

Global Power Report

November 1, 2007

ITC Great Plains, Oklahoma G&E announce plans for new transmission lines to connect wind farms

Prospects for the development of wind farms in the western parts of Kansas and Oklahoma brightened considerably on October 30 as the Southwest Power Pool approved plans for a transmission line in Kansas and as Oklahoma Gas & Electric announced plans for a wind power solicitation and a major line of its own.

Western Kansas and Oklahoma offer some of the best wind resources in the US but the development of wind farms there has been hampered by the lack of transmission capacity needed to deliver wind power to population centers in the central and eastern parts of the two states.

The SPP's board of directors October 30 voted to add to its 10-year plan a proposed 180-mile transmission project known as "the Kansas V plan," which is comprised of a 345-kV line that would run southeast from Spearville in western Kansas to Comanche County, then run northeast from there to near Wichita as either a 345-kV or 500-kV line.

The project is the northern half of the SPP's planned "X plan," whose southern half would include future lines in northern Oklahoma and Texas' Panhandle region, said Les

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Solar power heats up, fueled by incentives and the prospects of utility-scale projects

Solar power is looking up, brightened by technology improvements, a variety of incentives and by heightened environmental concerns.

In recent months several deals for utility-scale solar power projects have moved forward, and developers are hoping that the number of solar projects under development will bring economies of scale to bear and push down the costs of building solar projects, making them competitive with thermal peaking power plants.

In California alone there are 44 solar power projects in the California Independent System Operator's interconnection queue as of mid-September 2007, representing 17,393 MW. The California Energy Commission lists seven solar power projects totaling 2,677 MW that are under review or announced. And Platts Energy Advantage lists 3,524 MW of proposed solar power projects in the United States.

But not all the action is in California, though that is the hottest market. A partnership of SkyPower Corp. and SunEdison LLC recently announced a 9-MW solar photovoltaic project in Ontario, which is not usually considered a hot spot for solar power. And even though the size of the project is not usually considered utility scale — some would argue otherwise — it is a

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Constellation considers building 520 MW of new gas plants, extending lives of 719 MW

Constellation Energy is considering building 520 MW of new gas-fired generation at existing or permitted sites, said CEO Mayo Shattuck while announcing third-quarter earnings on October 31. It will also invest to extend the lives of 719 MW of plants. In addition, the company will proceed with earlier plans to bring 178 MW of retired generation out of mothballs and to expand the output of its New York nuclear station by 105 MW.

These initiatives are possible because of high market prices and the new, long-term capacity bidding systems in the PJM Interconnection and the New York Independent System Operator, Shattuck told analysts during a conference call. He noted that in PJM's Reliability Pricing Model system, capacity prices in the zone covering Maryland have risen from \$188.54/MW/day for the 2007-2008 planning year, to \$210.11/MW/day for 2008-2009, to \$237.33/MW/day for 2009-2010 (GPR, 18 Oct, 24).

Long-term gas prices are also "providing support for future power prices," Shattuck added. "We're starting to see energy and capacity prices that support new builds," he commented.

For the new 520 MW of gas plants and the nuclear uprate,

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The RFP process will determine whether OG&E will own the new wind farms, buy power from wind farms to be owned by others, or a combination of the two, he noted.

SPP's Dillihunt called OG&E's plan to build the new line "another incremental but important piece" of the power pool's expanding grid.

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sign of changes under way in the renewable energy market.

Other recent announcements give an even better indication where solar power is headed. In October, Florida Power & Light announced plans to build 300 MW of solar generating capacity in Florida.

In September, BrightSource Energy filed an application at the California Energy Commission to develop three solar plants totaling 400 MW in the Mojave Desert (*GPR*, 13 Sept, 16).

In July, Pacific Gas and Electric signed a 25-year power purchase agreement to buy the output from a 553-MW solar project in the Mojave Desert proposed by Solel Inc. that is due online by 2011 (*GPR*, 26 July, 15).

Duke Energy now says it might be interested in acquiring a solar power developer (*see story, page 19*). But perhaps the biggest milestone was passed in June when Acciona Energy North America's 64-MW Nevada Solar One project entered service in Nevada. The solar array sells power under a 20-year power purchase agreement with Nevada Power and Sierra Pacific Power.

