Revenue Stacking Explainer and FAQ's

About ENA and Open Networks

Energy Networks Association represents the companies which operate the electricity wires, gas pipes and energy system in the UK and Ireland. We help our members meet the challenge of delivering electricity and gas to communities across the UK and Ireland safely, sustainably and reliably.

Britain's energy landscape is changing, and new smart technologies are changing the way we interact with the energy system. On behalf of its members, ENA is leading the Open Networks programme that is transforming the way our energy networks operate. New smart technologies are challenging the traditional way we generate, consume and manage electricity, and the energy networks are making sure that these changes benefit everyone.

ENA's Open Networks programme is key to enabling the delivery of Net Zero by:

- opening local flexibility markets to demand response, renewable energy and new low-carbon technology and removing barriers to participation
- providing opportunities for these flexible resources to connect to our networks faster
- opening data to allow these flexible resources to identify the best locations to invest
- delivering efficiencies between the network companies to plan and operate secure efficient networks

Visit our website for further information on the programme and to access our deliverables.

Revenue Stacking

What is Revenue Stacking?
Revenue stacking is where a single flexible asset participates in multiple markets, to maximise its value to the energy system. Flexibility providers can receive multiple payments as a result. Revenue stacking can be split into three categories: 'Co-delivery', 'Splitting' & 'Jumping':

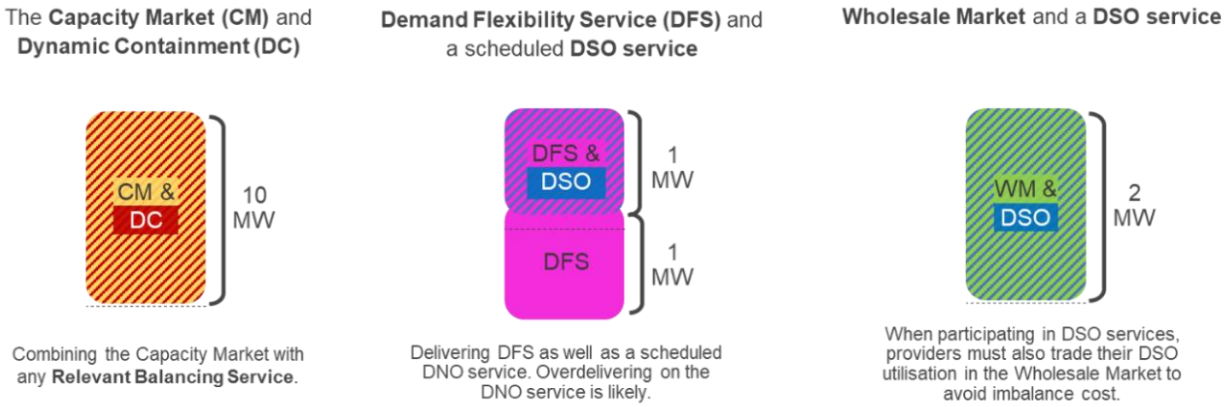
- **Co-delivery**: a single asset receives multiple payments for using the same capacity, at the same time, in the same direction.
- **Splitting**: a single asset receives multiple payments for using different capacity, at the same time.
- **Jumping**: a single asset receives multiple payments for services in different times (adjacent or non-adjacent).

	Co-delivery	Splitting	Jumping
Asset	Same	Same	Same
Capacity	Same	Different	Same / Different
Time	Same	Same	Different
Direction	Same	Same / Different	Same / Different

Below we provide illustrative examples of Co-delivery, Splitting and Jumping.

Co-delivery

A single asset receives multiple payments for using the same capacity, at the same time, in the same direction.



The figure above shows an example. The figure on the left shows how a single asset can be paid for providing Capacity Market (CM) and Dynamic Containment (Low). The asset, which can offer 10MW of generation turn up, is able to be paid twice for that 10MW. The Capacity Market can be co-delivered with 'relevant balancing services' as defined here.

