Simmons & Simmons

Investing in power and renewables

Patrick Wallace
Simmons & Simmons

Tim Bills-Everett
VicoBay

10 July 2019

Introduction – Power and Renewables M&A – Key Factors

What are the distinctive characteristics of power section M&A?

- See “Power and renewable energy M&A: Q&A” by Patrick Wallace in Practical Law – copy attached.

How do investments in renewable power differ from other investments?

See attached notes:

- “Overall risk allocation in investments in wind and solar generation projects” by Patrick Wallace.
- “Construction risk in renewable power generation projects.” By Patrick Wallace

How do power purchase agreements work?

- For classic thermal PPAs see attached article: “Long Term Power Purchase Agreements; the factors that influence contract design” by Patrick Wallace. Key points are summarised in the next two slides.
- For how renewables PPAs differ, see the slides which appear after that.

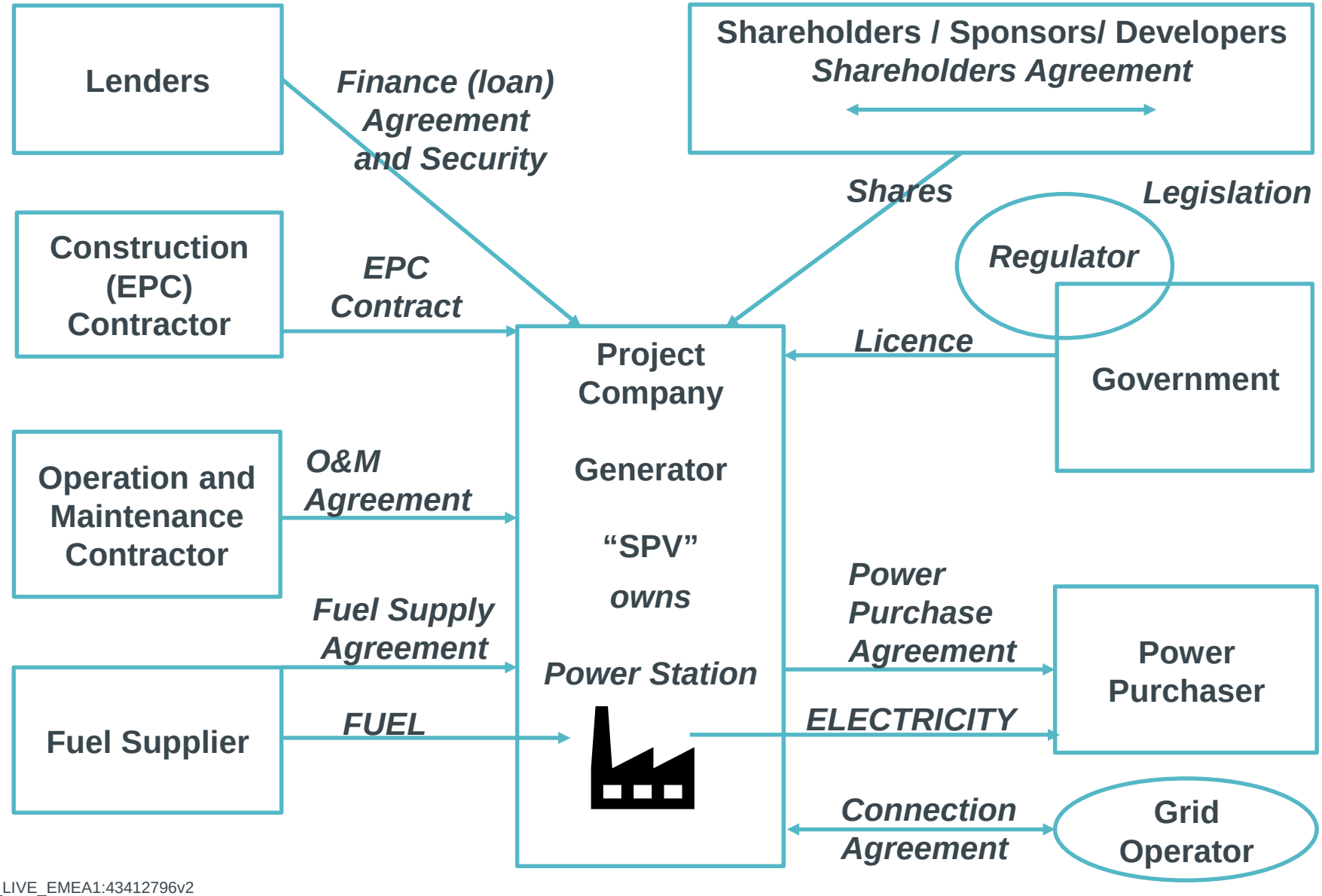
The roles that PPAs play, key characteristics of electricity as a product of power markets and their effect on overall contract structure

- The economic roles PPAs play
- The influence of the physical and legal characteristics of electricity
- A product, but not a physical object
- A product that depends on the system it operates within
- A product that has to be produced in real time and that has a very volatile market value
- The processes used to decide when a power station is to generate
- The consequences of the scheduling and dispatch process for PPA design
- Key characteristics of long term PPAs that are not electricity specific