"The Nevada project really got our attention," Kevin Walsh, managing director and head of GE Energy Financial Services' renewable energy team, said in an interview.

Walsh said that GE EFS' "sweet spot" is large solar projects of \$20 million or more. At \$266 million, the Nevada project is well within that target.

GE EFS already has said it plans to invest about \$50 million a year in what Walsh called "tech equity," which he defined as venture capital investments in emerging "clean" energy solutions such as biofuels, demand response, ocean power delivery, energy storage, and solar photovoltaics. In addition, spurred by Nevada Solar One, the company is now taking a harder look at direct investment in solar projects. "Solar thermal is picking up," said Walsh.

Solar power used to be the almost exclusive domain of venture capital and, from a hard-nosed developer or banker's point of view, the domain of what the industry dismissively refers to as "science experiments." But the larger scale of the solar projects now being proposed has begun to attract talent and money from developers and financiers that think big, that is, utility scale, 100 MW or more per project.

In September Robert Fishman quit his position as head of Calpine's power operations to become CEO of Ausra Inc., a developer of utility-scale solar thermal projects based in Palo Alto, California.

And Goldman Sachs, which has been a wheeler dealer in the power industry with its investments in Horizon Wind Energy

Proposed solar power projects in the US

Owner	capacity (MW)	State	target online year
Ausra Inc	175	CA	2050
Bethel Energy LLC	100	CA	2008
BrightSource Energy	400	CA	2012
City of Palmdale	50	CA	2009
Dbk Corp	200	CA	2050
Florida Power & Light	300	FL	2008
FPL Energy Inc	200	CA	2050
Kings River Conservation District	80	CA	2011
New Solar Ventures	300	NM	2050
SunPower Corp.	18	NV	2008
Solel Inc.	533	CA	2011
Solucar	250	AZ	2050
Stirling Energy Systems Inc	800	CA	2012
SunEdison LLC	8	CO	2007
US Army, Fort Bliss	60	TX	2009
Victorville Municipal Utilities	50	CA	2010
Total	3,524		

Source: Platts Energy Advantage

and Cogentrix Energy, is now taking a hard look at solar power.

"We are very interested in utility grade solar," said Larry Kellerman, a managing director with Goldman Sachs' fixed income, currency, and commodities group, in an interview. "We see tremendous potential, about 30,000 MW from about 1,000 MW now."

Kellerman declined to say how much money Goldman plans to invest in solar power, but he did say that Goldman would act as a developer and could take on partners, depending on the project. Goldman could, of course, just buy a developer or a manufacturer, as it has in the past, but right now, says Kellerman, "there are not any companies that look like attractive acquisitions."

Many of the companies that are developing solar projects are not, in fact, "survivable in the long term," said Kellerman. "It is like the early days of PURPA," he said, referring to the Public Utility Regulatory Policies Act that was enacted into law in 1978 and spawned the independent power industry. "The smaller developers, just like in the early PURPA days, will blunt their sword on the market" and the larger players with more capital will move in.

Kellerman says that shift is already under way and is evident with the entry of players such as FPL and Acciona and, of course, Goldman.

Like other developers pursuing solar projects on Bureau of Land Management sites, Goldman has applied for rights of way, as Solar Investments LLC, for a total 34,000 acres of BLM land, according to the California Energy Commission, which reviews those applications with the BLM.

What has changed to make solar power utility scale?

Kellerman cites several factors to explain the burst of interest and activity in solar power. The larger size of solar projects are bringing home economies of scale and beginning to drive costs down, in certain places, to the 10 to 11 cents/kWh "zip code," he said. This gives solar power the potential to be

rationally competitive with other renewable resources at a time when the industry is suffering from the “indigestion of too much wind in the portfolio.”

The big problem with wind power is that it is intermittent. Solar power, on the other hand, is predictable. The sun rises every day and gets hot at the same time of day and the same time of year. The only variable is cloud cover, and in the Southwest you can count on a sunny, cloudless sky about 350 days a year, said Kellerman. In short, solar power is almost peak coincident.

This gives solar power a big advantage over wind power, especially when trying to feed the power into the grid. “You can only put so much wind into the grid before the grid begins to choke. Man shall not live by wind alone,” said Kellerman.

