Active Power Products Review

Open Networks | WS1A P6
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DOCUMENT CONTROL

Authorities

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Related documents

Reference 1	*Name any documents this paper references or builds upon, and hyperlink.*
Reference 2	

Change history

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Introduction

About ENA

Energy Networks Association (ENA) represents the owners and operators of licenses for the transmission and/or distribution of energy in the UK and Ireland. Our members control and maintain the critical national infrastructure that delivers these vital services into customers' homes and businesses.

ENA's overriding goals are to promote UK and Ireland energy networks ensuring our networks are the safest, most reliable, most efficient and sustainable in the world. We influence decision-makers on issues that are important to our members. These include:

- Regulation and the wider representation in UK, Ireland and the rest of Europe
- Cost-efficient engineering services and related businesses for the benefit of members
- Safety, health and environment across the gas and electricity industries
- The development and deployment of smart technology
- Innovation strategy, reporting and collaboration in GB

As the voice of the energy networks sector, ENA acts as a strategic focus and channel of communication for the industry. We promote interests and good standing of the industry and provide a forum of discussion among company members.

About Open Networks

Britain's energy landscape is changing, and new smart technologies are changing the way we interact with the energy system. Our Open Networks programme 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

We're helping transition to a smart, flexible system that connects large-scale energy generation right down to the solar panels and electric vehicles installed in homes, businesses and communities right across the country. This is often referred to as the smart grid.

The Open Networks programme has brought together the nine electricity grid operators in the UK and Ireland to work together to standardise customer experiences and align processes to make connecting to the networks as easy as possible and bring record amounts of renewable distributed energy resources, like wind and solar panels, to the local electricity grid.

The pace of change Open Networks is delivering is unprecedented in the industry, and to make sure the transformation of the networks becomes a reality, we have created six workstreams under Open Networks to progress the delivery of the smart grid.

2022 Open Networks programme Workstreams

- WS1A: Flexibility Services
- WS1B: Whole Electricity System Planning and T/D Data Exchange
- WS2: Customer Information Provision and Connections
- WS3: DSO Transition
- WS4: Whole Energy Systems
- WS5: Communications and Stakeholder Engagement

Our members and associates

Membership of Energy Networks Association is open to all owners and operators of energy networks in the UK.

- Companies which operate smaller networks or are licence holders in the islands around the UK and Ireland can be associates of ENA too. This gives them access to the expertise and knowledge available through ENA.
- Companies and organisations with an interest in the UK transmission and distribution market are now able to directly benefit from the work of ENA through associate status.

ENA members

Cadent – Your Gas Network
electricity north west – Bringing energy to your door
ESB NETWORKS
gtc
nationalgrid
nationalgridESO
Northern Gas Networks
Northern Ireland Electricity Networks
NORTHERN POWERGRID
Scottish & Southern Electricity Networks
SGN – Your gas. Our network.
SP ENERGY NETWORKS
UK Power Networks – Delivering your electricity
WALES&WEST UTILITIES
WESTERN POWER DISTRIBUTION – Serving the Midlands, South West and Wales

ENA associates

- Chubu
- EEA
- Guernsey Electricity Ltd
- Heathrow Airport
- Jersey Electricity
- Manx Electricity Authority
- Network Rail
- TEPCO

Executive Summary

TO BE COMPLETED

Background

Previous work – ON20 WS1AP3

In 2020 WS1A P3 – Active Power Products group defined the standard definitions and parameters for the four active power products currently procured by UK DNO's.

All products currently serve a purpose, linked to liquidity

Dependencies and interactivity

ONP Ref	Description of dependency or interactivity
ON22 WS1A P2	Procurement processes – this product is identifying the steps required to move towards closer to real time procurement, and the standardisation of pre-qualification criteria.
ON22 WS1A P5	Primacy rules – key consideration of how these services will be operated.
ON22 WS1A P4	Common contract – will need to update the schedules with this information to drive further consistency
ON2020 WS1A P7	Baselining – our definitions of these products impacts the baselining principles and methods to be applied to these services.

Key deliverables

This paper refers to the deliverables below, from the ON22 PID.

Ref	Deliverable Scope/description	Deliverable date
A	Flexibility product catalogue - Consolidate a list of all flexibility products across DSO and ESO market and their existing technical characteristics.	Mar-22
C	This will capture the experience and key learnings from deploying the 4 active power (DSO) products. This will identify: - Areas of divergence - Identification of factors that are barriers to markets development - Factors that improve stackability threshold for products	Jul-22

	- Other relevant factors identified by the product team Recommendations for refinement/alignment of technical specifications of - Existing DSO flex products (if applicable) - Learnings from developments in the area of reactive power flexibility product This will be included in the July flexibility consultation.	

Analysis

Existing product review

The below four active power products were defined through ON20 WS1A-P3, with a timeline for implementation stated as December 2020. This built on the original definitions developed through Open Networks under WS2 P1 in 2018.

