The Sprint for Independence

Alternative energy takes on new meaning as the U.S. tries to wean itself off of carbon. Can Wall Street help finance it all with securitization?
Alternative energy has permanently entered mainstream discourse and there is little disagreement that the United States needs to reduce its dependence on foreign oil and develop clean, dependable energy sources.

While no consensus has formed on how to accomplish that goal, there is little doubt that it will require a significant and perhaps unprecedented capital investment.

In September, a group of specialists met at the offices of Stroock & Stroock & Lavan LLP to consider how the tools of securitization could be employed to spur needed capital investment in alternative energy and energy infrastructure. Aleksandrs Rozens led the discussion.

**ASR:** When we look at alternative energy issues, what are the key themes of the debate?

**WEINBERGER:** In the United States, there are three distinct themes that are very much interrelated. The first is energy independence. If you look at our oil consumption today in the U.S., we use about 30 billion barrels of oil per year, and only about a third to maybe 40% of that is produced domestically. So, we are highly dependent on foreign sources of oil. Most of that oil comes from regions of the world where there is significant geopolitical risk and instability. Recent spikes in oil prices were a key concern for everybody. We need domestic sources of energy that will not be interrupted and will not be subject to supply shocks.

Another major theme is that of controlling greenhouse gases. Most of our energy comes from fossil fuels. They create a significant amount of greenhouse gases, which lead to global warming and global climate change. There is a strong demand...
worldwide to start reducing our greenhouse gas emissions.

The third theme is that even if you are not concerned with energy independence or with environmental damage from the use of fossil fuels, the simple reality is that our current energy infrastructure is not sufficient to meet our current needs. We have to invest in new generation and transmission facilities. In addition to oil and coal, we need to look at solar, wind, geothermal and hydropower. These newer technologies will allow us to produce more energy domestically and will help us control greenhouse gas emissions. Given that we have to invest in our energy infrastructure, why not look at these newer technologies that promise additional benefits instead of just building more of what we currently operate? These themes are the cornerstones of our energy policies. We probably should discuss, briefly, our current energy regulations.

SUCHMAN: There are a number of legislative or regulatory mandates that provide significant money for investment in renewable energy and alternative energy development. For example, there are mandates providing for charges that ratepayers pay on their electric bills. These result from renewable energy portfolio standards, energy efficiency portfolio standards and systems benefits charges. Renewable energy portfolio standards require utilities to provide a certain percentage of energy to their customers using renewable energy. There are 29 states that have renewable energy portfolio standards although there are differences in the percentages that apply and in the definitions of what “renewable” means.

By and large, they all include renewables such as solar, wind and biomass. There are also five states that have voluntary standards. Energy efficiency portfolio standards, such as those being developed in New York, require that utilities reduce a percentage of energy demand, particularly at peak times. The standards can come from public service commissions, public utility commissions, state legislatures or other regulatory bodies. Energy efficiency is interesting because you can look at it as an asset in and of itself. Some people call it an invisible power plant, so that there is potential for investment in the asset to reduce energy demand. Systems benefits charges are very similar to renewable energy portfolio standards, except they deal with broader public policy, including investment in low-income communities, research and development and, electric efficiency. The large amount of money generated through these charges is distributed through various regulatory bodies or authorities, depending upon the state.

Another type of legislative mandate involves carbon dioxide cap and trade programs. There is only one cap and trade program in effect thus far, the Regional Greenhouse Gas Initiative [RGGI], which involves ten Northeast states. What is interesting about RGGI is that almost all the participating states have adopted a policy or regulations to auction off 100% of the available allowances to regulated sources. A power plant, for instance, that needs a certain amount of allowances to cover emissions from carbon dioxide would have to go to the auction and purchase those allowances. The proceeds are earmarked for investment in renewable energy and energy efficiency programs. There is also pending federal cap and trade legislation, the Lieberman-Warner-Boxer Bill, called the Climate Security Act, that provides for a certain percentage of the allowances to be auctioned off with the proceeds being earmarked for energy efficiency and renewable energy. The first auction under RGGI includes approximately 12 million allowances, or 12 million tons of carbon dioxide. The total cap for RGGI is 188 million tons, which could provide a tremendous amount of money in the aggregate. The hope is to leverage these funds in order to spur more private investment in renewable energy.

ASR: Who is responsible for the implementation of the regulations?

GUPTA: It has been happening at the state level, primarily, and it’s been happening with utilities often being required to meet a certain energy efficiency obligation or a renewable obligation. So state utility reg-
ulators are really key in terms of driving these investments and these policies so far. There is legislation at the state level that might also be helpful in getting the regulators to move in the right direction, but in many states there has not been such legislation. In the New York area, NYSERDA [New York State Energy Research and Development Authority] is implementing much of the efficiency or renewable energy requirements. Vermont has created a separate not-for-profit entity, Efficiency Vermont. But, generally, it’s the utilities. The big concern is that it is still not happening at scale. The drivers are there in terms of energy security and our dependence on oil, global warming, high energy costs, the need to invest in infrastructure and create domestic jobs. A recent study by McKinsey & Company showed half of our carbon reductions by 2030 can be achieved at negative cost through energy efficiency. We know that the programs that we have work and deliver consumer and environmental benefits. They just don’t deliver enough because we are not really investing enough and the policy is in effect in some states, but not all. We really need to figure out from a policy point of view what barriers need to be removed to get the private sector to bring in capital to significantly scale up investment in energy efficiency and renewables.

