EDGE
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EDGE Advisory
Energy Finance Report

FOCUS ON: CORPORATE RENEWABLES

Corporate renewable energy purchasing is one of the hottest topics in clean energy. Plummeting prices for wind and solar, an opportunity to reduce exposure to energy price volatility and requirements under voluntary climate and sustainability commitments are combining to drive intense interest throughout the Fortune 1000.

After a jump of nearly 200% from 2014 to 2015 in corporate renewables capacity, continued rapid growth was expected. But despite expanding interest by corporate buyers, growth has stalled in 2016, hindered by transaction complexity, a rapidly evolving power market, regulatory uncertainty and some instances of poor execution. Fundamental demand remains strong. As these challenges are overcome, we expect the corporate renewables market to regain momentum in 2017 and drive over $100 billion in new project investment over the coming decade.

This issue of EDGE Advisory focuses on strategies for success in the corporate procurement of clean energy, including with respect to transaction structuring; common pitfalls to avoid; the role of environmental attributes; regulatory developments and prospects; and attracting tax equity investment. We present interviews with leaders in each of the major camps – corporate buyer, developer, and tax equity – to reveal insights into their strategies and concerns. We also look at the exploding market for international corporate PPAs and related deal structures. We are excited about finding solutions for the structural and process roadblocks that can impede progress and look forward to opening a range of related discussions with our readers.

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Jim Wrathall, Elias Hinckley and Merrill Kramer, Editors

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THE FUTURE OF ELECTRICITY MARKETS? CORPORATIONS DIRECTLY BUYING RENEWABLE POWER

By Elias Hinckley

An increasing number of corporations are directly buying from (or building) clean electricity sources. For decades most Fortune 1000 companies did little more than seek to manage costs as they bought electricity and fuel. This model of simply relying on the existing marketplace to meet energy needs has, however, suddenly become outdated. More and more companies are realizing the strategic advantages of sourcing renewable power. Companies that fail to adapt will face serious competitive disadvantages as this trend accelerates.

Several factors are driving this explosion in interest in direct purchases of clean energy. Reasons range from pure cost per kWh purchased, to market and regulatory certainty, to the brand value of reducing reliance on fossil fuels, to concerns over the future of specific markets in the face of a changing climate. Consistent in every one of these motives is an underlying economic case: replacing electricity generated from burning fossil fuels with electricity from wind and solar is a good business strategy.

Over the past few years electricity from wind and solar has become cheap – in many cases it is less expensive to build new generating capacity from wind or solar than to build a new gas or coal plant. Buying renewable electricity removes fuel price volatility leading to price stability. Wal-Mart has been aggressively buying renewable power for years, primarily for the cost savings the company realizes. IKEA also cites cost savings as the primary driver for its massive clean energy purchasing program. Oil refining giant Valero contracted for wind energy to drive refining operations in Texas because wind power was cheaper and the price was more stable than what was otherwise available in the market.

Renewable electricity is clean, and an increasing number of companies are setting aggressive clean energy and greenhouse gas emission reduction targets. Companies across the business spectrum – ranging from Apple, to Dow, to General Motors, to Bank of America – have set goals for 100% renewable power for their global operations. These companies have built major branding and advertising campaigns around their sustainable investments. Consumers, both individuals and businesses, place real value in their buying choices on the energy and climate footprint of brands. Forward-thinking companies are committing to buying clean power in an effort to build competitive advantage with these consumers.

Corporate interest in renewables also stems from the anticipation of significant climate-policy changes, which could materially disrupt the market and existing cost structure of fossil fuel-based electricity. Several countries have put serious carbon pricing regimes in place as part of their efforts to meet the goals laid out in the Paris Climate Accord. The two largest global markets, China and the United States, have both formally joined the pact. In the United States, EPA's Clean Power Plan is still being contested, and the effect of specific implementation remain uncertain, but a material impact on power markets and electricity customers remains virtually certain. Around the globe many other countries are working through the implementation of new laws to reduce greenhouse gas emissions, all of which shifts value towards renewable electricity generating sources.

Many large corporations are not only trying to calculate the effects of these regulatory shifts, but are directly supporting the underlying climate policy changes. Adobe, Amazon, Apple, Blue Cross and Blue Shield, Google, IKEA, Mars, and Microsoft all submitted briefs supporting the Clean Power Plan in the current proceeding before the D.C. Circuit Court of Appeals. While their briefs to the D.C. Circuit presented a diverse set of reasons for supporting the Clean Power Plan, from obtaining regulatory certainty on the future of power markets, to mitigating health effects (and costs), to a belief it will support longer term global economic stability — each was rooted firmly in the conviction that the Clean Power Plan will lead to long-term increased valuation for these companies. As more corporations see the value of aligning their business with mitigating and adapting to climate change, the pace of clean energy acquisition by corporations will only increase, growing a market worth hundreds of billions of dollars for new solar and wind projects.

This potential has grabbed the attention of clean energy developers and investors. While the renewable energy market has grown rapidly over the past few years, developers and investors have become frustrated that many utilities are reducing the amount of wind and solar generated electricity they are willing to buy under long-term contracts. Such long-term commitments to buy the electricity generated from a renewable energy project are typically necessary for an investor or lender to put money into the construction or purchase of the project. Without these long-term agreements billions of available dollars are not being committed to projects. The combination of these two dynamics – developers and investors looking for new long-term commitments to buy power, while businesses are looking to lock in long-term supplies of clean and inexpensive solar and wind power – is driving a fundamental shift in the electricity market.

New corporate buyers will be a vital and growing segment of the solar and wind markets. Developers and investors are actively looking for ways to gain access and market share in this new segment. The Renewable Energy Buyers Alliance, which was created by the Rocky Mountain Institute, the World Resources Institute, the World Wildlife Federation and Business for Social Responsibility, has attracted more than one hundred of the largest corporate buyers to join its membership, as well as dozens of leading renewable energy developers, private equity fund managers, and banks to its events.

In addition to shifting corporate strategy and a matching demand for long-term buyers, changes in electricity regulation and innovations in the deal structures used to sell and finance electricity have helped open this new market for buyers to contract directly with power plants many miles away. An explosion in available data about usage as well as new technologies to track energy consumption are making the intermittent nature of solar and wind power easier and cheaper to manage, further supporting the economic case for shifting corporate energy consumption to renewable power.

Developers and investors must incorporate this huge new segment of the market for power as part of their respective strategies. Effective, forward-thinking energy planning will be an important driver of future competitive advantages across most businesses — and the companies that get this transition right will be rewarded. It will be vital for corporations to learn the power contracting and delivery process at a level of detail that only a select few super-users of energy have ever previously considered. Finding the experience and talent to succeed in this dynamic new market will be increasingly challenging. Early adopters are creating competitive advantage by being ahead of this market. Building a solid foundation for either the buying or selling of renewable power directly to corporations will be a barometer of success for businesses of all types.

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KEYS TO SUCCESS FOR CORPORATE PROCUREMENT TRANSACTIONS

By Jim Wrathall, Merrill Kramer and Morgan Gerard

Corporate renewable energy purchasing is going mainstream. Originally the focus of a small group of data center operators, big box retailers and other energy-intensive companies, a much broader cross-section of Fortune 1000 companies are now embarking on the path of clean energy procurement.

Company officials charged with accomplishing this mission are justifiably daunted. Many have little experience with clean energy and project finance. An ecosystem of developers, investors and contractors need to be mobilized. A host of company interests with authority over any of a number of financial, accounting, engineering, siting, utility, environmental and regulatory considerations must be conscripted, informed and coordinated to achieve a positive outcome.

Below we discuss seven keys for success.

1. Early and Comprehensive Alternatives Analysis

The clean energy marketplace is rapidly evolving. Optimizing strategy starts with a preliminary "stress test" analysis of the alternatives available to corporations to achieve their sustainability goals. Clean energy procurement options for corporations may include:

- *Self-Owned Onsite Generation.* Companies that can build or contract for generation facilities on or adjacent to their existing facilities stand to capture the greatest economic and energy value and quickest payback from their project. In states with net metering regimes, "behind the meter" generation will reduce power purchases from the incumbent utility, with excess generation either sold into the grid or credited against the user's future utility bills. Companies often are uncomfortable committing their credit or capital for these projects, and taking on the complexity of constructing, owning and operating energy systems that are not within their core business functions. The lack of sufficient space or inadequate renewable resource availability (such as sun or wind) may further limit this option.

- *Third-Party Owned Renewable Projects.* Companies can enter into arrangements with third-party project developers who will agree to build, own and operate power projects for the company's benefit. Under these arrangements, the company will enter into a long-term power purchase agreement (PPA) with the third-party developer containing an agreed-upon price or price formula. In exchange, the developer will agree to take on the risks the company wishes to avoid, such as construction risk, cost overruns, delays/completion risks, performance risk and balance sheet risk. A PPA will offer companies stable power prices and act as a hedge against electricity price volatility. However, many companies are not comfortable with committing to 15 or 20 year contractual arrangements. Long-term PPAs also can present accounting issues or gain treatment as "debt equivalents" by credit-rating agencies. Still other companies may have insufficient credit to allow the developer to access reasonable financing, as the developer's banks will look toward the creditworthiness of the offtaker to price their debt and coverage requirements. Finally, a company may have too small an electrical load at any one site to make a PPA arrangement attractive to developer.

- *Virtual or Synthetic PPAs.* The virtual PPA, otherwise known as a synthetic PPA, has risen in popularity in recent years. Effectively a financial contract, a virtual PPA does not involve the physical delivery of energy to the company. The company instead will continue to receive electricity from its local utility, but enter into a financial agreement with a project developer that has built a renewable project at a desirable location, usually within reasonable proximity to the company's load. Under a typical financial arrangement, the company and the project owner will agree to a fixed (settlement) price associated with the output generated from the renewable facility. The project owner will sell the power from its project into the wholesale markets and receive the market price. The parties then settle the difference between the wholesale market price (LMP) and the agreed-upon fixed price: the project owner will pay the corporation the difference if it receives a

price above the benchmark price, and the corporation will pay the project owner when the market price falls below the benchmark price. As part of the deal, the company will receive the renewable energy credits (RECs) associated with the renewable project. A virtual PPA allows a company to meet its sustainability goals through receipt of the project RECs, without having to deal with on-site issues or take on project development risks. The transaction, however, can be complex. The virtual PPA is an imperfect hedge as there likely will not be an exact price correlation between the electricity price received by the project owner and the power price at the corporation's site. The size of the project often is large, requiring the project owner to have multiple counterparties, creating potential intercreditor issues. Tensions may also arise in the event of a default by the project owner between the company's claims against the project and the senior positions of the lender to the project.

- *Purchase Renewable Energy from Utilities.* Increasingly, utilities are offering corporates a "green tariff," usually at a premium over the grid-cost of electricity. This approach may be seen as the simplest, since the company already has a long-standing relationship with its electric utility. However, these transactions can involve lengthy and numerous contracts, complex negotiations and may entail complicated structures that engender high transaction costs, depending on the state and utility. Utilities that are subject to an RPS may represent that a portion of their inventory is from renewables. The bottom line economics often are not favorable due to the premium pricing.

