



Photo: NASA/Troy Cryder

This 1 MW installation at Kennedy Space Centre in Florida was built as part of a public-private partnership between NASA and the Florida Power & Light Company.

Purchasing power

Corporate energy procurement: The signing of a power purchase agreement (PPA) is a key point in the development of a PV project. Most PPAs are agreements between an energy provider and a utility, however similar agreements have been used in corporate energy procurement. Energy law experts from Stoel Rives LLP take an in-depth look at the use of corporate PPAs in the USA.

As we head into 2017, the outlook for continued growth in commercial and industrial purchases of renewable energy is strong. 2015 marked a dramatic surge in the acquisition of renewable energy from corporate and industrial customers. After the volume of corporate power purchase agreements (PPAs) in 2014 doubled all that had come before, 2015 doubled that number yet again with well over 3 GW worth of corporate procurement of renewables in a single year. The numbers in 2016 will not be a similar doubling or even likely come close to matching those

of 2015, but the conditions for continued strong corporate procurement are arguably still in place as we head into 2017.

Market support for corporate offtake

The procurement of renewable energy over the past decade has been driven largely by utility offtake. During the late 1990s and early 2000s, when electricity demand was growing steadily year after year, utilities added significant new renewables capacity to meet growing electricity demand as well as

AT A GLANCE

- After a major surge in 2015, deals in corporate energy procurement have become commonplace for the renewable energy industry.
- Energy deals with companies can provide a source of revenue for IPPs amid uncertainty over the future of utility procurement.
- Corporations sensitive to rising utility costs are seeking ways to gain more control over their long-term energy costs.

Photo: Wikimedia Commons



Microsoft's West Campus headquarters in Redmond, Washington. The company recently worked on a deal with a local utility in Cheyenne, Wyoming where backup generators belonging to a data center feed power into the grid at peak times.

to meet increasing state policy requirements for renewable generation. Today electric load growth in most regions of the United States is relatively stagnant or even in decline. In addition, many states with existing renewables targets have sufficient renewable energy online or about to come online to meet the targets – save a couple of specific outliers like California and Oregon that have recently and significantly expanded their renewable energy standards. In this market, util-

ity procurements have been less frequent and vastly more competitive, forcing independent power producers (IPPs) to offer increasingly low prices to have any chance at submitting a winning bid. Furthermore, many were looking to the federal clean power plan, now likely to be scrapped, as the main policy driver for renewable and low-carbon electricity once state portfolio standards were saturated. In an absence of climate policy and unmet renewable energy procure-

ment policies or load growth, the extent of utility procurement seems uncertain.

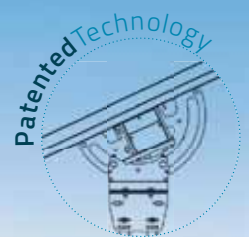
For those utilities venturing beyond any policies or regulatory requirements, some are becoming increasingly interested in owning generation and even participating in the development and construction of projects – work that under traditional build-transfer arrangements would have been the responsibility of the developer. Xcel Energy, for example, already a national leader in wind issued

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i CASE STUDY: AMAZON'S PARTNERSHIP WITH DOMINION

E-commerce giant Amazon has agreed to purchase energy from 80 MW of solar projects that will be developed by Dominion in Virginia, USA as Amazon looks to fuel 100% of its cloud computing operations through renewable energy. Many large companies are looking to clean energy to fulfill their corporate responsibility obligations, and solar is seen as a suitable energy source to fuel their operations. Amazon is one of several huge companies to have gotten on the renewable energy bandwagon in recent years, with a pledge to power 100% of its cloud computing operations using renewable energy. To achieve this goal, the company initially partnered with solar developer Dominion in 2015, through its subsidiary Amazon Web Services (AWS), to fund the development of an 80 MW solar plant in Virginia. In November 2016, AWS announced the expansion of that partnership for a further 180 MW of solar in the eastern state. A total of five PV projects will be developed by Dominion as part of the deal, including four 20 MW projects that Dominion will acquire from Virginia Solar, and a mega 100 MW project that Dominion is acquiring from Community Energy Solar. Dominion has recruited Strata Solar and Signal Energy to serve as EPCs on the projects. Dominion subsidiary Dominion Energy, has signed long-term power purchase agreements with AWS for the sale of the energy generated at the plants once they are operational, which is expected to be in late 2017. Dominion were unwilling to reveal details of the PPAs when **pv magazine** reached out for comment. "This alliance with Amazon Web Services will include the two largest solar farms in the mid-Atlantic," commented Chairperson, President and CEO of Dominion Thomas Farrell. "This solar expansion is great for Dominion, Amazon, and the Commonwealth of Virginia. It helps AWS meet its renewable energy needs, it expands

Photo: Simone Brunozi/Flickr



Virginia's clean electricity generation fleet, and it creates economic development opportunities in largely rural communities."