**ASR:** Have the regulations helped further development of new technology in this area?

**GUPTA:** You clearly see a lot more development of wind power because of state renewable energy policies in Texas, Colorado and California, and in California and New Jersey you are seeing a relatively huge investment in solar because of the policies that these states have adopted. Similarly, in New England, California and a few other states, there is policy support for energy efficiency. Where you have standards or policies, you see them working. One critical policy that we believe is very, very important, especially to bring utility investments in energy efficiency and clean distributed generation, like solar and fuel cells, is to get the utility incentives right. Right now, utilities make more money the more they sell. So why should they have an interest in investing in energy efficiency or solar or fuel cells or cogeneration when they’re going to make less money because they’re moving fewer electrons over their grid? California, New York and others have adopted policies which decouple utilities’ revenues from their sales. Decoupling regulation also creates an important element of revenue certainty in terms of investment going forward, making sure that what you’re doing on efficiency and solar rate reduction bonds, ratepayer-backed bonds or stranded cost securitizations.

**ASR:** So, has securitization been used in the environmental energy area?

**PROBST:** It has been used in the environmental area quite a bit. One of the earliest examples is a $202 million securitization for Puget Sound Energy in 1995. That financing paved the way for other similar securitizations by utility companies, eventually creating a $40 billion asset class known alternatively as

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**ASR:** How do these work?

**PROBST:** A regulated utility makes permitted investments and recovers those investments with a reasonable return through regulated rates paid for by customers as part of their normal electric bills. For Puget, it made certain investments in demand side management, or DSM.

**ASR:** What is DSM?

**PROBST:** To meet customer needs, an electric utility can increase the supply of electricity — for example, building generating plants — or it can reduce the demand, as in the case of DSM. DSM includes things like energy-efficient lighting for customers. In that case, although the utility doesn’t own the DSM assets — for example, the customer lighting — the utility is entitled to recover approved investments through customer rates. That
cash flow typically is very stable given a diversified customer base and low defaults on customer bills.

**ASR:** How is that cash flow securitized?

**PROBST:** This stable cash flow would seem ideal for securitization. There are, however, a couple of issues that need to be addressed. Some concerns could be potential future regulatory changes, potential underbilling, ensuring bankruptcy remoteness, and perfecting customer obligations. For Puget, and for subsequent transactions in this sector, many of these matters were addressed through state legislation and an irrevocable order of the applicable state’s utility commission. Today, legislation permitting some form of securitization for utility companies exists in nearly 20 states.

**ASR:** So, what are the benefits of securitization? Why would you go with it?

**PROBST:** The legislative and regulatory framework creates a very secure form of financing. Normally, a utility investment may be financed with, say, 50% traditional utility debt and 50% equity with a blended cost of, let’s say, 10%. If that same investment were refinanced with securitization, it could normally be financed almost 100% with securitization, normally rated ‘AAA’, and would, therefore, be financed at a much lower cost — say, for example, 6%. Incurring a lower financing cost means that customers pay lower rates, while the utility has efficiently monetized an asset.

**ASR:** So why aren’t we using this financing technique more extensively?

**PROBST:** The rate reduction is largely attributable to the enabling legislation and the regulatory order which ensures the ability to continue charging customers to repay the securitization. In some cases, legislators or regulators may not wish to provide such a promise. From the utility’s perspective, the securitization only establishes a rate sufficient to repay the securitization, not shareholders of the utility. For investor-owned utilities, they may see little benefit to this type of financing in and of itself.

**ASR:** So, do we have a future for this type of financing?

**PROBST:** I think it is possible to create win-win scenarios, where customers and utilities both share in the benefits of securitization, and legislators and regulators achieve the targeted level of environmental investment. Accordingly, we do believe that this form of securitization will play a role in environmental investment. Moreover, this type of securitization doesn’t need to be tied to DSM investments. It can also be used to meet renewable portfolio standards and some of the other investments that utilities may make.

**ASR:** And outside of ratepayer bonds, are we seeing any other types of alternative energy securitizations?

**WEINBERGER:** Well, we have quite a bit of experience with the securitization of wind farms. Most of this is in Europe, but, interestingly enough, the first deal — though not a true securitization — was actually done in the United States. That was the FPL Energy/American Wind deal, which was completed in 2003. It was rated ‘BBB’ and involved seven different wind projects. A rated parent agreed to make a cash deposit equal to the value of the federal renewable energy production tax credits. The challenge for that deal was a lack of long-term wind data. Some of the projects were not yet completed. Some of the technology that was being employed was not proven at the time and there was off-taker risk. There were commitments to purchase the energy, but there was counterparty credit risk. On the positive side, there was a diverse portfolio of wind farms, including five different wind farm technologies, and there were parent guarantees and a maintenance reserve. It wasn’t a true securitization because there was no SPV with separate assets, and the rated parent was relied upon for the rating, but it did pave the way.

Then, in Europe, we saw a number of different deals in the wind farm space. Breeze I was actually the first SPV deal, involving eight wind farms in Germany. This deal was driven very much by the favorable regulatory regime in Germany and that was the key strength behind the rating of that deal. In Germany, utilities are required to buy the energy produced by wind farms. So, you know that what is going to be produced is going to be sold and the off-taker risk is really not that extreme because even if one of the parties that was buying the energy for whatever reason goes under, someone else is going to come in and buy that energy. One significant weakness was, however, the wind variability. You just don’t know how often the wind is going to blow and how strong it will be. If it’s not blowing frequently enough or strong enough, you’re not going to produce the energy. If you don’t produce, you have nothing to sell. Another Breeze deal exhibited an element used in securitization in that it was actually tranched. It was about a 465 million Euro deal, with its senior class rated ‘BBB’ and the subordinated class ‘BB+’. Again, it was rated on the strength of the off-takers, as well as the favorable regulatory regime. The Alte Liebe deal involving primarily German wind farms was wrapped by Ambac. Again, the favorable regulatory regime, which is, I think, a theme that we’re going to come back to time and time again as we discuss the issues before us today, was key. However, many of the wind farms also had a five-year operating history as well.
Earlier deals either didn’t have long operating histories or included some projects that were not yet completed. The operating history and the favorable regulatory regime enabled Ambac to provide a wrap and the deal to be rated. I think, as we look at securitization, there are a lot of challenges. Certainly, when we’re looking at renewable energy, the variability of factors, like wind, is a key concern that needs to be addressed.

