Financing Renewable Energy

By Paul Astolfi, Scott Baron and Michael J. Small

Intense regulation and the importance of tax incentives are among the factors lenders must consider.

As the demand for energy produced from nontraditional resources has increased dramatically in recent years, more mainstream investors and lenders have begun to examine the renewable energy market for potential investment opportunities. Growth in demand for power generated from renewable sources has been in response to many factors, some of which (rising oil prices, international politics and global warming are examples) are part of our daily conversation. National political campaigns, media coverage and increased energy company advertising have raised the visibility of renewable energy technology.

From the beginnings of commercial renewable energy projects in the United States in about 1980, one of the primary motivations for developers has been to replace U.S. dependence on fossil fuels as the primary source of electricity.[1] This motivation has been driven by a desire to avoid the exhaustion of fossil fuels as a fuel source as well as a desire to generate energy without producing hazardous particulate matter and exacerbating other environmental problems, global warming being the most widely discussed.[2] As the United States recovered from the recession of the late 1970s and fuel prices fell on a relative scale, attention to energy issues equally dissipated among the general public and legislators, at least outside of California. As a result, market forces and tax incentives were not present to motivate investment and development in the renewable energy market. The 1990s brought new interest in renewable energy production, led by European innovation and government support; thereafter, the 9/11 terror attacks provoked the development of an "energy policy as strategic policy" approach that usually invokes a desire to break "America's oil addiction."[3] Currently, 24 state governments and the District of Columbia have instituted requirements that utilities in their state procure some amount of power from renewable sources.[4] These programs, referred to as renewable portfolio standards (RPS), can be complicated schemes and vary significantly in their "teeth" and definition of "renewable."

Good examples are provided by California and Texas, two of the states where a significant amount of renewable energy activity has occurred. In California, which seems always to have been in the vanguard of alternative energy, the state has established "a target of generating 20 percent of total retail sales of electricity in California from eligible renewable energy resources by December 31, 2010."[5] These eligible renewable energy sources include, among others, biodiesel, biomass, municipal solid waste conversion and combustion, tidal current, ocean wave, ocean thermal and wind energy.[6] In Texas, which experiences steady wind and has seen tremendous population growth and demand for power over the last 30 years, the state has set a requirement that the "cumulative installed generating capacity from renewable energy technologies" total 5,880 megawatts (MW) of renewable energy by January 1, 2015, and a goal of 500 MW of that amount coming from a renewable source other than wind.[7]

Financiers should remember that this market is highly regulated by both the federal and state governments, is driven in large part by tax incentives

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and—despite the broad support for renewable energy production—is not without political hurdles.[8] In addition, the particular technology employed in a given project will be particularly important in analyzing an investment. These themes should be kept in mind when considering an investment in the market, no matter what other particulars apply.

Financial Investments

There are almost as many avenues for a financier to invest in renewable energy as there are renewable energy companies. These include wind turbine financing, construction financing, providing debt for leveraged transactions, tax equity investments and providing traditional working lines of credit for renewable energy development companies. Wind turbine financing has arisen as a subspecialty in the market in part due to the extended lead times now being experienced for wind turbine delivery (more than a year). Construction financing for renewable energy projects is not dissimilar from financing the construction of any other project. It may be complicated by the likelihood of a term takeout, and lenders should be aware of this wrinkle.[9]

Most conversations about finance in the renewable energy market concern project finance, meaning a long-term investment, the credit for which is based entirely on the project being financed (that is, not backed up by a more creditworthy parent). In these structures, the project company is a subsidiary of an operating development company. Liability for the investment, whether debt or equity, usually does not go beyond the project company. Under some structures, the investment is made in an intermediate subsidiary, one level up from the project company, formed specifically for purposes of financing. Investors rely on the ultimate parent in these deals not for its credit but for its track record and technological know-how. In a field where the technology is still new, an investor should be confident that the particular project in which it is investing will work and be able to produce the power that will be sold to pay the investor back.

