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How To Economically Buy Renewable Power When You Don't Need An Entire Wind Farm

A Discussion Paper: Sharing Ideas and Options

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Executive Summary

This paper briefly describes a novel way for companies to buy renewable electricity by paying for a slice of the power generated by recently built wind or solar facilities. It also explains how the variable output from such generators can be balanced with power from other sources to provide a “firm” and reliable around-the-clock supply of zero (or very low) carbon electricity to the end-user.

This innovative way for companies to “go green” has been pioneered by Renewable Power Direct (RPD). It is available today. It greatly simplifies power procurement. It includes Renewable Energy Certificates (RECs). And it is economical because it does not require either up-front corporate financing or a long-term power purchase agreement (PPA) to fund new construction. Instead, RPD’s approach uses short-term power contracts with the term and volume sized to a company’s needs.

- *Gregory Staple & Peter Weigand**
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Introduction

We’re excited that companies such as Google, Apple, IKEA, and others have made commitments to 100% renewable energy by contracting for the entire output of a large utility-scale wind or solar project. The list of companies that would like to do the same is growing rapidly. Yet, only a small number of companies have the load (or balance sheet) to justify buying the full output of a wind farm or large solar array.

What practical options exist when you can’t buy the output of a whole wind farm? What should other companies with an appetite for renewable electricity do?

This paper explores several possible answers drawing upon discussions with both generators and end use customers that have expressed an interest in solving the “less than total wind farm” dilemma.

* The authors are, respectively, the Chairman and COO (Acting), of Renewable Power Direct (RPD), a FERC authorized wholesale power marketer focused solely on providing green electricity directly to customers.

We Hear You

During the last year, we have met with many prospective customers and attended numerous conferences, seminars and workshops that have brought together buyers and sellers of renewable energy. RPD is also a founding member of the [Business Renewables Center \(BRC\)](#) organized by the [Rocky Mountain Institute \(RMI\)](#).

We have been doing a lot of listening and this is what we have heard: The great majority of potential green power customers, including even fairly large companies, cannot afford and generally don't need the output of a whole off-site wind farm or utility-scale solar facility. Rather, this is what they want:

- A. Smaller volumes of renewable power sized to their load profiles
- B. Shorter contract terms (generally less than ten years)
- C. Regional supply connected to the electricity grid where their facilities are located
- D. Simpler "retail-oriented" supply contracts, not utility-style PPAs
- E. Firm quantities of power (with no risk of variable generation)
- F. Pricing that is on par with grid-electricity (i.e., brown power + RECs)
- G. The ability to "go green" in the near term (no construction risk or financing delay)
- H. Accountability and transparency for greenhouse gas (GHG) reporting
- I. Contracts that expand the supply of renewables (additionality)
- J. The ability to tell their renewable story (reputational and marketing benefits)

Conversely, this is what renewable project developers say they want:

1. PPAs of at least 12 years to secure project financing (15 or 20 years is better)
2. The PPA must have 100% volume off-take at the bus bar (F.O.B. the Wind Farm) with hourly variable generation risk to the buyer
3. The option to sell RECs separately in compliance markets (i.e., premium pricing)
4. Generation contingent on construction with delivery in 1-2 years (or more)
5. A single customer (developers generally do not aggregate demand)

Clearly these two lists do not match.

What are the Customer Options?

Closing the gap between what customers want, when they can't buy the full output of a large new wind or solar installation, and what developers say they need to bring such facilities to the market, requires innovation. The options being discussed are generally different in regulated (utility-served) and competitive markets. They include:

1. Customer-based aggregation to contract for utility-scale projects;
2. Using an anchor tenant to finance a large project (with output shared with “sub-tenants”); and
3. Creating new utility-based shared renewable tariffs (in markets without open access).

These options all have some merit, but for the most part, they are all still at the discussion stage or are only available in a handful of markets (e.g., where state regulation permits). Hence, after briefly reviewing each of the options identified above, this paper concentrates on a fourth alternative from RPD that can be implemented today and meets the needs of customers that do not want to buy an entire wind farm.

Closing the gap between what renewable power customers say they want and what developers say they need requires innovation.