**ASR:** Anthony, what do you think?

**SCHOUTEN:** My thought on the European deals is that they were securitizable as an exit strategy, but it doesn’t appear to me that the initial investment was made thinking securitization would be an exit. It happened to work out that way, because after about five years, you had operating data, you had a built-in plant, you had an off-take and the like. It seems to me, in light of Ashok’s remarks, that we can’t wait for five years of operating data before we can start to tap into the securitization markets to build this kind of finance. So, I think that there should be a discussion, as to how can we build a regulatory regime that can tap into securitization generated capital at the entry point as opposed to the exit point for an investment that’s already been made so that the money comes in right away.

**WEINBERGER:** Anthony does make a very good point because all of these transactions were securitizations that basically took out the project financing that was used to build them initially. If you can’t get the project financing in the first place, you’re not going to build the project. So, it could be beneficial to use securitization or securitization-like technologies in the earlier stages.

**SCHOUTEN:** You could, alternatively, create a transparent regulatory environment where the exit of securitization is certain enough that it reduces the costs of the bridge or project financing that occurs at the earlier point. Bridge financing or project financing would act more like a warehouse facility, where the investors could come in and say, “yes, we’ll build it” because we know that once the project is up and running, we have a favorable regulatory environment and we have a capital market structure that we know we can exit into to retire our investment. Then we can go on to the next project. The shorter you make that window and the more certain and transparent you make it, the more likely you are to attract the financing at the early or developmental stages.

**SIMONSON:** We have rated a number of renewable transactions including a few wind farm projects. We rated the two FPL deals and a few European transactions when they first came to market. When we are looking at these types of financings, we are trying to gauge the variability of cash flows versus the debt service that it needs to address. We look at all the different variables that you would look at when analyzing project finance transactions. However, the biggest risk is the wind resource risk. In the FPL transactions, the data just wasn’t there for us to say we were absolutely sure. We watched these particular transactions as they progressed and as the operating and wind resource data came in to us. What is really nice to see from a credit perspective is that while, on an individual basis, the variability of each one of the wind farms is tremendous, when you put them together and you diversify that wind resource, the stability of cash flow is really good. It’s part of the reason that we were able to raise the rating on the FPL Energy American Wind transactions from a ‘BBB-’ to a ‘BBB’.

**WEINBERGER:** I think that wind variability as a factor is an important one. Brian, do you have some thoughts on how to address that issue?

**O’HEARNE:** One of the interesting aspects of the alternative energy sector is the tremendous weather dependence such as wind and wind power, sunshine and solar power or hydropower and the need for precipitation. The weather de-
 derivatives and insurance market is now 10 years old and the liquidity, structuring flexibility and global scale have had remarkable growth and applicability. As Art discussed, the variability of the wind resource is the key issue when you develop a wind farm. Typically, a wind study is done at the specific site for a period of 18 to 24 months instead of the 40-year history that we tend to need in the weather market for providing an actuarially-sound product. However, as an innovative weather dealer, we can correlate the wind farm to an existing weather station and construct a very effective weather hedge that can be embedded in the financing even at the very beginning of the project. Further, as Art mentioned, if we can cover a portfolio of wind farms, the weather hedge can give benefit to this diversification and becomes an even more powerful value proposition. Then an operating history is developed, it may be possible to enhance the weather hedge by extension to power output and shape of the load. These hedges substantially shorten the time window of when there is certainty of the cash flows.

WEINBERGER: As these projects get developed, we may also look at carbon credits securitization. Someone will pool securitization in that space. Insurance products that guarantee deliverability of the credits, which insurance products exist in the market today, would also be very important.

SCHOUTEN: I think the transactions that we are aware of that used CDO technology were not for the purpose of debt financing. They were there to tranche the deliverability risks. So that, for example, the top tranche gets the first credits produced and the next tranche gets the next credits and so on.

ASR: Are there any other ways that we could use the securitization technique in terms of helping address the climate change issue?

SCHOUTEN: Well, in the carbon area, I think it’s a long way off before the cash flows that are associated with the value of the offsets generated by a project are securitized, unless there's a floor. If the government was to set, say, a floor on the price of credits somehow, then, perhaps, that could be securitized. But if you have a free market mechanism determining the price, I don't know that offsets are securitizable assets at this point.

GUPTA: In a regulatory world, where you have a cap and trade mechanism, and you decide you want to auction off the allowances, that stream from the auction allowances can be made available for investing in clean technologies. I think that is where the policy is headed. Whether it’s going to be 100% or 50% will determine the amount of money that will be available for these kinds of investments. I think that is going to be a critical policy decision. And as soon as such legislation gets passed, investors will be able to count on it in terms of a resource. Certainly, in terms of whether it’s the RGGI process with 100% auction or federal legislation with 50%, how you craft that policy, how you make those resources available and tie them to some form of securitization will help you scale up and get at the clean resources, much, much faster. So, I think that what people are talking about here is: what is the regulatory regime? What is the policy regime? How can you have some certainty around that future carbon regulation?

ASR: Brian, do you have any thoughts on that?

