



Secondary trading in the Capacity Market: Introducing Piclo Exchange

Executive Summary

Flexibility Service Providers (FSPs) with assets such as demand-side response (DSR) and batteries are becoming ever more critical to ensuring there is sufficient capacity and flexibility for a smart, clean energy system. However, as energy and flexibility markets are growing in number and evolving to meet the needs of a net zero world, it is critical that FSPs are seamlessly able to participate across these markets.

Secondary trading is a key feature of liquid and accessible energy markets, enabling participants to manage their contractual obligations by trading those they no longer want or are able to fulfil. In doing so, secondary markets de-risk participation and provide more revenue opportunities to other participants. To date, secondary trading in markets such as the UK's Capacity Market has been done manually, meaning participants have been hindered by time-consuming and admin-heavy processes for finding and securing trades.

This paper explores trends and forecasts for secondary trading in the Capacity Market, highlights the benefits of a marketplace approach and introduces Piclo Exchange as the single place to find, buy and sell contracts.



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Introduction

As the world continues its pivot towards net zero and fossil fuel generation is gradually phased out, the transition towards a more flexible, resilient and efficient energy system is becoming more urgent. We are seeing a monumental shift in the way that we produce and manage our energy gain momentum, as an increasing range and number of distributed and diversified energy sources come onto the system. For System Operators maintaining the delicate balance of supply and demand, this presents a range of complex challenges for which energy flexibility is an increasingly important tool.

Alongside flexibility markets, more traditional markets such as the Capacity Market continue to play a key role in securing the capacity needed as we transition to net zero. As a result, FSPs with various types of assets are essential to delivering a smart, flexible energy system. However, as the scale of flexibility services increases and FSPs widen their participation

across energy markets, managing contracted obligations must be optimised and simplified. One solution to FSPs seeking to manage their contracts is secondary trading.

What is secondary trading?

Secondary trading is where providers trade contractual obligations they no longer want or are unable to fulfil to other suitable providers.

Secondary trading is an important feature of competitive energy markets and is best suited to support where contracts can be traded in advance of the required service. This includes markets such as the Capacity Market, which ensures there is security of supply, or medium to long term DSO flexibility services.

FleX Exchange

As part of the UK Government's Business Energy and Industrial Strategy (BEIS) FleX Exchange competition, Piclo Exchange was recently launched - a marketplace that simplifies the process of secondary trading. Piclo Exchange is the next step on Piclo's mission to:

- Streamline access to multiple markets and revenue opportunities in a single place
- Improve participation and market liquidity
- Facilitate whole system transparency

Piclo Exchange was developed in direct response to the challenges FSPs faced with secondary trading. The marketplace provides a single place to find, buy and sell contracts, reducing the time spent on administration and enabling FSPs to increase participation and optimise their assets' performance. At the same time, Piclo Exchange helps to de-risk participation for those who have won contracts that they can no longer deliver and increases the revenue streams available to those who may want to take more on.

The first secondary market active on Piclo Exchange is the UK's Capacity Market (CM). Currently, secondary trading in the CM is performed on a one-to-one basis, meaning CM Providers have no way of gaining exposure to the entire market and finding a buyer can be tricky, time-consuming and admin heavy. By delivering full transparency as to who would like to buy and sell contracts and streamlining the trading process, users will enjoy a far more efficient experience - plus optimised prices.

This whitepaper summarises the context for and evolution of secondary trading in the CM, plus how Piclo Exchange works and the benefits a marketplace brings to secondary trading.

If you would like to discuss this in greater detail or would like a demonstration, contact exchange@piclo.energy.

This paper has been supported by LCP, who we worked with to research and model secondary trading in the Capacity Market.
<https://www.lcp.uk.com>

Secondary trading in the Capacity Market

What is the Capacity Market

The Capacity Market (CM) was introduced by the UK Government in 2014 and is part of the Electricity Market Reform Package. The CM is designed to ensure there is sufficient and reliable capacity available in times of system stress, which will maintain system security and prevent future blackouts. It provides payments to participants that encourage investment in new capacity or for existing capacity to remain open.

How does the CM work?

Each year National Grid ESO (NGESO), on the behalf of the UK government, holds auctions to procure capacity to meet a set target requirement. Two types of auctions are held; the first is a four year-ahead auction (T-4), where the bulk of the capacity is acquired to meet the set target. Within the T-4, planned new assets can win multi-year contracts (up to 15 years) that finance their build, whereas existing, operational assets can gain single year contracts. The second type of auction, which follows T-4, is a one year-ahead (T-1) auction. The T-1 acts as a top-up to account for any changes to the capacity procured in the T-4 or in the set capacity requirement between the four year-ahead stage and delivery.