The prospects of solar power have also been bolstered by concern about global warming. “There is a growing sense among utilities that their options are narrowing, getting riskier,” said Fred Morse, president of Morse Associates Inc.

Utilities are concerned about whether or not they will be able to pass on the costs of potential carbon taxes to their customers. “They need this [solar] option, but what they really need is CSP with storage,” said Morse, referring to concentrating solar power.

When most people think of solar power, they think of solar panels on a roof. Photovoltaic panels convert sunlight directly into electricity. But most utility-scale solar projects use CSP technology, not PV.

For example, in California where there are 17,393 MW of solar projects in the queue for a grid connection, 11,416 MW of those are CSP projects and only 5,977 MW are PV projects.

Competing Technologies

Just as a traditional thermal power plant burns coal or gas to create steam or hot gas that turns a turbine that produces electricity, CSP technology uses the sun’s radiant energy to heat a fluid that drives an engine or turns a turbine.

There are at least four competing forms of CSP technology, but only one that has been commercially tested. The three basic CSP technologies are trough, dish and tower.

In a solar parabolic trough, a U-shaped trough of mirrors concentrates sunlight onto a pipe running down the center of the trough. The fluid in the pipe, mineral oil for instance, is heated by the sun, turns water to steam in a heat exchanger, and the steam turns a turbine to produce electricity.

A solar dish looks like a large dish-shaped radar or television signal receiver covered with mirrors that direct the sun’s heat at an engine suspended in front of the dish at the focal point of the mirrors.

A solar tower uses an array of mirrors arranged in a circle around a tower. The mirrors focus the sun’s rays at the top of the tower where they heat a fluid to as high as 1,100 degrees Fahrenheit to turn water to steam to power a turbine.

The fourth CSP technology, the compact linear Fresnel reflector, is a variation of the trough, but is usually considered separately. The CLFR uses a Fresnel lens arrayed in a trough to concentrate the sun on a pipe that is elevated above the trough.

All of the CSP technologies employ motors to move the sun-reflecting mirrors so that they track the sun during the

The Sons of Luz

There are Luz-ers everywhere. Former employees of Luz International Ltd., the solar power pioneer that went bankrupt in 1991, have populated several companies now active in the solar power industry.

Luz founder Arnold Goldman is now chairman of BrightSource Energy where former Luz-er Israel Kroizer is now BrightSource’s COO.

Several of Solel’s middle management team came from Luz, including CEO Avi Brenmiller and Chief Technology Officer Eli Mandelberg.

Gilbert Cohen, formerly with Luz, is now a senior vice president at Acciona.

day, and all of the CSP technologies heat a fluid that spins a traditional turbine, except for the solar dish, which uses a Stirling engine.

In a Stirling engine, also known as a heat exchange engine, a contained gas is heated on one end of a cylinder and cooled at the other. The expansion and contraction of the gas drives a piston attached to a flywheel. The spinning flywheel turns a generator that produces electricity.

There are variations on each of the technologies. Usually they involve a different way of arraying the mirrors or a different type of heat-conducting fluid, and each technology, and every variation on that technology, has its champion.

Ausra, which is working with FP&L to install as much as 300 MW of solar capacity in Florida, specializes in Fresnel troughs. As the name suggests, Stirling Energy Systems uses Stirling engines with a solar dish. Phoenix-based SES has signed two power purchase agreements, one to provide San Diego Gas & Electric 300 MW for 20 years from its SES Solar Two LLC project planned for the Imperial Valley, and the second to provide Southern California Edison as much as 1,780 GWh a year for 20 years from its SES Solar One project in the Mojave Desert.

BrightSource Energy is concentrating on solar towers. Its most advanced project is the 400-MW Ivanpah in California’s Mojave Desert. BSE has filed with the CEC for the project and is working toward a power purchase agreement with PG&E. (A single 100-MW plant comprises four towers, says BrightSource.)

Parabolic solar troughs are championed by Solel Solar Systems of Israel. Solel Inc., Solel Solar’s US subsidiary, is using troughs at its Mojave Solar Park project (Solel-MSP-1), which has signed a 25-year power purchase agreement with PG&E for the output from the project once it begins operation, expected in 2011.