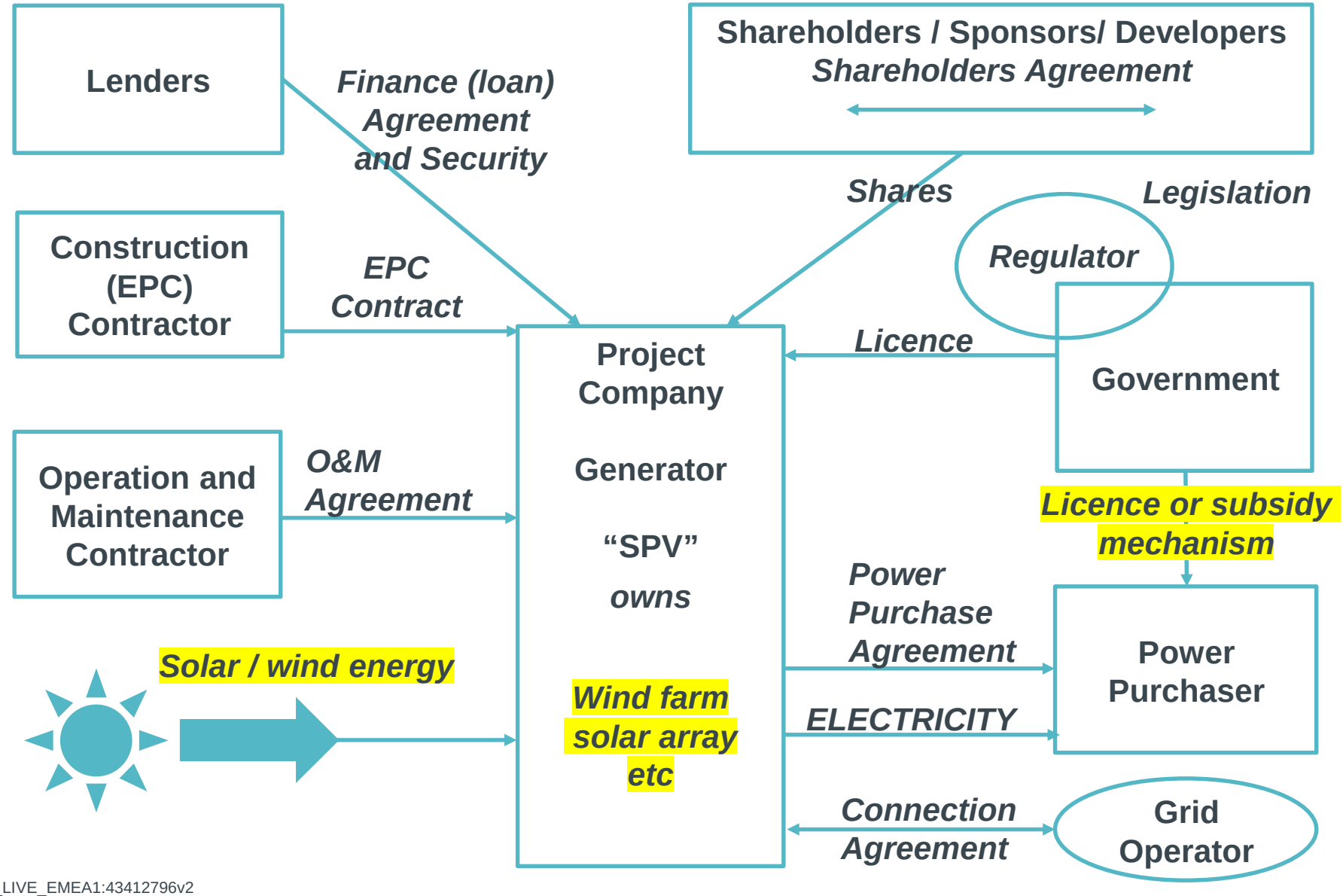
How the design of key terms of a long term PPA reflects the characteristics of power markets, of electricity as a product and the risk issues that affect infrastructure projects generally

- Making the Capacity Charge work
- Energy charges and fuel risks
- Take or Pay clauses in fuel contracts
- Fuel supply risk
- Credit risk
- Liability for failure to deliver power: exclusion of consequential loss liability
- Change in law
- Political force majeure