Option 1: Customer-Based Aggregation

The solution sounds simple enough: Get several customers to share the output of a utility grade renewable project on the same contract terms. That's attractive in theory, but in practice we believe it will be very difficult to make this approach work. Persuading a group of disparate corporate procurement, finance and legal departments to agree on mirror terms for a long-term PPA is likely to raise innumerable legal, business, accounting and financial hurdles.

The lack of standard PPAs that fit end use customer needs has made it difficult for prospective corporate buyers to get up the learning curve, and to develop a common understanding of deal terms and structures. Knowledge sharing is progressing based on the work of the Business Renewables Center and like initiatives. But much remains to be done.

To date, aggregating customers generally is not what renewable development companies do. Most developers are not staffed to tackle the process as their core business is building wind farms or solar arrays, and selling the output either into the wholesale market or to a single long term PPA buyer.

At some point, and hopefully in the near future, the option may be facilitated by one or more third parties that are willing to step in as a pool managers or aggregator. The manager would likely require some compensation for overseeing the aggregation process and spending the time and money to make it work.

Absent a pool manager, however, multi-company renewable energy PPAs, such as the [parallel transactions recently negotiated by three Washington DC-based buyers](#), are likely to be the exception rather than the rule.

Option 2: The Anchor Tenant Concept

This concept was introduced at a May 2015 BRC workshop. The idea is based on having a very large buyer, such as a data center operator or national big-box store, as the anchor tenant that meets the renewable developer's basic finance, credit, and contract terms. The anchor tenant would essentially underwrite the deal and then invite smaller corporate buyers to join in the project as subsidiary off-takers, acting like subtenants.

We hope this concept works. However, we suspect that relatively few prospective anchor tenants will actually wish to be in the renewable power aggregation, transaction management and credit business. These businesses require regulatory authorizations, power market trading, settlement and billing systems, and a number of other wholesale marketing capabilities.

Again, most of these services could be outsourced to a "pool manager". And, as with the customer-based aggregation option, an outside manager would likely require compensation for recruiting corporate buyers and overseeing the pre and post purchase mechanics (i.e., accounting, reporting, generator and buying pool coordination, etc.).

In sum, this is a new and promising concept, but with much to be sorted out.

Option 3: Utility Renewable Tariffs

In regulated markets (i.e., where retail competition is not permitted) life would be much easier for companies if utilities simply offered tariffs for purchasing load-based amounts of renewable electricity on flexible terms.

To date, only a handful of utilities (notably in Virginia, California and North Carolina) offer such tariffs and **even those have shortcomings**. This lack of workable renewable tariffs has led over **30 companies to team with two major NGOs** to lobby for better and more widely available utility options. Efforts like this are reminiscent of the fight for retail choice in the 1990s. It took almost 10 years of lobbying state legislatures, utility commissions and lots of pressure from customers. And the results are still limited to roughly half the market, leaving many customers without a real choice of power suppliers.

We hope that this will change and that the campaign for more flexible buyer- and developer-friendly green tariffs will gain momentum and lead to workable programs in a score of states. But, in the meantime, green buyers need better choices.

The RPD Solution

Rather than trying to pool the future demand of business customers to finance a new project, RPD starts by satisfying the existing demand of customers by re-purposing the capacity of recently built (but under-utilized) wind and solar facilities. RPD's approach involves a two-step process:

- **Step 1:** RPD subdivides the output of the facilities into multiple contracts for varying amounts of power based on the buyer's load and desired contract term.
- **Step 2:** RPD works with customers to negotiate follow-on agreements for additional renewable supply, thus converting the demand for the first set of contracts into a financial bridge for new wind and solar projects.

This two-step approach has multiple benefits for buyers, not the least of which is that a buyer can quickly switch from grid power to green power and reap the associated economic and environmental benefits. This can be done without waiting for a new project to come online or having to contract for the full output of a project.

RPD's solution is based on subdividing the output of existing generators using contracts of varying volume and length.

RPD's approach also works in both open competitive markets (where retail choice is permitted) as well as closed (utility-only) markets. As explained below, in the first type of market, the option is based on a physical power contract because the power can be directly delivered to a customer (or its

retail electricity provider (REP)). In closed markets, a virtual power contract can be used (such as a [contract for differences approach](#)) with the power sold to a wholesale grid on the buyer's behalf, and the proceeds used to offset the cost (and the carbon) associated with the customer's utility-based power consumption.