Competing Claims

It is not easy to sort out the competing claims of the solar purveyors. Each purveyor/developer touts their own technology. “Everyone says they have the best technology and that no one else’s works, and it’s all proprietary,” as Edwin Feo, co-chair of Milbank Tweed Hadley & McCloy’s global project finance group, said.

BrightSource Energy touts the lower parasitic loads of solar tower technology, 5%, compared with 15% for a solar trough,

according to Charles Ricker, senior vice president of marketing and business development at the Oakland, California-based company. He also noted that, unlike a solar tower, a solar trough requires relatively flat land, which makes site selection more restrictive.

FP&L has decided to go with Ausra's Fresnel trough for the solar projects it is going to build in Florida. The choice has caused some consternation in the solar energy industry. Critics say CSP will never work outside of the Southwest, and point to Florida's frequent cloud cover and the risk of damage from hurricanes.

A spokesman for FP&L said that one reason the utility chose CLFR technology is because the panels can be flipped over and lashed down if a storm hits. He added that the utility plans to move cautiously with a 10-MW project before deciding whether or not to scale up to 300 MW. He added that FPL is open to using other technologies for the 200 MW of solar capacity it plans to build outside Florida.

Even PV has its champions. Some executives in the solar power industry scoffed at SkyPower/SunEdison's PV project in Ontario, saying that its only justification is the 42 cents/kWh price paid for solar project in the province's standard offer contract. But Thomas Rainwater, SunEdison's CEO, dismisses those arguments.

"Tariffs in other places are equally attractive," he says, and insists that his company's business model is not dependent on the price available in Ontario. SunEdison has, in fact, installed 25 MW worth of PV panels in California in an agreement with Kohl's Department Stores.

Rainwater also notes that the size of Ontario project itself is not an accurate reflection of the potential of PV technology, at least not in SunEdison's business model. The Baltimore-based company bills itself as a "solar energy services provider," meaning that SunEdison installs and maintains PV systems for a customer. In exchange the customer agrees to buy power from SunEdison. Rainwater calls it a distributed generation model and says that while a 9-MW installation may be small, "if you do five or 10 of them, you get up to 500 MW. So it is scalable."

Solel's CEO, Avi Brenmiller, touts the company's patented tube technology. He says that when Solel's "UVAC 2008" tubing was installed at one of the SEGS plants, the energy efficiency increased by 30%.

SEGS, short for Solar Energy Generating Station, is a collection of nine projects in the Mojave Desert with a combined capacity of 350 MW that were built between 1984 and 1990. SEGS is still in operation and is the only solar station in the United States with a track record. SEGS, originally developed by Luz International Ltd., an Israeli company that went bankrupt in 1991, is now owned by FPL Energy, Caithness Energy and other investors.

Brenmiller cites the 20-year track record of the SEGS solar troughs, and says they are about 28% efficient at peak and about 20% on a yearly basis.

According to Tom Mancini, program director for CSP at Sandia National Laboratories, dish technology is the most efficient, converting sunlight to electricity at 22% to 25% efficiency on a yearly basis. Solar tower technology is about 18% to 20% efficient, and trough technology is about 14% to

Storage: solar power's next frontier

Proponents of solar power tout the technology as nearly peak coincident, which they say gives them an edge over their erratic rival, wind power. But what solar proponents are really hoping for is a commercially viable form of energy storage.

"Storage is coming into the game," said Avi Brenmiller, CEO of solar power developer and equipment maker Solel. When it does, says Brenmiller, the efficiency of solar power will go up to 50%, from the 14% to 25% efficiency range available now from concentrating solar power plants.

Most of the schemes for solar storage involve molten salt. The semi-liquid salt takes a long time to cool off, so it stores energy. Energy storage would allow a CSP project to extend its hours of operation to make it more peak coincident. Peak energy production for a CSP project is now from about noon to about 3 or 4 o'clock in the afternoon. Most peak loads extend until at least 6 or 7 o'clock in the evening. A molten salt storage system would allow a CSP plant to continue producing electricity into the evening.

Solel is looking at a system that would store molten salt in two huge containers, a hot tank at about 750 degrees Fahrenheit, and a cold tank at about 600 degrees Fahrenheit.