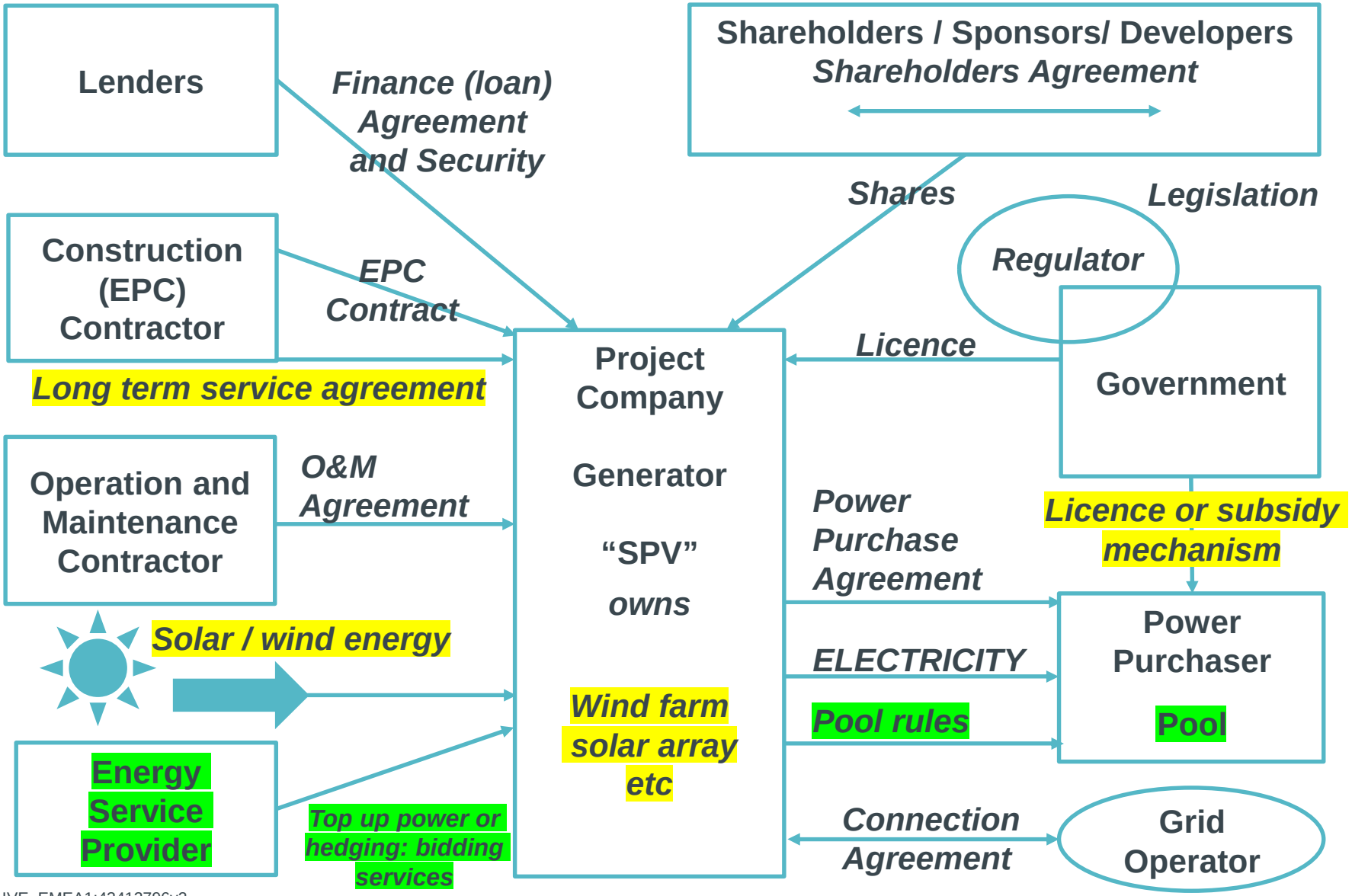
Classic Thermal Power Project Structure



Basic Renewables Power Project Structure



Modified Renewables Power Project Structure



Risk allocation - commercial

The traditional risk allocation:

- Demand risk – does the purchaser need the power? *Purchaser bears this.*
- Intermittency risk – less wind or sun than expected. Seller bears the risk if it is only paid for the actual output. *Purchaser bears this if it gets all production in exchange for a fee rather than paying per MWh of actual production.*
- Plant availability / efficiency risk – *often poor availability is treated in the same way as intermittency.*
- Electricity market price risk – *the cost of buying power to replace shortfalls - traditionally borne by the buyer.*

New style renewables PPAs

Customers, particularly under corporate PPAs, are pressing projects to take greater risks in some recent deals (led in Europe by the Markbygden project that Simmons advised on)

- Volume risk (intermittency and availability): the project company gives a firm long-term volume commitment
  - It mitigates intermittency risk by selling less than full output, having a top up PPA or hedging contract available and planning to sell excess electricity on the spot market.
  - It mitigates availability risk by seeking a long-term service contract.
- Electricity market price risk:
  - The project company commits to a long term price and accepts full liability to pay for replacement power at market price in case of shortfalls:
  - It mitigates this by pricing above cost and avoiding exposure to market prices by limiting firm long term volumes and appropriate top up PPAs or hedging contracts.

Commencement and termination

Commencement:

- Traditionally the project company only faces capped liability to damages for late start and mitigates risk by appropriate sizing of liquidated damages from the construction contractor
- Higher risk PPAs impose firm sale commitments from stated start dates; and the project company mitigates this by planning for a buffer period and selling output in that period at spot or non firm prices

Termination:

- Traditionally the project company just loses future revenue streams if the PPA is terminated for seller default; and the project company recovers compensation if it terminates the PPA for buyer default
- Higher risk PPAs are starting to oblige the project to pay mark to market compensation on termination for project default (subject to debt ranking first)

Force majeure and dedication / stapling of generating capacity to PPA

Force majeure protection:

- Traditionally the project company takes the risk of losing revenue during force majeure affecting its assets but bears no liability risk.
- With simpler renewable technology there is greater pressure for sellers that take intermittency and availability risk also to retain firm volume and price commitments even when affected by force majeure

Dedication of capacity, stapling and enforcement:

- Traditionally the power purchaser would have no direct rights over the generating assets
- Some buyers now seek mechanisms making sale of the generating capacity, during the PPA life and even in enforcement, contingent on the buyer honouring the PPA.