To win a contract in an auction, CM participants enter a £/kW-derated capacity bid price for either generation or demand turndown capacity. If successful, providers will receive CM payments split across each month of the relevant delivery year for the de-rated capacity provided.

Agreement holders are then obligated to be generating (or reducing demand) when called upon by NGESO during a stress event - a moment when taking into account additional operational reserve requirements, there may be less generation available than NGESO expects to need to meet national electricity demand on the transmission system. When this happens, a CM Notice is issued 4 hours prior and those who cannot fulfil their obligations face penalty repayments. To avoid these penalties, CM participants have the option to secondary trade their contracts to another participant, removing their obligations once the trade is approved.

Why secondary trading is needed in the Capacity Market

Secondary trading in the CM occurs when one CM Provider transfers their contracted capacity obligations to another, qualified CM Provider. Secondary trading can happen in cases where the holders of contracts are unable to deliver their obligation. This can happen if a Capacity Market Unit (CMU) is down for maintenance or, in the case of a new build asset, there are construction delays which means it will not be operational when required.

Penalties in the CM

If a Capacity Market Notice (or what you might call a 'stress event') occurs and a provider is unable to deliver their obligation, they will face penalties of 200% of the capacity payment for the relevant month and up to 100% of the total annual payment for the delivery year.

In these situations, the holder ultimately may face having their agreement terminated. Providers have two options to avoid this:

- **Secondary Trading** – to avoid a penalty, providers can trade away their contract in the secondary market. This occurs pre-stress event, where contract holders exchange their obligation for either part of or the full delivery year with an eligible transferee (in this case, a pre-qualified Capacity Market participant that does not have an obligation in that delivery year).
- **Volume Reallocation** – to avoid a penalty after a stress event, Providers can also trade via volume reallocation. This occurs post-stress event, where contract holders reallocate capacity to another unit that provided excess capacity during the event.¹

Capacity Obligations can be traded for:

- The entire delivery year
- A period within the delivery years, for which the agreement covers
- A specified number of calendar days in such a delivery year (known as "the transfer period")

In accordance with CM rules, participants may begin to trade following the T-1 auction through until the end of the delivery year. Looking at secondary trading in previous years (see Graph 1: Timing of Secondary Trades), trading began to occur eight months before the start of a delivery year.

If a Capacity Market entrant is qualified but has been unable to secure a contract in either the T-1 or T-4 auction for the upcoming delivery year, secondary trading provides an additional opportunity to secure a contract and create an additional source of revenue.