O’HEARNE: On the carbon side, we are developing carbon insurance policies and products. For the credits to be useful, the project must be certified which introduces a period of uncertainty. Experienced underwriters can get

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Simonson

various different projects that are being built to generate carbon credits. To the extent that you feel comfortable with the anticipated future value of the carbon credits, you can have a pool of assets that will be generated in the future that you can securitize today. Certainly, if you can remove some of the risk of not having the credits when the project is completed, that would further enable
comfortable that certain projects and their technology will qualify for carbon certification and Swiss Re wrote a ground breaking policy that insured the registration and deliverability of carbon credits over the production profile. Further, by being paid the premium in carbon allowances, instead of a cash outlay, that allowed the developer to monetize its cash flows and proceed to develop new projects. We believe in the next two years the U.S. will have some form of carbon policy and this convergence of the weather, commodity and emissions markets is going to accelerate.

Further, as people think about carbon and how it is contributing to climate change, what we are seeing is increased weather volatility; recent hurricane seasons, in particular. The 2005 season with Katrina, Rita and Wilma exhausted a lot of insurance capacity for Gulf hurricane exposure. There is a tremendous amount of energy infrastructure in the Gulf which we saw this summer with Hurricanes Gustav and Ike. The insurance capacity can be depleted in active storm years which allows opportunities for catastrophe bonds or insurance-linked securities to protect offshore platforms, coastal refineries and other energy infrastructure in addition to more traditional property and casualty business and has led to strong growth in the insurance linked securities markets. We are also seeing quite a bit of interest on offshore platforms, coastal refineries and other energy infrastructure in addition to more traditional property and casualty business and has led to strong growth in the insurance linked securities markets.

ASR: So, to achieve the goals that we have established in recent legislation in terms of improving our energy infrastructure, how much do we have to invest to get to that point?

GUPTA: It’s hard to put a price tag on it, but it is going to be huge. Certainly hundreds of billions of dollars. If you look at just energy efficiency, which I’m most familiar with, New York City has proposed a 30% carbon reduction by 2030 and New York State has proposed a 15% efficiency reduction for the state in terms of electricity and, hopefully, natural gas. These investments will easily end up being in the $20 billion range. If you multiply that in terms of what is needed nationally, you’re talking about hundreds of billions of dollars just for energy efficiency. Then if you look at wind and all the related transmission investments, you can imagine what the cost of that would be. Advanced biofuels and cellulosic ethanol and CCS [capturing and storing carbon from coal facilities] are going to require really significant investment. So, the question is one not only of assessing cost but of setting a time frame. The work done by McKinsey and others is to look at the next five to ten years and consider what is needed to scale up efficiency for negative cost solutions and what is needed to commercialize other technologies in the next five to ten years so they can scale up during years 10 to 20. Many of the targets we have are for the 2030 and the 2050 frame. So, looking at the time frame and looking at the cost of the different solutions is really what helps shape the answer to the question of how much money do you need? In any event, it is going to be a lot, but we have to stage it and we have to let the market ultimately decide and not pick technology winners.

SIMONSON: Isn’t that what the federal loan guarantee program is trying to do?

GUPTA: Which federal loan guarantee program?

SIMONSON: The loan guarantee program where the Department of Energy is setting aside $18 billion for loan guarantees for new technologies to address carbon issues. And then, on top of that, it has another $10 billion specifically for clean coal technology and then another $40 billion for new nuclear technology.

GUPTA: Yes. Clearly, in the last couple of energy bills, there have been resources put on the table to provide support for building the first scaled CCS project. And there is money, also, for nuclear. Yes, there are resources that will help bring the next generation of these technologies that we can learn from in terms of how scalable they are, how many of them can we build in the next 20 years, and what are the underlying economics.

WEINBERGER: If we are talking about the magnitude of the costs to address the problem, we have to look also at the cost of not addressing the problem. If we accept the premise that greenhouse gas emissions are leading to global climate change, there are a lot of effects of global climate change that have a significant, and will continue to have a significant, economic effect on the country. We are talking about increased storm intensities, and we see greater damage from hurricanes. We’re talking about a significant strain on public budgets to address issues like drought, flooding, and other problems. The impacts will be felt throughout the country, unevenly, but they will be significant. As important as it is to discuss how much we need to invest, we also have to appreciate that not investing also has a significant cost.

GUPTA: Going back to energy efficiency, in addition to negative costs (that is net savings), there are also significant benefits to the economy in investing in some of the solutions that will deliver efficiency for greater scale while we wait for the cost of other technologies to come down. So, this whole issue of how we roll out the package of solutions, and how we do it at the least cost possible, is something we all want to pay attention to. There are huge costs for inaction. And the question is: How do you manage the costs while solving the problem? So, both of those things are at play here. If you look at the different possibilities...
that can be invested in, how do you rank them? Where do you start? What do you scale up first? What do you let play out? What do you need to demonstrate and commercialize? And, what is going to be acceptable to the public? What will get regulatory support and policy support?

All of these issues are what makes this challenging. There are lots of choices that can be made in the portfolio of solutions where there is an economic benefit along with an environmental benefit.

ASR: When we look at the structured finance markets and securitization, how much money is out there that's available to put towards these efforts?

PROBST: To give you a sense of the size of the market, for 2007, issuance in the global structured finance markets is estimated at over $2.1 trillion. So even a small percentage of that market would represent a significant amount of private capital available to meet the sorts of initiatives that Ashok described.

ASR: So how do we get securitization to more broadly fund green investment? Art?