Change in law

Change in law protection: there are two types of change in law clause in renewables PPAs

- The customary type of change in law clause gives rise to a price adjustment for certain changes in law that increase costs, just as in thermal projects with long-term PPAs; some buyers are challenging this.
- Renewables PPAs in markets with subsidies often contain different change in law clauses that try to preserve the balance that exists in any applicable price subsidy mechanism. If the PPA states that the generator transfers its capacity to a buyer that takes market and subsidy change risk, the clause will try to protect the buyer against reforms that change subsidy mechanisms in a way that gives new forms of environmental related rights back to the seller.
- The worst change in law issue is where subsidy mechanisms are retrospectively withdrawn or modified
- This is a classic area to probe for dangerous overlap and confusion.

Conclusion

PPAs are the key document in any thermal or renewable power generation project. They

- Provide the key long term revenues that are needed to attract equity investment,
- Make the project “bankable” for limited recourse finance providers, and
- Ensure that shares in the project will be a marketable asset.

PPAs come in many forms…

- Classic thermal PPAs are complex finely balanced agreements that give effect to sophisticated allocations of risks and rewards.
- PPAs for renewable generation are simpler in some ways – for example fuel issues do not arise – but raise other complexities such as changes in renewable subsidy and support mechanisms.
- Some recent high profile renewables PPAs have introduced radical changes to the traditional relatively low levels of risk accepted by renewable generators, particularly as industrial and commercial buyers press for firm contracts with unlimited liability for the costs of providing replacement power.
- So no one size fits all. It is more important than ever to be sure that the kind of PPA a project has delivers the risk allocation that you are looking for. The different kinds of PPAs around can produce dramatically different results and a small change or defect in wording or structure can have a major economic impact.

Contact details

Patrick Wallace
Partner
T +44 20 7825 3082
E patrick.wallace@simmons-simmons.com

Patrick has spent the last 25 years as a partner specialising in major international energy transactions at Simmons and, until ten years ago, at Freshfields. Legal directories say that "*Patrick Wallace is hugely respected by the market for his power expertise and sources describe him as "excellent*"" (Chambers 2014 and 2016). He is described as "*a great asset in difficult negotiations*", has a "*solution – orientated negotiating style …[and is]… good at taking a deal through its paces*" (Chambers 2014). He "*comes recommended for his ability to "propose very intelligent solutions for resolving complicated legal issues*." (Chambers 2017).

Alongside a busy practice, Patrick teaches energy law as a visiting professor at King's College, University of London. He has served as a member of the firm's board of directors and founded the Simmons' Africa group.

Tim Bills-Everett
Managing Director at VicoBay Financial & Commercial Advisory Services
T +353 (0)87 166 8131
E t.bills@vicobay.com

Tim currently advises on renewables transactions and has developed and financed projects in Europe, Latin America and Africa and sold interests in them to leading fund investors.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Renewable PPA Latest Trends

VicoBay – Who we are

Track Record

Established in Dublin 2017, operating across the globe. 3 advisory professionals and growing, with 16+ years of combined experience in the renewable energy sector.

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RUBICON CAPITAL ADVISORS

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- Project Development
- Project Finance
- Buy Side M&A
- Sell Side M&A
- Strategic:
  - Competitive PPA tender
  - Commercial route to market strategies

