Consultation

Flexibility Market Asset Registration Consultation

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Contact:	Euan Kirkmorris, Nina Klein, Francis Mosley
Team:	Decentralised Energy Systems
Telephone:	020 7901 7000
Email:	flexibility@ofgem.gov.uk

We are consulting on Flexibility Market Asset Registration. This is the next step of our Flexibility Digital Infrastructure policy work, which we previously published a Call for Input on in March 2023.[1] This document outlines the scope, purpose, and questions of the consultation and how you can get involved.

We welcome responses from stakeholders with an interest in flexibility markets and asset visibility, especially at domestic and small-business scale. We particularly welcome responses from flexibility service providers, system and market operators, market platforms, asset installers, smart appliance operators, and others involved in facilitating, providing, or procuring flexibility services. We would also welcome responses from other stakeholders and the public.

Once the consultation is closed, we will consider all responses. We want to be transparent in our consultations. We will publish the non-confidential responses we receive alongside a decision on next steps on our website at ofgem.gov.uk/consultations. If you want your response – in whole or in part – to be considered confidential, please tell us in your response and explain why. Please clearly mark the parts of your response that you consider to be confidential, and if possible, put the confidential material in separate appendices to your response.

[1] Call for Input: The Future of Distributed Flexibility | Ofgem

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Contents

Foreword

Akshay Kaul, Director General for Infrastructure, Ofgem

Tim Jarvis, Director General for Markets, Ofgem

In this consultation we are introducing an initial step that will unleash millions of consumers to be part of the biggest transformation the energy sector has seen in generations.

Flexibility can save us £30-70 billion by 2050,[2] which means lower bills for all consumers. Flexibility is a necessity for our future energy system, not a nice to have. We cannot rely on gigawatts of wind and solar without also relying on gigawatts of flexibility to help alleviate their intermittency which batteries alone cannot fix. But distributed flexibility presents a fundamental change to how we operate our energy system. In the past it was static and passive, we made a few big decisions hour-by-hour for a few large generation assets. Now and in the future, it is a much more dynamic system with active control on a minute-by-minute basis to millions of assets, both generation and demand.

We need to ask ourselves how we want to face that new future. It will require change and pushing boundaries. It will require doing things which are currently unknown, to deliver things which are certainly known – that we must achieve net zero and combat climate change as fast as we possibly can.

We want to face this future together as a sector boldly going where we have not gone before. We want to build systems that empower all consumers to benefit from the net zero transition. We want to work together to drive whole-system solutions across organisations. Our original Call for Input in Summer 2023 proposed these ideas for coordinated digitisation of flexibility markets, we now want to make that vision a reality with the proposals for Flexibility Digital Infrastructure in this consultation.

There is no way we can operate a complex, interconnected future energy system using the tools of yesterday. Currently we are flying blind, we don't have full visibility or control of these new flexible assets. This is challenging for the system operator,

[2] Transitioning to a net zero energy system: smart systems and flexibility plan 2021 | GOV.UK

inefficient for network companies and most of all prohibitive for consumers who want to participate in flexibility markets and reap the rewards. But we have a plan to change this, to equip ourselves with the modern tools needed to face the future.

With this consultation, we intend to end the era of flying blind, ensuring visibility and transparency for flexible assets in markets. We intend to create the tools necessary for distributed assets like electric vehicle chargers, heat pumps, and home battery storage systems to seamlessly register for markets in a one-stop-shop, eliminating the complexity of the myriad platforms and processes they grapple with today. We want to maximise their participation in flexibility markets to benefit system operators, to benefit asset owners, and ultimately to benefit all consumers through lower bills which are only possible if we build this smart, flexible energy system. This is the first step for the Flexibility Digital Infrastructure, to provide common Flexibility Market Asset Registration.

Executive Summary

In 2023 we published our Call for Input on the Future of Distributed Flexibility, to gather views on our vision for a Flexibility Digital Infrastructure.[3] Our aim was to unlock distributed assets to participate in flexibility markets at the pace and scale required to meet the UK's net zero energy ambitions.

In this consultation, we set out how our Flexibility Digital Infrastructure policy has evolved in response to your Call for Input responses and subsequent stakeholder engagement. We now seek your views on our proposals to focus policy interventions on achieving common Flexibility Market Asset Registration for ESO and DSO markets.

At present owners and operators of small-scale energy assets (smart devices such as heat pumps, electric vehicle chargers, and home battery energy storage systems) must register the same data, multiple times, in different ways, to access different flexibility markets. This is a barrier to entry for millions of small-scale energy assets trying to access flexibility markets and it prevents consumers from obtaining the maximum value from their assets.

Our Flexibility Market Asset Registration policy sets out proposals to overcome these challenges in a common, coordinated way. We propose digital infrastructure where data is collected once, stored as a single source of truth by a trusted entity, and can be accessed by multiple users who need it. We set out a range of delivery body options to be considered for delivering the digital infrastructure itself. We propose the Market Facilitator as the responsible entity for associated activities such as enablers, to align ESO and DSO processes, and initial design work for the digital infrastructure itself.