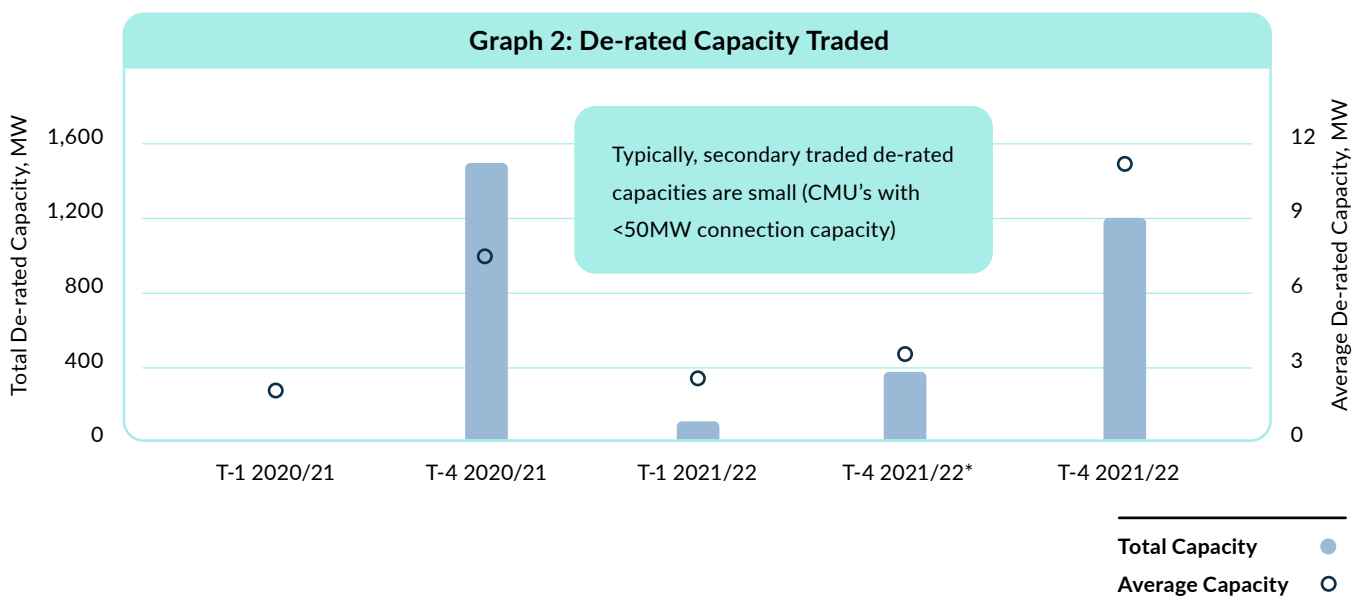
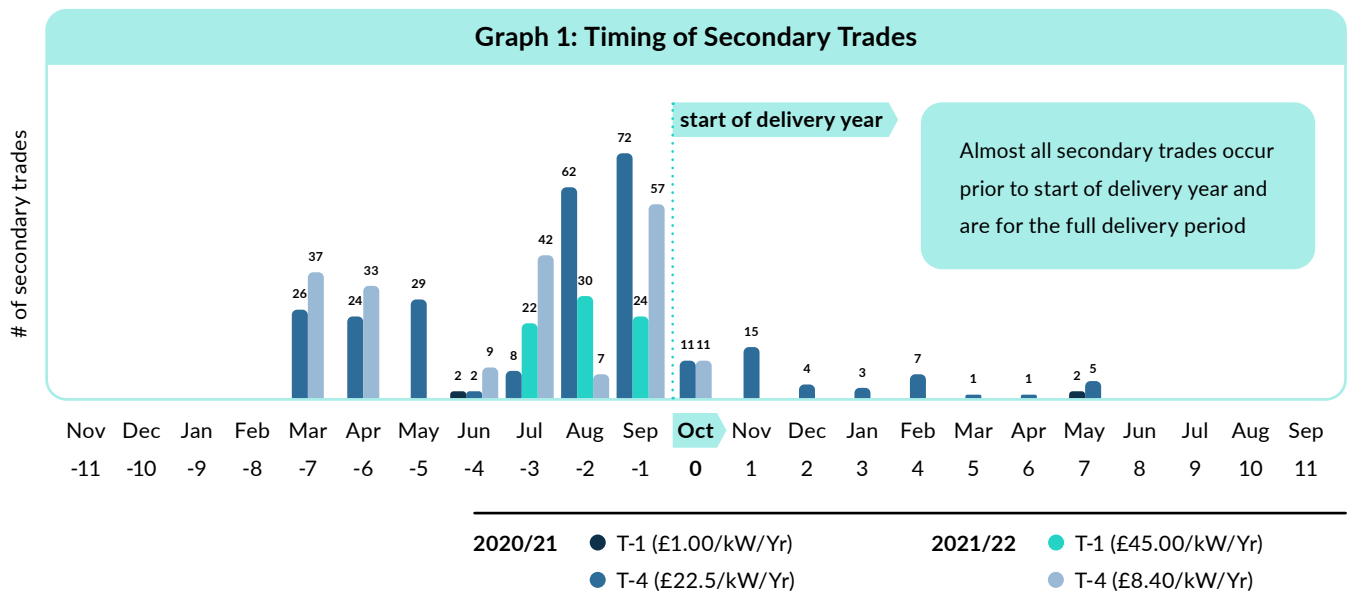
Whilst the CM's secondary market is well established, market reforms to improve secondary trading have been proposed by BEIS and Ofgem. Increased liquidity and ease of trading would continue to increase security of supply and there are several proposed changes under the call for evidence "Improving delivery assurance and early action to align with net zero", that could have a positive impact on secondary trading.

¹ Currently, Piclo Exchange supports secondary trading of contracts only

A closer look: timing and de-rated capacity of CM secondary trades

There have been almost 300 trades in the Capacity Market in each of the previous two delivery years to date, worth between £15m and £35m. Almost all secondary trades to date have been for CMUs which

are distribution connected, and typically, secondary traded de-rated capacities are small (<4MW). Trades have generally covered the full delivery year and occurred prior to the start of that year.