Many wind projects are financed primarily based on the tax incentives provided by federal legislation. Under these structures, a tax equity investor takes an equity position in the project similar to that of a limited partner. The tax equity investor and the other equity holder (usually the project sponsor) agree that the tax equity investor will be allocated the majority of the tax benefits while the project sponsor will be allocated the cash flows until the end of the majority of the federal Production Tax Credits (PTCs) have been used. At the end of that period of time, the two equity positions "flip" so that the flow of funds and tax benefits is reversed and the equity investor paid off. Market participants have developed a number of variations on the flip theme, and the Internal Revenue Service (IRS) has recently released guidance on some of the acceptable parameters for these transactions.[10] In addition to the various equity structures, projects can be debt leveraged in a number of ways. Projects can leverage the cash stream, the PTCs and a project sponsor may "back leverage" its equity position, taking out a loan collateralized by its equity position to increase its internal rate of return.

Solar projects can be financed using a sale-leaseback structure, since the federal Investment Tax Credit (ITC) does not require that the tax beneficiary actually produce the electricity. Under a sale-leaseback, a project developer will sell the project into a trust controlled by outside investors referred to in the jargon as "outside equity" or "tax equity" to distinguish them from the developer who continues to have an interest in the project. The trust, which is controlled by the outside equity, will then lease the project back to the project developer. The project developer will run the plant, produce electricity and provide a return to the outside equity in the form of rents payable under the lease. Facility leases frequently provide the lessee (the project developer) with a formula-based early buyout option. Tax treatment of the rental payments is extremely complicated and, if rental payments are not structured properly, the equity investment could be deemed to be a loan. Tax equity investors can leverage these structures, adding on debt at the level of the trust that owns the project. Here, as well, the rental payments made under the lease will be used to pay off the levered debt. In these structures, it is typical to engage an agent to act as depositary and payor, collecting all streams of funds and distributing them appropriately pursuant to an agreed-to waterfall.[11]

Regulatory Issues

The energy industry is highly regulated. Investments in the energy industry, including renewable energy projects, must be made in light of this regulatory

environment. The Federal Energy Regulatory Commission (FERC) oversees federal regulation of the energy industry. Federal regulations address, among other things, the ownership structure of a project; the rates the project will charge for electricity; the project's connection to the electrical grid; and, indeed, whether the project is subject to further federal regulation. In addition to federal regulation, a project may be subject to state and local energy regulation. Our experience has been that it is vitally important to the success of a project for well-connected local counsel to be engaged early in the process; they will be uniquely positioned to help guide the project through the sometimes tricky local permitting and regulatory environment.

In addition to energy regulation, renewable energy projects need to comply with federal and state environmental laws and regulations. This will, of course, include the standard Phase I evaluation, but the rural location of most renewable energy projects and the nature of those projects increase the number of applicable environmental regulations and the level of scrutiny.[12] Grasslands easements, wetlands issues, U.S. Army Corps of Engineers permits and the impact on avian and bat populations (among others) are all potentially relevant. Indeed, in many locations, the absence of clear permitting guidelines complicates these issues even more. Offshore wind energy projects present their own set of regulatory and environmental issues.

Tax Issues

As stated previously, while the per kilowatt costs of wind and solar energy have come down significantly, federal tax incentives, state RPS and renewable energy certificates (RECs)[13] continue to play a major role in driving development in the sector. The federal tax scheme classifies wind and solar property as five-year property under the modified accelerated cost-recovery system. Accelerating depreciation benefits the project developer and tax equity investors, who can provide capital at a lower cost in exchange in part for the tax benefit provided.

In the solar energy sector, the solar energy ITC provides the strongest tax-based motivation for growth. The ITC was enacted as part of the Energy Policy Act of 2005, was continued until the end of 2008 by the 109th Congress in December 2006 and provides a 30-percent tax credit for, among other things, qualified solar energy property expenditures put into service before January 1, 2009. On and after January 1, 2009 (unless extended prior to that date), the ITC diminishes to 10 percent. The tricky question for the ITC is properly characterizing the property at the solar energy facility. Not every dollar spent on the facility necessarily qualifies for ITC. Experienced counsel needs to be involved early in the planning stages of a project to ensure that the financial models accurately reflect this.

The wind energy industry's primary federal tax incentive is the PTC.[14] The PTC has been enacted by Congress intermittently over the last 15 years and is currently scheduled to terminate at the end of 2008. Equipment placed in service before January 1, 2009, will qualify for the PTC.[15] Taxpayers may take advantage of the PTC for the first 10 years a project is in service. The PTC provides the taxpayer with two cents[16] multiplied by kilowatt hours produced and sold during the year in question. The taxpayer claiming the PTC must own the facility and produce the electricity. Again, as with the ITC, experienced counsel should be engaged early in the process to confirm that the structure and characterization of legal relationships are appropriate to provide the project participants the expected financial returns.