Our Flexibility Market Asset Registration policy aligns with multiple wider policy areas, in particular the Market Facilitator role and the Data Sharing Infrastructure.

We strongly encourage stakeholders to provide their feedback on our proposals for Flexibility Market Asset Registration. You feedback will help ensure that we can meet the sector's need for a simple and streamlined process for registering small-scale assets into flexibility markets.

[3] The Flexibility Digital Infrastructure was referred to as the Common Digital Energy Infrastructure in the Call for Input.

1. Introduction

Section summary

This section sets out the structure of the consultation, the background to the policy areas covered, and what specific aspects are being consulted on.

Structure of the consultation

Section 1: Introduction

1.1 Section 1 introduces the structure of the consultation, the background and context to the policy areas covered by this consultation, and what specific aspects of those policy areas are being consulted on.

Section 2: Flexibility Digital Infrastructure Policy

1.2 Section 2 details the Office of Gas and Electricity Markets' (Ofgem's) Flexibility Digital Infrastructure (FDI) policy. This includes what an FDI is, why we believe one is necessary to facilitate distributed flexibility, recent developments across policy and industry relevant to the FDI, and wider policies and initiatives the FDI aligns with. It explains why we believe that common Flexibility Market Asset Registration is a priority area and requires policy intervention. It also covers the importance of delivering enablers to unlock distributed flexibility.

Section 3: Flexibility Market Asset Registration – Aims, Scope & Approach

1.3 Section 3 sets out the problem statement and Ofgem's current policy proposals for common Flexibility Market Asset Registration. This includes the scope of markets, assets, and data which we proposed the digital infrastructure should cover. It also sets out the functions and principles that we believe are required to achieve common Flexibility Market Asset Registration.

Section 4: Flexibility Market Asset Registration – Activities & Delivery

1.4 Section 4 sets out the activities and delivery needed to realise the proposals in Section 3. This includes underlying enablers work to align and digitise flexibility market processes and design work for the digital infrastructure itself. We propose that the Market Facilitator be responsible for these activities. We also set out a range of delivery body options, to consider which are suitable for delivering the digital infrastructure itself. We also discuss timeline considerations for deployment.

Section 5: General Asset Visibility

1.5 Section 5 summarises the general asset visibility policy vision, which Flexibility Market Asset Registration policy intends to align with long term. This includes

the policy vision as set out in the previous government's Energy Digitalisation Strategy (EDS),[4] the progress to date towards that vision, and considerations that might be required to achieve that vision. This section seeks to gather evidence to assist the Department for Energy Security and Net Zero in further policy development in this area.

Section 6: Next Steps and Consultation Responses

1.6 Section 6 describes our proposed next steps following this consultation, as well as details on how to respond to the consultation, how we handle the data related to your response, and how to track the progress of the consultation.

Policy background and context

1.7 To meet the government's ambition for the UK to become a clean energy superpower, with a zero carbon electricity system by 2030,[5] more of our electricity will need to be generated by renewables like wind and solar, which makes supply more variable. At the same time, the electricity system needs to adapt to the electrification of heat and transport, which makes demand much larger. To accommodate these changes in supply and demand, our electricity system must become increasingly flexible.[6]

1.8 Flexibility is critical to avoid generation overbuild; to avoid, defer, and optimise network reinforcement; and to support the secure operation of the system. Flexibility has the potential to avoid billions of pounds of additional investment every year,[7] which ultimately means reduced energy bills for all consumers. In recognition of this, Ofgem has made "*enabling consumer-focused flexibility"* one of the core objectives of our Multiyear Strategy[8] in order to realise our vision of *"establishing an efficient, fair and flexible energy system."*

1.9 Distributed flexibility is especially important given the increasing adoption of electric vehicles and heat pumps, which requires enabling millions of new assets to connect to the grid. These have the potential to be used flexibly, but the current system and existing market arrangements present barriers to distributed

[4] Digitalisation our energy system for net zero: strategy and action plan | GOV.UK
[5] Energy Secretary Ed Miliband sets out his priorities for the department | GOV.UK
[6] Flexibility can be defined as the ability for a smart, grid-connected asset to modulate its operation in response to an external signal. This signal reflects the needs of a particular energy system actor and defines the flexibility service that is being sought.
[7] Carbon Trust and Imperial College London estimated deploying demand side flexibility alone would save around £4.5bn in annual system costs by 2050 – Key findings - Flexibility in Great Britain | The Carbon Trust (page 106)
[8] Multiyear Strategy sets out Ofgem's vision for delivering clean, affordable and secure energy system | Ofgem

flexibility. This is why our policy is focused on unlocking distributed flexibility assets to participate in markets at scale, through an FDI and underpinning enablers.

1.10 We initiated this policy through our Call for Input on the Future of Distributed Flexibility in March 2023. There we proposed the case for change and the need for a common end vision to deliver distributed flexibility at scale. Since receiving supportive responses to these proposals, we have further developed and refined our policy through various activities as described below.

1.11 To gather stakeholder input, we held detailed workshops and exercises. We extend our thanks to everyone who participated, and particularly to the organisations who engaged in the System Use Case exercise. The submissions to this exercise are included as a standalone annex to this consultation.

