Fundamentals of PPAs

Lessons from a Multi-Buyer, Utility-Scale Solar Purchase

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REM Conference

December 3, 2014

Customer First
Renewables

Customer First Renewables

CFR is a Different Kind of Supplier: A *Renewable Energy Integrator*

Our Business

We deliver the benefits of competitively and predictably priced green electricity <u>directly to large customers</u> without the challenges of owning and operating their own renewable energy assets

We…

> manage the entire process of procuring renewables from strategy to operation

> look at all pieces of the puzzle—not just the PPA price

> integrate strategy and real-world execution in a turn-key manner

> are objective, transparent and technology neutral

> have no financial interest in any project or company

Solutions can be Delivered Virtually Anywhere

Onsite

> On customer site
> kWh used by customer
> Offsets utility power needs
> Excess kWh sold to utility
> Customer gets RECs

Direct Delivery

> Near customer site
> Some kWh used by customer
> Excess kWh sold to others
> Customer earns kWh revenue
> Customer gets RECs

Indirect Delivery

> Solution located anywhere
> All kWh sold to others
> Customer earns kWh revenue
> Revenue offsets local bill
> Customer gets RECs

> Under a PPA, the Seller is obligated to sell all or a clearly defined portion of the output of a specified renewable energy (RE) plant to Buyer, subject to certain limitations (e.g., transmission outage)

> Seller's PPA obligations need to be backed up by Seller security or guaranty

> Seller owns the RE generation plant and should be at risk if the plant fails to generate for other than specific reasons (e.g., Force Majeure)

> Risks need to be allocated between the parties, particularly transmission congestion, curtailment, negative pricing in the market and other grid system costs, some risks are often buried in the definition of Force Majeure

> PPA can be structured with or without customer receiving RECs and other attributes such as capacity

> Retail supply is a key part of the equation and needs to be considered alongside any direct-to-consumer PPA (assuming the Seller generator is not providing retail supply)

Source: CFR

Customers	• 2 major mid-Atlantic universities (GW, AU) • 1 major university-affiliated hospital (GWUH)
Their goals	• Establish RE solution to offset GHG and save money
Starting point	• Urban footprint, ~260,000 MWh combined use • Small on-site PV and cogen • Located in deregulated market (PJM) • Above-average power costs
Expected impact	• Supply 50% of each customer's needs with RE • Reduce electricity-related GHG by 50% • Substantial NPV cost savings relative to brown power • Largest US PV project east of Mississippi • Located in PJM portion of North Carolina
PPA Characteristics	• 20-year term, fixed price (no escalator), unit contingent
Process steps and time	• 2 year process between initial strategy and contract • First phase COD 6 months after contract signing
Organization involvement	• Senior decision makers on board early

Source: CFR

Challenge

1. Lack of awareness of RE options and means of achieving

2. Resistance to making long-term commitments

3. Organization anxiety

4. Inertia in current process and approach

5. Multiple points of inefficiency and lack of transparency across electricity value chain

How to Overcome

> Do your homework and draw on RE experts with execution experience

> Understand the significant risk of BAU and how RE mitigates that risk

> Get senior support early on, leverage benefits of partnership

> Understand how the organization makes decisions, and set up the right working and senior level teams

> Ensure prices are comparable and assumptions are clear; don't accept "the way things are" – innovate

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Maximizing the Value of Renewables for

Large Businesses and Institutions