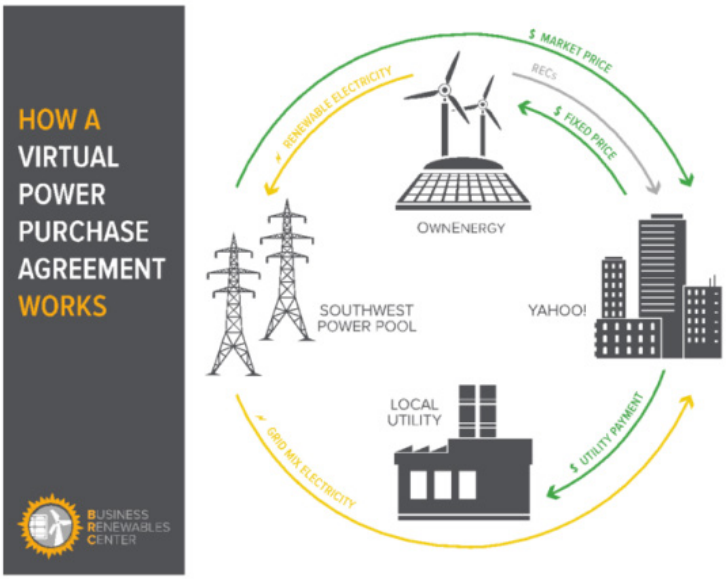
- *Participate in a Community Energy or Net Metering Program.* Also known as shared solar or solar gardens, the community solar model involves a developer that builds a large grid-connected solar array that makes its electricity available to multiple customers, referred to as "subscribers." A subscriber will purchase or lease solar panel-equivalents in the array. In states with community solar or virtual net metering programs, the purchaser will often receive credit for the electricity from the garden as if the panels were located on the subscriber's own rooftop. The utility will credit the customer for the kWh produced times its retail utility rate. Excess generation will be "banked" and credited against future company electricity use. Community solar projects have the advantage of improving economic value through optimal siting, economies of scale and reduced financing costs. There is often political value as well in participating in community projects as the model is largely politically driven as a way for regulators to allow a broad socio-economic spectrum to participate in the renewables movement. On the other hand, community solar projects often have long lead times because of the difficulty in lining up a sufficient number of quality subscribers.

- *Direct REC Purchases.* Companies can directly purchase unbundled renewable energy credits like RECs without having to enter into a PPA or build a renewable energy project. RECs represent the "greenness" of a specified renewable energy project and are sold "unbundled," i.e., separately from the underlying electricity. Ownership of the REC embodies the right to claim the green attributes of the renewable energy project by the entity holding the RECs. RECs thus

Achieving success in energy finance projects requires more than an innovative financial model. Transaction efficiencies are a key determinant of success. Regulatory and transaction costs for lawyers, bankers and accountants can make or break a project, or even a business model.

Transaction processes should be carefully tailored to match the economics of energy projects and investments. For more information on innovative approaches to achieving transaction efficiencies, please visit: http://go.sandw.com/edge-advisory

provide a company the advantage of satisfying its corporate sustainability commitment without having to own or control the physical production of the energy. The disadvantage of simply purchasing RECs is that they do not provide the purchaser with the energy benefits of owning its own on-site generation or entering into a PPA, nor the marketing visibility of having a solar or wind array on or near its site. Corporations sometimes view simply purchasing RECs as an inadequate commitment to decreasing our nation's reliance on fossil fuels and reducing greenhouse gas emissions.



2. Internal Team Building and Project Support

An institutional obstacle to corporate clean energy procurement is obtaining the necessary internal consensus and sign-off from the host of company personnel with authority over some aspect of a renewable energy project. Renewable power project development is not a typical core competency of a corporation. Authorizing a renewable energy project will often involve approvals from individuals involved in physical plant management, utilities, operations, accounting, legal, environmental and finance in addition to the sustainability officer. Companies usually do not have a single team or one stop shop with sufficient authority to approve all aspects of a project. Sustainability officers therefore often are required to reinvent the wheel for each sustainability project. Keys to success include 1) constituting a standing team, 2) flagging financing, tax and accounting issues early and 3) obtaining early and public endorsement from the CEO/President and/or Chief Financial Officer. These measures will go a long way towards ensuring a smooth process and positive outcome.

3. Retain Cost-Effective Third-Party Expertise

Most companies simply do not have the resources available internally to assess the alternatives and gain a full understanding of the economic, regulatory, and risk issues associated with renewable energy purchasing. However, there are sources of readily available knowledge that can be invaluable to the planning effort.

First, several non-governmental organizations have developed collaborative groups to share information and approaches. These include the Business Renewables Center, formed by Rocky Mountain Institute, the World Resources Institute and World Wildlife Fund; Advanced Energy Economy; and BSR. Companies that are new to the process or looking for alternative approaches can benefit enormously from joining these groups.

Second, there are a number of companies that provide consulting, brokerage or buyer's agent services for companies engaging in PPA and other energy management transactions. These include Altenex (a subsidiary of Edison Energy), Renewable Choice Energy, Customer First Renewables and Second Nature. These firms offer varying economic arrangements, but can provide critically important market knowledge as well as detailed economic modeling and advice on structuring and strategy.

Finally, clean energy purchasing will benefit from early involvement of professionals including lawyers and accountants. Ultimately the project will need to successfully navigate a variety of legal, tax and accounting issues. Early, effective transaction structuring can make a major difference for the economic outcome. For legal, billing structures that recognize risk inherent in the early stages and align the firm's interest with the client can help to ensure a project is properly structured from the outset and the company's interests are adequately protected. See our article on Adding Value Through Innovative Fee Structures.

4. Maximize the Value of Environmental Attributes

Clean energy projects can generate a variety of environmental attributes potentially contributing to bottom line project economics. The primary sources of such value are RECs created under state Renewable Portfolio Standards or through voluntary programs overseen by non-governmental entities.

A REC is a market-based instrument that represents the property rights to the environmental, social and other non-power attributes of renewable electricity generation—essentially the displacement of carbon and other emissions that are associated with traditional fossil fuel resources. RECs are generally a legal creation by a state, and the REC trading scheme differs between jurisdictions. However, a REC is uniformly recognized by the Department of Energy and other nonprofit organizations that certify RECs, such as Green-e, as "one megawatt-hour (MWh) of electricity generated and delivered to the electricity grid from a renewable energy resource." RECs can be bundled (attached to the energy that generates the certificate) or unbundled (liquid and freely tradeable regardless of who consumes the energy).

RECs can provide an additional value: supporting project financing for corporate purchasing. In a healthy, liquid market, RECs can be bought and sold, as well as pledged to secure debt financing. In markets where RECs have significant value, the credit can lower the cost of financing. There is also the added possibility of a REC arbitrage where the corporate builds or contracts for generation in a REC jurisdiction where REC certificates have favorable pricing, and sell the certificates in that marketplace for a greater return. The corporate can then purchase RECs in jurisdictions with lower REC costs, sufficient to support their greenness claims. A complication with extracting the financial value of a REC is that the REC must be held by the corporation for the project to qualify toward satisfying its sustainability or carbon reduction commitment. REC arbitrage is one way of extracting additional monetary value that can be applied toward future renewable investments. A company may also financially assign the REC to a lender as collateral security for financing its projects without jeopardizing its claim to the environmental attributes of the project. Alternatively, a company may oversize a project and sell the excess RECs into the market without affecting its ability to offset its electrical demand with the remaining generation. The economic tradeoffs and impacts on green claims must be carefully considered.

5. Maximize Tax Equity Investment Potential

The federal investment or production tax credits and accelerated depreciation, along with state incentives, can often offset up to 60 percent of the capital costs of a renewable project This in turn substantially increases project returns and justifies a project's economics. Often the corporate host does not have a sufficient tax basis within which to optimize the value of the tax benefits. Finding the right tax equity investor and planning the transaction can be complex. Conducting early analysis and obtaining expert assistance are vitally important to unlocking this major component of value. Further discussion on tax equity investment is provided below.

6. Avoid Foreseeable Pitfalls (or Worse!)

Renewable energy purchasing brings a variety of risks and potential failure points that can ruin a promising initiative. Some of the major pitfalls to avoid include:

- Not conducting a competitive process
- Premature Exclusivity
- Insufficient Contingency
- Ambiguous Scope
- Not considering financial alternatives, including those identified in point 1
- Failure to identify and meet investor expectations - execution of a PPA that is "unbankable" and will not support financing

Example Savings in a Renewable Energy PPA

Prices shown for 1 MWh

	Today	Future
Situation 1: No PPA		
Utility Rate	($40)	($50)
REC Price	($2)	($5)
Total	($42)	($55)
Situation 2: With a PPA		
Utility Rate	($40)	($50)
PPA Rate	($35)	($35)
Market Rate	$40	$50
REC Price*	$0	$0
Net Total	($35)	($35)
Savings	**$7**	**$20**

* In this example, the renewable energy credits (RECs) are included as part of the PPA.

Credits: Rocky Mountain Institute

- Misallocation of risks between buyer and seller:
  - price risk - impact of changes in market prices of electricity over time
  - basis risk - created when PPA provides for selling and buying at different locations
  - congestion risk - impact of grid usage on pricing
  - curtailment risk - potential for grid operator to refuse power due to oversupply
  - tenor - length of contract term
- Inadequate analysis of regulatory requirements
- Triggering of derivatives accounting rules
- Lack of access to necessary credit support

7. Ensure Full Consideration of Implementation Details

Many risks associated with clean energy projects arise from practical development and operational issues. They include addressing real estate, environmental and land use risks; engaging an experienced contractor for project construction; assessing capabilities and requirements for interconnection with the utility, and potential future utility-related scenarios; providing adequate capabilities and clear responsibilities for project operations and maintenance; and addressing all of these categories of issues in the context of possible future corporate acquisition transactions.

Outside expertise is typically necessary, but it is not wise to rely entirely on contractors with respect to implementation and execution issues. The internal lead ideally will immerse herself in all of the details and gain a complete understanding of the operations plan, raising questions with a skeptical view to add effective oversight of the process.

Conclusion

Clean energy purchasing can be a complex and daunting proposition, but is inevitable for many Fortune 1000 companies given policies and market forces. With careful attention to these areas, however, corporate officers can maximize their likelihood of achieving success.

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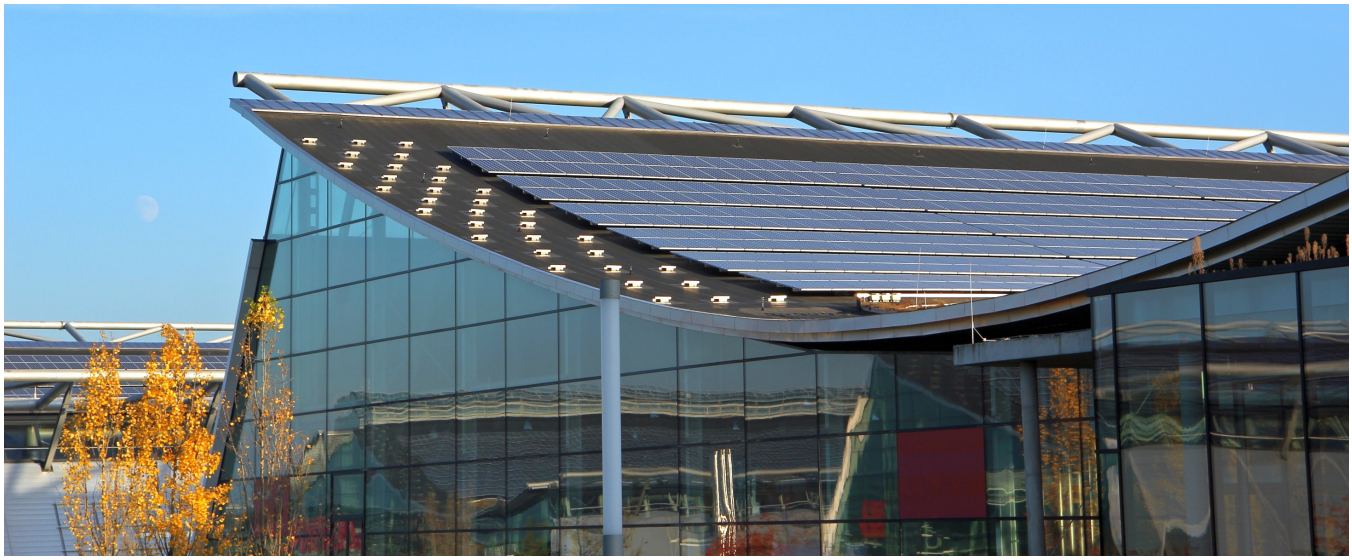


MARKET OUTLOOK: THE PATH FORWARD FOR CORPORATE CLEAN ENERGY PURCHASING

Special Contributor: Lily Donge, Business Renewables Center

The year 2015 represented a major turning point for electricity generation in the United States, bringing on 16.4 GW of carbon-free generation, according to the 2016 *Sustainable Energy in America Factbook*, published by Bloomberg New Energy Finance and the Business Council for Sustainable Energy. This is an exciting sign of a changing tide, but the U.S. bulk power fleet today totals ~1,100 GW of capacity, and two-thirds of generation still comes from fossil fuels. Renewables still have much ground left to cover.