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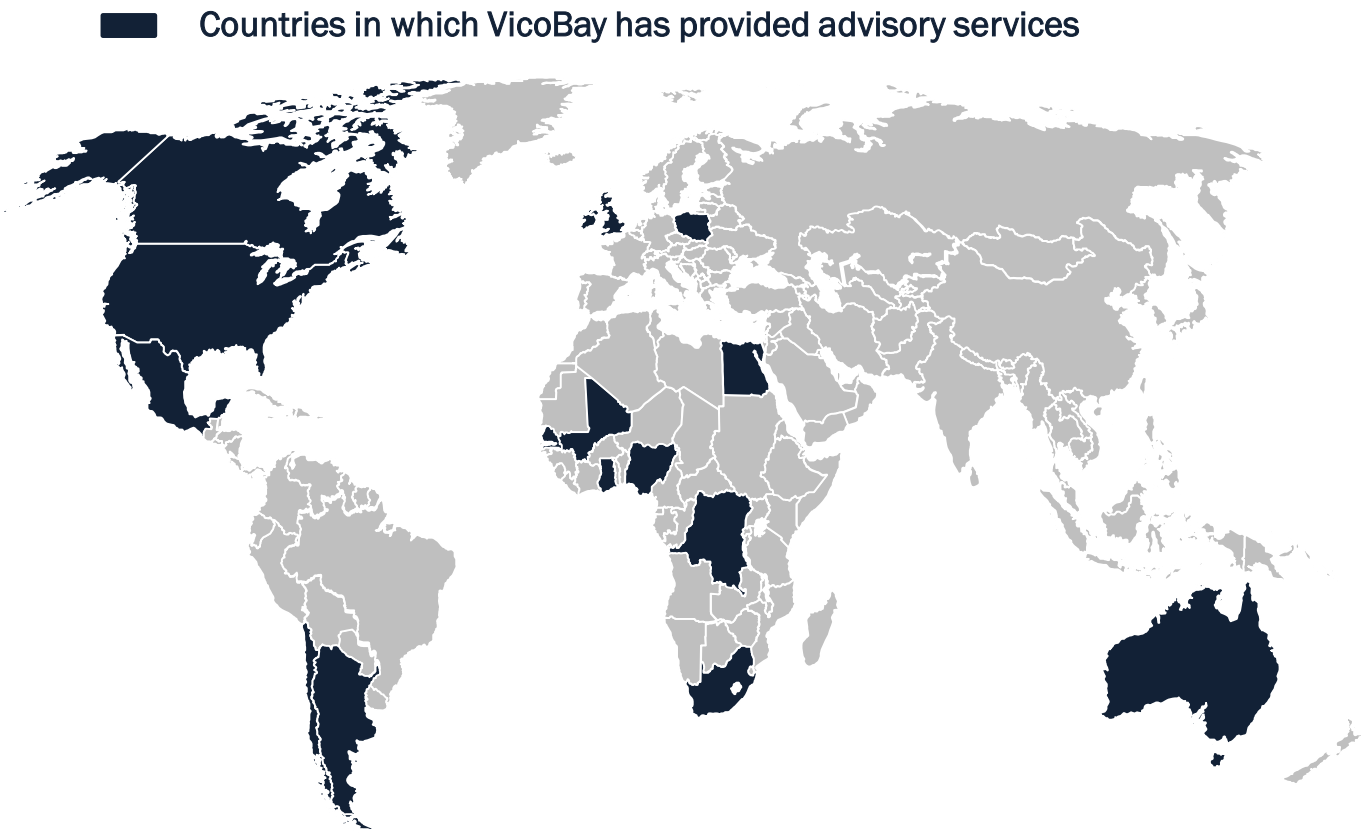

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The Renewables "PPA" story so far

1970s – Present Day

FiT

- Lead by USA and Europe
- Fixed price, long term, take or pay
- Sovereign backed
- Intended to establish the industry, supply chain, encourage investment in R&D, provide stability
- Capped installed capacity
- "Race to market"
- Market abuse?

2000s – Present Day

Auctions

- Lead by Growth markets – South Africa, Brazil, Mexico
- More recently adopted in Europe & USA
- Government administered process
- Often Sovereign backed
- Competitive tenders
- Qualification criteria to bid
- Award criteria – heavily price weighted, often consideration for project location
- Severe downward pricing trajectory
- Single site competition – solar PV

Present Day and beyond

Alternatives

- Lead by established markets – USA, Europe, Australia
- Some growth market participation – Mexico, Brazil
- Developers and investors are seeking alternative routes to market due to:
  - Regulatory restrictions – UK Onshore wind
  - Demand from corporates
  - Pricing pressure at auction

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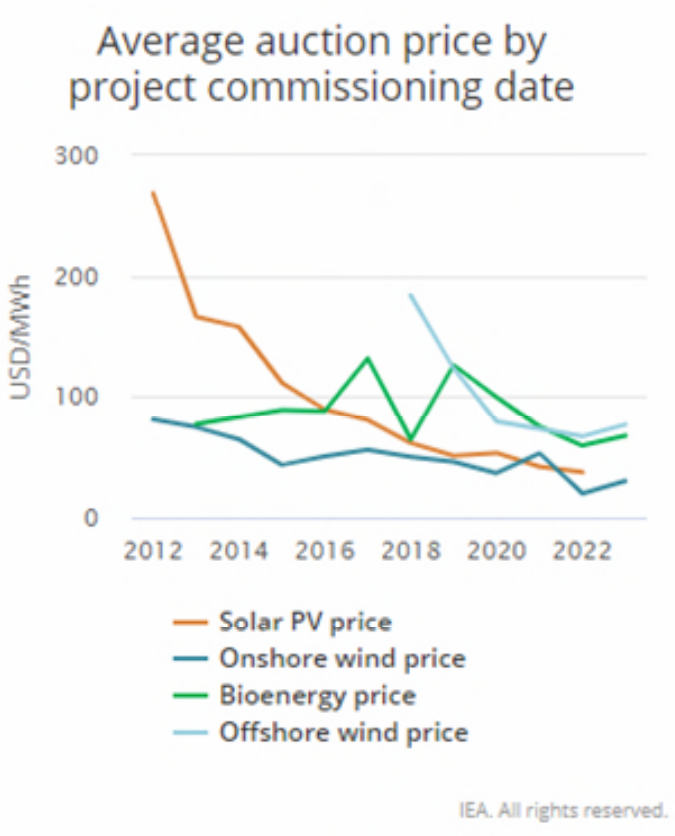
Route to market – PPA Auctions



PPA Auctions

- Government or state administered processes
- Until recently has been the only route to market for utility scale renewables in countries with poor sovereign rating, Argentina, Senegal, Egypt
  - Requirement for Ministry of Finance guarantee, MIGA coverage etc
- Dramatic decrease in pricing due to:
  - Increased efficiency of equipment – wind turbines, solar panels
  - Squeezing of supply chain
  - Reduction in cost of capital – both debt and equity
- Starting to see more risk allocated to generation:
  - Shape, volume, commissioning dates