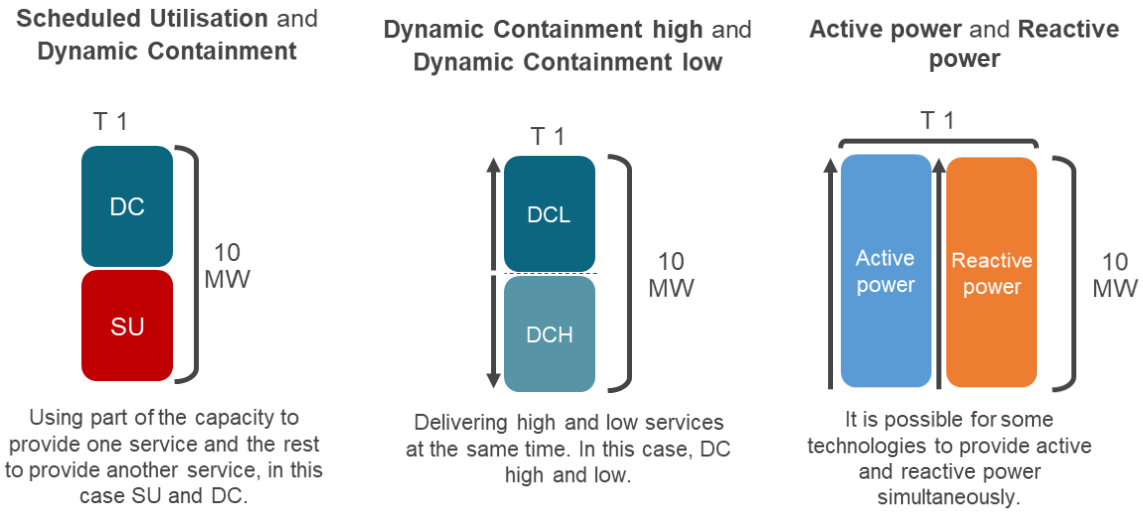
The figure in the middle illustrates that a single asset (or group of assets) can Co-deliver against the Demand Flexibility Service (DFS) and a scheduled DNO service. The asset, which can deliver demand turn down of 2MW, can deliver and be paid against both the DFS and DNO service.

Splitting

A single asset receives multiple payments for using different capacity, at the same time.

The figure below shows examples illustrating different ways of splitting flexible capacity between two services.

The figure on the left illustrates where services are in the same direction, and where the baseline of one service may be adjusted for the other. Figure in the middle illustrates where services are delivered in opposite directions - either because of adjusted baselines, or because services are not required simultaneously (eg Dynamic Containment High and Low). The example on the right shows additional stacking potential in cases where an asset can provide flexibility in both active (kW) and reactive power (kVA).



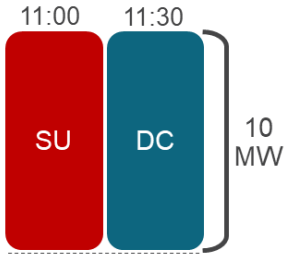
T = Time | DC = Dynamic Containment | SU = Scheduled Utilisation | WM = Wholesale Market

Jumping

A single asset receives multiple payments for services in different times (adjacent or non-adjacent).

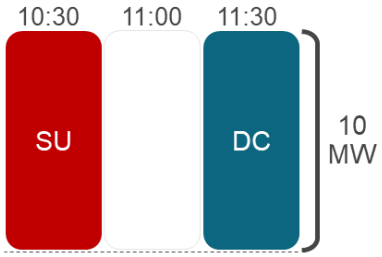
Examples where Jumping is permitted are widespread. That said, providers should consider any technology related constraints (eg maximum duration of response or time between activations). There may also be limitations how quickly assets can be registered or de-registered from a service.

Adjacent: Dynamic Containment (DC) and Scheduled Utilisation (SU)



Providing services in adjacent time periods. In this case DC and SU

Non-adjacent: Dynamic Containment (DC) and Scheduled Utilisation (SU)



Providing services in time periods that are not adjacent.

T = Time | DC = Dynamic Containment | SU = Scheduled Utilisation

What revenues can you stack?

The Revenue Stacking Excel Tool was created as an authoritative and intuitive tool for stakeholders.

The tool includes revenue stacking information from the NESO's Markets Roadmap and the ENA's Revenue Stacking Assessment for DSO Services. The tool has been validated by the NESO and all DSOs.

We welcome feedback on the tool, particularly related to its usefulness, usability and potential. If you have ideas for how it can be improved, please use the contact form on the ENA website.

ENA Revenue Stacking assessment excel tool

What is being done to improve revenue stacking opportunities?