1.12 To further innovative technical solutions, we supported the Department for Energy Security and Net Zero with the creation of the Net Zero Innovation Portfolio (NZIP) innovation programme Flex Markets Unlocked (FMU).[9] To spur industry progress on key enablers, we published an open letter to the Energy Networks Association (ENA), supporting the Open Networks programme and outlining our expectations and renewed engagement.[10]

1.13 In tandem, we have actively monitored the significant developments across industry. The Distribution System Operators (DSOs) are increasingly procuring standardised flexibility services and are using different in-house or independent market platforms. The Electricity System Operator (ESO) has separately progressed deployment of the Single Markets Platform. There are also emerging commercial offerings and international innovations to streamline and coordinate flexibility markets. Whilst these developments are welcome and beneficial for distributed flexibility, there is still more to be done.

1.14 Going forward, we will use this consultation to gather evidence on current proposals and to steer future progress. Given the findings from our policy development activities, our proposals now focus on asset registration for flexibility markets as a first step. We are proposing that the Market Facilitator be given responsibility for enablers and design activities and convenes Working Groups, and we are considering what delivery body options are suitable for the digital infrastructure itself.

[9] NZIP Flex Markets Unlocked competition guidance | GOV.UK
[10] Open letter on the Open Networks Project | Ofgem

1.15 The proposals in this consultation have close alignments with multiple policy areas. In particular the Market Facilitator role,[11] the Data Sharing Infrastructure (DSI),[12] and work on Consumer Consent.[13] Additionally, they are relevant to EDS commitments on general asset visibility, and the NZIP Automatic Asset Registration (AAR) Innovation Programme.[14]

What we are consulting on

1.16 We are consulting as part of our on-going work on the FDI.

1.17 We outline progress towards the FDI and why we believe common Flexibility Market Asset Registration is a key first step for policy intervention. We seek stakeholder feedback on this first step proposal and our proposal not to intervene in other areas while we monitor market developments.

1.18 We set out our common Flexibility Market Asset Registration proposals for feedback. This covers the proposed scope of: ESO and DSO markets, small-scale domestic and small business assets, and static data for market registration. It also covers the proposed functional outcomes the digital infrastructure should provide, e.g. single source of truth and good user experience, and the proposed design principles its delivery should follow, e.g. timely delivery and appropriate security.

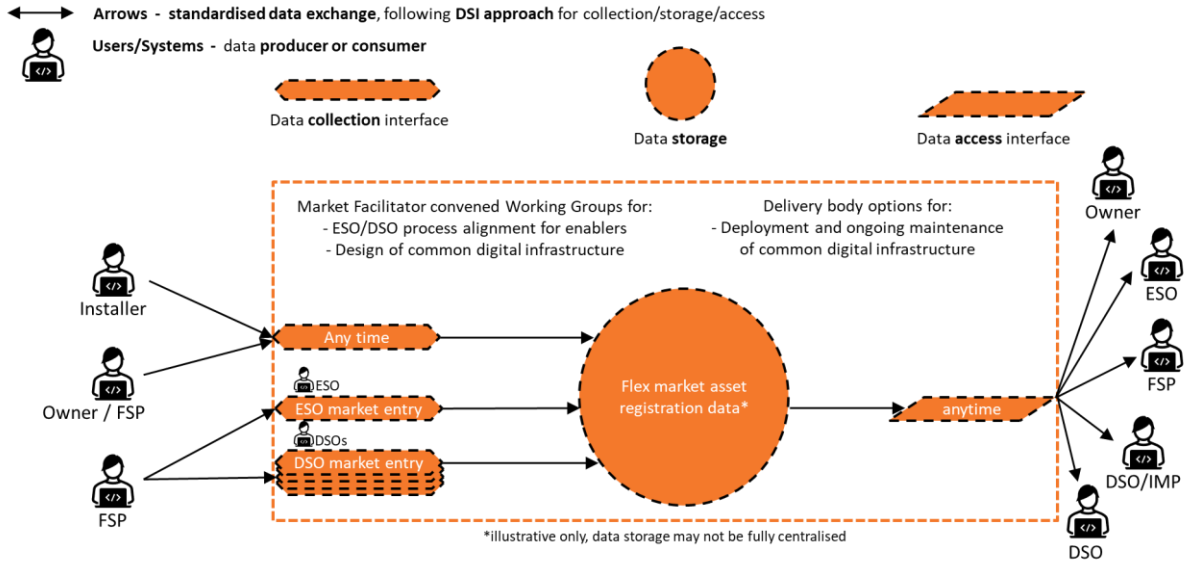
1.19 We are seeking feedback on the proposal that the Market Facilitator should be responsible and convene Working Groups to deliver enablers related to ESO and DSO alignment and design work for the digital infrastructure. We seek feedback on the proposals that the digital infrastructure should enable data collection, storage, and access; fully aligned with DSI approaches. We outline potential delivery body options for the digital infrastructure and welcome stakeholder views on these options.

