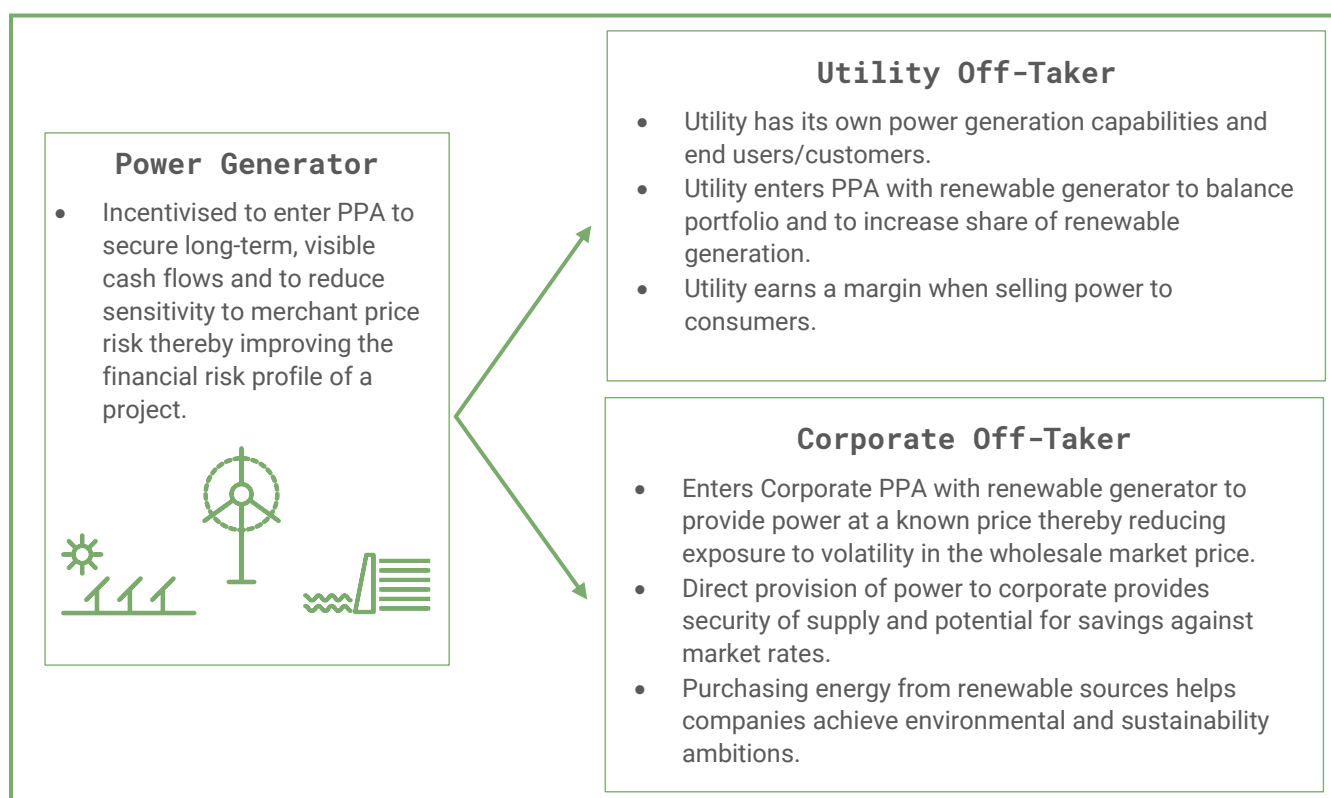


Power Purchase Agreements (PPA) – what are they?

A PPA represents an agreement between a power generator and an off-taker – typically a utility company or other large corporate entity - for the sale/purchase of electricity outside wholesale markets. The PPA will define the commercial terms between the generator and the off-taker, including the schedule for delivery of power, pricing, and ultimate termination of the agreement – the term of which could be as long as 20 years or more.