How Step 1 Works

To implement this step, in competitive markets, such as Texas (ERCOT) or the mid-Atlantic states (PJM), RPD contracts for existing utility scale renewable supply (together with the associated RECs) from sites that are currently selling the power on a merchant basis. There is currently over 2,500 MW of operating merchant renewable supply in the U.S.

Merchant means the renewable energy is sold into the wholesale market (the markets managed by ERCOT, PJM etc.) on a daily/hourly basis with the generator being paid the hourly clearing price. These are the same wholesale markets that retailers buy power from in competitive jurisdictions and the clearing prices for renewable power (excepting the RECs) is the same as for fossil-based generation.

Second, RPD subdivides the wholesale merchant energy (and RECs from the same renewable source) into commercial blocks based on customer requirements for volume and length of contract. There are several delivery options for customers using this method:

- In open markets the renewable power can be delivered directly to customer locations via a REP. If the customer wishes, RPD will arrange for its retail partner, XOOM Energy, to provide retail services, including delivery of the renewable power. In either case multiple locations in the same geographic region can be aggregated. Customers also can select what percentage of renewables they want with RPD supplying the wholesale renewable power and the retailer sourcing the balance of the supply from other wholesale providers. This generally is workable even if the customer wants 100% renewable power because, in large regional power markets, some renewable power is typically being generated even if a specific wind or solar facility is inactive.
- In closed (utility-based) markets, a contract for differences approach can be used. This type of virtual power contract can be used to acquire and resell power into the wholesale market on a buyer's behalf. The length of the term and/or the volume is customizable, and this approach can provide a hedge against rising utility rates; environmental benefits are also available because the power contract includes the purchase of associated RECs.

RPD also uses the wholesale market to reduce the risk associated with the variable generation of wind or solar energy. It does so by working through its wholesale services and scheduling partner, [Tenaska Power Services](#), one of the nation's largest energy traders. Tenaska ensures that the electricity product a buyer receives is firm and reliable because any dedicated renewable generation has been balanced, as needed, with other power sources.

How Step 2 Works

Once customers have begun to use renewable power from existing wholesale sources, they can transition to a new project when adequate demand in the same market is aggregated into a pool of purchases that justifies a bigger new project. The transition also can be facilitated by selling the unexpired portion of an initial contract back into the wholesale market.

Because RPD has already assembled the customers and blocks of electricity demand, it is in a unique position to leverage this purchasing power with new project developers. That provides additional customer benefits. In addition, RPD can look to Tenaska to review and underwrite the overall credit requirements necessary to secure a new project; Tenaska can also manage the wholesale delivery (power scheduling) on behalf of a customer pool.

How Does the RPD Solution Fit Customer Requirements?

Let's step back now and see how RPD's two-step approach to delivering green power to buyers meets each of the requests that we listed at the outset of this paper (recall page 3).

A. Smaller Volume Sizes

- Smaller volumes aren't an issue because the wind farm (or solar array) already exists. There is no minimum volume such as that needed to justify a new build.
- An existing wind (or solar) generator can sell a variety of small volumes as they are simply switching from merchant sales to term sales with corporate buyers.

B. Shorter Contract Lengths

- Unlike new projects where longer (15-20 year) terms are needed to justify financing, existing wind farms don't need long term off-take contracts.
- Terms from 2 to 10 years can be negotiated that fit corporate risk appetite and procurement policies.

C. Regional Supplies Matching Customer Locations

- There are hundreds of megawatts of merchant generation in most of the nation's competitive power markets (ERCOT, PJM, MISO, NEISO, CAISO).

- For locations without retail competition, a contract for differences can be utilized. Such contracts are also standard in the wholesale power industry and do not involve many of the construction and performance issues associated with PPAs.

D. Simpler Contracts

- Merchant generators sell power into the wholesale market using the same industry standard purchase and sale contracts based on a format agreed by the Edison Electric Institute (EEI). Unlike PPAs, this leaves only a few deal-specific terms to be negotiated (e.g., price, volume, delivery point).
- These standard wholesale contracts, in turn, make it easier for RPD to offer a simplified power purchase contract to an end-user or its REP.