THE CORPORATION MOVES IN

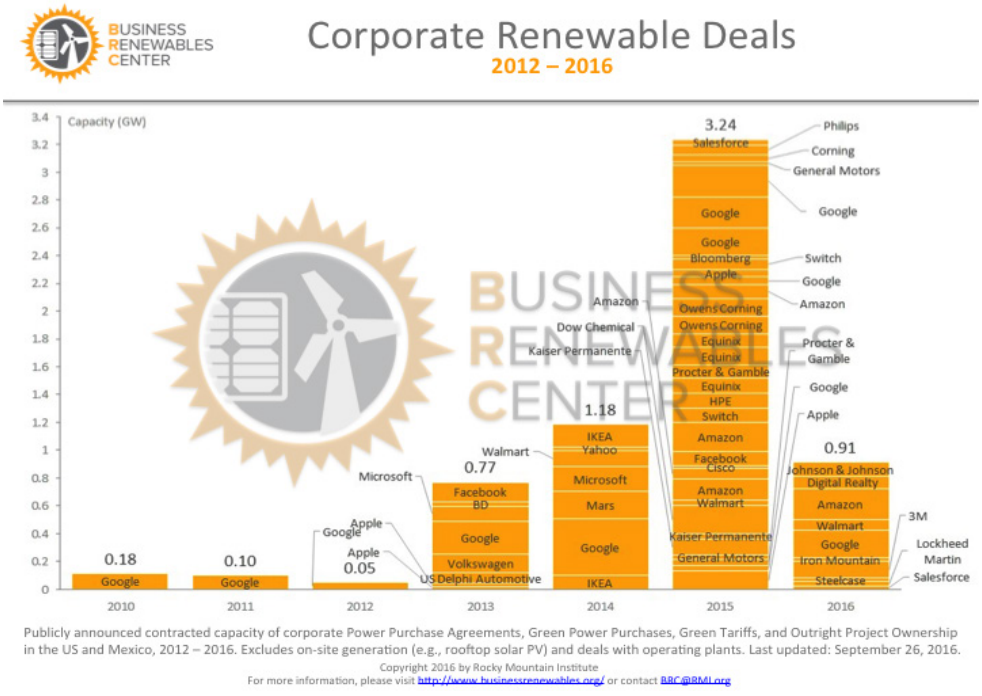
The good news is that renewable capacity growth has a new ally, with the potential of mobilizing tens or even hundreds of additional MWs at a time: corporate demand for renewable energy.

Rocky Mountain Institute's Business Renewables Center (BRC) has been focusing on renewables growth in large chunks—through corporations' appetite to contract for large amounts of electricity. And its member companies have been doing exactly that, in record numbers. Though a young market, corporate deals for large-scale renewables have been growing fast, from 0.56 GW in 2013, to 1.18 in 2014, to 3.44 last year. Meanwhile, the number of market participants has blossomed from 1 to 26. Corporate demand for renewables is now becoming the nation's leading source of demand for wind power and an increasingly important source of demand for solar, too.

EXCITING GROWTH, BUT MUCH MORE OPPORTUNITY AHEAD

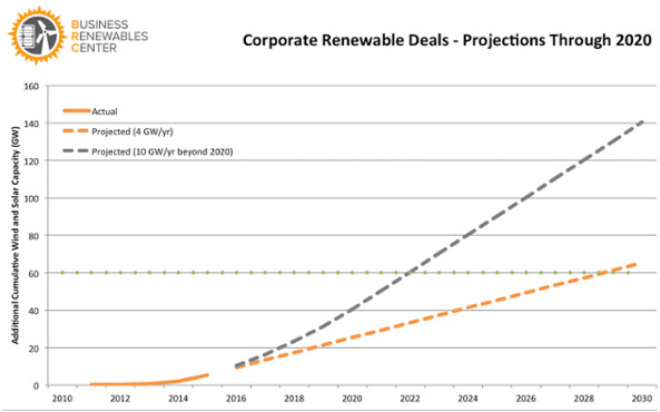
Even with these developments, the U.S. commercial and industrial (C&I) sector remains largely untapped. In 2015, electricity consumption in the U.S. commercial sector totaled 1,360 TWh while the industrial sector totaled 960 TWh, for 2,320 TWh together (EIA data).

Consider against that backdrop the corporate large-scale renewables market to date. Corporations contracted for 5.33 GW of wind and solar through power purchase agreements (PPAs) and other deal structures from 2010–2015. Even generously assuming an average capacity factor of 50 percent, which is high for currently deployed wind and solar technologies, those 5.33 GW would produce a combined total of around 23 TWh annually, or just around 1 percent of the combined C&I load. That leaves a lot of headroom (~99 percent) between corporate renewables deals to date and total C&I annual electricity consumption.



Publicly announced contracted capacity of corporate Power Purchase Agreements, Green Power Purchases, Green Tariffs, and Outright Project Ownership in the US and Mexico, 2012 – 2016. Excludes on-site generation (e.g., rooftop solar PV) and deals with operating plants. Last updated: September 26, 2016.

For more information, please visit http://www.businessrenewables.org/ or contact BRC@RMI.org



With companies increasingly eyeing renewable PPAs for stable, long-term energy procurement, as well as the favorable national and international policy climate for renewable investment, the only way for the PPA market is up. But how much "up" should we expect?

WHAT IS THE UPSIDE FOR CORPORATE RENEWABLES?

In recent years this market has grown exponentially, in line with the pattern expected in a rising sector with falling technology costs and substantial public support. After this initial spur, we might see another few years of exponential growth: the momentum that has been created, as well as the PTC/ITC extension, are going to sustain this trend. But thereafter, expect to see a more-sustained period of linear growth as the market matures and more companies satisfy their renewable energy goals.

The BRC and its partners—including the Corporate Renewable Energy Buyers' Principles—have set a target of 60 GW of additional renewable capacity in the U.S. through corporations, to be reached between 2025 and 2030. Achieving this target requires around 4–5 GW/year of additional capacity. We believe a growth rate of 10 GW/year beyond 2020 could be possible, more than doubling the 60 GW target by 2030.

Naturally, there are obstacles to overcome when it comes to corporate procurement, including price risk allocation, uncertainties over a range of compliance issues from accounting to financial regulation and political risk given the current patchwork of state regulation. For this market to thrive, there is still a significant way to go.

But there is also a lot that can be done in the way of promoting the existence of great opportunities. Markets have a tremendously resilient feature: when demand is there, supply will find its way, leading to growth. And with corporate renewables, have no doubt: demand is there. Even so, this potential is not going to be achieved without effort.

Corporations need to hear and understand the message that renewables in the wholesale market are now business as usual and make good business sense. And every CFO must ask about renewable deals, not because others are doing it, but because it is simply a form of resource risk mitigation. But more than this needs to happen in order to keep growth linear for the longest possible time.

FIVE WAYS TO HELP GROW THE CORPORATE RENEWABLES MARKET

1. Recruit the sector next door

Every sector should participate. Energy is a resource that needs to be managed. Electricity prices simply reflect commodity volatility, and management of volatility over 10- to 30-year cycles is important for any company to understand. 2015 was the year of IT companies signing PPA deals to power their data centers, including Yahoo, Equinix, Google, Salesforce, Amazon, Facebook, and Hewlett Packard. Also very notable was the emergence of manufacturers into the PPA market, with both General Motors and Procter & Gamble signing their first renewable deals. Owens Corning was the largest industrial transaction in 2015, with Dow and Corning also adding to the mix. But other sectors are yet to join, with first-mover advantages especially in banking, defense (Lockheed Martin became the first earlier this year), paper, cement, and mining as outstanding sectors in which renewable electricity supply at stable, long-term prices should prove a long-term value chain winner.

2. First-timers need to go for seconds

The BRC tracks closely those companies that have signed deals and the unanimous consensus so far has been that a knowledge advantage of the PPA exists. Having undergone the process to negotiate the first one, nothing should prevent these companies from signing more of these types of deals—both more easily and quickly. In 2015, Google alone signed three renewable PPAs in a row. Salesforce followed its first-ever PPA in December with a second deal just one month later. How many will follow the same pattern?

Leaders who signed deals early enjoy a knowledge advantage that makes them capable of acting much faster on their subsequent deals. For instance, Microsoft acted on its second deal in a fraction of the time it took for the first one to go through. We are hearing from service providers that Q1 2016 continues to show promising activity, and we are hearing from corporate buyers that the expertise acquired in signing the first deal will significantly reduce negotiation times for the second one.

3. Get more first-timers

Last year, first-timers accounted for two-thirds of announced deals. That's great progress. But there's room for far more. According to the report Power Forward 2.0, 43 percent of the Fortune 500 (200+) have clean energy or climate targets. Repeat buyers such as Google, which has committed to sourcing 100 percent of its energy requirements from renewables, are part of the equation. But growing further beyond the 26 companies who have done deals to date must be an equal if not bigger focus.

4. Expand the spectrum of corporates that would benefit from a PPA

So far Fortune 500 companies have signed most PPAs (though a few others, such as BRC member Steelcase, have also entered the mix with deals). That's because it takes some size to absorb tens of MW of energy capacity. But increasingly we see intermediaries who are willing to play the role of break-bulk in between developers and buyers. For instance, BRC sponsor Bank of America Merrill Lynch has now come to the market and performed aggregation deals, offering PPAs that are smaller in size. Beyond that, energy trading desks will be able to customize blocks of PPAs to smaller deals, shorter tenors, and other options to outsource some key risks.

This is a clear indicator of market maturation, and one of the most interesting features of 2016 is precisely how financiers want more corporate participation, and the willingness of the investor community interested in the corporate demand pull.

5. Make the market transparent

A variety of indicators demonstrate the early movement towards market maturation, but the hallmark of market maturation is transparency. BRC is focused on creating visibility of supply as well as demand for corporate renewable electricity, and the BRC Marketplace has launched to ensure market participants can see the pipeline of potential projects in front of them. For this platform, we imagine a landscape of choices that will include more than 60 GW of options for buyers to choose from. This would enable a market where a baseline understanding of projects becomes ubiquitous, and in which relatively new players should not fear informational asymmetry.

Corporations have decidedly moved in on the renewables market, and they're here to stay. The questions remain: How much appetite do they have? And how long will it last? The answers appear to be: "a lot" and "quite a while." Especially if all market actors take the right steps to sustain corporate renewables' impressive growth to date.

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UNLOCKING CLEAN ENERGY VALUE IN DORMANT CORPORATE PROPERTIES

By Hayden Baker, Van Hilderbrand, Jeffrey Karp and Jim Wrathall

More than 60 percent of the Fortune 500 companies have adopted sustainability commitments. Many other leading businesses have similar initiatives to reduce greenhouse gas emissions, conserve resources, increase efficiency, generate cost savings and give back to their communities.

Most of those sustainability commitments rely on increased use of clean, renewable energy sources. For many companies, this means discovering ways to co-locate clean power generation at their operations or procure clean energy, carbon offsets or renewable energy credits through contractual arrangements.

At the same time, tens of thousands of industrial sites lay dormant, burdened by the stigma of either actual or perceived environmental risk from contamination. At many of the same Fortune 500 companies with lofty sustainability goals, down the hall from the sustainability officer sits the real estate function, with responsibility for legacy and dormant properties: a cost sink incurring unproductive expenditures every year managing environmentally impaired properties.