BrightSource Energy decided to use water as the heat-conducting fluid for its 400-MW Ivanpah project in California's Mojave Desert, rather than molten salt. "We made the technology commercially viable by getting rid of the extras," said Charles Ricker, senior vice president of marketing and business development at BrightSource. Switching from salt to water eliminated the need for expensive equipment to pump the molten salt and reduced maintenance costs, he said.

Peter Duprey, CEO of Acciona Energy North America, says that solar storage would allow him to better meet customers' needs by customizing the output of its plants. He noted that the peak demand in Las Vegas, which is close to Acciona's Nevada Solar One plant, runs until 10 o'clock at night. A viable solar storage option would allow him to serve that load.

There are several projects now under way in Europe, most of them in Spain, that will use solar storage technology. Industry experts say that the high tariffs in Europe, as high as 40 cents/kWh, give companies working there the luxury of exploring those options.

In the United States, developers are more likely to watch those projects on the Continent closely but stay on the sidelines. Eventually costs will come down, say developers, making the technology available and viable, but until then, as Solel's Brenmiller said, "We wouldn't like to be the first to try it."

15% efficient on a yearly basis. All the technologies have a capacity factor of about 30%.

But Fred Morse, the consultant, stresses that efficiency is not the main point. "You don't develop a project based on efficiency, even though that clearly affects price." Solar projects, like other power projects, are developed based on the delivered price of power, said Morse, and "price depends on everything except your DNA. Where's the sun? What's the debt-to-equity ratio? Is there storage?"

CSP technology requires direct, radiant sunlight, unlike PV technology, which works on total sunlight. For that reason, “I don’t believe CSP will work outside the Southwest,” said Morse. He said that southern Nevada is superb, as is Utah and south central Colorado. New Mexico also has great solar potential, said Morse, but there is not a lot of transmission and it is too far from load centers.

The hottest spot for solar power is California’s Mojave Desert. It is “the best location in the world for solar power,” says BrightSource’s Ricker. It has good direct sun, relatively high altitudes, proximity to transmission lines and to load centers. If only 1% of the Mojave were covered with solar plants, they could generate 20 GW, enough to provide electricity to 75% of the homes in California, says Ricker.

Location is one factor that determines what technology a developer chooses, another is what bankers think. Bankers’ aversion to risk, and preference for tried and true technologies, is one of the chief considerations that developers cite when they talk about their choice of technology. To illustrate that point, Ricker recounted part of the BrightSource’s corporate history. (BSE was founded by Arnold Goldman, who also founded Luz.) Part way through the SEGS projects, the technology was approaching the limits of its efficiency. So the developer, Luz, decided to switch from troughs to solar towers for SEGS-6, but the finance people insisted on sticking with the trough technology, said Ricker.

Once a developer has decided on location and technology, he still has two other pieces of the puzzle to put together: financing and a power purchase agreement.

One of the biggest drivers of solar power projects right now

is the willingness —in many cases, the obligation — of utilities to sign PPAs for solar power.

A total of 25 states have renewable portfolio standards that require them to fill their needs with a certain percentage of renewable power. Twelve states have explicit solar power targets within their renewable portfolio standards, according to data compiled by the North Carolina State University Solar Center (see map, below). Topping the list is New Mexico with a requirement that 4% of the state’s power come from solar resources by 2020. New Jersey is looking to source 2.12% of its power from solar by 2021. Delaware wants 2.005% solar PV by 2019. Maryland wants 2% solar by 2022, and Nevada is aiming for 1% of its power from solar by 2015.