Pros

- Recognised and investible route to market

Cons

- Highly competitive
- Financial barriers to entry
- Inability to negotiate PPA

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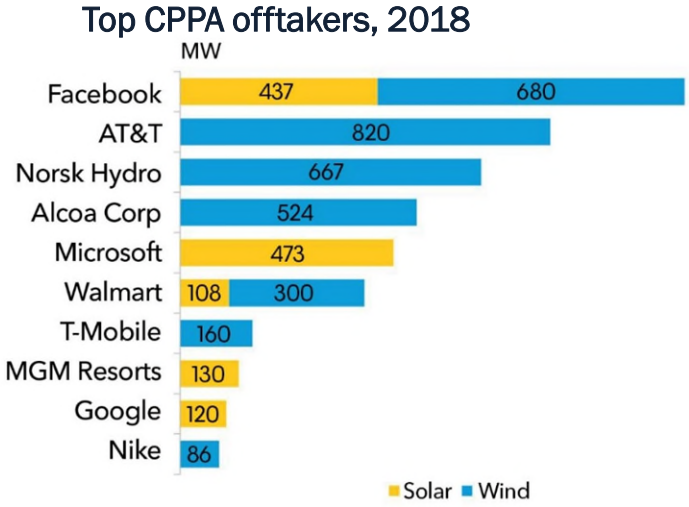
Route to market – Corporate PPAs



Source: Bloomberg NEF. Note: Data is through July 2018. Onsite PPAs not included. These figures are subject to change and may be updated as more information is made available.

CPPA Background

- A Corporate Power Purchasing Agreement (PPA) allows corporate consumers of energy to procure their energy needs directly from renewable energy producers.
- Structures are often bespoke, tailored to offtaker needs and evolving rapidly.
- General market trends:
  - PPA tenors are shortening in response to "first mover disadvantages" making some early PPAs "out of market"
  - Merchant exposure
  - Operational risk is being passed back to the project
  - Firm volumes commitments
  - Hedges and insurance products becoming popular
  - Aggregation of smaller buyers

Pros

- Real alternative route to market
- Demand from

Cons

- Buying power of offtakers
- Creditworthiness of offtake
- Bespoke nature of legal agreements
- Risk allocation evolving rapidly

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Route to market – Power Utilities

Power Utility Background

- Core business is buying and selling of electricity
- Owners of renewable and thermal generation
- Residential, commercial and industrial supply contracts
- Presently active in balancing and trading CfDs, but expected to play a more active role in direct purchase of electricity from projects
- Currently overlooked opportunity?

Pros

- Understand the market – informed buyers
- Creditworthy offtake
- Often involved in CPPA sleeving agreements
- Strong network with large energy consumers

Cons

- Understand the market – hard negotiators
- Typically shorter term contracts – 10 years
- Possibly lower pricing than direct to corporate PPA

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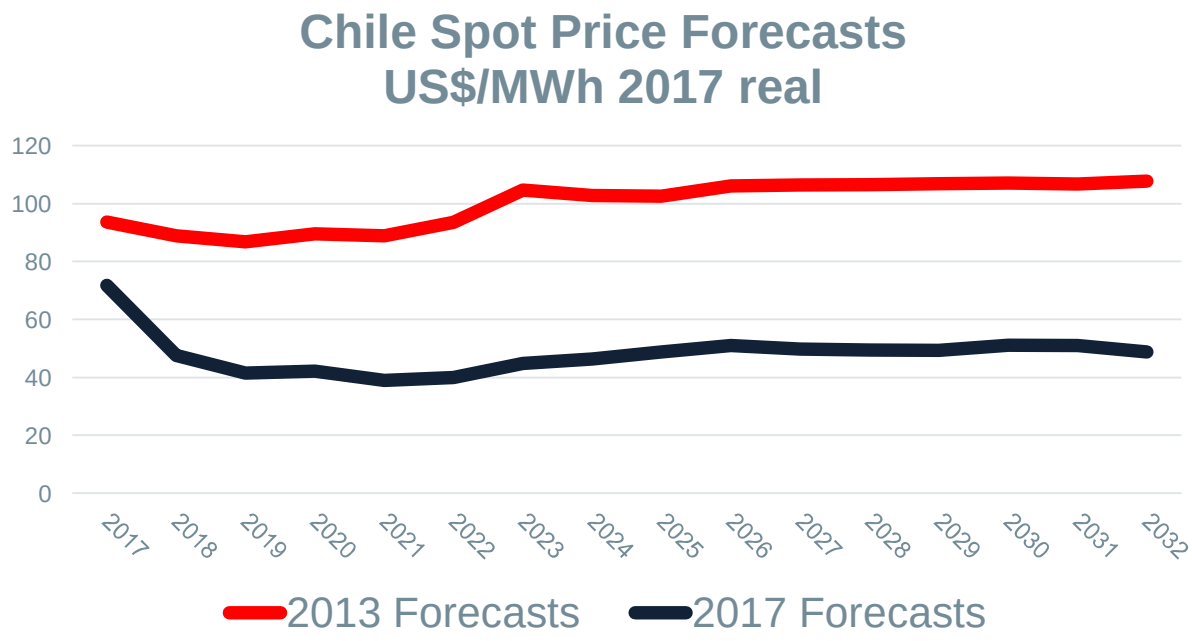
Route to market – Merchant