SIMONSON: Well, as Curtis said, there is a tremendous amount of capital out there that could be used to invest in renewable energy projects. From a rating agency perspective, we look at a number of different green asset projects on a regular basis. We've rated a number of solar, wind and ethanol transactions. The people that invest in these bonds, or the banks that make loans in these types of projects, want to know what the creditworthiness of these entities is. The way we go about rating these types of entities is the same way we look at any single-asset financing. We want to gauge what the variability of cash flow from a particular entity is in relation to its fixed obligations. We go through the analysis to gauge the ability of the facility to get built on time and within budget. We then try to determine if it will operate in a manner that's going to be cost efficient, and that the product can be sold for a reasonable amount of money. It is the ability to sell that product at a level that will be sufficient to repay all of its fixed obligations, not only debt service, that determines a rating. Other fixed obligations include taxes, insurance, and fixed labor costs.

ASR: In a lot of cases, we don't have enough performance history and we don't have diversity in the portfolio, let's say, akin to an RMBS or a CMBS deal. So, how do you create a transaction? How do you structure it to address those issues?

SIMONSON: Standard & Poor's does not structure deals. The structuring is done by the owners along with their bankers. The bankers that deal in this industry have been around for a while and we believe in the next two years the US will have some form of carbon policy and this convergence of the weather, commodity and emissions markets is going to accelerate.

PROBST: There are people out there willing to invest in these types of assets and they want to do it on a risk-adjusted basis. The rating is a good way for someone to gauge Standard & Poor's opinion as to the default probability of any particular “green asset” transaction.

WEINBERGER: Art, one of the things you mentioned is that there's a fair amount of completion risk and operating risk. How do you view these when we are looking at what are possibly newer technologies in the energy space and you don't have that kind of history? Is that ratable at all? How does that work?

SIMONSON: There are a number of new initiatives that have been brought into S&P by developers of these new technologies. It is our job to get our arms around these potential new technologies and to gauge, will it get built and if it gets built, what is the probability that it will generate a product in a cost-efficient manner that can be sold? We utilize internal expertise. We have a number of engineers on staff. We'll also utilize outside experts as well — independent engineering firms or independent marketing consultants — to help us gauge the viability of these new projects. However, when dealing with a brand-new technology, it is difficult to get an investment grade rating because we do not have a long data history to fall back on.
definitely they have brought the financial technology used in other areas — CDOs and structured finance — into this process. A rating is our opinion as to what is the viability, the default probability, of a particular piece of debt issued by a project. When there is no history, no data, we have to take a step back and gauge it with a little bit of conservatism. As I mentioned earlier, that is what happened in the first FPL wind deal. We didn’t know how the wind regime was actually going to work, but as soon as we saw that the diversification benefits really did provide a more certain cash flow, we raised the rating.

**ASR:** Brian, what do you find in your experience? How do you address the diversity of the portfolio issue or the performance history?

**O’HEARNE:** At an early stage in a project or technology, a weather index protection might be the best solution since there is no performance history but there is existing weather data. We may not be able to guarantee that a solar facility or wind farm will produce “X” amount of electricity until there is performance history. But from the correlations, the more the sun shines, the better a solar project should do; the windier it is, the better a wind project should do. We can understand and underwrite the weather risk and gather the relevant weather data independent of any performance history. The developer and/or investors can then work with their lenders and the substantial certainty of debt service with a highly rated dealer the weather hedge provides. As Art mentioned, once the project develops a production history, we may be able to hedge expected production based on the wind data and production history. These weather structures help to get these alternative energy projects up and established and the hedges are available and cost-effective.

**SIMONSON:** And as part of the rating process, we definitely give credit to the structure when you have a third-party guarantor providing a targeted guarantee. For example, making sure that the sun will “shine” for a certain amount of time, and if it doesn’t, the insurer will make a payment based on the formula in that particular policy that is designated to true-up the insured. When you have a hedge as part of a transaction, Standard & Poor’s does give credit to that hedge for providing a cash flow certainty in the rating process. But, hedges do cost money, so that’s another fixed expense that the project has to cover. And then, you assume additional risks with a hedge, including counterparty risk and liquidity risk. To the extent that a hedging agreement comes with the potential for collateral calls, we want to make sure that the particular project has the ability to handle any of those additional collateral requirements that come due if the hedge is “out of the money.”

**ASR:** So when I put together one of these transactions, outside of working with the derivative that could help put it together and make it work, do you think we can get some federal or state guarantees, some sort of enhancement from local authorities, as well?

**PROBST:** One example of federal credit enhancement that has been used in the securitization market is the SBA’s 7(a) loan guarantee program. That program has been used for many years to foster the development of U.S. small businesses. The Section 7(a) guarantee typically covers no more than 85 percent of the loan and, in some cases, 50 percent of the loan amount. This ensures that the borrower has skin in the game. SBA loans can generally be securitized and reduce borrowing costs for small businesses. There are many other loan guarantee programs that have been used to create securitizable assets. One of them is the FFELP program for student loans. Maybe, Ashok,

**GUPTA:** At the state and local level, you do have utility programs. So, the question is: can we look at system benefits charges or obligations on the utilities for energy efficiency portfolio or renewable portfolio requirements as critical drivers
WEINBERGER: Could you explain that concept a little more? Are you talking about using those resources for something similar to a loan guarantee program, or are you trying to securitize the actual energy efficiencies through ratepayer bond structures?

GUPTA: If you are collecting from consumers, let's say $300 million a year, do you just invest that in incentive programs for consumers, or can you take $50 or $100 million dollars of it and stimulate a greater level of overall investment in efficiency projects by creating a loan guarantee program? So, yes, loan guarantees could be one way to use the money. Another way is if you have a ten-year stream of $100 million annually that you are collecting from consumers, like on Long Island, could you basically decide ‘we want to do a lot more efficiency up front, given that we have a commitment of $100 million-a-year to repay the investment?’ I think whether it's a loan guarantee or some other way to securitize that revenue stream, those are options that we haven't really fully utilized. I think we should be thinking about efficiency in a different way in order to really look at this revenue stream that's out there and how it can be used to accelerate a greater level of investment today.