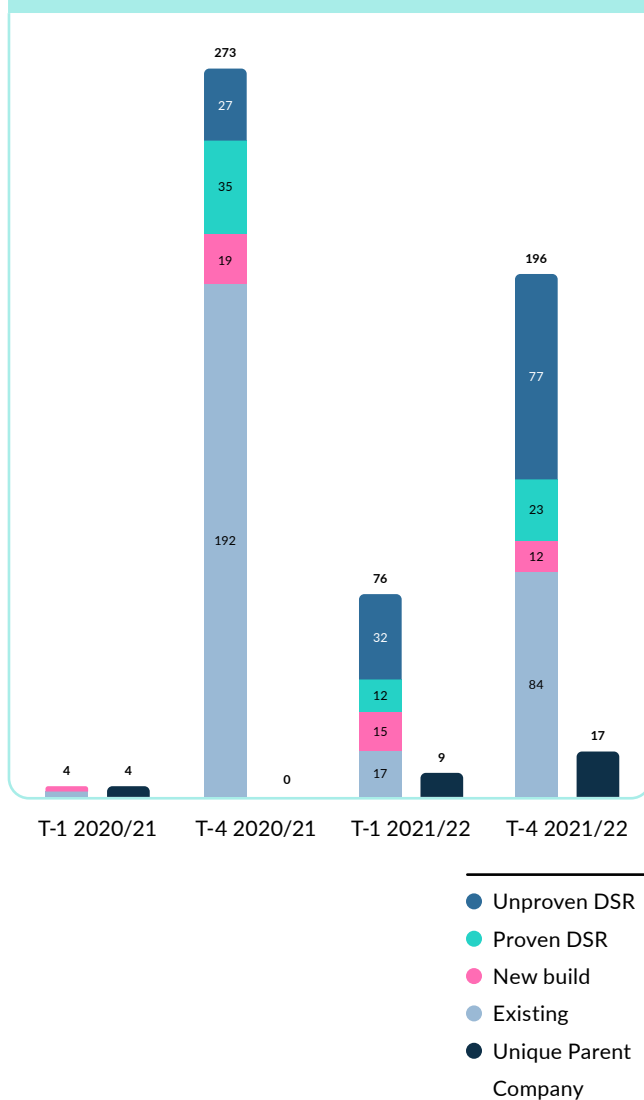
* Excluding EDF secondary trades (Hunterston B to West Burton A)

A closer look: secondary trades by CM Unit Category and technology group

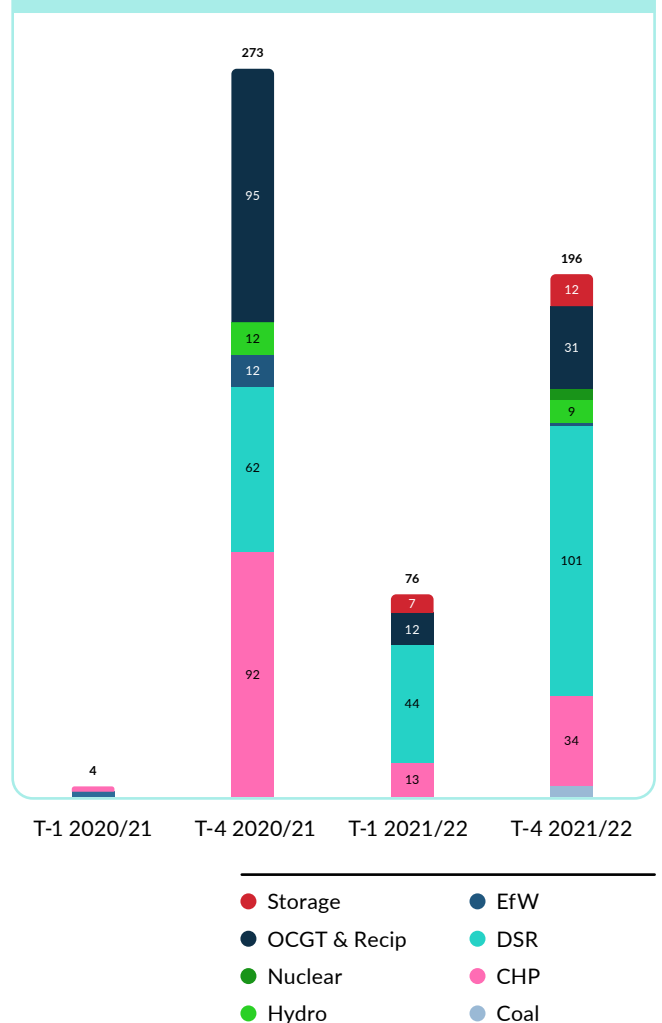
Over the past two delivery years, the majority of secondary trades were made for CM Unit Categories “Existing” and “Unproven DSR”. DSR represents the main technology group participating in the secondary

market, followed by CHP (Combined Heat and Power) and OCGT & Recip (Open Cycle Gas Turbine & Reciprocating Engines).

Graph 3: Secondary Trades by CM Unit Category



Graph 4: Secondary Trades by Technology Group



A closer look: secondary trading optionality

15 year contracts can also be secondary traded, however they can still only be traded for one year at a time in the relevant delivery year. This means that there will be multiple clear prices that contracts could be worth in a single secondary trading period. The

number of CM prices available to be secondary traded will continue to increase until 15 year contracts begin to expire. The maximum amount of different value CM contracts available to be traded will be 16, assuming the CM continues to run in its current format.