NIMBY

Not In My Backyard. Despite the apparent wide-ranging support for all kinds of renewable energy technology, wind farms and solar fields face local political opposition ranging from landowner nuisance suits to sustained lobbying by vested conflicting economic interests. Many wind farm projects encounter resistance, sometimes escalating to litigation, from nearby landowners who are looking for money or genuinely opposed to the installation of a wind turbine, usually because they want to maintain a traditional aesthetic. Some of the more widely reported incidents of NIMBYism are the proposed Blue Water offshore wind farm in Delaware and Cape Wind in Massachusetts.[17] These two proposed significant offshore projects have been under development for several years and for just as long have encountered opposition from various groups (including well-heeled part-time residents of Martha's Vineyard). Those opposed make various arguments, but those in favor of projects like these often suspect the root of the opposition is limited to perceived aesthetic deterioration and diminution in property values.

Technology

The technology used in every renewable energy project will be subject to intense scrutiny. In a project finance transaction, the functionality of the project ultimately determines return on investment. Financiers should assess whether there is a reasonable chance an intellectual property claim will be brought against the project and remember that intellectual property claims are often "bet the company" issues. Technical consultants for investors will want to examine historical wind or solar data relevant to the project site and the appropriateness of the equipment chosen for that site. The particular model of turbine chosen for a particular wind project will be examined. Wind turbines are designed to be applied in different settings that have light to heavy winds and include onshore and offshore sites. There is therefore some flexibility in the relationship among the various physical dimensions of a single turbine and tower. A single wind turbine's energy production capacity ranges from 850 kilowatts to 6 MW.[18] Rotors range in size from 150 feet to 375 feet in diameter, and towers range from 120 feet to 600 feet in height (not including submerged portions of towers in offshore projects).[19]

The most widely known use of solar energy in the United States has, until recently, been on-site installations of photovoltaic technology (converting sunlight directly into electricity with the black panels with which we are all familiar from handheld calculators and yard lights). Solar thermal technology, on the other hand, uses sunlight to heat water to boiling or a specially formulated liquid to extremely high temperatures. In the latter case, the superheated liquid is used to boil water, and in both cases the resulting steam drives a turbine and produces electricity. Of course, when clouds or other atmospheric debris interrupt solar radiation, solar power plants produce less electricity. Likewise, if the wind is not blowing, rotors do not spin, and wind farms do not produce electricity. The next generation of solar energy is likely to facilitate heat storage that will last through the night and thereby provide constant energy-generation capacity. Wind farms have accomplished some storage capacity by linking to water reservoirs that use excess power produced by the wind farm to fill the reservoir and then, during calm periods, releasing the water to power turbines and produce electricity.

Nuclear power plants, which face probably the most tremendous NIMBY issues, are not always included in the "renewable energy" sector (the power source, uranium or plutonium, after all, is depleted in the process), but many interested in replacing traditional forms of energy production believe that nuclear power is the only form of base-load power production that is "emission free." A nuclear power plant does not emit pollution in the form of climate-changing gases or particulate matter. For these reasons and the fact that nuclear power is not generated using foreign oil, there has been a renewed interest in building more nuclear power plants. The first application since 1988 to build a new nuclear power plant was recently filed with the federal commission overseeing the market; as many as 32 more applications are expected to be filed, with total construction costs running upward of $90 billion.[20] Lead times for nuclear plants are expected to be extremely long (15 years is the time period most often mentioned), and the political hurdles will be arduous.[21] The rising cost of traditional fuels (which will be increased with carbon emission tariffs) is expected to push significant growth in the nuclear power industry.