For years, lawmakers and regulators have been encouraging the use of contaminated land for clean energy development through various governmental grants, incentives and programs. The U.S. Environmental Protection Agency's RE-Powering America's Land Initiative tracks over 80,000 contaminated land sites on more than 43 million acres, and has developed mapping tools to help stakeholders evaluate the renewable energy potential of those sites. As of June 2016, the RE-Powering program has facilitated 179 renewable energy projects on 171 contaminated properties, landfills or mine sites in 38 states and territories, totaling 1,124 megawatts of capacity.

While there are major potential economic and energy benefits, these projects are by definition exposed to increased environmental risk. This risk has continued to ward off developers and lenders from more fully embracing the opportunity to deploy renewables at impaired sites.

The surge of interest in corporate procurement of renewable power offers a major catalyst to spark renewable energy development at these fallow properties. Companies with

portfolios of unused properties may realize significant project efficiencies and cost savings by siting clean energy projects on contaminated or dormant properties.

Advantages of Developing Clean Energy Projects at Impaired Properties

Developing clean energy systems at dormant or impaired properties can offer several inherent benefits:

- *Existing Infrastructure*. Former industrial or commercial properties and mine sites are typically located close to vital infrastructure, such as electric transmission (or at least distribution) lines and substations, grid interconnections, roads, railways, and water supply. Capitalizing on existing infrastructure reduces development costs.

- *Close to Energy Load.* Similarly, dormant industrial and commercial properties and municipal landfills are often located near energy load demand, reducing the need for transmission infrastructure and the attendant expense and delay of securing related easements and permits.

- *Fewer Permitting, Zoning or Natural Resource Risks.* Relative to developing a greenfield project, a former industrial or manufacturing location likely will have fewer environmental permitting hurdles or natural resource impairment risks and is likely already zoned for development.

- *Preferential Treatment Under State Programs*. Several states encourage the redevelopment of brownfield sites through incentive policies. For example, New Jersey's renewable portfolio standard specifically identifies brownfields and properly closed landfills as the type of sites that are qualified to generate solar renewable energy credits. Massachusetts' Clean Energy Results Program is among the many other state initiatives supporting clean energy development on brownfields and landfills.

- *Community Support for Revitalizing Dormant Land*. Municipalities and states eager to enhance their tax base generally welcome the productive re-use of contaminated land. Many states offer streamlined regulatory approvals and expedited permitting, accelerated tax deductions, and tax abatements to support brownfields redevelopment and revitalization.

- *Available Funding*. Under both the EPA Brownfields program and various state programs, direct funding may be available in the form of grants and discounted long-term loans.

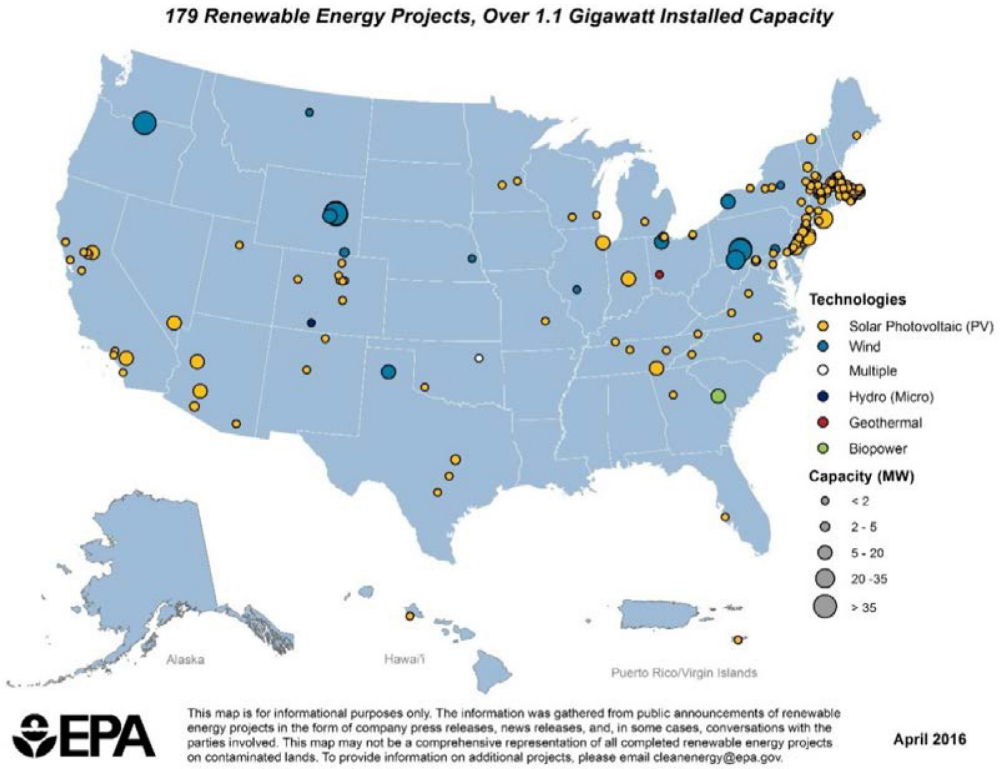
- *Cheap Land*. Whether due to the environmental risk itself or other market reasons, by definition the land is not being developed and so can typically be acquired at a discounted price, or will present a low book value commitment on the existing corporate balance sheet.

Risk Mitigation Strategies for Developing Impaired Properties

Despite these advantages, environmental risk – or even the perception of environmental risk – can be enough to scuttle any redevelopment, let alone one as complicated as a renewable energy project. Project developers are justifiably concerned about potential liability under the federal Superfund law (CERCLA) and liability schemes under other state and federal environmental statutes, as well as common law litigation risk.

However, various regulatory protections can substantially mitigate this risk. Combined with contractual protections offered by corporate buyers, in many cases the risk-reward balance can be shifted such that impaired property clean energy development is a viable strategy. Risk mitigation protections include:

- *CERCLA Bona Fide Purchaser and Tenant Guidance*. CERCLA was amended in 2002 to provide landowner liability protections for bona fide prospective purchasers. To establish and maintain that defense, a purchaser must satisfy the "all appropriate inquiries" standard in the course of diligence and thereafter undertake "reasonable steps" to prevent releases of hazardous substances at the site. The protections



subsequently were extended to tenants in EPA guidance issued in 2012.

- *State Voluntary Cleanup Programs.* State voluntary programs typically offer a "no further action" letter and/or covenant not to sue once the site meets applicable criteria, often allowing for the use of risk-based clean-up standards and institutional or engineering controls, resulting in major cost savings for cleanups.

- *EPA Comfort Letters.* While the EPA will not issue a "no further action" letter as some states will, the EPA may provide a "comfort letter" setting forth information known to the EPA about a site to give the developer some certainty that enforcement risk is low.

Even with these liability protections, however, a developer cannot completely eliminate environmental risk when developing impaired property. Therefore developers are best served by working with creditworthy counterparties who can retain and indemnify them for pre-existing contamination, and ensuring full attention to deal provisions allocating such risks.

Corporate Procurement Strategies Could Spur Clean Energy Redevelopment

Dormant corporate properties are low-hanging fruit for corporate procurement. The corporate owner already has the liability for the underlying contamination. Provided the owner is sufficiently creditworthy and willing to indemnify the developer and EPC contractor, the path forward for clean energy development is open.

Some companies are hesitant to allow development of impaired properties for fear of exacerbating existing conditions or potentially triggering further scrutiny or investigation. However, corporate strategies to procure clean energy can provide a compelling framework to overcome that hesitation.

Clean energy projects typically are developed either by (1) co-location of a clean energy system in proximity to an operating asset, or (2) contracting with a third-party project for the purchase of electricity through a corporate power purchase agreement (PPA). Use of impaired properties can create an advantage in either of these models. Prospective corporate buyers may be able to obtain more favorable pricing under a PPA, reduce overall project costs, and revitalize blighted properties by allowing the underlying project to be sited at one of their own impaired properties.

Co-location

Many industrial and manufacturing sites have adjacent contaminated property in the "back 40" which could be

used to site a clean energy system. Co-locating a renewable energy project provides an opportunity to power existing operating assets at predictable and reduced energy costs. Companies may realize an additional revenue stream if they can sell excess energy back to the grid under state supported net-metering programs or to a third party under a virtual net-metering agreement. Within this structure, the corporate owner could either contract directly with an EPC contractor to construct the system for it or lease the surface of the contaminated land to a third-party developer who would construct, own and operate the project. The property owner would retain liability and indemnify the EPC contractor or tenant/developer for any pre-existing contamination.

Corporate PPAs

Corporate PPAs allow the buyer to procure clean energy directly from third parties regardless of whether the project is located next door, in the same regional energy market or even further afield.

The corporate sustainability officer willing to walk down the hall to their property manager may discover that the company has sizeable properties suitable for siting a renewable energy project from which they can procure power on more favorable terms than third-party sites – while also reaping the social, environmental, public relations and financial benefits of restoring a dormant property to productive use. If they have properties with adequate renewable energy potential, then they may be able to contribute the underlying property (or at least the surface rights) – either by sale or lease – to the clean energy project, thereby reducing development costs in exchange for either rent or extracting more favorable pricing in the PPA. In addition to converting the blighted property into a productive asset and generating value for the business, the company also will win points with the state and local community by converting a dormant property to a sustainable use.

Property owners and developers should be prepared to spend time analyzing the resource potential of the property, the scope of any residual contamination, the risk associated with subsurface development and the engineering feasibility. This leg work is inherent in any development project and the good news is that the often complicating factor – the environmental condition – already may be well understood.

Resources like the EPA's RE-Powering initiative can provide helpful tools to assess the potential of particular contaminated properties for development. Even where the acreage or energy potential (e.g., wind, sunlight, hydro or geothermal resources) may be inadequate for renewable energy development, other technologies like combined heat and power or waste-to-energy systems may be well-suited. Owners may be surprised to learn of the opportunities to monetize their dormant properties. For example, solar projects can require as little as roughly five acres to be financially viable, and most U.S. regions meet the minimum resource potential of 3.5+ kilowatt hours per square meter per day necessary to generate cost-effective solar power.

Conclusion

Redevelopment of contaminated land has been slow to gain momentum under existing EPA and state programs. However, the confluence of corporate purchasing of renewables with brownfields protections can unlock major value for companies with an inventory of dormant properties. Through diligent investigation and creative approaches to risk mitigation, companies can achieve sustainability goals while realizing substantial economic and energy reliability benefits.

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Interview Q&A: Vince Digneo

Sustainability Strategist, Corporate Responsibility, Adobe Systems

In his role as Global Sustainability Strategist, Vince Digneo leads all of the company's environmental initiatives. He was previously Global Environmental Sustainability Initiatives Manager at HP, where he and his teammates helped HP achieve their many environmental leadership rankings. Prior to that, Mr. Digneo worked at Stanford University as a Senior Associate Director of Natural Sciences Development, specifically focused on the Natural Sciences and Environmental Initiatives. Mr. Digneo became a sustainability expert, first as a PhD student at Stanford, and then as the owner of ISO certification and compliance for all chemical products at HP Labs and Agilent Technologies. He is proud to have his name alongside other Stanford and HP researchers on at least two patents.

