

EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT WIND POWER PURCHASE AGREEMENTS

Greg Rainey & Todd Kantarek

Sargent & Lundy LLC | Consulting



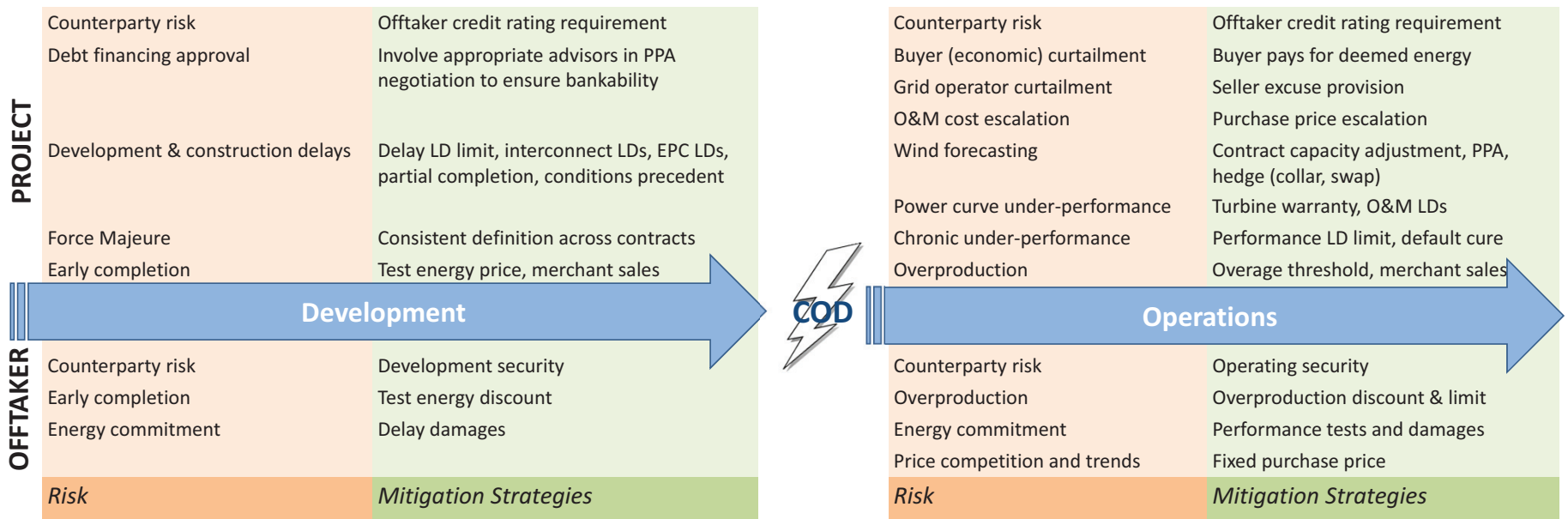
Abstract:

There are a wide variety of terms and conditions used in power purchase agreements for wind projects. The differences stem, in part, from purchaser preferences, state and regional differences, and different technical capabilities of projects. This presentation will describe key differences in such terms as: contract rates, pricing escalation, annual energy requirements, curtailment, forecasting requirements, plant performance requirements, testing and metering, and defaults and remedies. Changing certain terms is a zero-sum game; in other words, the seller's gain results in the buyer's loss, and vice versa. However, this is not the case for all terms; there are certain aspects in which both parties can benefit and this presentation will provide examples of these. Negotiating a power purchase agreement is a challenging task, especially given current market conditions. Understanding the range of power purchase agreement differences can help sellers and buyers of wind power establish reasonable, sensible, and mutually beneficial agreements.

Methodology:

Sargent & Lundy reviews many wind PPAs every year and is in prime position to detect industry trends. For this presentation, data and trends were picked out of Sargent & Lundy's database of wind PPA terms. Data selected for this presentation are representative of U.S.-based utility-scale projects with capacities between 70 and 250 MW and built between 2011 and 2014. Representative offtakers represent a mix of public utilities, investor-owned utilities and cooperatives. While the data sample is only a fraction of the PPAs in place today, we believe it is representative of the trends in PPA terms occurring around the country.

"Wind PPAs are a battleground over the cost of risk"



Current PPA Term Trends

Contract Term	What is it?	Recent trends	Representative data
Term	Total contract length	Most commonly 20 to 25 years	Average duration is 23 years
Price	\$/kWh paid for delivered or deemed delivered energy	Price is often the negotiated lever for relatively inflexible set of key utility PPA terms	1 st yr fixed price premium is 180% Avg. escalation is 2%/year 13% of PPAs are adjustable
Performance LDs	Damages due to offtaker for under-performance of the project, usually defined in terms of availability or production	Required performance is usually defined as 70-85% of full availability or P50 production with damages linked to the replacement cost of energy.	Availability requirements average 82% Production quantity requirements average 81% of P50
Delay LDs	Damages due to offtaker if delays are incurred	No significant correlation with project size or contract price is evident in the data.	Daily delay LD summary (\$/Day):
Excess production	Energy production over the PPA contract quantity may not be purchased at the full contract price	Above a threshold of 110-120%, the contract price is reduced by 0-50% in about 47% of cases. In many cases, the project will have the option to sell excess energy to the spot market.	Average excess threshold: 116% Average excess discount: 61%
Test Energy	Energy production during the development stage (pre-COD)	Test energy is often compensated at a discount, often at the same rate as <i>excess production</i> .	Average test energy discount is 32%
Development Security	Secures offtaker's claim to delay LDs	Securities are usually secured by a letter of credit or guarantee. The development may be covered by the Operating Security. Development securities often coincide with the Delay LD limit. Observed correlation with project size is limited.	Average development security is \$6M
Operating Security	Secures offtaker's claim to performance LDs		Average operating security is \$16M

PPA terms vary considerably from project to project, but are usually highly consistent for each utility

Take-aways

Key 'win-win' approaches that generate value for both project and offtaker:

- Engage appropriate advisors to ensure the PPA is bankable to avoid re-negotiation during project financing.
- Invest in a bankable wind assessment to reduce production uncertainty.
- Negotiate performance requirements that are realistically and consistently achievable given the project's wind resource and capabilities.