1.20 We discuss the policy vision from the EDS towards improving general asset visibility and seek to gather stakeholder views on considerations including using policy levers, priority use cases, and undertaking cost-benefit analysis.

[11] Consultation: Market facilitator delivery body | Ofgem and Decision: Market facilitator delivery body | Ofgem
[12] Governance of the Data Sharing Infrastructure | Ofgem
[13] Data Sharing in a Digital Future | Ofgem
[14] LCT Connect | Energy Systems Catapult and Automatic Asset Registration Programme: Phase 1 projects | GOV.UK

1.21 *Figure 1* shows an overview of our proposals for common Flexibility Market Asset Registration, both the digital infrastructure itself and the associated design and delivery bodies.

Figure 1: The digital infrastructure proposed for Flexibility Market Asset Registration



1.22 The Flexibility Market Asset Registration digital infrastructure will allow asset installers, owners, and contracted flexibility service providers (FSPs) to register assets just once through data collection interfaces; this can be at any time but primarily upon first entering an ESO or DSO flexibility market. The data will then be stored as a common single source of truth; the storage approach may not be fully centralised. Then through a data access interface, owners, system operators, FSPs, and independent market platforms (IMPs) will be able to access the data as needed, for example when entering an additional flexibility market.

1.23 The Market Facilitator will be responsible for enablers and design activities through convening Working Groups. There are a range of potential delivery body options that would be responsible for the deployment and maintenance of the common digital infrastructure, including the storage solution and collection and access interfaces.

2. Flexibility Digital Infrastructure Policy

Section summary

This section explains how our policy has developed since the Call for Input and why we are now focusing on delivering common Flexibility Market Asset Registration. The section describes our key policy alignments with other government and Ofgem policies and innovation programmes. It also sets out relevant industry developments and discusses the importance of enablers for distributed flexibility.

The Flexibility Digital Infrastructure

2.1 In our Call for Input on the Future of Distributed Flexibility, we described the four key barriers preventing consumers entering distributed assets into multiple markets and preventing us from unlocking the system-wide benefits of distributed flexibility, these were:

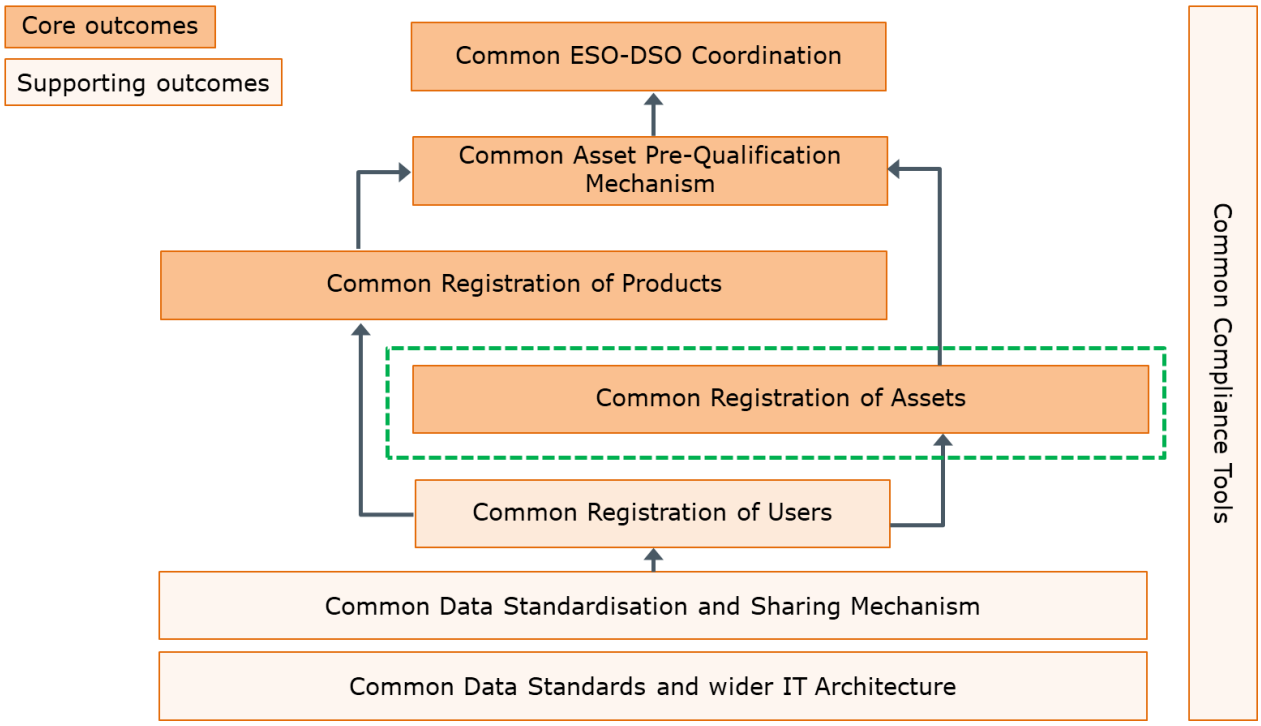
- A lack of transparent information
- A lack of coordinated access and operations
- A lack of trusted governance
- Additional market-specific issues.