Although PPAs are not a new concept, their use has grown rapidly in recent years owing to increased penetration of renewable energy technologies. Firstly, as the economics of renewable energy generation have become competitive with conventional forms of power generation, governments have phased out many of the subsidy schemes (Feed in Tariffs, Renewable Obligation Certificates etc.) that initially primed the renewables industry. To underpin the investment required to develop a new renewable energy asset without any form of subsidy and to shore up the financial validity of the project, a power generator will seek to structure a PPA around the asset in order to secure a long-term and stable revenue stream, and to reduce sensitivity to spot power prices. Spot power prices can be volatile, so the PPA reduces an element of uncertainty for both the generator and purchaser, over the long term. Secondly, a growing cohort of corporate entities (and utilities) is seeking to purchase more power from renewable sources as part of their commitment to reduce emissions and build more sustainable enterprises. Multinational tech giants including Amazon and Google have joined large industrial and high-intensity users of electricity such as Siemens, Rio Tinto and Akzo Nobel (historically the main corporate users of PPAs) in building portfolios of renewable energy assets and entering into agreements to buy power directly and indirectly from independent renewable energy generators.

PPAs may be structured in different ways, with flexibility in length of contract, the delivery profile, or the volume to be delivered, for example. With the exception of 'route to market' PPAs, which simply provide a generator with access to sell output at market prices, a common feature is typically that of greater price certainty for both the generator and the off-taker. In addition, renewable energy projects that are 'behind the meter', providing power directly to the end corporate user rather than going via the grid network, may provide scope for cost savings for the off-taker when compared with market rates.



When structuring a PPA, the generator and the off-taker must consider how much power is to be delivered and when it is to be delivered. Incorporating these elements will naturally reflect the risk appetite of the counterparties.

Fixed volume PPAs place an obligation on the generator to deliver a pre-defined amount of power to the off-taker over the term of the PPA in return for a fixed price per unit of power delivered. Volume for delivery will be based on reasonable assumptions of the likely output from an asset, however, should volumes fall short of the generator's obligation the generator will be required to purchase the balance in the market.

The delivery profile (i.e. when to deliver) is typically set at very short time periods, such as hourly, and can be viewed as providing baseload power to the off-taker. Baseload is the minimum level of electricity demand over a period of time and does not include spikes when demand may change significantly. Less common, but still possible, are PPA structures that allow for delivery over a far longer period, such as quarterly. A generator accepts greater risk under a baseload PPA owing to the tight schedules for delivery and increased chance of underproduction and subsequent merchant price risk. As a result, the generator will typically be able to strike a higher sales price per unit of power under a baseload PPA.

Other forms of PPA exist which remove the volume and delivery profile risk. Under the terms of an 'as-produced' PPA the off-taker agrees to purchase all (or a certain proportion) of the output from the generator at a fixed price. Since the volume risk is borne by the off-taker and there are no delivery profile obligations, the generator will achieve a lower price for the power generated compared with a fixed volume PPA. 'Route-to-market' PPAs facilitate the sale of power and the off-taker is usually a utility with power trading capabilities. While the generator will not assume any volume or delivery profile risk, similarly to a 'pay-as-produced' PPA, the generator will have no price certainty because the output is sold at prevailing market prices.