Agreed Active Power Product definitions	
Active Power Product	**Definition**
Sustain	The Network Operator procures, ahead of time, a pre-agreed change in input or output over a defined time period to prevent a network going beyond its firm capacity.
Secure	The Network Operator procures, ahead of time, the ability to access a pre-agreed change in Service Provider input or output based on network conditions close to real-time.
Dynamic	The Network Operator procures, ahead of time, the ability of a Service Provider to deliver an agreed change in output following a network abnormality.
Restore	Following a loss of supply, the Network Operator instructs a provider to either remain off supply, or to reconnect with lower demand, or to reconnect and supply generation to support increased and faster load restoration under depleted network conditions.

Service Parameter	DNO Flexibility Products				
	Sustain	Secure (Scheduled)	Secure (Dispatched)	Dynamic	Restore
When required?	Scheduled forecast overload	Pre- fault / peak shaving		Network abnormality / planned outage	Network Abnormality
Risk to Network	Low	Medium		High	High
Utilisation Certainty	High	High		Low	Low
Frequency of Use*	High	Medium		Low	Low
Minimum Flexible Capacity	0-50kW				
Minimum Utilisation Duration Capability	30 mins				
Minimum Utilisation	15 - 30 mins				
Maximum Ramping Period	N/A	N/A	<15 mins	<15 mins	<15 mins
Availability Agreement Period	N/A	Contract stage	Week ahead	Contract stage if applicable	Contract stage if applicable
Utilisation Instruction Notification Period	Scheduled in advance**	Contract stage	Real Time	Real Time	Real Time

* Frequency is location specific defined at the point of procurement
** Utilisation requirements may differ to schedule and be instructed in real time

DNO's have continued to develop their flexibility offerings over the last 18 months in response to stakeholder feedback and refining their processes to best suit their operational requirements as they learn from implementation. This has resulted in some variance between the DNOs based on how they have interpreted the service to best suit their networks and operational challenges to drive most value for their customers.

It is also important to note that not all of the DNOs are using all of the products, and some of the reflections on variance are speculative on that basis.

Areas of divergence

The product group have undertaken a gap analysis to identify where DNO's interpretation of products maintains some divergence, and to understand the reasons for this.

Sustain

DNO's are currently aligned on the definition and interpretation of the Sustain product. This product is procured in advance, according to a pre-agreed schedule whereby the Provider is made aware of the times they are expected to be providing services at the point of contract.

Parameter	DNO interpretation
Network constraint	Pre-Fault
Procurement timescale	Annual/Season
Payment mech	Utilisation only
Availability Agreement period	Pre-determined
Utilisation Instruction	Scheduled contract stage
Dispatch mechanism	Scheduled / Self dispatch

Secure

The secure product is similarly procured in advance, and Providers are given notice at the procurement and contract stages of the expected windows of availability and utilisation. Being a pre-fault product, this has a higher level of utilisation certainty than Dynamic or Restore.

However, a key area of divergence is the point at which that availability is agreed, meaning the Provider is therefore entitled to an availability payment. Some DNO's agree this availability period formally at the week ahead stage, some 2 weeks ahead, and one DNO secures this availability at the year ahead stage.

All DNO's currently provide a forecast of the expected availability and utilisation window, however for those networks that secure availability at shorter time scales (week or 2 week ahead) the length of this window or capacity required may vary slightly in line with verified network conditions to ensure efficient network operation. Availability agreed at the year-ahead stage can give higher revenue certainty to Providers and in the instance of UKPN, can combine with other shorter-term products such as their short term Dynamic service to cater to different types of flexibility provider. However, availability secured this far ahead could also potentially exclude them from participating in other market opportunities that may become available at a later stage.

There is also some divergence in the timing of the utilisation instruction, being issued either in real time with a 15 minute ramping period, or earlier in the day notifying the provider of the utilisation window start time. These instructions can also vary between using an API interface, phone call or email.

Parameter	DNO interpretation
Network constraint	Pre-Fault / planned outage
Procurement timescale	Annual/Season
Payment mech	Availability & Utilisation
Availability Agreement period	Week ahead / 2 weeks ahead / Year ahead
Utilisation Instruction	Week ahead / Real time / Within day
Dispatch mechanism	API - 15 mins / Phone / Email

Dynamic

DNO with the divergence to explain why

The Dynamic product is a post-fault requirement, utilised in reaction to a network abnormality. The majority of DNO's operate this product consistently through availability and utilisation payments, with availability secured at the week ahead stage and utilisation instructions sent in real time requiring a near immediate response to help ease the network constraint. UKPN do not seek availability under this product, instead compensating for utilisation only.

UKPN have expanded the application of the Dynamic product to pre-fault requirements. This translates to an increased frequency of utilisation and allows UKPN to use the Dynamic product to test and promote closer to

real-time markets. UKPN use the Dynamic service in combination with the Secure product. By procuring across long- and short-term commitment timescales, UKPN look to accommodate different types of flexibility provider as well as manage network risk.

