

Innovative PPAs: Small print, big impact

New solar finance | Innovation in the solar industry is not limited to labs and fabs, with some creative financial engineering increasingly proving its worth. John Parnell looks at how power purchase agreement innovation can bridge the gap between cost-competitive and 'nearly' cost-competitive solar

In the dizzying world of finance, power contracting and project investment, words like 'nearly', 'almost' and 'roughly' are unlikely to make the final cut of any contract. Nor do they make a convincing pitch. So with solar 'nearly' cost competitive in almost all the most advanced markets, how can an end customer be utterly convinced they'll pay roughly less than their current arrangement?

This is the challenge thrown up for solar in a variety of scenarios, in the absence of a major utility willing to lock in a price for 25 years, where local spot market offers the chance to exploit any volatility in energy pricing and potential financiers are looking for something with more security.

Changing the rules with new contracts can bring more potential investors as well as more potential off-takers. So what are the options? One route is what is often referred to as a synthetic PPA.

A common element is an agreed threshold price or price range for electricity from the project. If the market price drops below this level, the buyer's missed savings are returned, if the market price is over this level, the seller is compensated for what they could have sold the power for on the open market.

Ray Hudson, global solar service leader at DNV GL, says a better definition comes through what a synthetic PPA is trying to achieve rather than any given aspect of its mechanics.

"There isn't a standard definition of what a synthetic PPA is. On the highest level it's an attempt through contract language and using financial engineering to create a more financially stable situation where the power is being sold on the market a merchant way and to make that more attractive to the financiers," Hudson says.

The US has not had the same price guarantees and top-up tariffs that Europe and other markets have enjoyed; stability has to come from other sources. Hudson points to the very different market dynamics as another reason why PPA innovation has typically started in the States.

"Here in the US market it's been [dominated by] very firm PPA contracts. Typically that was with a utility so that's a very bankable, very creditworthy off-taker for the energy. That's a really solid contract. At the far extreme you have projects selling just at the merchant spot price, in the places where there is a spot market, and that has a lot of price volatility. A synthetic PPA is to try to go between the two extremes, between a fully defined PPA and the pure merchant market," explains Hudson.

Just a few short years ago, cost-competitive solar felt like a long way off but the closing of that gap has also brought the two extremes described by Hudson closer together. It is largely for that reason that the synthetic PPA has become a more important tool for those on either end of the contract.

"I think what is really important in the overall context of this is that the cost of solar-generated electricity has dropped so much that you can really talk about solar being competitive on the merchant market. A few years ago that wasn't the case and now that it is competitive in many areas, and almost competitive in others, these additional assurances that are in the contract language help a broader range of entities that are providing financing to come in," explains Hudson.

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The growth of synthetic PPAs in solar is a sign of the industry's maturity, according to DNG GL's Ray Hudson.

Credit: DNV GL

appetites for risk to participate in the solar industry and help with the financing of solar projects. It's interesting that the financiers of solar have a wide range of risk appetite. Some are very comfortable with high risk and are looking for appropriately high returns. Some really want

low risk. And again, this too allows different entities to come in – non-traditional financial institutions, not just banks but also insurance companies, hedge funds and other kinds of investors. It also lets in individual load users who are interested in purchasing solar energy. This mechanism can help them be comfortable with the price they are paying for the solar energy."

Even with state-wide renewable portfolio standard (RPS) obligations on the wane, demand is still growing. Demand from new corporate players beyond the utilities that were subject to those requirements is also growing.

The Environmental Protection Agency's Green Power Partnership, which monitors how much power firms source from renewable generation, includes Intel, Unilever, Wal-Mart, Sprint and Lockheed Martin to name a few. Anyone doubting the appetite of large corporates for solar energy in particular need only look at the US\$850 million PPA Apple signed with First Solar in February. Or the 180MW healthcare firm Kaiser Permanente signed in the same month.

Bringing in corporate interest also opens the door to firms looking to exploit on-site renewables but Hudson says but capturing the additional benefits of those installs would help further.

Utilities are by no means done with solar, however. Even beyond the investment tax credit cut in the US, there is a future for solar demand from the big power firms, as long as one criterion can be met.

"The utilities don't just have to pay a relatively high PPA as part of firm contracts to make their RPS obligations," Hudson says. "We're right on the cusp of the cost of solar being competitive for generation and the utilities being interested in having additional renewable generation for economic reasons, not just for 'green' reasons or the RPS requirements. Now we are moving down the [cost] curve where we are getting into generation parity and at that point you are competing fully against other generation sources."

Lack of standardisation

Roll together the increase in distributed generation projects, synthetic PPAs and projects forming part of bundles securitising bonds and it could appear that the paperwork per megawatt is only increasing.

"Just like the engineering of solar plants can be complicated the legal and financial engineering that is going into these agreements is also, frankly, quite complicated – sophisticated might be the word!" says Hudson.