Development

The first step in putting together a project is determining whether sufficient energy sources exist in a given location to produce power using technology to which a developer has access. Owing to, first, anecdotal accounts gathered over time and common knowledge and, more recently, sustained, detailed surveys, one can produce a highly accurate map of the United States giving both gradations of solar radiation and wind resources.[22] Cross-referencing these areas with access to transmission lines feeding into profitable markets will give an investor a good idea of where activity is likely to occur. Investors who are generally familiar with these facts should also be aware that micrositing issues can crop up and diminish a project's capacity to produce power. For example, local topography and its resulting effect on wind can make a significant difference in the performance of a turbine. Acquisition of land and land rights is therefore very important and can be very complex, involving transactions with government landowners such as the Bureau of Land Management, as well as local municipalities. Large

projects in rural areas can involve dozens of individual landowners. For wind projects, long-term land leases are most common, providing the developer with the right to use that portion of land necessary to build the turbines and towers and to transmit the electricity from the project site to the electricity grid. A financier should analyze the particular payment terms provided for in the leases underlying the developer's land rights for the project.

The second step in development is determining whether the electricity can be transmitted into the grid and sold profitably. Depending on the project's location, energy is sold either through long-term power purchase agreements (PPAs) or on spot markets (such projects being referred to as "merchant projects") or some combination of these. Long-term PPAs are generally more easily financed since the financier knows at least who the consumer of the power is going to be. The fact of the sale has been accomplished, and the financier can easily analyze the credit of the purchaser. Merchant projects rely on the open market to sell their power and, therefore, retain the risk of the price of electricity over time. In order to offload this risk, hedging arrangements have been developed that provide the energy producer (and its financiers) with certainty as to price. These hedging arrangements are often referred to as "synthetic PPAs" and, in their simplest form, provide for payments from the hedging counterparty to the power producer in the event prices for power dip below a stated amount and the opposite if power prices go above a stated amount. As with leases, PPAs may be subject to the risk of rejection if a party thereto winds up in bankruptcy.

Developers have choices when it comes to technology. Some lenders will have an affinity for certain vendors and their technology. Warranties of the energy-producing equipment will be critical, both as to specific items warranted and the creditworthiness of the warrantor. Contracts, leases and permits should be in the project company's name and consent to any prior assignment should be obtained to ensure that the project company and its lenders have the appropriate legal standing to enforce warranty, lease and other rights. It is interesting to note that we have seen certain contractual terms recently trend in favor of original equipment manufacturers as a result of the greatly increased demand for (outpacing the supply of) their products.

Changing Times for Renewable Energy

As this article was being written, Congress passed an energy bill that did not include provisions for extending the PTC and the ITC. Nonetheless, some members of Congress and industry groups are seeking to include PTC and ITC extensions in other legislation. Lenders should expect a bumpy and potentially twisting road until a stable policy environment is reached. In the meantime, the renewable energy market has momentum, concerns over fossil fuels remain, and continued governmental support, in some form or another, is reasonably likely.[23] With the market's short history in the United States, it can be difficult to measure the probable success of one project against the next. Diligence and good counsel will make the difference.

Endnotes

1 U.S. Windpower's Crotched Mountain, New Hampshire, installation is generally considered to be the first commercial application of wind power energy production in the United States. U.S. Department of Energy—Energy Efficiency and Renewable Energy, *Historic Wind Development in New England: The Age of PURPA Spawns the "Wind Farm," www.eere.energy.gov/windandhydro/windpoweringamerica/ne_history_windfarms.asp* (Dec. 7, 2007). The Solar Energy Generating Systems built in the Mojave Desert in the 1980s were some of the first and are still among the largest solar energy production plants in the world. San Diego Renewable Energy Study Group, *Potential for Renewable Energy in the San Diego Region, www.renewablesg.org/docs/Web/Renewable_Study_AUG2005_v4.pdf* (Dec. 7, 2007).

2 Bernie Woodall, *Kansas Says "No" to Big Coal-fired Power Plant, Reuters.com, http://uk.reuters.com/article/environmentNews/idUKN1845502220071018* (Dec. 7, 2007).

3 *Bush Has Plan to End Oil "Addiction," CNN.com,* Politics, *www.cnn.com/2006/POLITICS/01/31/bush.sotu/* (Dec. 7, 2007).

4 U.S. Department of Energy—Energy Efficiency and Renewable Energy, *States with Renewable Portfolio Standards, www.eere.energy.gov/states/maps/renewable_portfolio_states.cfm* (Dec. 7, 2007).

5 California Public Utilities Code § 399.11 et seq. *www.leginfo.ca.gov/cgi-bin/displaycode?section=puc&group=00001-01000&file=399.11-399.20* (Dec. 7, 2007).