Amazon's strides toward clean energy

In 2014, Amazon announced its ambition to meet 100% of power for its global cloud infrastructure needs using renewable energy. Its initial goal had been to reach 40% by the end of 2017 – that has since been increased to 50%. The projects in Virginia will feed clean energy into the grid that supplies AWS data centers. "We continue to ramp our sustainability efforts in areas where availability of renewable energy sources is low or proposed projects are stalled, and where the energy contribution goes onto the same electric grid that powers AWS data centers," commented AWS Infrastructure Vice President Peter DeSantis. "By enabling 10 utility-scale renewable projects in the U.S. to date, we are well-positioned to meet our latest goal of 50% renewable energy powering the AWS global infrastructure by the end of 2017." On the Dominion side, once these projects are completed, the company will have an operating solar capacity of 1,400 MW, of which 434 MW are in North Carolina and Virginia. One of the latest Dominion projects to go online, which was also as part of its partnership with AWS, was an 80 MW solar plant in Accomack County, Virginia.

perhaps one of the largest requests for proposal (RFPs) for renewable energy in the country this fall – seeking up to 1.5 GW of wind generation as part of its resource plan, well beyond any existing state portfolio requirements. While the RFP sought traditional PPA and build-transfer bids, Xcel Energy is also seeking approval of up to 750 MW of self-build wind projects.

Meanwhile, the longer-term tax credit extension passed at the end of 2015 creates an important window to develop low cost renewable energy. Wind and solar prices have been dropping dramatically for years, with wind now being scheduled first in certain markets due to its low cost. Thus, for the foreseeable future, commercial and industrial entities will have the

opportunity to save money while fulfilling corporate climate and sustainability policies. This then also provides a significant alternative market for developers willing and able to adjust to the different market and financing terms at a time when policy driven markets are uncertain.

Corporate offtake vs utility models

In certain cases, these arrangements might include a power purchase agreement, where the company essentially takes the place of the direct buyer of the power and the parties arrange for transmission of that power to corporate load. In these cases, given long-term uncertainty over electricity rates, the corporate buyer may be willing to negotiate

slightly higher costs per kilowatt hour in exchange for a shorter contract term. The ability to enter into a direct PPA is related to the particular state regulatory scheme. States that grant utilities – traditionally seen as natural monopolies – exclusive franchises to serve customers may preclude direct sales of power to a retail customer in the utility's service territory.

In many cases the parties may agree to some version of a virtual PPA. The many forms or names a virtual PPA can take include a contract for difference, hedge agreement, or swap transaction. In any case, the basic idea is that the generator sells the power into a competitive marketplace (e.g. regional independent system operator) at market-based rates and the corporate buyer buys power directly from the marketplace. The two parties agree to a fixed price to be settled at a known hub or trading point. This reduces variable price exposure for the developer and its financing parties, and may provide a hedge against volatile energy prices for the corporate offtaker. The renewable energy certificates associated with the generation may be built into the deal or sold separately. Discerning how this can best be done where either the buyer or seller or both are in a traditionally regulated market requires great care to be given to the specifics of the transaction, in light of the particulars of the way utilities, their service territories, and limitations on electricity sales are regulated in that state.

Another option, particularly for traditionally regulated states, is through the use of a green tariff or agreement that keeps the utility directly involved. Here a customer enters into a renewable energy contract with a utility for a particular generation facility, with the utility acting as the intermediary between the customer and the developer. The utility purchases energy from the developer and sells it to the customer for the same time period and price, with the customer also paying the utility transmission and distribution rates along with other associated costs. Sometimes utility tariffs can be modified to support such transactions. The facility can be owned by the customer, the utility, a developer, or a combination of those parties. One challenge here is to seek utility tariff changes or contractual arrangements that support cost savings for the customer and actually facilitate such transactions.

Corporate procurement in 2017

Technology companies like Google, Facebook, Yahoo, Microsoft, and others have been the primary drivers of corporate energy procurement – often seeking sufficient energy and capacity to power their data centers that also meets climate and sustainability goals. Unsurprisingly, the ability to make arrangements to accommodate both of these needs at relatively low cost has affected the locations where such companies elect to site their data centers. Early deals were primarily sited for new load in places with deregulated markets, where fundamentals made structuring more straightforward.

In 2017, an eye should be kept on more traditionally regulated markets, established large load customers, and terms of the deals that solve concerns for both the utility and customer. First, many of the traditionally regulated states are attractive places to site new load where utility price structures make for compelling economics, significant renewable energy resources, and low costs of labor and land. Data centers almost always include significant backup generation capacity that could prove useful to the utility as well. Microsoft, for example, recently worked on a deal with Black Hills Energy in Cheyenne, Wyoming where the utility would have direct access to the backup generators at the data center to feed in power during peak events on its system. This arrangement helped the utility avoid building a costly new power plant to accommodate the data center in a location that otherwise was not seeing load growth. The arrangement also helped overcome perceived barriers for renewables deals for existing load, due to addressing for the state utility commission the perceived risk of shifting costs to other ratepayers.

In addition to new entrants to traditionally regulated states are the established large load customers in those states. In an increasingly global marketplace, many of these customers are extremely sensitive to increasing utility rates and may seek various avenues to allow greater control over long-term energy costs. These customers are numerous, their load is extensive, and either aggregated or individually, they may be the new frontier for corporate procurement of renewable and low carbon energy. ♦ Jennifer H. Martin, Sara E. Bergan and Andrew P. Moratzka



Photo: Joey Rozier/Flickr

A 1.6 MW PV installation on Google's headquarters in Mountain View, California. The corporation has stated that from 2017 all energy for its offices and data centers will be procured from renewable sources.



Photos: Stoel Rives

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