Synthetic power purchase agreements
What can we learn from the US market?
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Abstract

With phase-out/lightening of subsidies for onshore and offshore wind in some European countries in recent years, an increasing number of wind farm developers and owners (Independent Power Producers or IPPs) are turning to corporate and institutional market power purchase agreements (PPAs) as an alternative route to market to secure financing. C&I PPAs are less established in the European market compared to the US where the market is more mature with a variety of PPA instruments and structures available to stakeholders.

With the C&I PPA market becoming increasingly vibrant in Europe it is expected the market may move towards adopting some of the more complex C&I PPA structures used in the US. With multinational corporations like Google and Apple providing C&I PPA contracts in Europe, many of the risks observed in such contracts (which are greater than that observed in a typical utility PPA in some respects) in the US would be relevant to contracts in Europe as well.

This paper explores key lessons learnt from the US market in understanding and managing the key technical risks lenders and investors will be exposed to under these agreements, with a particular focus on synthetic PPAs, and whether these lessons are relevant in a European context. Three electricity markets are considered here – the U.K., Netherlands and the Nordic markets.

Sleeved vs. Synthetic C&I PPA structures

Under a sleeved structure, an intermediary such as an electricity supplier facilitates delivery of power from the generation site to the Corporate Offtaker’s site through a back-to-back supply agreement between the Corporate Offtaker and the intermediary.

- **Sleeved structures** are simpler structures, and are covered by complex contracting arrangements between the IPP and Corporate Offtaker.
- Energy supplied is restricted to a specific site of the Corporate Offtaker.

**Synthetic PPAs** are in essence a form of hedge where the parties buy and sell energy on the wholesale market (either directly or through a supplier as the local regulations may require), with a separate PPA between the parties providing the price security.

- **Synthetic PPAs** are structurally more complex, but are governed by simpler contracting arrangements between the IPP and the Corporate Offtaker.
- The structure allows for flexibility in the number and location of loads supplied.

Top three technical risks in Synthetic PPAs (cont…)

2) Offtaker-driven curtailment

Corporate Offtakers in the US typically retain rights under the PPA to be able to specify that no PPA settlements shall occur if the market price falls below a defined floor price – so-called negative price. Although this is not a physical curtailment instruction, such economic curtailment can have a notable impact on project cashflows. The allocation of risk between the parties in these instances is a key negotiation point in C&I PPAs, and in cases observed in the US, economic curtailment is not able to be triggered by the Corporate Offtaker until a negative price threshold is reached where it is no longer economic to operate the project taking into account the value of any remaining Tax Credits received. This allocates more risk to the Corporate Offtaker from negative price events.

Curtailment compensation mechanisms shall also be included which can provide some mitigation against negative impact to project cashflows, where compensation for curtailed generation is paid at the full or a fraction of the contracted energy price. Such compensation mechanisms may set provisions where the risk of lost revenue from economic curtailment is borne by one party (can either be the IPP or the Corporate Offtaker) until a defined curtailed generation threshold is reached, and thereafter the risk is borne by the other party. Investors and lenders will need to assess the allocation of risk between the parties, and whether, where possible, within the PPA negotiation stage seek to include compensation mechanisms to mitigate the risk to project cash flow.

The U.S. (Great Britain) Netherlands Nordics

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<th>Offtaker-driven curtailment</th>
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<td>Typically, financial contracts used for price hedging use the price index in the Nord Pool day-ahead market as the reference price for settlement.</td>
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<td>There are several bidding areas in the Nord Pool market, and physical energy delivery is settled against the price applicable in the bidding area the IPP is connected to. The difference between the bidding area price and the system price introduces a basis price differential, and this differential varies across bidding areas depending on the underlying contracts in the network. Financial contracts such as EPRAs are available in some Nordic countries which may be used to manage exposure to basis price differential.</td>
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3) Performance and delivery guarantees

Corporate Offtakers have been observed to require higher level of delivery guarantees compared to utilities, and these guarantees typically take the form of time-based energy availability guarantees with guaranteed levels observed to typically range between 85%-90%, and in some cases up to 95%. Some agreements may also require minimum annual energy delivery guarantees, where wind variability is risked to the IPP.

Lenders and investors will need to assess the risk of exposure to liquidated damages which is generally subject to a liability cap, and its impact on project cash flows particularly in a low wind year which compounds the impact of reduced revenues received during that year. The availability calculation mechanism and allowed exclusions are subject to detailed scrutinisation to establish the risk allocation between the parties, such as, treatment of any outages or curtailment initiated by the network operator for system security and stability reasons and whether this is excluded from any availability calculations. Also, where variable energy references are used in energy-based availability guarantees, it is imperative to assess the robustness of any transfer function used to estimate the undelivered energy as well as details of back-up measures in the event of failure nacelle anemometry.

Availability warranties provided by O&M service providers may provide some level of back-to-back protection against avoided delivery damages. However, we do not recommend a single worst-case revenue from curtailment and PPA liquidated damages payments. Operating reserves and securities such as letters of credit have been used in the US to mitigate against the risk of downside case impact to project cashflows.

Performance and delivery guarantees are not a typical feature of PPAs typically seen in the GB, Dutch and Nordic markets for wind generation, and therefore is imperative to assess the downside impact to project cash flows in detail.

References

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2. TenneT, Market Review 2016, dated March 2017

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