Merchant

- No PPA, supply directly into the spot market
- Potentially require balancing, day ahead trading services

Pros

- No contract negotiations
- Speed to market

Cons

- Price taker in the market
- Availability of debt finance
- Availability of equity
- Price cannibalisation
- Price forecasting accuracy. Coal price, coal generation capacity
  - LNG price, LNG capacity
  - Interconnection
  - Renewable penetration
  - Hydrology
  - Demand growth

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New Products

Proxy Generation PPA

- Allocates operational risk to the project
- Independent Calculation Agent determines the Proxy Generation as a function of:
  1. Measured wind condition at each turbine
  2. The turbines' power curve
  3. The project's expected operational efficiency
- Once operational, if the project out-performs its Proxy Generation level, the IPP retains this upside
- This present a natural opportunity for OEMs providing EPC and full service O&M agreements to assume the risk allocated through the Proxy Generation PPA

Volume Firming Agreement

- Fuel risk, wind or solar resource, can more easily be hedged once the operational risk has been reallocated to the project through a Proxy Generation PPA
- Insurance firms such as Allianz Global and reinsurance brokers such as Nephila Climate
- Requires sufficient data regarding historic weather patterns in a region to allow adequate assessment of risk to be insured

Proxy Revenue Swap

- A Proxy Generation PPA plus a Volume Firming Agreement still leaves price risk to be allocated between project or offtaker
- The Proxy Revenue Swap addresses the concept of volume firming as well as removing price risk from the project
- Commodity trading houses or banks can swap variable fuel and price risk for a fixed payment to the project
- Project receives a lump sum payment annually / semi-annually, swapping the floating risk of fuel and price for a fixed price payment from the counterparty to the swap

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Conclusions

- Shorter contracts and increased merchant exposure becoming the new norm
- Risk allocation in PPAs evolving
- Impact of prosumers expected to be felt in midday pricing – residential and C&I solar
- IPP of the future will need to be active on both sides of the market
  - Storage, peak shifting
  - Demand side response
- Tripartite agreements between renewable generators and storage?
- Continued price decrease expectations from buyers and sellers
  - Is zero the bottom?
  - Additional revenue streams – data and smart homes, smart businesses

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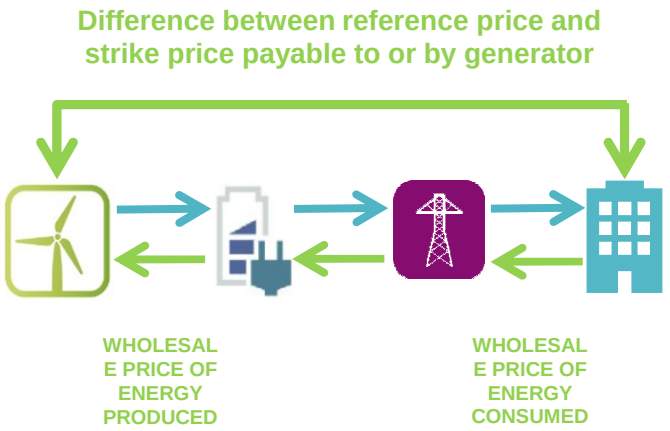
Annex A – Synthetic PPA

Overview

- "Synthetic PPAs" or SPPAs are deals that are directly negotiated between generators and a large retail purchaser (the "offtaker") of power, such as Microsoft and Amazon
- The SPPA features no physical delivery (i.e., transmission of power from point of injection to point of withdrawal) of energy between buying and selling parties
- The primary pricing structure for an SPPA is a Contract for Differences (CfD):
  - If the wholesale market price is below a fixed "strike" price, then the offtaker pays the difference between the wholesale and strike price to the generator
  - If the wholesale market price is above a fixed "strike" price, then the generator pays the difference between the wholesale and strike price to the offtaker
- SPPAs simplify documentation relative to Physical PPAs
- Synthetic PPAs provide flexibility that allows the contract to largely replicate the economic form of a physical PPA:
- Because a synthetic PPA is not restricted to the physical production of energy more flexibility can be built into the contract
  - Firm blocks of energy during a period
  - Catch up or make whole provisions
  - Multiple offtakers or multiple generators
- SPPAs allow hedging instruments to be "layered" on top

Physical and Financial Flows



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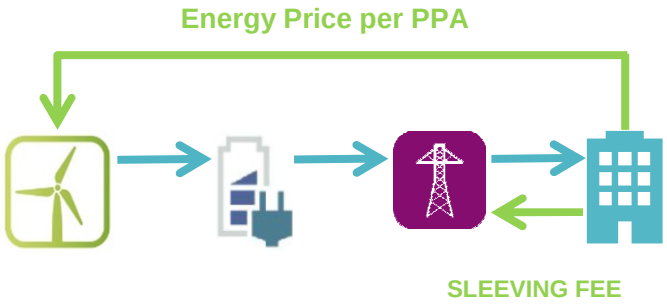
Annex B – Sleeved PPA