This sophistication could mean that emerging markets with tighter margins might not be able to make the best use of synthetic PPAs just yet but Hudson sees scope for that to change.

"I think you'll see it first in the places in

the world where there are already lots of lawyers like the US and I think the details will be worked out in ways that it can be articulated and then spread out to other places in the world. We're seeing some of the other things happening elsewhere in the world like securitisations, like yieldcos that have really followed what happened in the US. I think the same thing will happen here," he predicts. "The challenge right now is that these contracts are new and not very standard, so you end up with more legal work, reviews and frankly expenses to do these. So these are not

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simple contracts and you do have to have an investment in the legal and financial review. We do think that over time they will become much more standardised."

There is, of course, more than one way to skin a cat. Don Lord is CEO of UK Sustainable Energy (UK-SE), which helps industrial and commercial clients fit renewable energy and efficiency measures into their business. It built what it describes as the UK's largest "zero cost" solar farm for telecoms giant BT.

BT takes 8MW of power from the site with a simple contractual clause that ensures all parties are happy with the PPA.

"We say to all our clients, and we're doing an awful lot of these with very big

energy users across the UK, have a 60-day termination clause," says Lord. "That way that enables us to fix a low cost of energy that is index linked and the client can just terminate if it feels it's necessary. That's the way they like it rather than having a complex hedge structure."

Lord stresses that a hedge structure is great in some situations but many corporate clients are looking for the simplest option.

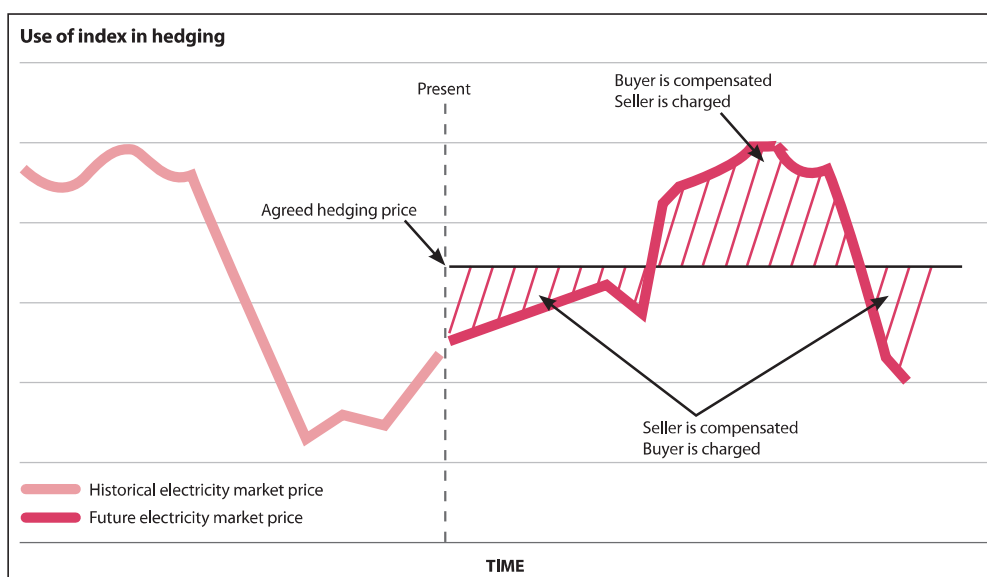
"They know that this option is available but it is highly complex; people have enough complications between carbon accounting and price fluctuations so anything for an easy life. And it is not just an easy life, it also makes the best financial sense to be honest"

UK-SE funds its projects on the worst-case scenario that the client cancels. This means that, given that no-one has cancelled at the time of writing, the company receives a bonus from the PPA on top of what it modelled with its backers. On the client-side, they are safe in the knowledge that they can exploit any dramatic downward shift in the market price of power by invoking their 60-day termination.

Lord says the company has a healthy 300MW pipeline of safe bets and much bigger pipeline in earlier stages of progression. While they are focusing on the UK for the moment Lord acknowledges that there are plenty of places with high, volatile power pricing where the comfort of the 60-day cancellation could appeal.

The fact that the solar industry is able to find multiple solutions to its problems and continue to bring new sources of demand and fresh investment into the sector is worth celebrating. Hudson points to the solar market in Texas and California where some of the most sophisticated contracting work is at play. It's no coincidence that these are also two markets where solar is highly competitive.

"I think this is just one of the mechanisms that is helping with the competitiveness of solar. I think the industry could certainly do a better job of talking about the advances it has made," Hudson says. "This type of structure and dealing with these sorts of issues is not new to the finance and legal industry. Bringing it to solar shows that the industry is maturing, certainly it has matured technically and economically. It has improved and it's getting into these really competitive situations and that's what I find really exciting."



A PPA hedge guarantees the buyer does not pay over the odds should the market price rise, while the seller is protected by a floor price should the going rate drop below the contracted price.