SCHOUTEN: I think it's also worth looking at how tax credits and tax policy are used. In granting tax credits, the government is choosing to defer revenue to incentivize favored activity, but that's a dollar-for-dollar loss. One hundred percent of the credit is automatically gone. Whereas, if you get rid of the tax credit and tax the activity, but provide loan guarantees to reduce the cost of financing the activity, you may or may not have to pay out on that loan guarantee. So, you may actually have a win-win situation. The government gets the revenue and you benefit from the lower cost of borrowing. I think that it's worthwhile to look at a lot of different incentives and see whether they really are efficient. In the renewable area, tax credits are subject to an annual reauthorization, thus creating some uncertainty as to whether or not you want to make the investment or whether you should scale up to make the investment because the program may not be reauthorized the next year. Also, from what I understand, the tax credits that run off of some of these renewable deals are purchased by an equity investor because the value of the tax credits is not known at the point of entry into the investment. It's only known at the tail. So, the price that's paid for the tax credits up front may be much less than the actual amount of the tax deferral that the government has in lost revenue. If you create a loan guarantee program, that is something that you know you get. A known quantity of investment is attractive because you know what percentage of the loans you're guaranteeing and what your attachment point is. So, I think it's worth looking at how these incentives are done. Something like the SBA loan guarantee program could work well for incentivizing energy efficiency.

Perhaps you give loans to homeowners that are government guaranteed, 85 cents on the dollar, and encourage them to put more insulation on their homes, change the glass, change the thermostats. Those loans can be very easily packaged into asset-backed securities and the borrowing cost would be very, very low. Homeowners will benefit; utilities could potentially benefit for being the sponsor or originators of those loans. I think it's really worth rethinking how we could tie the securitization market into our energy policy.

ASR: And that could also apply on commercial real estate, as well, could it not?

SCHOUTEN: Absolutely. Green commercial real estate is viewed by debt purchasers as a better asset, on the theory that since vacancies come about in a particular market, you want to own properties that are going to stay vacant for the least amount of time. I think that the
conventional wisdom is that tenants prefer to move into a green space if they are going to occupy any space that happens to be on the market at any given point in time. So, if you are buying a bond that is backed by green commercial real estate, you may be better protected in a market where you are competing with other empty spaces for tenants.

GUPTA: The key thing that still needs to be worked out on the commercial side, and, also, on the residential for multi-tenant buildings is, again, the split incentive between the landlord and the tenant. Who makes the investment? Who's going to benefit? And I think there is an interest right now, because of concern about energy costs and global warming and other reasons for people to actually sit down and see how they can share in the benefits and deal with the costs, which we haven't historically had because energy was not a big enough issue for many tenants or owners to think about or deal with. Climate was not an issue on peoples' minds. But given that it now is, I think dealing with things like lease structures and creating more transparency in how energy costs are dealt with in the real estate sector will help make these markets work better as well. So, there are going to be parallel paths here in terms of things we need to do to make sure that what we just heard, in terms of how we can scale up, works in the rental market and the multi-tenant market and not just owner-occupied or government buildings or institutional buildings.

WEINBERGER: When we spoke earlier about the German wind farm securitization deals, one factor that was very crucial in the ability to get those deals done, the ability to rate those deals, was the regulatory environment. Germany has a feed tariff system — if you produce the energy, the utility is required to buy it. In terms of renewable portfolio standards and other schemes that we have in the various states, do you see that kind of driver developing here, as well, or something similar?

GUPTA: I don't think we have that same clarity in terms of enforcement and the ability to recover the costs of meeting that renewable obligation. It's playing out differently in different states in that some people are looking, again, to what the regulators are doing to actually implement the renewable obligation. It is a patchwork out there at this point. It's not clear. People have to look at it depending on what the state policy is and allowing for cost recovery of the obligations that currently exist and whether those obligations are, in effect, being enforced. If it happens on a project-by-project basis, that's going to be more complicated. And, again, different states are doing it differently. In New York State, there's money being collected to support the renewable obligation from all the utilities and a state agency is administering it. So, that creates more certainty that there is a pot of money. Once the pot of money runs out, it is not clear what happens next in terms of continuing to support more projects. I'm sure what people are looking for is certainty about the ability to recover costs and have a stream of revenues coming in, and about the regulatory landscape. And that's why I think looking ahead long term, at the national level, how we design our cap and trade program is going to be critical because there is going to be a lot of money that flows out of that program. We need to create some certainty in the legislation that gets written about these streams of revenues and where they go in terms of supporting, solar, wind and CCS and different types of technologies. It should be performance-based as much as possible, and not based on costs. We
broadly need to have good policy design moving forward.

SCHOUTEN: I think it is essential to decouple those auction raised revenues or the systems benefits charges from the ongoing political process, because that gums up the works. It seems to me it would be best to have a market mechanism decide based on expected profits or otherwise, where equity investment should be made, and what is the most efficient deployment of the funds.

SUCHMAN: That’s a very good point. In New York State, there is an example with the systems benefit charge. Every year it goes through a political roller coaster as to whether or not the legislature is going to grab the money to use for something else or for general funds. The tight economy and state deficits have exacerbated the problem. Also, how it is used is very critical. If it gets bogged down in a regulatory body or even an authority that has to develop its own programs for direct investment, that’s not an efficient way to leverage private capital and to speed up investment.

SCHOUTEN: That’s a risk that investors don’t want to take. It has to be clear what people are being asked to participate in and they don’t want to participate in a political process.

GUPTA: Therefore, the policy design right now is critical in terms of making sure that it’s multi-year. It’s not subject to year-by-year allocations and changing of rules. The rules should be written pretty clearly and be performance-based. Those are just good ground rules to start with. There is a huge opportunity to shape those rules right now and make sure that we are using those streams of revenues from auctions in the most effective way possible in terms of leveraging private financial resources to make it happen, as I keep saying, at scale and faster.