Auctions		Delivery Year								
		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
2015/16	T-4 (DY 2019/20)			£18.00	£18.00	£18.00	£18.00	£18.00	£18.00	£18.00
2016/17	EA (DY 2017/18)	£6.95								
	TA (DY 2017/18)	£45.00								
	T-4 (DY 2020/21)				£22.50	£22.50	£22.50	£22.50	£22.50	£22.50
2017/18	T-1 (DY 2018/19)		£6.00							
	T-4 (DY 2021/22)					£8.40	£8.40	£8.40	£8.40	£8.40
2018/19	T-1 (DY 2019/20)			£0.77						
2019/20	T-3 (DY 2022/23)						£6.44	£6.44	£6.44	£6.44
	T-1 (DY 2020/21)				£1.00					
	T-4 (DY 2023/24)							£15.97	£15.97	£15.97
2020/21	T-1 (DY 2021/22)					£45.00				
	T-4 (DY 2024/25)								£18.00	£18.00

Prices are per kW/Yr

Simplifying secondary trading – a marketplace approach

CM participants identified that secondary trading is currently a time consuming and inefficient process, which has not been optimised to provide the best price for either party during a contract exchange.

User research highlighted that an obstacle to secondary trading was a lack of visibility, which means there is no way for providers to exchange contracts easily. Currently, if a provider needs to sell a contract they will need to manually find a buyer themselves, relying on individual emails and phone calls to find and negotiate trades with other CM Providers. This can be both time-consuming and an administrative burden. As the need for secondary trading is predicted to grow (see Graph 5: Projected Secondates Trades), it is clear that a new approach is required.

A marketplace approach to secondary trading

Piclo Exchange was created to facilitate greater transparency on both sides, streamlining the process of finding and exchanging contracts and enabling optimal pricing through competitive bidding. In doing so, the marketplace provides additional revenue streams and de-risks participation by creating a liquid secondary market. Whilst the first secondary market open to users on Piclo is the CM, the marketplace will expand and continue to develop as the need for secondary trading grows across markets.

The screenshot displays the Piclo Exchange web application. The interface includes a top navigation bar with 'Exchange', 'Browse', 'Manage listings (1)', and 'Manage bids'. A sidebar on the left contains navigation links: Home, Exchange, DSO Map, Manage, and Settings. The main content area features a 'Choose listing to display' dropdown set to 'GP10'. Below this is a table for the 'GreenPower' listing, showing details like CMU, Trade Capacity (3.42 of 3.42 MW), Type (T4), Delivery year (2021/22), Trade Period (Full Year), CP (£/kW/Year) (£22.50), Guide Price (£/kW/Year) (£20.25), and Listing Value (£69,255.00). An 'Edit details' button is present. The 'Bids requiring action' section contains a table with columns: Received, Capacity, Period, Bid, and Position. It lists three bids, each with 'Accept', 'Reject', and 'Negotiate' buttons. The 'Stats' section shows 'Time since first listed' as 3 Days and 'Views' as 23 Total, 14 Unique. The 'Bids pending negotiation' and 'Rejected/historic bids' sections both show 'None'. A green 'GP' button is at the bottom left, and a help icon is at the bottom right.

Received	Capacity	Period	Bid	Position
21.01.21	3.42 MW	2021/22	£ 21.50 kW/Yr	<button>Accept</button> <button>Reject</button> <button>Negotiate</button>
21.01.21	2.00 MW	2021/22	£ 22.50 kW/Yr	<button>Accept</button> <button>Reject</button> <button>Negotiate</button>
21.01.21	3.42 MW	03.04.2021 04.04.2021	£ 22.50 kW/Yr	<button>Accept</button> <button>Reject</button> <button>Negotiate</button>

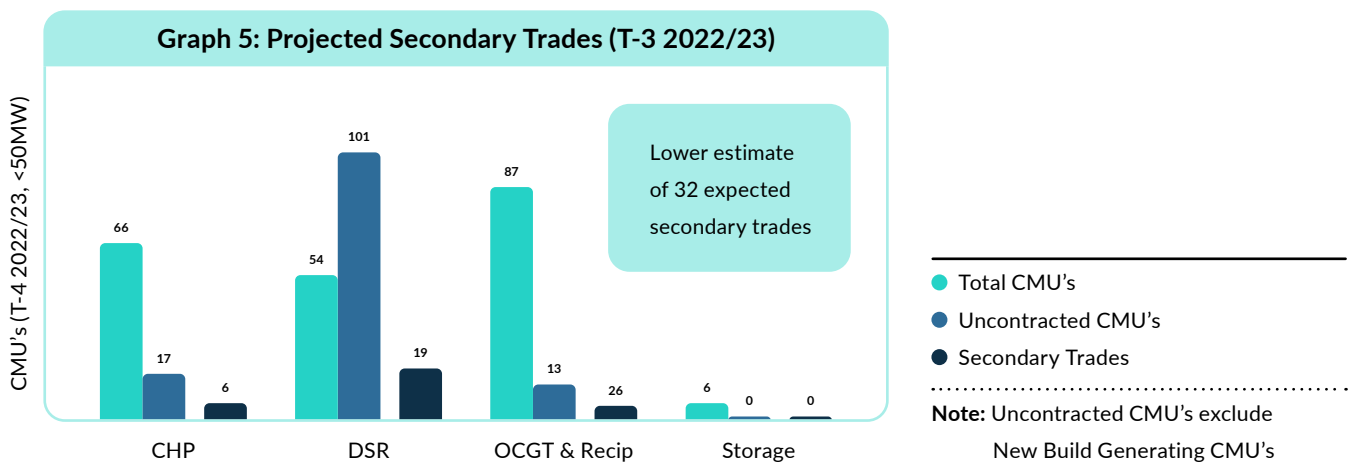
Example of a marketplace user-interface for secondary trading