EDGE: *Adobe has adopted some fairly aggressive sustainability and renewable energy commitments. Can you tell us about the origins and evolution of those commitments?*

MR. DIGNEO: Adobe's founders created a culture of sustainability. They figured out, early on, that reducing waste, minimizing water consumption and saving energy were not just the right things to do, they are good for business. So, setting meaningful sustainability goals is part of our culture. A good example of this is Adobe's response to the California Energy Crisis in 2001. At that time the company's leadership decided to voluntarily reduce electricity consumption with a goal of 20%. Adobe beat this goal through energy efficiency projects and saved a lot of operational costs in the process. Since 2002, close to 200 sustainability and efficiency projects have been implemented, with payback periods generally less than about 18 months. At the end of 2015, 73% of all Adobe employees are working in LEED certified workspaces, with our sites in San Jose and San Francisco as LEED platinum certified. Last year, we set the goal that Adobe will power all of its operations and digital delivery of products with 100% renewable energy by 2035. However, we expect the vast majority of our footprint will be powered by renewable energy between 2020 and 2025. A lot of that is centered in the U.S., with interesting opportunities emerging in India. For the rest, the last few miles getting to 100%, that will be the most challenging. We are working with our data center and cloud suppliers to also commit to a low-carbon economy. In addition, we are engaging with local utilities, governments and NGOs to move policy in a direction where not just Adobe gets renewable energy, but the people in our community can also enjoy the benefits of having clean air and paying lower utility rates.

EDGE: *Adobe's energy demand is not as great as that of major data center companies like Google and Apple. But you have been a champion for corporate purchasing of renewable energy. What is driving your leadership in this area?*

MR. DIGNEO: True, we are not at the same scale as Google, Apple, Amazon, Microsoft and others. But we have to thank them for moving the market forward. Those companies had the wherewithal and the commitment to move the energy markets towards renewable energy. They were able to make large purchases driving down the cost of grid-scale renewables. Doing so, they made it possible for us to set renewable energy goals for our operations and digital delivery of our business in a way that makes business sense. That said, we feel very strongly about working with our peers in this space regardless of their size. Our commitment goes beyond energy usage to advocacy and influencing policy. We think it makes economic and environmental sense for everyone in our industry, and we know the importance of doing everything we can to take that path.

EDGE: *Looking to the future - what is Adobe's strategy for purchasing renewable energy?*

MR. DIGNEO: There are four elements of our renewable energy strategy. Energy efficiency is first, because without it you would not enter into a Power Purchase Agreement (PPA), or provision onsite renewable energy, unless you have a good handle on your energy efficiency and the reductions you can expect to achieve over the next five to ten years. You need to have a good idea of a forecast for 15 years out.

The second piece would be to implement onsite renewable energy wherever possible. As an example, a few years back we installed wind turbines at our headquarters in San Jose. It was a forward-thinking move, but they do not produce the amount of renewable energy that we need onsite, given the limitations of our footprint. In other locations, including our sites in Lehi, Utah and in India, we have more options that we are looking at for onsite. I think we have some other opportunities in the U.S. with that as well.

The third piece is working with our peers, with NGOs, policy makers, local governments, and especially utilities and regulators to help support policies favoring aggregation and utility supply. Rather than us bearing the sole burden of having to put onsite solar or purchasing a PPA for an Adobe site, the goal would be to partner with local utilities in order to spread the benefits to local communities where we work and live.

Then finally comes the PPA. We are actively exploring them for our operations in the West, where there are a lot more options than there were even a year ago. In India, we are quite close to finalizing a PPA within the next year. We feel strongly about the importance of demonstrating that renewable energy is an excellent business decision.

"Considering a PPA should be easy – a clean process without the guesswork. One of the main benefits is stabilizing costs, so it needs to be easy to communicate to management."

Vince Digneo

EDGE: *When evaluating potential projects and PPAs, what are the primary considerations you are looking at?*

MR. DIGNEO: We always start by evaluating the ROI. There are several complexities of PPAs along with the ever-changing market. Not only has pricing been falling every quarter, PPA contracts have been getting more complex. Considering a PPA should be easy – a clean process without the guesswork. One of the main benefits is stabilizing costs, so it needs to be easy to communicate to management.

EDGE: *Thinking about corporate purchasing of renewable energy more generally, for companies with energy loads similar to yours, are there recommendations or advice that you would offer to energy managers embarking on this process?*

MR. DIGNEO: I would suggest taking advantage of the resources and groups that are out there. One group we have been involved with since 2013 – we were founding members – is Business for Social Responsibility's Future of Internet Power Group, a group focusing on powering internet products with renewable energy, including peer companies such as Facebook, Salesforce, HP-Enterprise, Symantec and eBay. In addition, we are also members of the Rocky Mountain Institute's Business Renewables Center (BRC), and work with other NGOs, including World Resources Institute and World Wildlife Fund. These groups provide an array of resources for companies to use – so they aren't approaching this alone.

One easy step I recommend is to sign onto the Corporate Renewable Energy Buyers' Principles which is a function of the BRC and now expanded to the Renewable Energy Business Alliance (REBA) along with the NGOs mentioned above. More than anything, it is a commitment to do everything possible to power your business using renewable energy. Another step would be to reach out to peer companies to share ideas and best practices. No one entity has all of the answers, but together we can find them. Finally, bringing in the right experts, firms like yours and outside groups can help you become a partner with the utilities and local governments. It all comes down to collaboration.

EDGE: *Great, thanks very much Vince.*

MR. DIGNEO: Glad to participate with EDGE, thank you.

Interview Q&A: Shalini Ramanathan

VP Origination, Renewable Energy Systems (RES) in the Americas

Shalini Ramanathan is VP Origination for Renewable Energy Systems (RES) in the Americas. RES is a leading developer and constructor of wind, solar and energy storage projects. Ms. Ramanathan has closed 1,400 MW worth of deals with more than $2.5B in total transaction value. She has negotiated offtake agreements with Google and Microsoft and with many utilities, including Xcel Energy and Wolverine Electric Coop. She holds a Master's degree in Environmental Management from Yale University and a BA from UT Austin.

EDGE: *How does RES approach the corporate customer segment? Are there particular structures or counter-party types RES favors, and if so why?*

MS. RAMANATHAN: We look for motivated buyers – that's as true for corporates as it is for utilities. Buying green energy requires a strong champion on the inside. We look for companies that have a clear commitment to procuring green energy and a path to getting deals done.

I know some developers are offering shorter terms, which I'd define as a less than twelve year term for wind projects. Due to our investment partners' lack of interest in significant merchant exposure, we look for offtakers who are open to longer terms. Of course, the market is evolving and we evolve with it, especially on this issue.

And since we develop large wind, solar and storage projects, we appreciate counterparties who can take at least a substantial part of a project we're marketing. We do clubbed deals with multiple offtakers on a single project, and I expect we and other developers will see more of these in the future.

RES Distributed works on customer-sited solar/storage deals, which is a very different market than the bulk power deals my team and I work on.

EDGE: *For many years, developers have had to address financier concerns over the difficulty of conducting credit analyses on non-utility offtakers. How do you see this issue evolving with the recent market focus on corporate PPAs?*

MS. RAMANATHAN: A couple of things have happened. First, banks and tax equity have done their due diligence on corporate PPA deals and have gotten comfortable with non-utility offtakers. This isn't that new anymore. Second, corporates and developers have gotten better at understanding what is required (in terms of credit instruments, counterparty entities, levels of buyer credit support and specifics in the PPA to deal with credit downgrades) to make financiers comfortable. It's the rare corporate offtaker today who would only agree to sign a PPA using a shell company with no assets and no recourse to the corporate parent under any circumstances.

Of course, this is an evolving field. Most sizable green energy PPAs have been signed by large, well-known companies. That's certainly our experience, since we've transacted with Microsoft and Google and are in touch with companies of that caliber.

There are plenty of companies who have yet to sign a green energy PPA. At some point, the growth in PPAs will come from smaller than Fortune 100 companies, new companies in new fields or perhaps even from large companies with complicated credit and earnings stories. Those deals will get a lot more scrutiny from financiers than do deals with large, established companies with investment-grade credit.

Clubbed deals will continue to grow in popularity because corporates want the benefits of larger projects even if their loads are small. Assessing the credit risk of each link in the chain is of course more complex than dealing with just one offtaker.

EDGE: *RES has been involved in the energy business for over 30 years. Are you surprised at how long it has taken for corporate deals to become common? Why do you think it has taken so long?*

MS. RAMANATHAN: The real question is: why is this happening at all? Corporate buyers are not energy companies, they are experts in other products and yet they have emerged as a large and growing class of green energy customers. This is a terrific development.

Having said that, I'll address the why...

First, the cost of renewable power infrastructure has come down dramatically even as energy yields have gone up. Most corporate buyers will tell you that they are not looking to pay a premium for what is one of many inputs to their products. Signing PPAs for wind and solar that are in the money compared to brown-power prices, or are expected to be over the term of the PPA, is critical.

Second, we're living in an era when people care about the origin of the things they buy. Increasingly, consumers are choosing to pay a premium for organic produce. Major tech companies have a choice of where to site data centers, and many of them are using that leverage to demand that green energy be part of the package – this is corporate consumer choice in action.

Third, fully deregulated and even partially deregulated markets have made corporate PPAs possible. There are markets in the US where it is reasonably straightforward to enter into a financially settled deal, which really is the easiest deal structure for an offtaker that isn't a load-serving entity.

Finally, and perhaps most fundamentally, large companies face consumer and shareholder pressure to take meaningful steps to reduce their environmental footprint. Buying green energy has a huge impact. It's worth your time to do, if you're evaluating multiple corporate sustainability options ranging from packaging to fleet fuel use. The fact that green power is now in many cases competitive with brown power makes it easier to focus on greening your energy supply.

EDGE: *As a developer, what are some of the main challenges you have faced in the corporate space?*

MS. RAMANATHAN: We spend a lot of time educating prospective corporate clients about the energy market, deal structures and renewable power technologies. We're enthusiastic geeks who enjoy doing it, but it is an investment of time, and any time investment implies an opportunity cost.

We obviously hope that our client outreach pays off in a deal. This doesn't always happen, or sometimes discussions lead to interest in a deal we can't do, such as an RFP specifying a 3-year PPA, which is better suited to an operating merchant asset.

There are some key ways in which corporate buyers are different from utilities. Basis risk, the difference in price between the generation and settlement points, is an important issue that often comes up in corporate PPAs. This is especially true for deals in regions (MISO comes to mind) that aren't as liquid as we'd like them to be. A utility might have tools to manage basis risk, while many corporates argue that they definitely do not. They'd rather

"Large companies face consumer and shareholder pressure to take meaningful steps to reduce their environmental footprint. Buying green energy has a huge impact."

Shalini Ramanathan

pay a premium for a hub-settled deal over a bus-bar option to have a project wear basis risk. The location of an individual project relative to load, as well as analysis of known and expected points of congestion, becomes very important.

EDGE: *Are there particular regions where corporate deals are making the most sense? Why?*

MS. RAMANATHAN: We see continued demand for projects in CAISO and ERCOT North or South, and strong demand for well-priced assets in PJM. MISO and SPP are, in our view, slower, but ticking along. We've seen a spike in interest in SERC and non-CAISO WECC, though there are challenges to transacting in those markets.

There's an almost philosophical aspect to this question. Should a corporation procure power in the same regional transmission organization (RTO) its load is in? Or is it acceptable to purchase green energy in market X even if you're in market Y, where green power is more expensive to buy and deals harder to structure? Different companies have different answers to this question. Some price green energy in their footprint, then decide to, for example, overbuy in ERCOT in order to offset overall U.S. or global load.

Some corporate buyers choose projects in their footprint, even at a higher price, in order to have a simple story that their customers, who are mostly not experts in energy markets, will understand.

EDGE: *RES does a lot of work internationally – what trends in the corporate space have you seen abroad recently?*

MS. RAMANATHAN: We're seeing growing C&I interest in Europe and Asia. A lot of US-based multi-nationals especially have bought a lot of green energy in the United States and plan to keep doing so in the next few years to take advantage of the PTC/ITC, while looking aggressively at green energy in other markets. There is interest among corporates and developers in applying the market and deal structure lessons we've learned in the United States to other markets. Many markets need regulatory reform before corporate purchasing can take off.