2.2 We proposed a two-fold solution to address these key barriers. Firstly, the Flexibility Digital Infrastructure (FDI) would facilitate information provision, coordination of market access and operations, and trusted governance. Secondly, we would support the underpinning enablers that are crucial for the development of the FDI and generally support distributed assets accessing multiple flexibility markets. These include direct enablers, such as data standards and standardised market products; as well as wider enablers, such as operational metering and baselining methodologies.

2.3 The overwhelming response we received to the Call for Input was an endorsement of our case for change. There was also strong stakeholder support for Ofgem to intervene to deliver the FDI, with a desire for iterative delivery at pace, and to accelerate the delivery of enablers which were seen as critical.

2.4 Through these responses and additional policy development activities we were able to refine eight potential outcomes for the FDI, as outlined in *Figure 2*.

Figure 2: FDI outcomes



2.5 **Common Data Standards and wider IT Architecture**: data standards, communication protocols, and reference architectures.

2.6 **Common Data Standardisation and Sharing Mechanism**: coordinating services, tools, and frameworks to securely exchange standardised data across organisations.

2.7 **Common Registration of Users**: unified identity and access management services across flexibility markets.

2.8 **Common Registration of Assets**: common Flexibility Market Asset Registration would be a single source of truth for asset data which can be ported across flexibility markets, allowing assets to register 'just once' for multiple flexibility markets.

2.9 **Common Registration of Products**: a harmonised directory of flexibility markets, so that product requirements, processes, and value are provided in an easily comparable format.

2.10 **Common Asset Pre-Qualification Mechanism**: a cohesive process for pre-qualifying assets into markets, using asset registration data and product registration data.

2.11 **Common ESO-DSO coordination services**: a range of services to increase the transparency and coordination of system operator actions involving distributed flexibility.

2.12 **Common Compliance Tools**: overarching technical tools and governance processes to ensure outcomes are implemented according to commonly agreed rules and technical standards.

Policy development and current priorities

2.13 Since the Call for Input, we have undertaken further engagement activities to inform policy development. These included workshops, industry exercises and meetings with a wide range of stakeholders. These have informed our position that common Flexibility Market Asset Registration is a priority area for Ofgem policy intervention to achieve the common registration of assets outcome, and that progress towards the other FDI outcomes is likely to continue without specific policy intervention needed at this stage.

2.14 The absence of a common Flexibility Market Asset Registration process is frequently cited by stakeholders as a major market entry barrier for flexibility. Additionally, it is needed as a foundation to achieve other FDI outcomes, such as pre-qualification and ESO-DSO coordination services.

2.15 There are a number of recent industry developments which could contribute to achieving the outcome of common Flexibility Market Asset Registration. These include the ESO's Single Markets Platform; DNO developments, including platforms tenders with Piclo, EPEX SPOT, and Electron, and National Grid Electricity Distribution (NGED)'s in-house Market Gateway; and the ENA's Connect Direct platform for digitising asset registration. However, we believe these developments alone will not overcome the barriers identified.

- The Single Markets Platform is providing a platform for ESO markets, coordinating, and simplifying the process for all future facing ESO markets. However, this is not aligned with DSO markets and is not designed for the millions of distributed flexibility assets that need to participate in future.
- The DSO tenders (won by Piclo, EPEX SPOT, and Electron) as well as the NGED Market Gateway platform demonstrates successful competitive tendering and new technology development. However, this still leaves a disparate digital landscape for FSPs to integrate with and none of these solutions are aligned with ESO markets.

2.16 Given this current market landscape and the nature of the solutions proposed, see details in sections 3.1 – 3.5 , we believe policy intervention is needed to

deliver the FDI outcome of common Flexibility Market Asset Registration. The solution requires common approaches across organisations and interoperability across digital infrastructure. To achieve this, high levels of coordination across multiple individual organisations is needed. Commercial market forces and current regulatory incentives have not delivered this level of coordination to date, this is why coordinated policy intervention is now required.

2.17 For the remaining FDI outcomes, however, we have seen more promising signs of progress across policy and industry.

- Ofgem's DSI policy should support an industry-wide approach for the FDI outcomes related to common data sharing and user registration.[15]
- The Piclo Max platform appears to be offering a commercial solution to the common product registration FDI outcome.
- ENA's Open Networks programme is delivering enablers work which supports FDI outcomes such as common product registration, prequalification, and ESO-DSO coordination.
- The ESO are also collaborating with NGED and UK Power Networks (UKPN) in their Regional Development Programme[16] to deliver activities such as MW Dispatch which support the ESO-DSO coordination FDI outcome.[17]

2.18 We believe a prioritised and iterative approach should be taken to deliver FDI outcomes at pace, in line with stakeholder desires. Therefore, given this progress and ongoing work, we believe the remaining FDI outcomes could potentially be developed as commercial propositions or through industry collaborations. However, we recognise that the FDI being implemented in a disparate manner may have some associated risks.