WEINBERGER: So, we’re talking about regulatory schemes that are generating dollars, that, in theory, are supposed to be used for pursuit of a national energy policy. I see two challenges. One is that the state-by-state regulatory scheme is very much patchwork. There’s no consistency. Some of the states have regional compacts like RGGI. It seems, however, that there needs to be much greater coordination on the state level, as well as federal legislation. From the securitization perspective, once we accept that the money is there — and let’s assume that the money is there and it’s a stable source of funds — how do you employ that to attract securitization capital into the market? Because it appears that, based on everything that we’ve discussed, without bringing the capital markets into the pursuit of the goals of our energy policy, we are not going to have the necessary investment.

SCHOUTEN: While ratepayer backed receivable securitizations work, I think they are expensive and, ultimately, a higher burden on ratepayers than alternatives that would lever up ratepayer obligations. If you reduce the cost of your debt financing, that’s a lower cost that can be passed on to the ratepayers. There is a long, long history of people paying their electricity bills. Why can’t that be levered up? That’s about as diverse a pool as you can possibly get. Ratepayers should get benefit of an aggregation of their repayment risk through the lower cost of funding the debt to fund energy projects through the capital markets.

PROBST: And that has been one of the key tenets behind the utility securitizations that have been done: very large diverse customer bases and an extremely predictable rate of payment of customer bills.

ASR: Using the idea of capturing a fixed-income flow — we’ve done it successfully in the housing market, commercial real estate, auto loans, credit cards. How can we use that practice — what could we take out of that recipe, if you will, of securitization — and apply it to investing in green projects? How do you use elements of securitization or project finance?

PROBST: As we’ve discussed here, the types of green investment are going to vary significantly. And, similarly, the financing techniques will also vary significantly depending on factors including the degree of operating risk, technology, competition, customers, the legislative and regulatory framework, and other variables which could impact that cash flow. Some of the techniques might include innovations from the derivatives market. As Art mentioned, even though derivatives do not eliminate risk, rather, they generally substitute a counterparty risk for an operating risk, I think derivatives will play an important role until the performance risks are better understood by market participants and until we have the data to allow those risks to be distributed more broadly through the capital markets.

ASR: Brian?

O’HEARNE: I definitely agree with Curtis as far as isolating risks and how this ties into the costs of increasing weather volatility. As we have said earlier, weather and weather-related commodity solutions are particularly well-suited for isolating risks in alternative energy projects because they are so weather dependent. Weather is becoming more volatile and the year-to-year changes can be extreme but the weather derivatives market is very well-suited to this because of the offsetting nature of some risks. For example, construction firms benefit from warm winters, but suffer if it is cold. Matching that cold risk up with the warm sided risk for the utility and diversifying or taking that basis risk
into our portfolio allows for improved pricing. Further, as we discussed particularly for renewable energy, if the hedge is embedded in the financing, it can be very cost effective because of the improved debt/equity profile.

**ASR**: Curtis?

**PROBST**: One of the key financing techniques of securitization is the ability to isolate and mitigate certain risks for investors through credit enhancement or other structural protections. Employing bankruptcy remote vehicles, engaging backup managers or servicers to ensure asset performance, utilizing third-party credit enhancements, such as bank letters of credit, and developing detailed cash flow identification, segregation and prioritization can all play a very important role in efficiently financing these investments.

**SIMONSON**: I agree with Curtis. Our ability to gauge the certainty of cash flow is directly reflected in the rating.

**ASR**: I'm curious. What kind of servicer would you have? I'm familiar with the servicer in residential/commercial real estate, auto and credit card securitizations. But what kind of servicer would you have in this situation?

**SIMONSON**: Typically what it refers to in a project finance transaction is an operator. It is conceivable to have an operator of a wind farm or an operator of a solar field that would get into trouble and go out of business. In these types of transactions, you’re not going to have a “hot” backup like you have in some of the securitizations, but if you have identified another entity that could come in and keep the particular project up and running, it is just more certain that the cash flow is going to be continuously generated.

**ASR**: So, it’s a backup operator?

**SIMONSON**: Yes.

**WEINBERGER**: In the FPL wind farm securitizations, the parent company, which itself was a rated entity, operated these projects. This helped in your analysis.

**SIMONSON**: That's correct. But we also want to make sure that if something happened to FPL, there would be someone to step in. So as part of the rating process, we want to know what other firms are out there that would operate wind farms. And one of the key things that we were looking at was if an alternative operator has to come in, would it charge more than what is currently built into the project agreements? If the project currently has a sweetheart deal because the current operator is not charging a market price, how high would the O&M cost line increase if the operator has to be replaced? We want to make sure that that project would be able to handle it. This is definitely factored in as part of the rating process.

**PROBST**: Another key feature of structured finance, which dates back to the inception of the structured finance markets, involves the creation of different securities or tranches for a given pool of assets or asset. Those securities can vary by risk, by maturity or by structure to appeal to different investor types and may increase aggregate financing capacity and lower the overall financing cost. We expect to see a number of green projects financed using different tranches. For example, assume an investment that enjoys a partial government guarantee, similar to the kinds we’ve discussed today, were structured. Such an investment may be more efficiently financed by creating one security with full government support and another security that is exposed to the risk of the project rather than selling one security that has the composite risk profile. By targeting different investors to take different risks, many of the risks we’ve discussed today, I think more capital can be deployed, which helps go to the objectives that Ashok mentioned, as far as scale and speed of investing in this sector.

