Understanding and negotiating PPA's in the new world of energy trading

PPAs | Power purchase agreements are a constantly evolving sector, with new structures and styles emerging as the solar sector matures. Pexapark's PPA transaction manager Amanda Niklaus takes a look at how these agreements are being tailors to fit the "new world".

The Los Banos solar farm in California, US.

In 1597, Sir Francis Bacon, an English philosopher and statesman, who served as Lord Chancellor, noted in his work *Meditationes Sacrae* that "knowledge itself is power". That was a long time before what we now refer to in the sphere of renewable energy as the "old world" of feed-in tariffs.

But as renewable energy enters a new, post-subsidy world, it seems pertinent to adjust that famous saying – coined by Bacon – for a 21st Century context where, actually, in renewable energy, acquiring knowledge before producing power is what's imperative. For, the acquisition of knowledge and access to sound data are now critical to anyone involved in buying or selling renewable energy and managing risk.

Power purchase agreements (PPA) are becoming the norm when it comes to managing investment risk in the increased absence of feed-in tariffs and as the energy market undergoes the next stage in its evolution. But before we delve into the intricacies of PPAs and negotiating them, it is key to remember that a PPA is only as good as the energy risk management strategy for a portfolio – the knowledge, evaluation and action to mitigate risk - that underpins it.

So what do investors need to understand about PPAs now, as we emerge from a market underpinned by feed-in tariffs? How are PPAs evolving and should negotiations and PPA origination

Credit: Ab Inbev.

Earlier this year Budweiser revealed its UK operations were solely powered using renewables, aided by solar PPAs in the country.

be approached now? What knowledge of risk and contract negotiation is required? And how can the necessary data and information be acquired?

An end to feed-in tariffs

For over a decade, the sun has shone unrelentingly on the global solar market. The industry has seen the levelised cost of energy (LCOE) generated by photovoltaic panels come down from US$1.61 per watt in 2011, to just US$0.16 cents per watt in 2020, leading the International Energy Agency to dub solar the "cheapest… electricity in history" in its World Energy Outlook Report in 2020.

With the climate emergency rightly becoming the world's number one priority, net-zero targets are being set by governments and businesses across Europe and the world. This has led to huge uptake and demand to install solar arrays, and investors have grown in confidence when it comes to managing any previously perceived risk around solar.

But much of this confidence and exponential growth has been fuelled by feed-in tariffs, which have also helped in driving down the cost of solar energy. And as has been well documented, those subsidies are being phased out, particularly in more established markets. In the EU, subsidies are all but extinct.

This means that developers and investors are now significantly more exposed to highly volatile power markets in a post-subsidy world. A prime example of this is the recent increases in the cost of raw materials for solar components, which has caused the trend of falling LCOE from solar to plateau, injecting just a little more risk into a marketplace that has generally been a safe bet for investors until now.

That's not to say that interest from lenders doesn't remain high; energy transition industries secured over US$500 billion of investment globally in 2020 according to statistics from BloombergNEF. Three-fifths of that (US$303.5 billion) went to renewables. And the outlook for the next decade and beyond is for continued growth in solar.

But the difference now is that future growth will come against the backdrop of a rapidly changing energy market. And for solar project investors and developers, that means taking on new risks – including more exposure to power price – and using deal structures with which they may be unfamiliar.

It's at this point that PPAs come in. Owners and investors increasingly see PPAs as the key to taking their project to financial close – and across Europe, around a dozen PPAs covering the production of thousands of MWh of energy are being agreed every month.

The emergence of PPAs

PPAs have become more prevalent, not just in the solar industry, but across renewables.

The removal of subsidies means that there is less financial security for lending institutions, such as banks, to invest in a renewables project. As a result, lenders require a way to secure their investment and PPAs are successfully doing that by proving that the concerned renewable asset has already found a long-term buyer at a fixed price.

PPA contracts thus enable renewable investment by providing revenue certainty to investors and lenders in unsubsidised markets.

In recent years, various forms of PPA have emerged. Among them are physical PPAs, which refer to the purchase of energy at the meter point (the reception point of production). A physical PPA customer receives the physical delivery of (or title to) the energy through the grid.

And then there are financial PPAs – also referred to as "virtual" or "synthetic" – which allow a company to buy renewable energy virtually. There is no need to own the title of physical energy and it enables companies to focus on reducing their carbon footprint, by receiving renewable attributes. These "green" additionalities allow a credit link between the purchaser and the renewable asset owner and will not impact the source of energy consumed by the purchasing company. This form of PPA is proving popular in the USA, but is favoured less in Europe, because it is treated as a financial product within accounts, and companies may not be willing or ready to handle that.