2.19 For the remaining FDI outcomes, we propose to monitor industry progress to determine if Ofgem has a role to play in delivering these in future. We welcome feedback on these proposals.

Enablers for distributed flexibility

2.20 It is clear from the Call for Input responses and subsequent stakeholder engagement, that addressing enablers (also termed "barriers") is key to

[15] Governance of the Data Sharing Infrastructure | Ofgem
[16] Regional Development Programmes (RDPs) | ESO
[17] Megawatt Dispatch | ESO

unlocking the full potential of distributed assets participating in flexibility markets.

2.21 Direct enablers, needed for Flexibility Market Asset Registration itself, are discussed in greater detail in sections 4.1 – 4.4. We propose that they should be addressed by the Market Facilitator coordinating a range of activities between the ESO and DSOs, with potential for the ENA Open Networks programme to begin work on this in the interim.

2.22 Wider enablers, needed for distributed flexibility in general, are being addressed in various ways across both government and industry. This includes: on-going policy work on key areas, including progressing the Smart Systems and Flexibility Plan; the ESO Power Responsive programme seeking to reduce market participation barriers; the Open Networks programme and subsequently the Market Facilitator aligning approaches across DSOs and ESO; and interested parties progressing code modifications.

2.23 Whilst significant progress has been made and various efforts are ongoing, it is not clear that these are sufficient to address the enablers identified and successful implementation of some solutions has yet to be demonstrated. Therefore, we will continue to monitor progress to understand whether participation barriers are being addressed sufficiently and to consider if any further support or intervention is required.

Wider alignments

2.24 In addition to aligning long term with any developments in general asset visibility policy as discussed in Section 5, we also recognise close synergies with other policy areas, innovation projects, and industry initiatives.

2.25 There are strong alignments with multiple policy areas as follows. The Market Facilitator will deliver accessible, transparent, and aligned DSO and ESO markets.[18] We propose that the Market Facilitator be responsible for enablers and design activities for Flexibility Market Asset Registration, as well as supporting the ESO and DSOs to deliver the digital infrastructure.

2.26 The DSI will provide a mechanism to securely exchange standardised data between organisations across the energy sector, which will be used by the Flexibility Market Asset Registration digital infrastructure.[19] The Consumer

[18] Consultation: Market facilitator delivery body | Ofgem and Decision: Market facilitator delivery body | Ofgem
[19] Governance of the Data Sharing Infrastructure | Ofgem

Consent solution will introduce mechanisms for consumers to grant and manage consent to access their energy data, which will be key for the data in the Flexibility Market Asset Registration digital infrastructure.[20]

2.27 Ofgem is also supporting Government with the Smart Secure Electricity Systems (SSES) Programme, which will ensure consumers are protected when they purchase smart energy assets and register with FSPs. [21] SSES policy also supports the participation of distributed assets in flexibility markets.

2.28 Key innovation projects and industry initiatives to draw learnings from are as follows. The NZIP FMU programme[22] which will trial technical solutions designed to overcome the barriers identified in our Call for Input and discussed in this consultation. The NZIP AAR programme which will trial technical solutions designed to achieve the aims of the EDS around asset visibility.[23] The EU-funded OneNet programme which defined common market frameworks alongside common open source digital architectures and interfaces, then demonstrated them in regional trials.[24] Multiple pieces of ongoing industry work are also relevant, in particular those highlighted in sections 2.17 and 4.3.

Q1.	Do you agree that policy intervention is needed to deliver common Flexibility Market Asset Registration?
Q2.	Do you agree that for other FDI outcomes policy intervention is not needed at this stage? Are there any risks to consider with this approach to FDI delivery?
Q3.	Are there any other policy alignments or industry developments, in the UK or internationally, which should be considered as part of ongoing FDI policy development?

[20] Data Sharing in a Digital Future | Ofgem
[21] Delivering a smart and secure electricity system: implementation | GOV.UK
[22] Flex Markets Unlocked Innovation Programme | GOV.UK
[23] Energy Digitalisation Taskforce report: joint response by BEIS, Ofgem and Innovate UK | GOV.UK
[24] One Network for Europe | OneNet Project

3. Flexibility Market Asset Registration – Aims, Scope & Approach

Section summary

This section explains our proposals for digital infrastructure which delivers common Flexibility Market Asset Registration. We set out the problem statement to be addressed and the digital infrastructure solution proposed. We discuss the scope the digital infrastructure should cover in terms of markets, assets, and data. We also set out the functional outcomes it needs to provide and the design principles it should be aligned with.

Problem and solution overview

3.1 The problem statement is that the same data about the same assets needs to be registered multiple times in different ways for different flexibility markets.

3.2 Accessing multiple markets is important for revenue stacking, which is needed to make flexibility commercially viable. However, ESO and DSO market registration is complex to navigate; processes vary across markets and different digital platforms are used. Currently, the digital infrastructures are the ESO Single Markets Platform and various different DSO platforms, either built in-house or tendered for third party provision.

3.3 Registration is therefore burdensome, especially for distributed flexibility assets where hundreds of thousands of assets have to be registered multiple times in different ways. This effectively creates a barrier to market entry for distributed assets, reducing participation which lowers liquidity.