A closer look: projected secondary trades

By extrapolating the proportions of secondary trades and applying these to contracted CMUs for the T-3 2022/23 delivery year, 32 secondary trades are estimated.

- De-rated capacity being split into multiple secondary trades
- Additional trades following T-1 auction for 2022/23 (auction took place 15 Feb 2022).

However, it is expected that the actual number would be higher due to:



Why might there be more secondary trading in the CM?

- Current commodity prices may lead to increased risk of insolvency and termination of existing agreements, as well as FSPs running assets harder to avoid peak prices. This could lead to greater unavailability due to back-up generators not being designed to run for such extended periods
- Tighter margins due to coal plant closures and nuclear and CCGT unavailability could make stress events more likely. Plus, due to newer, distributed technologies having smaller capacities than technologies such as coal plants, many more CMUs are needed to meet demand - leading to a higher probability that some of those will secondary trade
- There may be a reduction in over-procurement by National Grid ESO, leading to a higher chance that CM providers will have to fulfil their contractual obligations
- Clarifications to the Capacity Market rules could provide more security to participants seeking to secondary trade
- The potential introduction of sharper penalties could place more risk on post-event reallocation and so, shift greater volumes of trades to the secondary market

The benefits of Piclo Exchange

1 Full visibility of opportunities

For the first time, there is one simple place for FSPs to find and exchange contracts, providing full visibility to those seeking to take on or trade away their obligations.

2 Improved trading experience

In addition to making the process of finding contracts quicker and easier, the marketplace also streamlines the process of the exchange and facilitates partnerships through providing templates for contracts and delivering a user-focused service.

3 Increased number of market participants

By supporting secondary market participants, the number and type of FSPs willing to participate in markets, such as the Capacity Market, could rise and widen due to the de-risking of participation and more opportunities to win contracts.