EDGE: *As a developer, how do you see the potential of the corporate offtake market going forward?*

MS. RAMANATHAN: I think utilities will start becoming more involved in corporate deals. Utilities can take basis risk, and some may even be interested in owning projects, putting them in their rate base to earn regulated returns. I think we'll see more green tariffs, such as the Green Rider in North Carolina that allows Duke to meet the needs of large data centers in that state. We'll also see more deals, such as the recent one between Facebook and Public Service New Mexico, where a siting decision is tied to a utility providing green energy. RES works with both corporate and utility buyers, so we look forward to these discussions.

I also wonder if we'll move toward greater shared understanding on how to treat the Renewable Energy Credits (RECs) that are a major driver of deals. Some corporate off-takers are fine with high-value RECs being sold and replaced with low-value RECs as a way of reducing the PPA price while others aren't. Some corporates only buy unbundled RECs, while others go the much-harder PPA route because they value additionality and want to know their role is essential to a project going forward. As an industry, we use the term "RECs" without qualifying that term to reflect these different approaches. We'll see more discussion around this issue as the sector grows.

Finally, we're already seeing more corporate interest in solar deals. I expect this to accelerate as the price of solar continues to drop.

Interview Q&A: Jonathan Silver

Tax Equity Advisors LLC, Managing Partner

Mr. Silver is one of the country's leading clean energy investors and advisors. He is the Managing Partner of Tax Equity Advisors, LLC, which helps large US companies invest in solar, and Senior Advisor to Marathon Capital, the country's largest clean economy-focused investment bank.

During the Obama Administration, Mr. Silver led the federal government's $50 billion clean energy investment fund, heading investments in some of the world's largest wind, solar, geothermal, biofuel and nuclear projects. Collectively, those investments jump-started the clean energy revolution and are also on track to return $5 billion in profit to the US government.

Named one of the country's top-ten "influencers" in green-tech by a leading publication, Mr. Silver is, or has been, on the boards of Eemax, the nation's largest tankless water heating company, Sol Systems, a leading clean energy RECs trader, American Forests (the nation's oldest forest conservation organization), the Solar Electric Light Fund and the Wind Energy Foundation.

EDGE: *How does Tax Equity Advisors operate in the tax equity market?*

MR. SILVER: Tax Equity Advisors (TEA) advises U.S. corporations with significant tax liabilities on the use of solar tax equity. We source, diligence, and underwrite transactions, negotiate the terms of an investment on behalf of our clients, and monitor project performance for the duration of the investment. We generally serve as a fiduciary for our clients.

EDGE: *Are you seeing increasing interest in tax equity investments by new and non-traditional investors?*

MR. SILVER: Yes, slowly. The market for tax equity will be about the same size this year that it was in 2015 and it will grow next year.

The traditional sources of tax equity, banks and insurance companies, have insufficient capacity to meet the demand that exists today. Several institutions actually rescinded offers they had made for this year because they lacked capacity.

This unmet demand and the features of the investment tax credit program are well-suited to a new group of capital providers: corporations with significant federal tax liabilities. Many of them would benefit from taking advantage of the tax credits, accelerated deprecation and cash that comes from making a tax equity investment, but have not had any exposure to the sector and are often unfamiliar with the intricacies of investing in renewables. This year, however, a number of large companies have begun to assess the opportunity seriously and several became first-time investors in the sector. Our firm handles all of the very considerable work and diligence required for these companies to make sound investments and, after the investment, provides all the project oversight, compliance and tax reporting required.

EDGE: *The number of available power purchase agreements for wind and solar has declined recently. Has this made sourcing good projects more challenging?*

MR. SILVER: Yes and no. I wouldn't read too much into the number of PPAs available or announced at any one time. Some are never announced publicly and public RFPs come to market regularly. Last year, for example, corporations bought more wind power than utilities did.

In addition, a number of states are likely to increase their clean power targets next year and in the years to come, so the utilities will continue to be major purchasers.

The uncertainty around the ITC/PTC extension last year meant that a number of projects that might have been completed this year raced to close in 2015, which included, obviously, negotiating PPA agreements for them. Perversely, the extension slowed new project development a bit in 2016, but I expect a wave of new activity in 2017. The new interest in solar tax equity opportunities will increase the number of projects as well.

EDGE: *Are you and your investors looking for projects with corporate offtakers?*

MR. SILVER: We are not the investor. Our clients are the investors and reap all of the benefits of the investment. We will look at any project above a certain size that has an offtake agreement with a creditworthy investor.

EDGE: *For a tax investor, does the structure of the contract, whether based on a traditional PPA, green tariff, or a contract for differences or some other synthetic PPA instrument, matter, in terms of how you view the investment?*

Yes, but a more complete answer is that we underwrite each project against a very large number of credit criteria. The offtaker is relevant and the structure of the PPA is important. We are always looking to de-risk our investments and the nature, strength and duration of the PPA is certainly critical to that assessment. The stronger the PPA, the easier it is to underwrite the project.

EDGE: *We see a lot of pressure from corporate buyers for shorter-term offtake agreements than we would typically see in a utility deal. How does this affect the tax equity approach?*

"This unmet demand and the features of the investment tax credit program are well-suited to a new group of capital providers: corporations with significant federal tax liabilities"

Jonathan Silver

MR. SILVER: It is true that corporate PPAs are generally shorter than the ones utilities write. To a certain extent, this has to do with their lack of familiarity with longer-term power contacts, but it is also a function of the corporate budgeting process which rarely extends more than five years. However, corporate buyers buy for many different reasons, including lowering their energy costs and for various marketing purposes. In the past year or so, a number of more traditional companies – like 3M and General Motors – became clean power purchasers. The length of these contracts varies significantly.

It might be worth mentioning that utilities themselves have occasionally written shorter-term agreements, driven in part, I think, by ongoing confusion about the Clean Power Plan. Whether corporate or utility buyer, we can assess potential ways to structure tax equity even with shorter tenor PPAs.

EDGE: *Do you have different return expectations for a deal with a corporate PPA as opposed to a traditional utility PPA?*

MR. SILVER: No.

EDGE: *Corporate buyers can present a different credit risk than utility buyers - are you concerned about this, and if so are there tools you are using to manage this new risk?*

MR. SILVER: Since we work principally with Fortune 1000-size companies, which have significant capital to put to work, we tend to concentrate on larger projects with well-known, creditworthy offtakers. That said, corporate buyers can, and do, present different risks often including basis risk, shorter tenors and general credit issues. There are several new companies out there developing tools to help investors assess smaller projects and less creditworthy offtakers. An attractive, repeatable hedging product would also be helpful.

WINNERS AND LOSERS IN THE CORPORATE RENEWABLE ENERGY SURGE

By Joshua Sturtevant

Corporate renewable purchasing in the U.S. market to date totals over 4 gigawatts, most of which has been contracted over the past three years. Market projections indicate an additional 16 gigawatts of capacity could be contracted by 2019, with the trend accelerating from there.

A consequence of this trend is the willingness of corporations to reduce their reliance on utilities as power suppliers, within both regulated and deregulated service territories. In any paradigmatic shift in something as critical to business as the way that energy is produced and consumed, there will be winners and losers. Which sectors will grow, and what companies will step up to bridge the gaps in energy management, finance, construction and operations? Special thanks to Rob Rains and Laura Wallace of Washington Analysis, who shared insights into how the dividing lines are emerging, discussed below.

Good for the Tech Sector – and Others

While the corporate renewable energy transition is still in the early stages, technology companies have been significant adopters, driven both by a natural willingness to embrace new technologies and by positive corporate social missions and mandates. Of course, technology companies increasingly are large consumers of energy, adding significant economic and reliability issues to the equation. Familiar names such as Google, Amazon, Cisco, Microsoft, Adobe, Iron Mountain, and Facebook have benefitted from renewable energy deals serving data centers and other facilities.

But tech companies are not alone in having corporate mandates to diversify energy supply and reduce greenhouse gas emissions from energy consumption. Companies such as Whole Foods, Mars, IKEA, Lockheed Martin, Dow Chemical, 3M, Proctor & Gamble and Walmart have all taken advantage of renewable energy purchasing to meet corporate goals and gain pricing surety over energy costs.

> "Nationally, if even half of commercial and industrial electricity demand were met by renewable energy, this would drive development of nearly 450 gigawatts."
>
> *Advanced Energy Economy, Opportunities to Increase Corporate Access to Advanced Energy: A National Brief*

Also Good for Developers and Third-Party Owners

The corporate trend represents the opening of a major new market for developers and third-party owners. Even corporates that have taken advantage of ownership opportunities in renewable energy have avoided engineering, procurement and construction responsibilities, instead farming those activities out to experienced development shops, creating opportunities for those entities. In transactions where third-party ownership models are utilized, the credit profiles of many corporates ensure that arranging deals will prove less difficult than other deals of similar sizes. Examples of development companies and third-party owners benefitting from the trends in this space include Avangrid, Canadian Solar, First Solar, Gamesa, Pattern Energy, RES-Americas, SunPower, Vestas, NextEra Energy Partners and NRG Yield.

And Positive for Technology Providers

Technology providers also stand to gain from the corporate trend. If current trends continue, corporations will only increase their participation in the energy markets. It is likely that increased participation will lead to increased sophistication and self-reliance in procurement and system operations, a positive development for companies that produce everything from energy pricing databases to storage systems to monitoring software. Examples of

RECENT CORPORATE CLEAN ENERGY PURCHASING MILESTONES:

IKEA North America Services LLC, now utilizes onsite generation at 90 percent of their U.S. locations. The company purchases renewable energy from utilities and owns wind farms in Illinois and Texas. Once fully operational, IKEA's wind farms will combine to generate 980 GWh per year. IKEA has established a renewable energy goal of 100 percent by the year 2020, and IKEA North America is finding ways to increase its usage of renewable energy to meet that goal.

Mars Incorporated partnered with a third-party developer on the construction of the 200 MW Mesquite Creek wind farm in Lamesa, Texas, completed in 2015. Mesquite Creek generates 100 percent of the electricity needs of the company's U.S. operations – enough to electrify approximately 61,000 U.S. homes. Mars essentially underwrote the project, providing the financial security to construct the facility, and purchases all of the Renewable Energy Certificates (RECs) from the facility. Mars has committed to eliminating all greenhouse gases from its global operations by 2040.

Amazon Web Services (AWS) also has committed to 100 percent renewable energy use. In 2015, approximately 25 percent of the power consumed by AWS global infrastructure was renewable. AWS purchases from the 150 MW Fowler Ridge Wind Project in Indiana, under a Power Purchase Agreement with Pattern Energy. AWS invested in a utility-scale 80MW solar facility in Virginia and wind facilities in North Carolina and Ohio, all of which should be fully operational in 2017. With this progress, AWS expects to meet its interim goal of 40 percent renewable energy power.

companies that could benefit from corporate trends in the energy technology space include HelioScope, Solar Edge, Enphase, SMA, Noresco and EnerNOC.

But Negative for (Most) Utilities

The obvious downside in this market is for utilities, standing to lose major customer demand. Thus far utilities in states with the highest concentrations of technology companies have been most susceptible, including California, Colorado, Texas, Virginia, Washington and North Carolina. The trend has potentially negative implications for utilities in these regions such as Xcel and Dominion.

The trend poses a longer-term threat to electricity sales for other utilities and merchant power firms such as Calpine, Dynegy, Exelon and NRG. For example, several casinos in Nevada are seeking to depart from NV Energy's service territory while simultaneously procuring outside power. A recent filing to the Public Utility Commission of Nevada (PUCN) by Peppermill Casinos Inc. to exit the service territory represents the fourth casino seeking to leave the utility. Both MGM Resorts and Wynn Resorts have signaled an intention to exit the grid, and Nevadans will vote on a ballot measure this November that would implement a competitive electricity market.

Some utilities, however, have shown signs of getting in front of trends. For example, some have acted as a go-between in deals between large asset owners and corporate buyers in back-to-back PPA deals. Others, such as Duke, are participating in programs such as North Carolina's Green Source Rider which ensures that they will remain participants in deals despite not generating the load.