E. Firm Quantities

- RPD uses a wholesale scheduling partner (Tenaska) to reduce the traditional output risks associated with solar and wind generation, which are intermittent resources. Tenaska has the ability to take the power F.O.B. the project busbar (which generators want) and convert it into firm quantities for retail delivery by sourcing balancing electricity in the wholesale markets and through other hedging activities. This eliminates volume risk for customers.

F. Economic Parity with Brown Power + RECs

- Wholesale competitive markets price all sources of power generation – fossil and non-fossil – alike. That makes it possible for RPD to price renewable contracts at parity with other customer procurement options.
- Many customers do not wish to use RECs as a stand-alone solution for greening their electricity supply. As explained below, RPD typically offers customers bundled or “current RECs” derived from the renewable energy they are also buying.
 - Historically, many retail marketers or REC brokers have sold “vintage” RECs to “green up” a buyer’s brown power. The problem with vintage RECs is they may not be tied to a specific generator and also may have been resold by the original buyer.
 - RPD, in contrast, offers buyers “current RECs”. These RECs are derived from the same generation source used to meet the buyer’s power requirements and are produced during the same time frame (and, hence, “current”).
 - In some markets RECs are priced at a premium because utilities are also required to own a certain number annually to comply with state Renewable Portfolio Standards. In these markets, customers may elect to forego the use of current RECs and/or substitute alternative RECs.

G. The Ability to “Go Green” Quickly

- RPD’s approach lets customers buy renewable electricity right away. This provides immediate benefits to corporate customers with sustainability goals that are balanced with P&L responsibility. With power prices at or near historic lows, renewable power prices can be hedged on attractive terms while wholesale market prices are favorable.

H. Accountability For Carbon Reporting

- RPD’s approach delivers customers current RECs produced month-by-month along with the renewable power. Because the power is typically sourced from recently completed merchant projects, these RECs also meet Green-e or equivalent certification standards and hence have the same environmental reporting benefits as a new project.
- To assure transparency, the power purchase contract can also provide for express identification of the renewable source behind the contract.

I. Contracts That Drive Additionality

- Although Step 1 may not as clearly increase the supply of green power today, it provides a superior alternative to the common practice of relying on short term unbundled REC purchases to “green” brown power purchases. Moreover, Step 2 results in direct additionality.
 - Industry experts **have long questioned** the efficacy of unbundled REC sales on new project development. In most cases, REC sales provide a very small portion of a renewable generator’s revenue (generally less than 2 percent), and investors and lenders thus place little value on REC sales absent a long-term energy contract.
 - The more term contracts a merchant generator can sign (for both power and RECs), the stronger its balance sheet and the more financially able it is to expand its business and fund incremental new facilities.
 - Under a term contract, a corporate buyer can negotiate to change out the source of its supply with a generator, and switch to a newly built facility. RPD can also facilitate this by pooling customer demand. For example, Acme Data Company could sign a 5 year renewable power purchase contract for a 3 megawatt load in the PJM market at a fixed price. In year 3, the generator opens a new (additional) wind project through aggregation. Acme then signs up for the new project and at the same time sells the balance of the existing contract into the wholesale market.

J. Reputational Benefits: A Strong Story

- Finally, RPD’s customized renewable power products provide companies with a sustainability message that can enhance its brand and corporate reputation. In addition

to power and RECs, RPD negotiates with each merchant power supplier to obtain branding rights.

- The branding rights typically include the right to promote and market the specific source of a customer’s renewable supply in a variety of ways, such as:
 - live-stream images from the renewable site
 - real time production data that can be displayed via an on-line “dashboard”
 - the ability to conduct site tours
 - the ability to place corporate signage on the generator’s site

Conclusion

The interest of corporate America in directly purchasing renewable electricity is plainly growing. And, as the market develops, new options for aggregating customers will arise. But that will take time. Buyers that cannot “buy the whole wind farm” still need alternatives to meet their energy security and sustainability goals.

We think the RPD Solution can help. It works today and can be implemented fairly quickly for most companies. The customer can buy:

- just the amount of renewable power they want
- for as few or as many years as desired
- by geographical location
- at economical prices with current RECs
- with an option for physical or virtual delivery (via a contract for differences)
- the ability to convert from merchant to newly built projects, and
- with branding rights to provide a strong marketing and sustainability story.

For further information about what RPD can do for your company, please contact us. We also welcome your comments and suggestions on this paper.

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