The NESO and DSOs recognise the significant value that revenue stacking can bring to an efficient electricity system. We also acknowledge that there is more work to do to reduce barriers and ensure that all market participants can maximise their value to the system. We encourage interested stakeholders to engage with, and help shape, this activity. Below we summarise some of the most significant pieces of work:

- Open Networks currently has three open workstreams with a direct impact on how flexibility products can be combined:
- The Flexibility Products and Stacking group is looking to deliver clearer resources for flexibility service providers, a set of design principles to ensure that new services are stackable by default and a reduced set of DSO products
- The Baselining group is looking to define consistent standards for baselines, with an explicit objective to consider how any changes will impact product stackability

- The Primacy group is exploring the adjacent issue of how flexibility from nearby (not the same) assets is coordinated by NESO and DSOs to maximise system value, including supporting market access for providers, for example those within Active Network Management schemes.
- The design of the Demand Flexibility Service is currently being agreed for Winter 2024/25. In its proposed form, it removes the requirement for exclusivity and makes clear that the services could be stacked co-delivered with DSO flexibility services and the Capacity Market.
- Where changes impact settlement processes, they are managed by Elexon as modifications to the Balancing and Settlement Code. In November 2024, P415 will come into force, enabling aggregators to combine wholesale market opportunities with DSO and NESO services. Issue 114 continues to explore wider changes to enable wider market access for aggregators and a level playing field with suppliers
- In July 2024, Ofgem appointed Elexon into the new industry role of 'Market Facilitator'. A key element of their responsibility is to promote coordination and stacking of NESO and DSO services. The Market Facilitator is expected to be fully operational from late 2025.

FAQ's

Can I be paid twice for the same kWh?

In some cases, yes. This is called **co-delivery**. Co-delivery is where multiple services can be delivered from the same capacity at the same time, increasing the revenue earned for delivered power. Examples of services which can be co-delivered:

- DSO services and wholesale markets
- The Demand Flexibility Service and DSO services
- The Capacity Market and most NESO services (see 'Relevant Balancing Services')

To do this both services must be required at the same time and in the same direction. Care should be taken when entering into such an arrangement such that there is not a risk of conflicting signals or instruction from one buyer that could result in under delivery to the other buyer.

What are the benefits of stacking?

By allowing flexible assets to provide multiple services, we reduce the total amount of flexibility we need in the system and increase the revenue potential for each flexible asset. It therefore has value to the efficiency and operability of the whole system, as well as benefits to participants.

Are there any risks in stacking?

By combining different services there is a potential increase in utilisation of the asset, or increased disruption to its normal operation.

Different services may have different technical requirements, such as response time and ramp rates. The differing requirements may increase stress on an asset and this should be considered when entering into the markets.

There could be additional commercial risk and complexity for providers for stacking services. For example, if an asset was unavailable resulting in non-delivery of multiple services, the commercial impact would be higher.

A particular consideration for stacking is baselining, and agreeing the baseline with both contracting parties. This is particularly true for Splitting where baselines might suddenly increase/decrease as other contracts start and end.

Who can I speak to, in order to find out more?

To find out more about revenue stacking you can contact either your area's distribution system operator or the National Energy System Operator.

Do I need to let System Operators know that I am planning to stack services?

You should consult the contractual terms for the relevant services, but it is likely you will need to alert the buyers, not least to ensure you are appropriately baselined and not penalised for stacking. However, unless explicitly stated you are not obligated to inform the contracting parties of your *detailed* arrangements.

You may also wish to provide feedback to a specific operator on how a service could be adjusted to improve ease of stacking. All DSOs and NESO are interested in hearing this feedback and are looking to further improve these opportunities.

What is primacy?

As DSOs and NESO, we are responsible for different aspects of one interconnected electricity system. Actions that one party takes has the potential to impact another party. In particular, an action by one system operator may create a need for another system operator to compensate.

Primacy is about managing these interactions in a clear and efficient way. A working group under the Open Networks programme is currently developing the necessary rules and data exchanges. While this stacking page focuses on what a single asset can do, primacy is focused on the potential conflict between the actions of different assets within the same electrical network.

Further reading

For more detail on current stacking opportunities

- Revenue Stacking Assessment (2024, ENA, supported by Cornwall Insights). Provides further description of considerations when stacking products, along with the compatibility of specific services

For more detail on technical requirements of NESO and DSO flexibility products

- The standard DSO flexibility products (2024, ENA)
- Markets Roadmap (NESO)

Visit our website to find out more about Open Networks