**ASR**: So, even though originally tranching was developed for CMOs and REMICs to deal with prepayment risks and refiannings, I find it interesting that it could be applied to what Brian mentioned before, where you have unusual patterns. Could you apply tranching in a case where there are changes in weather conditions?

**PROBST**: I think you could employ tranching in that case and many other cases. Going back to the mortgage market example, there were classes of securities that took prepayment risk and had a lot of variability in the cash flows, and then there were classes often structured that had minimal prepayment risk and were just bearing the credit risk. So, we have the ability through structured finance technology to create these different risk profiles, which I think is, again, going to be very important in increasing the pool of capital available for these projects.

**WEINBERGER**: I think that’s a crucial concept. If you look at everything that we’ve discussed here, we have regulatory schemes that may help support some of these projects. We have monies that are generated from these regulatory schemes which may be leveraged to provide loan guarantees. We have insurance products that will help mitigate some of the risks. But, certainly, if you tranche the risks, you may wind up with a very interesting product that can meet a diverse group of investor needs. This will also help build these projects or, at least, take out the bridge financing in a way that may be very efficient.

**ASR**: So, I wondered, maybe we could go around the table and offer an outlook as to what we expect in this arena. What kind of
investors will be attracted to these structures?

PROBST: The range of green investment is going to be very broad. You’re going to attract a number of different investor types. I would say many of these projects have a very long asset life, so it would seem to be very well-suited to life insurance companies, for example, for their portfolios. We’ve talked a bit about government support. I think that some of those lower-risk securities are going to attract maybe a different investor type. And that could be eventually retail investors, that could be money managers, that could be commercial banks. Through use of some of the risk-mitigation techniques that Brian mentioned, I think we can attract a very broad range of investors. So, I don’t think green investment is tailored to one specific category of investor. I think it actually offers something for everyone once we have a broader scale of investable projects.

O’HEARNE: I agree we will see more utilization of these hedge and structural protections to open up the investor pools and the more certain cash flows these hedges allow. Further, as the U.S. develops a carbon policy, that will open up a whole new investor base, as well as structuring opportunities since there is significant correlation between weather, commodity prices and carbon allowances. For example, to the extent you get an excessive heat wave or a very cold winter, more power is needed from fossil sources which means more carbon. These correlations will lead to new investment ideas and new risk management opportunities.

WEINBERGER: I think we should also be cognizant that there are a number of funds that are dedicated to investing in green energy, and they may have the expertise to really understand some of the lower tranches in these deals and assess the risk, and they may be perfectly suited to purchase them. Moreover, to the extent that utilities are required to invest in alternative energy projects, there may be significant investment from that sector.

SCHOUTEN: There is broad agreement at this table that if you use structured finance techniques and you build them into your regulatory scheme, you will have more bidders for the debt. You will open up your financing to people who wouldn’t otherwise invest in whatever your project is. But it seems to me that one of the next steps for the industry might be to establish a form of support group. Because the regulators or the policymakers may not understand these markets or how to build something that’s friendly to these markets so that they can get the investment from these markets. Being able to assist them in crafting a regulatory scheme or in executing policy in a way that allows them to access a greater pool of capital, and thus reduce borrowing costs, would be a useful concrete next step in terms of building something here that works for everyone.

PROBST: Anthony, I agree with your comment. I would probably make it even broader. I think it’s bridging the gap between private capital and the policymakers in the area of environmental programs. I think that you’re correct; the policymakers should have a better understanding of what the private sector requires in order to put capital to work. On the other hand, I think the private sector needs to have a better understanding of the sorts of investments that are available. I think private capital has an intuitive understanding that there are a lot of opportunities in the green area, but does not know how to participate in that market. I don’t think a lot of the private capital understands greenhouse gas emissions or cap and trade or many of these topics the way they understand mortgage prepayment rates or consumer credit risk or government guarantees.

SUCHMAN: I agree with that, and I think that investors are going to be looking for, as Tom said, a fund or a knowledgeable group of investment managers that are going to be able to funnel that money. They’re going to say: “Okay, green is important. This is what I want to do. I know there’s money to be made. I don’t know how to do it, so give it to someone that does.” I was just going to add large pension funds such as CalPERS, to the potential group of investors. The New York State pension fund has already announced a $500 million investment in the green space. There are real estate investment trusts already popping up to invest in green real estate. And, some knowledgeable people, like the team at Al Gore’s fund, were able to close a $5 billion fund quickly. In terms of “next steps,” I think that, coming from the perspective of an environmental lawyer and being really in awe of all the financial people at this table, there is not enough government money in the world to solve this problem. It’s got to come from the capital markets. It’s got to come from the private sector. As we find products and technologies to reduce some of the risks and keep the policy going toward a more green environment, capital market investment will happen because the world is going in that direction. People we talk to in every big bank or in every financial institution are looking for those investments in order to get a good rate of return.

SIMONSON: I echo what Gail said. I think that so long as investors are getting a risk-adjusted return appropriate for the risks undertaken, there is absolutely plenty of money to be had to invest in this particular sector. You are actually even seeing people, right now, willing to invest in new nuclear projects. Ten or 15 years ago, that wasn’t even contemplated. But, I’ve talked to a number of investors who are willing to be part of the next nuclear generation. And, if carbon is really the culprit for climate change, then nuclear has to be part of the solution, as well, to some of the other technologies that we’re talking about today: solar, biomass, wind and hydro.
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To learn more, call us at:

Anthony Schouten
Tel 212.806.5516
Fax 212.806.2516
aschouten@stroock.com

E. Gail Suchman
Tel 212.806.6656
Fax 212.806.7656
gsuchman@stroock.com

Thomas R. Weinberger
Tel 212.806.7008
Fax 212.806.7908
tweinberger@stroock.com