Despite early indications that entrenched utilities could be losers in the transition to increasing corporate clean energy purchasing, very few renewable energy trends have gone unchallenged by the incumbents. Net metering, third-party ownership, and interconnection are all policies which utilities have opposed. Many state energy regulatory frameworks make renewable off-site and/or distributed generation projects difficult to structure, giving threatened utilities opportunities to push back harder as corporate deals gain more traction. It remains to be seen whether utilities will fight against corporate deals, cautiously embrace them, or end up somewhere in the middle.

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Tax Equity Update

By Elias Hinckley and Brian Hammell

2016 looks to be about even with 2015 (which was a record year for tax equity investment). The year got off to a slow start as a number of projects had already been accelerated because of concerns over expiring credits, while the timeline of other projects was slowed following the long term extension of the ITC and PTC, which removed urgency for placing projects in service.

Looking at the corporate renewable buyers market there are several factors that can make tax equity more difficult to secure when financing a project:

- In the corporate PPA market the variety and newness of underlying structures is causing friction with some investors. Some tax investors are still working through the different underlying revenue constructs such as synthetic PPAs, including contracts for differences as well as other financial instruments designed to mirror physical delivery.
- These new contracts do not have market-established benchmarks for allocation of basis, congestion, curtailment and production risk. Add to this the different long-term credit position of many corporate buyers compared to utilities with rate-backed revenue recovery, and the tax investments into these deals requires a new risk analysis compared with traditional utility off-take deals.
- There is pressure from corporate buyers for shorter tenor agreements – sometimes as short as five to seven years – which adds a great deal of merchant risk for tax investors' residual value in projects and for wind projects does not even cover the full credit period for the PTC.

While the tax equity market remains significantly undersupplied, which makes all of these corporate PPA challenges more acute, there is significant interest within the corporate buying community to invest as tax equity in these transactions. We expect to see significant additional tax investment capacity working into this market from our corporate buyers as well as traditional tax equity investors.

FEDERAL CLEAN POWER PLAN UNDER REVIEW

EPA's Clean Power Plan (CPP) is expected to drive substantial deployment of clean energy in the U.S., providing additional support for corporate renewable energy procurement. But first the CPP must survive legal challenges filed by coal and oil companies along with state attorneys general who are politically hostile to government clean energy programs.

On April 1, 2016, Sullivan & Worcester filed an amicus brief in the U.S. Court of Appeals for the District of Columbia Circuit in support of EPA's Clean Power Plan. The brief was filed on behalf of Adobe Systems Inc., Mars Incorporated, IKEA North America Services LLC, and Blue Cross Blue Shield of Massachusetts, Inc. As noted in the brief, the CPP is a vital national solution supporting market certainty, and delay in implementation could cause economic, social, and business disruptions, including to supply chain management and strategic and financial planning. Another amicus brief filed by Apple, Amazon, Google, and Microsoft, provided the Court with additional compelling perspectives on the negative consequences of carbon emissions and the importance of clean alternatives for procuring their electricity.

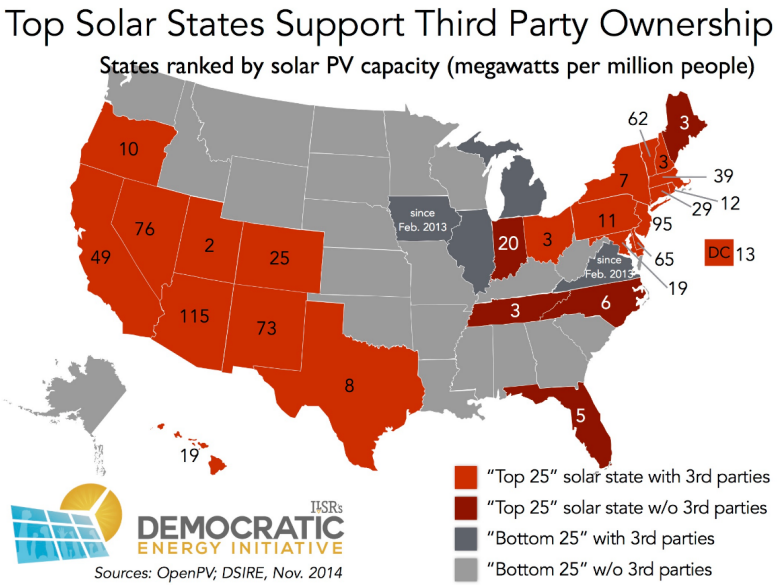
Oral arguments are scheduled for the week of September 26. Should the D.C. Circuit or the Supreme Court rule in favor, the CPP will be another major impetus toward corporate renewables procurement.

See the EDF Summary "3 Ways the Clean Power Plan Will Strengthen Our Economy."

REPORT FROM THE STATES

By Joshua Sturtevant and Jim Wrathall

Continued growth of the corporate renewables sector will be heavily dependent on favorable policies at the state level. Earlier this year Advanced Energy Economy, a non-profit clean energy trade group based in Washington, DC, launched a program with the goal of spurring state policies to support corporate renewables. (*Note*: Sullivan & Worcester is a Member of AEE and provides support for AEE projects.)



In June AEE published *Opportunities to Increase Corporate Access to Advanced Energy: A National Brief*. The publication analyzed key state policy issues and provided a methodology for considering and advocating for supportive policy development. Following on the report, AEE has prioritized states where the greatest opportunities exist for promoting policy changes favorable to corporate renewables.

Most of major corporate deals to date have involved large, offsite projects. AEE notes that policies supporting growth in offsite corporate deals include utility renewable energy tariffs and direct access tariffs. Back-to-back power purchase agreements (PPAs) are another transaction framework which, while not necessarily directly dependent on a policy, could drive more offsite deals.

While offsite deals are attention-grabbing due to their size, the market in the distributed generation (DG) space also offers major growth prospects. Policies that could stimulate development in the corporate DG space supported by AEE include increasing project size limits, allowing third-party ownership and expanding net metering programs.

Participants in the corporate renewables market will benefit from a full understanding of the impacts of state policies in markets where projects are under consideration. They should strongly consider participating as AEE members and in support of the AEE state policy initiatives.

STATE POLICIES SUPPORTING OFFSITE GENERATION PROJECTS

Utility Renewable Energy Tariffs

Renewable energy tariffs, or green tariffs, are one mechanism by which corporates can procure renewable energy from offsite. Under these programs, customers enter into contracts to procure energy that is created by renewable generation sources. Historically, customers have had to pay premiums in programs like this, but advocates are pushing utilities to include competitive procurement and increased freedom of choice, which could make them more effective and in-line with a typical power purchase agreement arrangements in the future.

Direct Access Tariffs

Direct access programs, sometimes called retail choice programs, allow customers to purchase directly from a non-utility system operator rather than a utility as intermediary. However, the utility continues to provide transmission and distribution services. These programs can be effective in regulated markets

States identified by AEE with the highest potential for offsite deals if tariff policies were to be implemented include: California, Florida, Indiana, Michigan, Minnesota, Alabama, and South Carolina.

Of these, California may be the state where movement is seen in the near term. The state has long been at the forefront of promoting solar, and several of the largest offsite deals to date have been done there. Additionally,

a 50% by 2030 RPS ensures that regulators and market participants alike will be looking to meet energy needs with renewable sources in large chunks.

Back-to-back PPAs are another mechanism which facilitates corporate purchases of offsite clean energy. Here, utilities agree to purchase energy from a particular renewable energy facility on behalf of a particular customer. They then turn around and sell a commensurate amount of energy to the customer at a pre-negotiated rate (hence the term 'back-to-back'). As the utility can ensure value creation, this structure may be a less objectionable path forward in some tricky markets than tariffs that have been proposed.

STATE POLICIES SUPPORTING DISTRIBUTED GENERATION

Policy-restricted system size limits

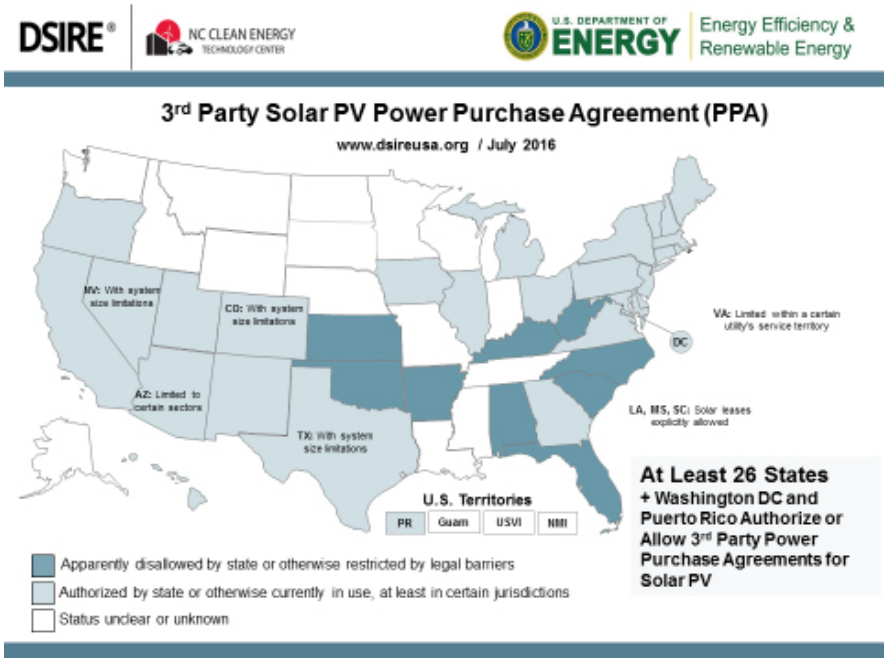
Many states place limits on the size of DG projects. The main reason cited is typically the ability to ensure that local grid infrastructure is capable of absorbing incremental electricity. Such limits can be problematic as permissible systems often produce less than co-located operations need, reducing the value proposition of going green at those locations. Absolute maximum size allowances could be raised without risk to the grid in many locations. Alternatively, system sizes could be pegged at the level of the co-located facility's consumption, as is currently done in New Jersey and Colorado, among other states. Some of the states with the greatest potential for replacing current consumption with energy from renewable sources with increased system size limits include: Texas, California, Michigan, Alabama, Kentucky, Tennessee and Indiana.

Other states, such as Pennsylvania, have moved to clarify interconnection sizing standards this year. However, among the states listed, there has been relatively little recent movement toward increasing DG system size limits.

Third-Party Ownership

The concept of third-party ownership of systems has long been a battleground between solar advocates and incumbent utilities. Many potential offtakers appreciate the opportunities afforded by third-party ownership, a system where corporations can pay for energy through a power purchase agreement rather than paying the larger upfront cost of installing a system themselves. However, utilities often push back against efforts to allow third-party ownership, particularly in states where the right does not yet exist. Some of the states with the greatest potential for replacing current consumption with energy from renewable sources with permissive changes to third-party ownership rules include: Indiana, Florida, North Carolina, Alabama, Minnesota, South Carolina and Kentucky.

Among those, Florida and North Carolina are perhaps the states with the greatest chance of implementing third-party ownership rules in the near term. Proponents of third-party ownership in Florida narrowly missed getting a question on third-party ownership on the ballot this November. Meanwhile, regulators in North Carolina rejected third-party ownership earlier this year, following the failed Energy Freedom Act in that state in 2015.