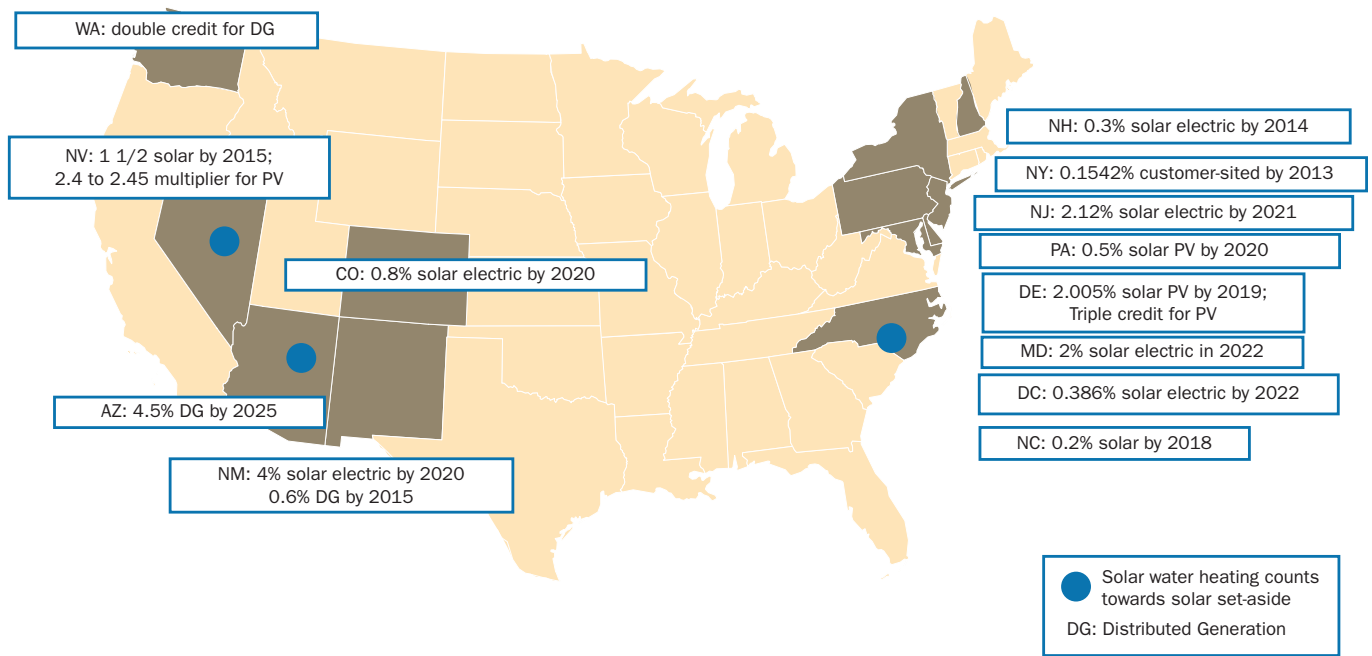
In addition, some developers say they are getting a better response from utilities for solar projects than for wind projects because of solar’s predictability. “The good thing about solar power is that it produces when customers need it most, that’s its real benefit,” said Stu Hemphill, director of renewable and alternative energy at Southern California Edison. “Solar is the great untapped resource in California,” he said.

The economics of the sun

California also has a renewable portfolio standard with a market reference price of about 9 cents/kWh — not quite rich enough for solar power — but the MRP has a multiplier for peaking power that could get the price up to about 14 cents/kWh.

“Most sponsors think they can live off the market reference price,” says Feo with Milbank Tweed. Even though solar power struggles to reach that price, if a developer thinks he can make it work, FE0 says he will “under sell his project hoping that the price

Solar/DG Provisions in state Renewable Portfolio Standards



Source: North Carolina State University Solar Center

for solar technology will come down and the escalator will go up.”

Many PPAs are for very large projects that will not be built all at once. So the theory is that technology improvements will push down costs as the project is phased in, and the price paid for the power output will rise under the escalator in the PPA.

Ricker would not talk about the actual delivered costs stipulated in BrightSource's PPAs, except to say, “in general terms, it is in the 10 to 13 cents/kWh range.”

Solel's Brenmiller says his target is to bring the cost of producing solar power down to 10 to 12 cents/kWh, so that it is competitive with combined-cycle gas plants, which is the traditional choice for providing peaking power.

Brenmiller would not say how close Solel is to that target except to say that the company's second project is in the 10 to 13 cents/kWh range, including a 2 to 2.5 cents/kWh contribution from the federal investment tax credit.

BrightSource also benchmarks its projects to gas-fired peakers. The reference price BrightSource is using right now to build a solar project is \$3,000/kW, compared with \$1,000/kW for a gas-fired plant, said Ricker. He said it might be possible to get the cost of solar power to a comparable level with gas-fired peakers in as few as five years.