3.4 An effective solution would have aligned registration processes and enable asset data entered once to be used repeatedly across multiple markets. Therefore, our vision for enabling common Flexibility Market Asset Registration for distributed assets has two key aspects:

- Firstly, underpinning enablers work – the Market Facilitator should support the alignment of ESO and DSO registration processes.
- Secondly, new digital infrastructure – a common digital infrastructure for the collection, storage and access to asset data integrated across ESO and DSO market systems.

3.5 The digital infrastructure should provide data collection services for flexibility market asset registration data at any time, but in particular at the point of market entry through fully integrated ESO and DSO collection points. It should

store data as a common single source of truth, trusted for use by the ESO and DSOs for market registration. This data must be accessible by the ESO and DSO, and possibly other users as needed such as FSPs, IMPs, and asset owners.

The solution scope

Markets in scope

3.6 The digital infrastructure should cover the flexibility markets most valuable to distributed assets, taking a prioritised approach.

3.7 The digital infrastructure should focus initially on ESO markets (all ancillary and balancing services, including the Balancing Mechanism) and DSO markets (the five standard flexibility products). Currently, they have divergent processes, and their digital platforms are not interoperable. Therefore, there is value in aligning these similar market types, to support stacking and increase liquidity for both ESO and DSOs. Some work is already underway through the Open Networks programme and the Market Facilitator provides a clear future delivery route.

3.8 We believe there is value in common asset registration across multiple different market types. Therefore, future iterations could consider other markets such as the Capacity Market or possibly Wholesale markets. Whilst alignment would be valuable in principle, practical considerations mean it is not currently appropriate, this will be kept under policy review. The Capacity Market is undergoing higher priority strategic reforms. Wholesale markets are a substantially different market type, with distinct governance and complex existing digital infrastructure.

Assets in scope

3.9 The digital infrastructure should cover the assets least likely to be registered and those with the highest registration burdens, taking a prioritised approach.

3.10 The digital infrastructure should focus initially on small-scale domestic and small business assets, particularly flexible domestic assets like electric vehicles, heat pumps, and home battery storage systems. These are less likely to be registered for flexibility markets already and face higher registration burdens given the volumes of assets. The digital infrastructure should focus on assets less that 1MW in capacity, which aligns with the point at which assets require aggregation to access ESO markets.

3.11 We believe there is value in common approaches for asset registration across different scales. Therefore, future iterations should consider including larger-scale assets above 1MW. In particular, the Embedded Capacity Registers could

be a priority for integration with the digital infrastructure. However, this would be subject to considering the costs and benefits of integration, particularly if existing approaches are sufficient to meet user needs.

Data in scope

3.12 To provide a single source of truth for multiple markets, the digital infrastructure should cover the asset data items which are common across flexibility markets, taking a prioritised approach.

3.13 The digital infrastructure should focus on supporting market registration stages (including pre-qualification). It should not focus on market operation or verification stages, as that data is highly specific and bilateral. Therefore, the digital infrastructure should primarily support static data, see the examples below. If dynamic data, such as an asset's user settings, is needed for market registration, the digital infrastructure could consider approaches to support dynamic data.

3.14 We propose that an industry Working Group, convened by the Market Facilitator, should determine the exact data fields the digital infrastructure should include. More details of this proposed Working Group are discussed in sections 4.15 – 4.16. In addition to the common market registration data fields, some markets may require additional market-specific data fields. We expect this Working Group to ensure that as many data fields as possible are common across markets.

3.15 To illustrate the data scope the digital infrastructure should support, example data fields are listed below. These include (1) flexibility service data and (2) technical asset data.

3.16 (1) Flexibility service data – this would cover data relating to the Flexibility Service Provider and their contract with the consumer, such as:

- name(s) of FSP
- flexibility service(s)
- existence of consumer consent
- duration of FSP contract

3.17 (2) Technical asset data – this would cover the specifications of the asset itself and its network connection, such as:

- asset type, serial number, manufacturer, and model
- date of installation
- postcode and meter point administration number (MPAN)

- rated capacity and export/import
- flexibility capacity
- ramp-up and ramp-down times
- minimum and maximum duration of operation
- connection constraints including active network management (ANM) schemes

3.18 Examples of operational or dynamic data that we do not propose the digital infrastructure should support include:

- battery state of charge
- asset availability
- pricing information
- user settings (such as minimum home temperature)

3.19 The digital infrastructure should support consumer consent, aligned with Ofgem Consumer Consent policy.[25] This would be required for collecting and managing any data relating to customer assets and contracts with FSPs.

3.20 Data quality is an important consideration. The digital infrastructure should support data fields being populated from trusted external data sources and so will need to integrate with these external systems. These may include Original Equipment Manufacturer (OEM) device catalogues, the ENA's Type Test Register (TTR), ESO systems, and DSO ANM systems.

Q4.	Do you agree with the scope proposed for markets, assets, and data? Should anything else be considered?