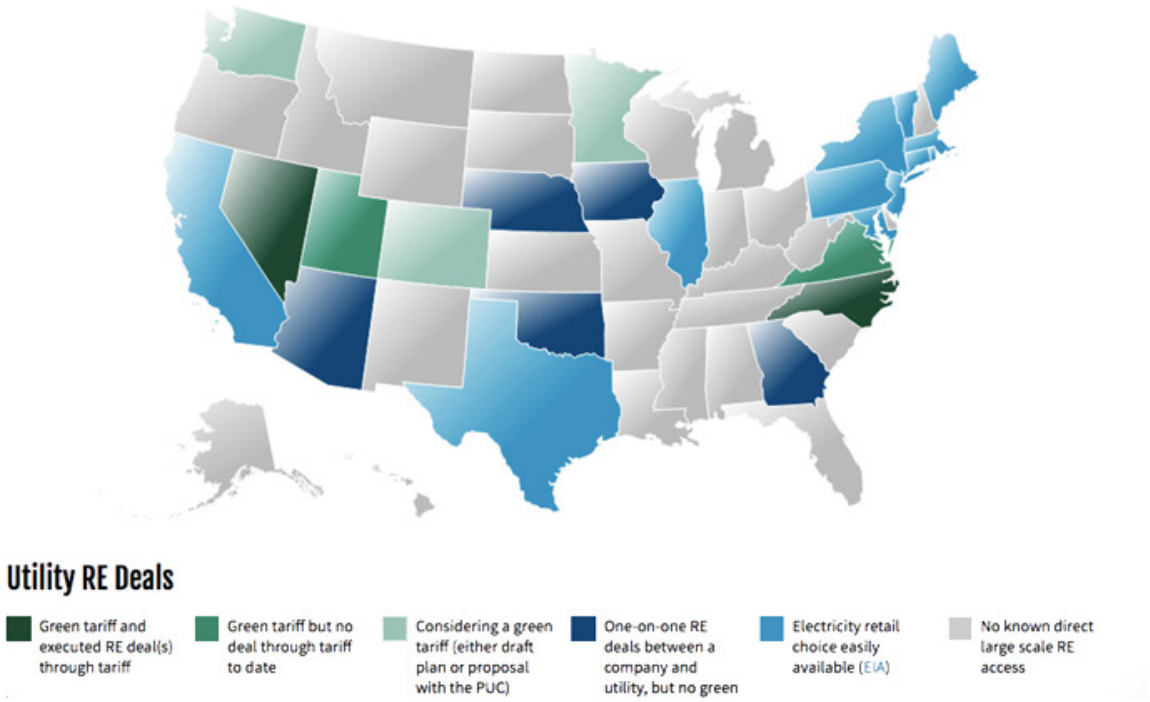


Despite a lack of clear victories, it is clear that renewable energy advocates are gaining traction in those states. These developments follow the easing of restrictions on third-party ownership in Georgia over the past few years, another indication that the tide may be turning for renewable energy in the historically utility-friendly Southeast U.S.

Virtual/Aggregate Metering

Virtual net metering and aggregate metering are policies which allow customers to offset consumption

Credit: World Resources Institute



at one or more meters based on the production of a single system. While such systems can be co-located with offtaker owned meters, or located offsite, as is often done in Massachusetts, these are typically thought of as distributed generation deals. Some of the states with the greatest potential for replacing current consumption with energy from renewable sources with the implementation of virtual and/or aggregate net metering rules include: Texas, Florida, Ohio, Indiana, Georgia, North Carolina and Virginia.

Fights around virtual and aggregate metering are often as contentious, if not more so, than battles around third-party ownership. It has become clear in the aftermath of the investment tax credit (ITC) extension that many utilities have chosen combating net metering policies as a cause du jour. For example, Nevada recently changed net metering rules with results that solar advocates argue, despite grandfathering of existing systems, will stifle the development of rooftop solar projects there going forward. Therefore, it is difficult to determine how successful solar advocates will be in trying to expand, rather than contract, or even leave at the status quo, policies around net metering.

In the absence of movement, or in the face of additional regressive policy adoption, it could be that alternatives to virtual and aggregate metering emerge. For example, under New York's REV initiative energy would be traded over exchanges by producers and consumers alike, with buyers free to purchase from sellers at their discretion. If successful, such an approach would undermine the need for programs such as virtual net metering. Other states are watching New York closely to see if its ambitious visions come to fruition. In the meantime, advocates may find process on net metering programs to be slow at best.

For up to date tracking of policy developments before state legislatures and Public Utility Commissions, AEE offers its members access to PowerSuite, its comprehensive online tracking database.

https://www.aee.net/articles/aee-unveils-powersuite-a-new-online-platform-for-tracking-energy-legislation-and-regulatory-proceedings-in-all-50-states

ADVANCED ENERGY ECONOMY POWERSUITE

Detailed summaries and quarterly reports also are provided by the NC Clean Energy Technology Center DSIRE database.

http://www.dsireusa.org/

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GLOBAL OPPORTUNITIES: HOW CORPORATE ENERGY BUYERS CAN LEVERAGE DEVELOPMENT AND CLIMATE FINANCE FOR INTERNATIONAL PPAS

By Jim Wrathall

Corporations increasingly are looking to expand their renewable energy purchasing in international markets. This is particularly true for those having experienced procurement success in the U.S. off-site market. Major opportunities for international deals can arise in the context of existing energy-intensive industries such as mining, fossil fuel production and large scale construction projects. However, international projects and PPAs can be attractive to companies in many other sectors where there is a global footprint.

Successful international project finance and development must overcome several common challenges, including:

- For those seeking to implement self-supply, securing debt financing for the initial investment in infrastructure can entail management challenges, and the shift from operating expense to capital expense must be addressed in project financing.
- General contractors and operators may not have core competency in renewable energy and may the lack technical capacity to design and finance complex and hybrid energy systems.
- Project developers and operators must ensure reliable power supply as offtakers will have no tolerance for risks of power disruption.
- The useful life of assets does not always align with typical uses abroad. For example, renewable energy systems have expected life that substantially exceeds the typical duration of a mining project; project investment payback periods are generally shorter than clean energy project finance cycles.
- Local incentive programs may be non-existent, or differ from those with which U.S.-based financiers have experience.

Despite hurdles, multinational corporations are increasingly looking outside the U.S. for opportunities to procure renewable energy. Several sources of development financing and risk mitigation support should be evaluated to help reduce the cost of capital and improve the odds of project success.

World Bank

World Bank provides low-interest loans, zero to low-interest credit, and grants to developing countries. These support a broad variety of investments in areas including energy and other public infrastructure, financial and private sector project development, and environmental and management.

The World Bank's International Finance Corporation (IFC) is one of the world's largest financiers of private projects in developing countries, providing financing over the last decade for renewable power, energy efficiency, sustainable agriculture, green buildings and private sector adaptation to climate change. As of FY15, IFC's portfolio of climate-smart investments had reached $13 billion, supporting $115 billion worth of projects, with over $2 billion of new projects invested in the fiscal year ended June 2015.

Overall, World Bank Group members have provided over $49 billion in financing and guarantees since 2010, of which over $21 billion was for energy efficiency and renewable energy projects. World Bank Group financing in the sector totaled $6.5 billion in FY15.

Overseas Private Investment Corporation

Since 2010, the Overseas Private Investment Corporation (OPIC) has committed more than $1 billion a year to renewable energy project, supporting more than 85 renewable energy projects across the developing world. For a project to be eligible to apply for OPIC financing, it must include the meaningful involvement of the U.S. private sector, most often by significant ownership of the investment. Although the financial structure may vary with the nature of a specific business, the percent of total project cost funded in debt, including OPIC's loan, is typically limited to 50% for a new project, with the remaining 50% funded in equity capital, grants, or fully-subordinated debt capital.

OPIC also offers Political Risk Insurance, which can allow U.S. businesses to take advantage of commercially attractive opportunities in emerging markets, mitigating risk and helping them compete in a global marketplace. OPIC insurance provides comprehensive risk-mitigation products to cover losses to tangible assets, investment value, and earnings that result from political perils, including economic instability such as currency devaluation, war, conflict and corruption.

U.S. Export-Import Bank

The U.S. Export Import Bank (Ex-Im) is an independent federal agency. Its mission is to support U.S. jobs by providing export financing at no cost to American taxpayers. Ex-Im provides a variety of financing mechanisms, including working capital guarantees, export-credit insurance and financing to help foreign buyers purchase U.S. goods and services.

Climate Finance Sources

To date, the UN Climate Investment Funds (CIF) reports having allocated more financing to private sector mitigation, forestry and adaptation investments than any other multilateral climate fund. The $5.6 billion Clean Technology Fund, the largest of the CIF's four funding windows, is channeling $1.9 billion to support private sector work in renewable energy, energy efficiency and sustainable transport projects and is expected to leverage $20 billion in private sector co-financing. Renewable energy projects and programs reportedly accounted for 35 percent of total climate mitigation finance in 2014. This figure shows the high investment priority from both the public and private sectors - and represents a large potential opportunity for new project development.

Strategies for Accessing Development Finance

IFC and OPIC have previously joined with sponsors and private lenders in financing numerous wind and solar projects in developing countries. These projects provide a reliable track record and template for developers and corporate buyers considering international projects. Keys to success include early assessment of development finance opportunities and ensuring the project team includes international development and climate finance expertise.

Where are the International Opportunities?

Dan Seif, Managing Director of Grid Economics, LLC notes that, "For the next set of deals, large corporations are keen to transact where substantial facility load, viable market mechanisms, and competitive renewable energy pricing overlap."

Dan notes the following as major emerging opportunities:

- Chile has outstanding renewable resources and a viable wholesale power market. While not a major load center for most corporations, it is for the mining industry, which has led the Chilean corporate renewable deal flow.
- Mexico has a wide distribution of industry types, moderate industrial load, and good renewable resources. Their new, much more open power market regulations are gradually setting in, with corporations eyeing the potential.
- India is seeing an explosion in wind and solar generation development, with thousands of new utility scale wind and solar projects under development.
- By far the leader in diversity of industries and corporate load outside the U.S. is China. China's renewable power industry and in-country development activities are world class. The missing piece, a viable market opportunity for corporate direct procurement, may be occurring with a new interprovincial power trading system.

First Solar Set to Build Largest PV Solar Power Plant in Latin America

141MW Luz del Norte project supports Chilean renewable energy goal

TEMPE, Ariz.–(BUSINESS WIRE)– First Solar, Inc. (NASDAQ: FSLR) today announced it has received board approval from the Overseas Private Investment Corporation (OPIC), the U.S. Government's development finance institution, and IFC, a member of the World Bank Group, for financing to support construction of the 141MW(ac) Luz del Norte solar power plant in Chile's Atacama Desert. The loans, which are expected to close later this summer, clear the way for First Solar to proceed with construction planning at the site, which is near the city of Copiapo. Terms of the deals were not disclosed. The OPIC board approved a loan of up to $230 million; the IFC board approved a $60 million loan.

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EDGE Advisory is produced by Sullivan & Worcester's Energy lawyers and analyzes the latest energy finance trends from a legal and business perspective. It is edited by Jim Wrathall, Elias Hinckley and Merrill Kramer. Authors are listed below. Additional contributing authors for this issue are Lily Donge of the Rocky Mountain Institute, Business Renewables Center and Rob Rains of the advisory services firm Washington Analysis LLC.

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ADVANCED CORPORATE ENERGY SOLUTIONS

Sullivan & Worcester's Energy Group offers the full range of strategic and transactional services for corporate renewable energy purchasing programs.

Our team includes industry leaders in Project Finance and PPA Structuring; Sustainability; Regulatory; Project Development; and Tax Equity Investment. We represent clients across the sector – investors, lenders, project developers, and corporate buyers – giving us the full perspective to support project success.

For corporate buyers, we offer a suite of value-added services, including early stage strategic advice under alternative fee arrangements. Please contact any of the members of our Energy Group below to discuss how we can help ensure success for your corporate renewables project.

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Sullivan & Worcester is a mid-sized full services law firm with offices in Washington, D.C., New York, Boston, and London. S&W's Energy Practice designs solutions for complex financing challenges, including the integration of new technologies and related financial innovation for the power generation industry, as well as the deployment and commercialization of advanced energy technologies and distributed generation projects.

For more on the topics discussed in this issue of EDGE Advisory, along with continuing updates and perspectives on market trends and policies, please register for S&W's blog, The Energy Finance Report: **www.energyfinancereport.com**