An equally daunting task is financing 30 years of fuel costs upfront. “The capital costs of solar power are two or three times those of a coal-fired plant because we capitalize the cost of fuel,” said Ricker. The capital expenditures of a solar plant are a substitute for the stream of fuel payments over the life of a thermal project, he explained. On the other hand, he added, a solar plant's O&M costs are negligible. And, as Morse noted, when “you're buying 30 years of fuel upfront, you are very sensitive to interest rates.”

A lot of solar projects are beginning to look for financing, but only one utility-scale solar project that has been financed in the past decade and a half, Acciona's \$266 million Nevada Solar One. It was financed as a leveraged lease by Banco Santander and BBVA, CAIXA Geral de Depositos, and equity investors JPMorgan Capital Corp., Northern Trust and Wells Fargo.

Wells Fargo, with HSH Nordbank AG, is also an investor in SunEdison's SunE Solar Fund III, which has raised more than \$250 million for PV solar installations.

BrightSource Energy, like many of the other players in the solar power industry right now, is privately owned. Ricker says BrightSource is well financed, with more than \$50 million from Vantage Point Venture Partners, Draper Fisher Jurvetson, Morgan Stanley, JP Morgan and Chevron. The company also has a revolving line of credit – Ricker would not say for how much or who the creditor is – and he added that BrightSource is already beginning to line up more financing for its planned projects.

But if the pace and scope of solar power projects continues to grow, small privately owned companies will find it increasingly challenging to raise the capital to fund their growth targets.

“Solar power is like wind power was 20 years ago,” said Feo. “Value is created by utility PPAs with guys who are under capitalized. They eventually sell out; the big players come along and buy up the smaller assets.”

Big players are players who have profitable operations that enable them to use the tax credits that make renewable energy projects viable. Big players play in more than one sector. Big players have deep pockets.

Acciona had \$9 billion in revenues and \$1.98 billion in earnings in 2006, and it is working on a variety of renewable energy technologies, from biomass and biodiesel, to wind power and a 46-MW PV project in Portugal. The company's experience with other renewable technologies could provide valuable lessons that it could apply in California or Colorado. The company could also bring its size to bear in realizing economies of scale in everything from financing to manufacturing.

Acciona see a bright future for solar power in the United States. There is the potential for 300 GW to 400 GW of solar power here, said Peter Duprey, CEO of Acciona Energy North America. Overall, he said, “there is no reason why the United States could not source anywhere from 30% to 50% of its power from [a variety of] renewable sources.”

Could something go wrong with this sunny outlook? It has once before.

In the late 1980s solar power was beginning to thrive in an environment of high incentive-laden rates, positive political will and high oil prices. As oil prices fell and power prices rose, the luster began to fade.

Arguably demand, and not the machinations of a cartel, will keep oil at or near current prices, but there are no guarantees. Ricker says BrightSource's “hurdle price is \$40 to \$50 a barrel for oil or \$5/MmBtu for gas.”

Another pitfall is the possibility that Congress will not renew the ITC. Tax incentives are important said Duprey. A rough estimate, based on a 30% investment tax credit and a slightly discounted debt level, yields a \$72 million credit for the Nevada Solar One project. Acciona would not comment on the value of the tax credit.

Tinkering with any one of those contributing factors could drastically change the outlook for solar power, but right now solar power is hot and, as Duprey says, “the solar power industry is still in its infancy.” — *Peter Maloney*

COMPANY NEWS

Enron, in a last fight, girds for battle to wrest billions in damages from Citi

It will be the last thing it ever does. Enron, destined for liquidation, is preparing to battle Citigroup and Deutsche Bank in a court room in New York in April over billions of dollars the once high flying energy group believes the big Wall Street banks owe in damages for their involvement in the company's collapse. The case is also casting light on the distressed debt market.

Down to just a 40-person staff, what is now known as Enron Creditors Recovery Corp. is reaching back to allegations a bankruptcy court examiner made in June 2003, specifically that Citigroup had “actual knowledge” of “wrongful conduct” at Enron when it helped Enron executives design and implement a number of so-called special purpose entities.