As part of the consultation, we are keen to understand industry views on using the same products in different timelines, or separately defining different products to achieve this.

Similarly to the Secure service, there is also divergence on the timing of the utilisation instruction and the dispatch mechanism for issuing this instruction as detailed in the below table.

Parameter	DNO interpretation
Network constraint	Network abnormality
Procurement timescale	Annual/Season
Payment mech	Availability & Utilisation / Utilisation only
Availability Agreement period	No availability / Week ahead / 2 weeks ahead
Utilisation Instruction	Real time / Within day / day ahead
Dispatch mechanism	API - 15 mins / Phone / Email

Restore

DNO's are currently aligned on the definition and interpretation of the Restore product. This product is procured in advance as a utilisation only product as it is only operated in post fault situations to facilitate restoration support.

Parameter	DNO interpretation
Network constraint	Post fault - CI/CML
Procurement timescale	Annual/Season
Payment mech	Utilisation only
Availability Agreement period	N/A
Utilisation Instruction	Real Time

Dispatch mechanism	API / Phone / Email

Barriers to market development

Barriers can be categorised under the two key headings of procurement and operation.

Procurement

There is emphasis across the Open Networks Project and industry on a general direction of travel towards closer to real time procurement across a range of services, which is being reviewed in particular in Product 2 of Work Stream 1A – Procurement Processes. While there are benefits to this, in many regions the markets for flexibility are nascent and there is often a need for longer term contracts and longer term revenue certainty while these markets develop. Although this can in itself remove capacity from shorter term markets ahead of time, we generally believe there is a role for both closer to real time and longer-term contracts further ahead of time. WS1A P2 is also looking at standardising the pre-qualification criteria for participating in flexibility services, and the current variances in product interpretation present a barrier to this standardisation.

Each DNO faces inherently different operability challenges and may interpret the four standard products differently (within the agreed parameters) in order to drive the most value for their own network and customers. This interpretative difference across networks may present a real or perceived barrier to national or cross-regional flexibility providers, however there may be greater overall value to the end consumer in the services being operated in a tailored way.

Operation

This product will continue to consider the stackability of the flexibility products with each other and across other industry services, considering: ‘stacking’ - the same MW in the same time period, ‘splitting’ - the same asset in the same time period, but not the same MW, and ‘jumping’, same asset, same MW but different adjacent/different time period. Although ongoing, initial findings of the review indicate that availability and utilisation secured further ahead of time reduce the ability of a service provider to stack, however they also provide networks with much needed confidence in the ability of services to effectively manage network constraints to meet regulatory obligations.

Recommendations

The two products that currently demonstrate the highest levels of divergence are the Secure and Dynamic products.

We would therefore like to gain feedback from stakeholders on the materiality of these differences, and any recommendations for alignment.

We are keen to understand whether industry would value the creation of a new product similar to how UKPN are currently operating their Dynamic product, whereby DNO’s procure at the day ahead stage any further

flexibility required to address a forecasted shortfall. This could also be used to manage any notices of unavailability from existing contracted Providers and would be a utilisation only product.

This could possibly be achieved by using existing products in different timescales. We are keen to understand what the preferred approach might be.

Either of these would address the deviation currently seen within the Dynamic product, and reflects the work undertaken in WS1A product 2, which looks to facilitate a move towards closer to real-time procurement through processes and prequalification requirements, and WS1A Product 4, which is looking to standardise the common contract for flexibility by moving towards a more framework style approach.

Questions for stakeholders

1. Are the 4 active power products clear and easy to understand? If no, please provide further detail.
2. What are the most important parameters to you in terms of distinguishing between products?
3. Do you view the current divergence between different DNO's interpretation of products, such as through response times, procurement timescales, and payment mechanics as a barrier to participation? If yes, would you prefer these to be defined as a separate product for clarity?

Parameter	SUSTAIN DNO interpretation	SECURE DNO interpretation	DYNAMIC DNO interpretation	RESTORE DNO interpretation
Network constraint	Pre-Fault	Pre-Fault / planned outage	Network abnormality	Network abnormality
Procurement timescale	Annual/Season	Annual/Season	Annual/Season	Annual/Season
Payment mech	Utilisation only	Availability & Utilisation	Availability & Utilisation / Utilisation only	Utilisation only
Availability Agreement period	Pre-determined	Year ahead / 2 weeks ahead / Week ahead	No availability / Week ahead / 2 weeks ahead	N/A No availability
Utilisation Instruction	Scheduled contract stage	Week ahead / Real time / Within day	Real time / Within day / day ahead	Real Time
Dispatch mechanism	Scheduled / Self dispatch	API - 15 mins / Phone / Email	API - 15 mins / Phone / Email	API / Phone / Email

GLOSSARY

APPENDICES

Visit our website to find out more about Open Networks

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