Overview

- A "sleeved PPA" means a generator that sells power directly to the buyer and the utility then sleeves the power through the grid and supplies it to the buyer
  - Can take the form of a tripartite agreement between Generator, Offtaker and Utility/Balancing Agent
  - May also be structured as two separate agreements, a PPA and a sleeving agreement
  - The "sleeved" component is wrapped into an existing utility supply agreement
- Generator sells power at the meter point to corporate customer
  - The utility then "sleeves" power through the grid and sells power to the corporate customer
  - The utility performs balancing services and firms intermittency
- Renewable benefits can be sold to either the utility or the corporate customer
- The UK, Italian, Nordic and other southern European regulatory regimes require a licensed supplier to be involved because a license is required to put electricity onto the grid
- The generator can be entirely independent or the buyer can have an ownership stake
- A new model is emerging (e.g. Ireland) where the consumer also sets up a "mini-utility" company and becomes a balancing party itself. The mini-utility saves fees from the main balancing party, but also requires legal and technical knowhow to operate as a licensed supplier.

Physical and Financial Flows



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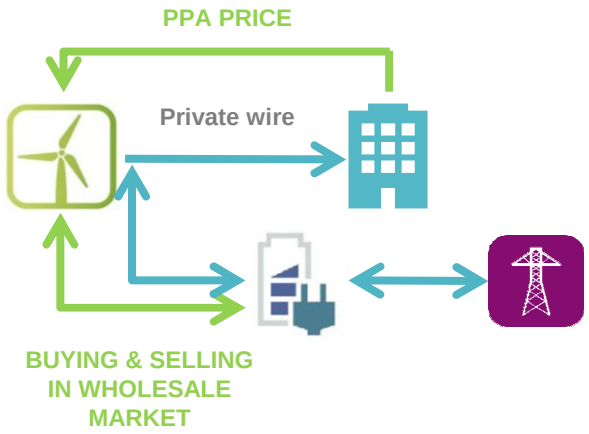
Annex C – Private Wire or Direct PPA

Overview

- "On-site PPAs" or "private wire PPAs" exist when a buyer and seller handle the transmission of the seller's power to the buyer with no immediate third-parties
  - They essentially have their own grid or transmission between them, with the company's load directly wired into the seller's plant
- Like a physical PPA, this arrangement is most common when the seller has concentrated resources near to a buyer with large, steady, and predictable load
  - The renewable asset now has a predictable revenue stream, which is often necessary for the financing of the project
  - The private wire might save fees but requires expertise to operate
- While the wire between seller and buyer is capable of operating on its own as a micro-grid, it is not completely independent, as the seller is hooked into a balancing party or regional transmission organization to provide firming power
  - The seller buys power from the balancing party to cover for intermittency
  - When the renewable plant has excess power relative to the load of the buyer, it can sell the excess into the wholesale market
  - The wholesaler can then sell that excess to utilities and, eventually, end-use customers buying on retail markets
  - Buyer and seller may make some arrangement towards sharing the financial risks posed by intermittency and fluctuations in wholesale electricity prices (either bought from or sold to), rather than forcing the seller to absorb all of those risks

Physical and Financial Flows



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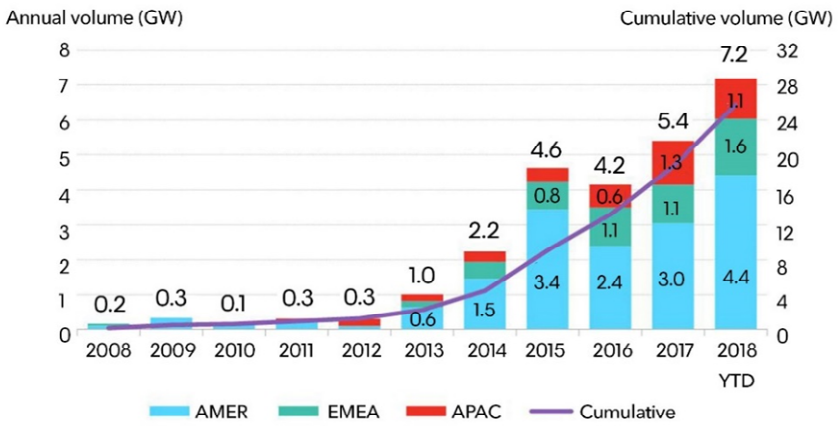
Annex D – Corporate PPA market share

Global Corporate PPAs, by region



Source: Bloomberg NEF. Note: Data is through July 2018. Onsite PPAs not included. APAC number is an estimate. Pre-market reform Mexico PPAs are not included. These figures are subject to change and may be updated as more information is made available.

Market Overview

- The global PPA market continues to grow with 5.4 GW of PPAs signed by 43 corporations in 2017 alone. In 2018 this is anticipated to grow to over 7GW (and over 20 GW cumulatively).
- The largest markets for PPAs are the USA (which accounted for 57% of C-PPAs in 2017) and Europe, which has lagged behind the US due to a more fragmented regulatory environment.
- There has been significant growth and demand for C-PPAs across the European market. Paris Aeroport & the French national railways (SNCF) have recently invited private tenders for Solar PPAs.
- Significant industry initiatives with Solar Power Europe RE-Source and the RE-100 are underway and the market for Clean Energy PPAs is expected to accelerate.

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t.bills@vicobay.com

+353 (0)87 166 8131

www.vicobay.com