

An introduction to different ways of buying renewable electricity

For more information contact secretariat@recs.org



The basics of buying renewable electricity

Electricity is not a tangible product that can be packaged and physically transported. It is a charge that must be maintained on a grid. When a consumer buys power from a producer, that power cannot be boxed and delivered directly to them. Instead, the *producer injects their electrical* charge onto the grid in one place and the consumer takes the same amount of charge off the grid somewhere else. System operators work to maintain a balance between the injection and off-taking of power. Without this balance, grids fail – causing blackouts. When a consumer buys power, they are not buying physical electricity, they are buying the right to remove a given amount of charge from the grid.

A standard contract to buy power will supply the consumer with electricity, as a commodity, that is generated by any producer and sold through wholesale and retail markets. For a consumer to buy power from a specific generator and claim the use of that power requires a book & claim accounting system, because the electricity grid is not able to take power from one generator and deliver it to one consumer. Such systems allow producers to ‘book’ the attributes of a given unit of power when it is injected into the grid in the form of an energy attribute certificate (EAC). Those attribute certificates can then be transferred to a customer, who then ‘claims’ them as proof that they paid for a given type of electricity. The unit these certificates typically cover is one megawatt-hour (1MWh) of power, and the attributes they cover are aspects such as what technology was used to make the power, where the power was generated, the age of the installation that produced the power, and whether the installation received any public support.

Bundled or unbundled?

A key principle of book and claim systems is that the attributes of a given product are separated from the underlying product itself. This means that an EAC can be sold either together with the underlying power, or separately from it. When the EAC and underlying power are traded in a contract together, it is described as ‘bundled’, a term which originates from US REC (Renewable Energy Certificate) markets. When the EAC and underlying power are traded in separate contracts, it is described as ‘unbundled’. In either case, the principles remain unchanged and a producer who can have their power certified with an EAC can benefit from the income of two product streams: 1. the physical power, and 2. The underlying attributes, as represented by an EAC. Which producers can have their power certified depends on the prevailing laws in the country where the



power is being generated. The amount a producer can earn from their EACs depends mainly on how much supply there is of the kind of energy they are producing compared to the demand for that specific product.

There are no discernible differences between EACs that are sold as unbundled or bundled, other than bundled EACs being sold by the party selling the physical power, in the same contract. While the terms ‘bundled’ and ‘unbundled’ have had qualitative differences projected on to them by some stakeholders, these distinctions are largely irrelevant to the associated income received by the electricity generator. To this end, whether EACs and their underlying power are sold together or separately makes no fundamental difference to the impact renewable electricity markets can have on the energy transition. If consumers are buying EACs for renewable electricity, they are providing an income stream to renewable electricity producers. Furthermore, while individual end-users may choose to buy both power and attributes from the same device owner, the terms ‘bundled’ and ‘unbundled’ may or may not apply to such purchases, depending on the contractual form being used.

With either procurement choice, the fundamental principles remain the same. The more renewables consumers buy, the greater the market signal for more renewable electricity and the more incentive, and income, there is for renewable electricity producers to invest in new installations – all of which helps to accelerate the energy transition. The contractual form that both producers and consumers chose for those trades is a secondary consideration. More information about options for maximising the reliability and impact of buying renewable electricity can be found in [RECS International’s guidance for market participants](#).

Bundling and Power Purchase Agreements

Power purchase agreements (PPAs) are increasingly held up as the gold standard of renewable energy purchasing. As a particular class of long-term contracts for the supply of electricity, they are often extolled for providing a stable income stream for renewable power generators. At their core, PPAs are simply contracts agreed, usually for an extended period, between generators and consumers that can be used to supply or purchase any type of electricity. However, this is a complex and growing market with many different forms of PPAs, which are sometimes split into three overarching categories: private wire, physical, and virtual (also known as synthetic) PPAs. Despite this simple nomenclature, these terms cover a range of complex contractual forms and are sometimes understood differently by different stakeholders. It should also be



noted that parties can agree legitimate long-term contracts for power, EACs, or both that may not be called, or recognised, as PPAs.

Whatever the contractual form, a consumer can only purchase renewable electricity by purchasing the relevant energy attribute certificates. A consumer can buy their power from any generator using any contractual form, and as long as they are also buying the same volume of EACs for renewable energy, they can state that they are using 100% renewable electricity.

Conclusion

As is set out in more detail in [RECS International's guidance for market participants](#), all contracts for power and/or for attribute certificates rely on clearly defined and regulated systems and markets. Therefore, no contractual form is inherently more reliable than any other. Equally, no contractual form is inherently more impactful than another. The socio-economic impact of buying renewable electricity depends on how much money flows from the consumer to the producer and the signal it provides for the building of more renewable power. As in other areas, consumers need to be well informed when deciding on how to buy renewable energy and understand that the impact of their purchase is not dependent on the contractual form used, or whether their EACs are bundled with the power they are buying.