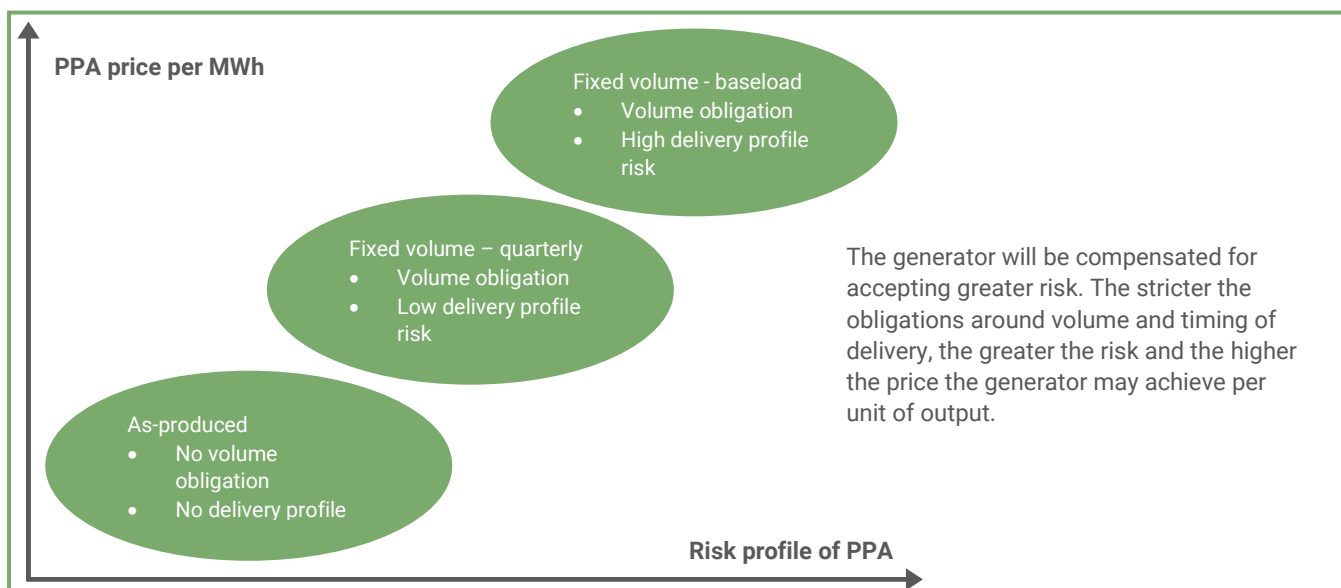
RE100 INITIATIVE

The RE100 initiative is focused on accelerating the global shift towards clean energy supply and zero-carbon grid networks.

The initiative brings together hundreds of the world's most influential companies under one common theme: a desire to procure 100% of the electricity they use from renewable sources.

Companies operating in the industrial and commercial sectors account for approximately 50% of global electricity end use.

By committing to a long-term off-take agreement through a Corporate PPA, credit-worthy companies facilitate the build-out of new renewable energy capacity that may otherwise never have been developed – a dynamic known as 'additionality'.



The usage, sophistication and maturity of the PPA market differs between regions and it is clear that areas with lower prevalence of subsidy support, for example, will tend to have a larger, more active PPA market since price sensitivity is greater and developers will seek to de-risk their assets from a financial perspective. With a history of sizeable subsidy support for renewable energy generators (alongside other factors), the UK PPA market remains less mature compared with that of the Nordic countries or North America, for example, and where PPAs have been utilised they have typically been for relatively short contract periods. However, as subsidy support mechanisms have been withdrawn, the UK corporate PPA market and many others across Europe in particular, are beginning to transform and grow.

The demand for renewable energy from corporations has been spurred by sustainability objectives but also by the much-improved economics of renewable energy technologies and more flexible regulation. This has driven a surge in the quantum of corporate PPAs being signed and in 2019 a record 19.7GW worth of contracts were agreed according to Bloomberg New Energy Finance, representing year-on-year growth of c.45%. In 2020, to the end of July, almost 9GW of PPAs have been signed with approximately 60% of that coming from U.S. corporates.

Efforts to decarbonise the global economy will require continued growth in installations of renewable energy capacity and the intermittent nature of wind, hydroelectric and solar power generation, for instance, will result in greater volatility in spot electricity prices. PPAs provide a way to mitigate this price risk for both generators and off-takers and facilitate the development of new renewable projects by improving cash flow certainty.

The **VT Gravis Clean Energy Income Fund** invests in companies that own renewable power generation assets and these companies are highly active in PPA markets. Such contracts have underpinned the income-producing credentials of these portfolio companies and have meant that dividend distributions have been maintained, and in many instances increased, despite the economic contraction induced by the COVID-19 pandemic.

William Argent
Fund Adviser, Director
7th October 2020

INNERGEX

(INE CN, CAD\$4bn market cap)

Canadian renewables company specialising in the development and operation of hydroelectric, solar and wind assets.

Owns 75 operational assets with installed capacity of 3.7GW.

Example Asset: Phoebe Solar Project, Texas U.S.

Capacity: 250 MW
Sufficient output to power 50,000 Texan households p.a.

Commissioned: November 2019

Transmission network operator: ERCOT

Off-taker: Shell Energy North America

PPA expiration: 2031 (12-year term)

Total output from the Phoebe solar farm is sold to the ERCOT power grid. 89% of the energy produced receives a fixed price under a 12-year PPA with Shell Energy North America. The remainder of the project's output receives a merchant market price.