6 *See* California Energy Commission's Renewables Portfolio Standard Eligibility Guidebook, at 7, *www.energy.*

ca.gov/2007publications/CEC-300-2007-006/CEC-300-2007-006-CMF.PDF (Dec. 14, 2007).

[7] Renewable energy technology in Texas is "[a]ny technology that exclusively relies on an energy source that is naturally regenerated over a short time and derived directly from the sun, indirectly from the sun, or from moving water or other natural movements and mechanisms of the environment." PUCT Substantive Rule § 25.173(c)(16). *See also* the Texas Public Utility Regulatory Act at the Texas Utilities Code § 39.904, *www.puc.state.tx.us/rules/subrules/electric/25.173/25.173ei.cfm* (Dec. 14, 2007).

[8] Peter J. Howe, *Changes May Buoy Cape Wind Project: Patrick Seeks to Alter State Law,* BOSTON GLOBE, Dec. 11, 2007.

[9] We have not addressed biofuel technologies, such as ethanol, for several reasons. First, the opportunities for large project development and related financing and syndication are not as many. Second, as pointed out in the NEW YORK TIMES and the WALL STREET JOURNAL, the ethanol market may be stalling. Lynn L. Walters, *Ethanol's Boom Stalling as Glut Depresses Price,* N.Y. TIMES, Sept. 30, 2007; Lauren Etter, *Ethanol Industry Is Losing Clout in Congress as Food Prices Climb,* WALL ST. J., Oct. 11, 2007.

[10] Rev. Proc. 2007-65, IRB 2007-45, 967, provides that a transaction will not be challenged if, among other things, (1) the developer maintains a one-percent interest in the partnership's income, gain, deduction, loss and credit; (2) the tax equity investor at all times maintains a 20-percent investment in the partnership; and (3) the tax equity investor's production tax credit allocation is not guaranteed.

[11] In the event a party to a lease becomes a debtor in a bankruptcy, the lease will be subject to either assumption or rejection under the Bankruptcy Code, 11 USC § 101 *et seq.* In addition, some leases are so structured as to draw "recharacterization" challenges, which seek to have a lease treated as a loan. Under such circumstances, the gain or loss for the putative lender/lessor or the borrower/lessee will also be of consequence to all parties whose own investment is affected thereby. While project development is driven by perceived future success, cautious investors will consider the potential consequences of underperformance or insolvency.

[12] The cost to comply with those regulations varies widely. For a 200 MW project, which is about average for a large commercial-size development, the total costs for environmental studies, permits and other compliance can range from $500,000 to $4 million. The difference in cost is attributable to a number of factors, including the physical size of the project, the regulations of the applicable local and state jurisdictions and whether there is a federal nexus with the project (for example, if federal permits are required or if the project is on federal land), which will require compliance with additional federal regulations.

[13] RECs are a property right separate from the electricity produced by renewable energy generating facilities and can be traded, subject to some limitations.

[14] Approximately one-third of a project's net present value when it goes into commercial operation is accounted for by the PTC.

[15] As with the ITC, industry groups are lobbying Congress to extend these tax credits for a number of years past their current termination in 2008.

[16] By law, the PTC increases to account for inflation.

[17] *www.bluewaterwind.com; www.capewind.com.*

[18] 1,000 kilowatts is equal to one MW.

[19] We give the dimensions here in imperial units although most of the industry (including U.S. manufacturers and developers) uses the metric system, in large part due to the significant lead Europeans had in this field until recently.

[20] Mark Clayton, *Nuclear Power Surge Coming,* CHRISTIAN SCIENCE MONITOR, Sept. 28, 2007.

[21] Nicole Gelinas, *Nuclear Power: The Investment Outlook,* ENERGY POLICY AND THE ENVIRONMENT REPORT (The Manhattan Institute, June 1, 2007), *www.manhattan-institute.org/cgi-bin/apMI/print.cgi* (Dec. 7, 2007).

[22] *www.eere.energy.gov/windandhydro/windpoweringamerica/wind_maps.asp;http://www.nrel.gov/gis/solar.html#maps* (Dec. 7, 2007).

[23] The authors note that the State of California recently sued the U.S. Environmental Protection Agency for its decision not to waive federal preemption and allow California itself to govern greenhouse gas emissions from motor vehicles. *State of California v. U.S. Environmental Protection Agency*, No. 08-70011 (9th Cir. Ct. App. filed Jan. 2, 2008).