4 Market information and insights

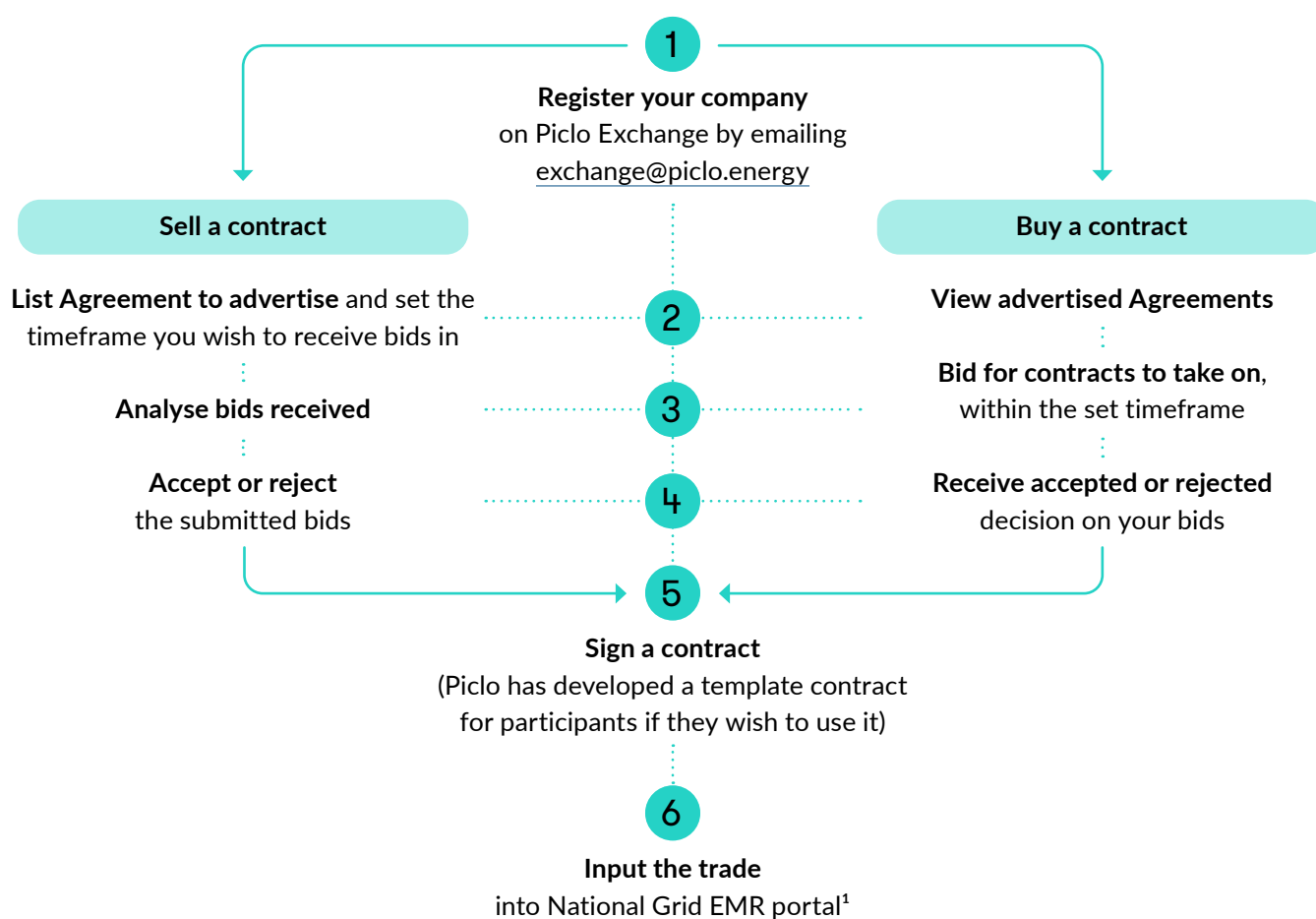
Market information such as real-time visibility of available contracts plus deadlines and pricing data is available on the Piclo Exchange interface. This allows participants to quickly get a realistic idea of how to optimise participation.

5 Whole system coordination

Whole system efficiencies will be driven by empowering participants to act through streamlined processes, improved interactions and availability of information.

How it works

To execute a trade on Piclo Exchange, users go through a set of simple steps:



¹ How is the obligation traded?

After the contract trade is agreed on Piclo Exchange, the Registered Holder and the Transferee must each submit to the Delivery Body in writing requests which are:

- in the form prescribed by the Delivery Body; and
- identical in all material respects; at least five Working Days before the first calendar day to which a Capacity Obligation subject to the transfer relates;

A transfer of a Capacity Agreement or Transferred Part has effect when it is entered in the Capacity Market Register.

Using Piclo Exchange

Using Piclo Exchange aims to speed up the secondary trading process for users. Where the existing process of emailing and phoning other participants could take over a month to execute, the marketplace cuts this process down to a week or two by streamlining the process and bringing all participants together in a single place.

Provider	Capacity (de-rated MW)	Transfer period	Guide price (£/kW/year)	Status
GoldenSolar	5.454	From: 1 Oct 2022 To: 30 Sept 2023	6.10	Bidding closed View
GoldenSolar	8.000	From: 1 Oct 2022 To: 30 Sept 2023	6.60	Bidding closed View
Demo FP 1	10.000	From: 1 Oct 2022 To: 30 Sept 2023	6.20	Bidding closed View
		From: 1 Dec 2021		

Browse listings

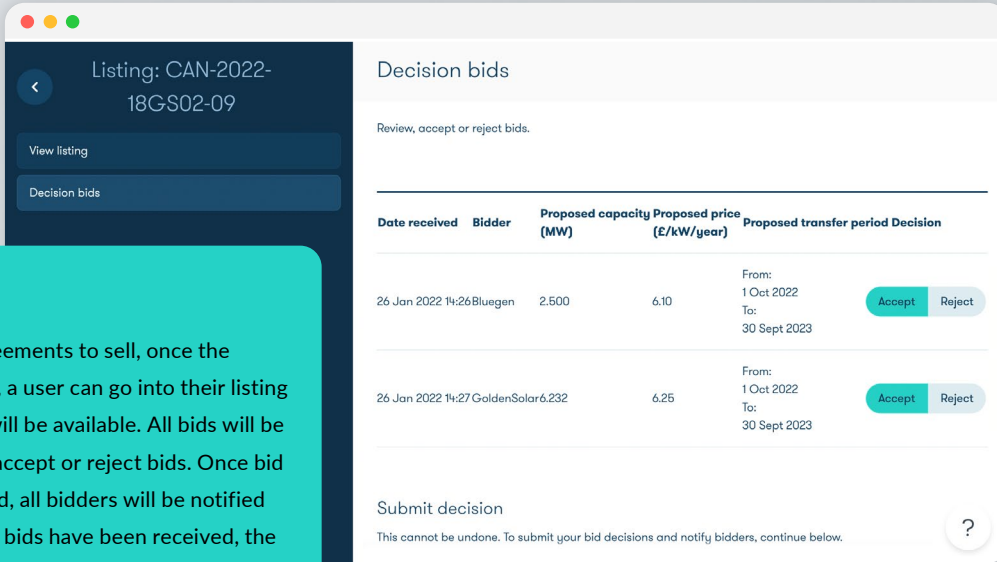
Once you have entered Piclo Exchange you will be able to view all the listings that have been posted (both past listings and live listings).