Both are complex in their structure and pricing. Overlooking or inadequately negotiating a contractual clause can impact the overall revenue of a PPA. This necessitates a thorough understanding of energy risks, valuation and negotiation.

It might seem obvious, but investors and project owners need to ensure that PPAs work for them. That means forgetting standard, carbon copy agreements and honing in on specific requirements. This can be done by giving careful consideration to four key areas before embarking on the PPA process.

Tailoring a PPA

Firstly, thought should be given to the intention of the PPA. Generally speaking, PPAs are used for providing revenue certainty that gives confidence to lenders, hedging against future power

price risks, managing risks optimally in a portfolio or optimising revenues and hedges.

This means that PPAs fall under two main types: bankable PPAs, and PPAs that are focused primarily on optimisation of project risks. Whether a PPA is bankable will impact on its length (or tenor), how it is structured (risk allocation) and counterparty risk.

Bankable PPAs will likely have to be of a certain length, and banks often have specific requirements around certain structures, specific terms and guarantees. PPAs required for other risk management purposes, can potentially consider other terms, structures and shorter tenors.

A diversifying market for renewable energy

Secondly, understanding active buyers in the market is critical. And it is here where the market is seeing change and diversification, particularly with more and more corporates emerging as buyers, along with vertically integrated players. This, in essence, boils down to simple supply and demand theory.

PPAs are being signed across the board in Europe – but particularly in Spain, Germany and Poland. But appetite and liquidity can change quickly – so access to good market intelligence data is crucial, as is giving close consideration to the different types of energy buyers in the chosen market. In countries where there are large numbers of corporate and industrial companies that want to buy power from wind and solar projects, PPA requirements will be different to those needed in markets dominated by utilities, especially those that are state-owned and seeking to price risk and profit from it. In the last 12 months, there has been approximately a 50/50 split between corporate and utility PPAs in Europe, by capacity.

Addressing risk

Thirdly, it is becoming clear that energy markets and PPAs work differently from country to country. That is leading to variation and additional layers of complexity in PPAs which require investors to tailor their proposals. Each market may have its own particularity, for example Italy has zonal pricing which is a significant risk, while Germany has specific treatment of negative pricing. It's good to know about these market-specific risks to manage them properly. There may also be additionalities that owners can take advantage of or, indeed, political or policy upheaval that may impact demand or lead to other market changes. So tailoring PPAs for different markets, different buyers and different socio-economic conditions is vital to mitigating risk.

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Fourthly, there has been much discussion in the market about different PPA structures. The various volume structures, such as pay-as-produced, monthly baseload, annual baseload, fixed hourly profile, to name just a few, affect how the energy risks in a PPA are distributed among the parties. We will look at each of these energy risks in turn, which should be fully considered throughout the lifetime of an asset, via a broader energy risk management strategy. But when negotiating a PPA the key is to understand who takes on each commercial energy risk in the contract. As PPAs evolve and become more sophisticated, the risks tend to shift from the buyer to the seller.

A number of key risks have emerged when buying or selling on the energy market, which are worthy of careful consideration by all parties before negotiating a PPA. Among them are:

Price risk. There is always the risk that an adverse movement in the market will impact on price. It is unavoidable, but can be mitigated.

Liquidity risk. A market state where buyers and sellers can conclude large volume transactions quickly, without impacting the market price. Depending on the structure of the PPA, its cost or risk can be reduced, through, for example, getting a validity period (which comes at a cost) or agreeing on a price formula indexed on closing prices. The buyer and seller could agree to fix the PPA price closure referenced on publicly available prices such as forward prices observed on an exchange.

Volume risk. The annual energy production of a renewable asset is an estimate. Its likelihood is typically calculated and assessed on the basis of long-term meteorological data. If a renewable asset is hedging a fixed volume at a fixed price, there is a risk that certain amounts of volume are not produced and need to be procured. If this is the case, the producer may have to purchase the missing volume at market prices that may be worse than the original fixed price. Optimising the volume risk is crucial. PPA structures can be used to reduce this risk as can insurance guarantees.

Profile risk. This arises from the fluctuating nature of renewable energy (for example, there is no solar energy produced at night). In markets with high renewable energy penetration, times of high production can mean a significant decrease in power price, and in turn, revenue. This will depend of course on the location of the plant but this risk can be mitigated through certain PPA structures.

Credit risk. Much like any commercial contractual agreement, credit risk is also a key component in the negotiation of PPAs, ensuring that the risk a buyer will not be able to meet its contractual payment obligations is agreed and considered as part of the PPA contract. Protections can be put in place, such as advanced payments, margining requirements, increased frequency of payments and a Material Adverse Clause (MAC). The same applies to the seller if, for instance, the project runs out of money and energy generation ceases.