Bid on a Listing

For users wanting to take on a contract, if you view a listing for which bidding is still open and you wish to submit a bid, click the "submit bid" button. Bids must comply with CM Exchange Market Rules and will not be visible to anyone other than the company that has listed the agreement.

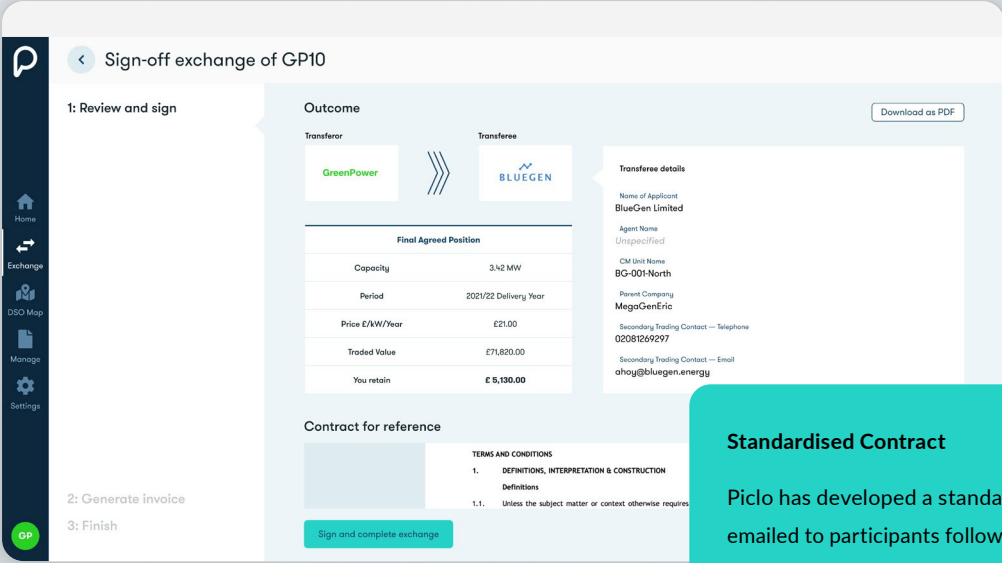
Decisioning Bids

For users that have listed agreements to sell, once the bidding close date has passed, a user can go into their listing and a “decision bids” button will be available. All bids will be visible here and the user can accept or reject bids. Once bid decisions have been submitted, all bidders will be notified of the decision via email. If no bids have been received, the bidding end date can be extended by emailing Piclo.



Standardised Contract

Piclo has developed a standardised contract that will be emailed to participants following a successful trade. It is up to the participants whether or not they wish to use this contract.



Next steps

If you are a CM Provider and would like to find out more about Piclo Exchange, email us at exchange@piclo.energy. You can be registered and ready to sell or buy contracts with others in the Capacity Market in the space of a few days.



About Piclo

Piclo was founded with a mission to power the world by cheap, clean and abundant electricity. Piclo Flex is a leading independent marketplace that brings together Flex Service Providers with System Operators to procure locational flexibility services.

As our energy systems become cleaner, more distributed and diversified in response to the climate crisis, our grids come under more stress and face challenges in maintaining the delicate balance of supply and demand.

Our marketplace enables technologies such as renewables, batteries and electric vehicles to provide locational flexibility to distribution networks, smoothing out the complex transition to a decarbonised future and delivering low-cost and resilient grids.

We collaborate closely with National Grid ESO, and are currently in commercial partnerships with three leading UK Distribution System Operators (DSOs) for their procurement needs: UK Power Networks, SP Energy Networks and Electricity North West.

On Piclo Flex:

£55m

of flexibility contracts awarded

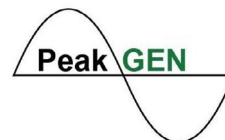
771 MW

of procured capacity

15 GW

of flexibility assets registered

Trial participants





www.piclo.energy



linkedin.com/company/piclo



exchange@piclo.energy