Balancing risk. This refers to the difference between what was scheduled (usually a day ahead) and actual production (the imbalance cost). This risk can be reduced by fixing the imbalance cost through an agreement or using intraday trading, if available.

While the PPA can mitigate against these risks, investors and owners have had to develop energy risk and energy portfolio management processes that ensure they're aware of and considering the risks cited above – which will vary depending upon a whole raft of factors.

Negotiating PPAs

Understanding these risks evidently forms a key part of negotiating a PPA. The structure of the agreement will dictate how those risks are distributed among the parties. For example, for the profile risk, in a pay-as-produced structure, where a fixed price is paid for any volume produced, the buyer will take on that risk fully.

Conversely, in a monthly baseload structure, a contract that buys a constant volume of energy every hour of each month but where the volume commitment changes monthly, the profile risk is mostly carried by the seller.

Other key considerations should be made when negotiating PPAs. These include:

Reference prices. Given contract negotiations often take more than six months to conclude, there is scope for prices to change. Therefore it is common now for reference prices to be defined through the negotiating period, with tools such as PexaQuote being used as a price reference by players on both sides of PPA deals.

Increasingly, negative pricing is becoming an issue with renewables. This reiterates the need to understand the market that the PPAs being tailored to, especially as there may be need to insert clauses in the contract that force the asset to stop producing during prolonged negative prices. This is an important and often overlooked item in a PPA contract.

Changes in law. Clauses that mitigate risks brought about by potential changes in the law that could materially affect the obligations of one or both parties in the agreement should also be handled as part of the PPA negotiation. An example of this might be changes in tax laws.

Performance guarantees. These should be considered, where for instance, production may not meet the level expected in the contract. In such a scenario provision should be made for how this settlement will be addressed between both parties. In which case will the seller have to compensate the offtaker?

Termination. Thought needs to be given to termination. What will trigger an early termination of a PPA contract, such as a default or delay to the Commercial Operation Date and the costs associated with it.

The importance of data and skills

It's evident that PPAs are crucial to mitigating risk as renewable energy enters a new frontier.

It might feel like energy sellers, generators, asset owner or investors need to be experts in contract law to ensure that their solar array is profitable. And while it's obvious that the transaction between off-takers and energy sellers needs the security of legal puppetry, project owners – especially those seeking capital investment in a project – can use the framework of a PPA to ensure their knowledge of the market and consideration to risks and variables is primed. Most will be au fait with the risks involved of buying or selling energy, but PPAs frame this in a way that mitigates against those risks and heightens awareness of them.

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PPAs are, however, just one tool in the post-subsidy arsenal of any entity involved in renewable energy generation or purchase. In addition to PPA origination, and as mentioned, renewable energy players need to build out energy portfolio management, and energy risk management and reporting processes. This requires reengineered operating system that enables entities to thrive, equipping them with the skills and insight needed.

The Intergovernmental Panel on Climate Change (IPCC) – which highlighted that human activity and global warming, much of it caused by carbon emissions and fossil fuels, is changing the climate in unprecedented and sometimes irreversible ways – described by UN Secretary General António Guterres as "a code red for humanity", is the sort of message that is going to intensify the energy transition over the coming years. And as the adoption of renewable energy is accelerated by governments and corporates, it means more and more people who have previously had no exposure to PPAs are going to be making their first forays into this minefield of complexity. To address this knowledge shortfall, community learning and resources for those engaged in the development of PPAs is also essential.

The future

It's abundantly clear that in the new world, renewable energy is going to have a huge stake in the future of the preservation and health of our planet. But sustainable energy needs to be just that, sustainable. PPAs are evolving to ensure that essential investment continues to flow into the solar market. But signing a PPA is only one part of an asset's energy risk management strategy over its lifetime – and the risks should continually be assessed. The duration of a PPA may not cover an asset's full life, so strategies and hedging need to be renewed and considered regularly. It is worth noting, too, that a PPA will only cover the output of one project, so there needs to a portfolio-wide strategy for generators operating multiple projects.

The key for both generators of power and for those buying the output is that they possess the knowledge and access to the right data. This will help ensure PPAs are right for them, as well as the broader operation and monitoring of their portfolio and the risks that come with developing renewable energy projects.

That knowledge will be what powers the "new world" of merchant markets, and – we all hope – what plays a critical role in saving our world. Sir Francis Bacon was right: knowledge itself is (renewable energy) power. ■

Author

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