The solution approach

Functional outcomes

3.21 The digital infrastructure will need to deliver various functional outcomes, see *Table 1*. The functional outcomes described below are a starting point which can be further refined as necessary by industry Working Groups, convened by the Market Facilitator, as discussed in sections 4.15 – 4.16. Refinement should account for the latest technology developments and emerging user needs.

3.22 The digital infrastructure should provide a single source of truth master record for asset data, which gathers data from trusted external sources and assigns unique asset and user IDs. It should provide common approaches to data

[25] Data Sharing in a Digital Future | Ofgem

collection, including at point of ESO and DSO market entry. It should provide common approaches to data access for multiple ESO and DSO users. These collection and access approaches should support a range of data exchange functionalities. There should be a good user experience and consumer consent should be effectively enabled. The digital infrastructure will need to integrate with specific wider systems, such as components delivering other FDI outcomes, ESO and DSO procurement systems, consumer consent solutions, external data sources, and the DSI. Additionally, key non-functional requirements will need to be in place, such as standard data models and communications protocols, trust frameworks, and reference architectures.

Table 1 – Functional outcomes for the digital infrastructure

Functional outcome	Narrative
1. Single master data record	• data is **stored** as a **single source of truth** for asset data • data is **standardised and machine-readable** (*see Non-Functional Requirements below) with a 'common backend Application Programme Interface (API),' but with **highly configurable** data fields dependant on the user/asset/product needs • data is **maintained** though data management services and (if necessary) synchronisation services • able to **support static data**, possibly able to support dynamic data • to include appropriate **metadata**
2. Unique ID	• **unique asset ID** and **unique user ID**, **linked to master data** record • enables de-duplication of asset data records • enables accurate and permission-based data access
3. Data quality	• data **quality is sufficient** for users to reliably use it for their needs • wherever possible, data fields are populated using **trusted external data sources**
4. Appropriate collection points	• able to collect flexibility market registration data at point of **market entry** • data collection though **multiple 'common client APIs'** across ESO and DSO markets, which are **aligned with the 'common backend API'** of the single master data record, enabling **'just once'** registration
5. Common data access	• a **'common backend API'** available for multiple **ESO and DSO users**, and other users as needed, to access the single master data record, enabling **'just once'** registration
6. Data exchange mechanisms	• will require **machine-readable interfaces** and may require **user interfaces** • ability to **create** and **read/write** master data, including data **update mechanisms** • ability to **search** and **access** master data, e.g. using **metadata catalogue**, with **real-time** exchange • supported by data **compliance** tools • all **permissions** based e.g. Role Based Access Control (*see Non-Functional Requirements below) • all **standard** and **secure**

Functional outcome	Narrative
7. User experience	• modern digital and **user-friendly interfaces** (e.g. API and maybe GUI), and **supporting documentation** to provide a good user experience
8. Consumer consent framework	• GDPR compliant, including the publication of a clear **framework** for managing consent related to flexibility market asset registration data • aligned with **Ofgem's Consumer Consent** work, making use of best practice in the sector • easy and dynamic **mechanism** for asset owners to grant and manage consent with relevant parties, with that consent releasing data from the asset register in an appropriate and timely fashion
9. Integration with wider systems	integrates in a **machine-readable, interoperable** way with: • other **FDI outcomes** e.g. product register, pre-qualification, ESO-DSO coordination • ESO and DSO **procurement systems** to enable 'just once' registration for all flexibility markets • **Consumer Consent** solution as a mechanism for asset owner consent • **external sources** to populate data fields with trusted data • relevant elements of the **DSI**
Non-Functional Requirements	**Standard data models and communications protocols** • this requires aligned ESO-DSO flexibility procurement processes, then agreed standards and protocols for data exchange mechanisms, should align with DSI approaches **Trust framework** • to classify user roles and associated permissions and provide identity management services, should align with DSI approaches **Reference Architecture** • to enable interoperability across systems, should align with DSI approaches

Design principles

3.23 When delivering the scope and functions above, the digital infrastructure should adhere to the following design principles, see *Table 2*. Industry Working Groups, convened by the Market Facilitator (detailed in sections 4.15 – 4.16), can also use them for later detailed digital infrastructure decision making. The design principles described below are a starting point which can be further refined as

necessary by the industry Working Groups. Refinement should account for the latest technology developments and emerging user needs.

3.24 The digital infrastructure should deliver quality solutions in a timely and cost-effective way. Security, resilience, and privacy must be upheld, and competition and innovation should be supported. There should be the necessary powers for delivery and enforcement, with suitable accountability.

Table 2 – Design principles for the digital infrastructure

Design principle	Narrative

1. Quality Performance and Usability	• must effectively deliver the **necessary technical functions**
	  ○ especially considering good user experience and effective data management
	  ○ also considering general security and operational capabilities, and enabling wider integrations

2. Timely and Pragmatic Delivery	• must deliver the outcomes needed in the **timelines required** ○ delivering at pace and responding to industry needs; while pragmatically considering coordination needs, sector readiness, trials/testing, update approaches, and future extensibility
3. Cost Effective	• must **maximise benefits at least cost**, costs should be efficient and proportionate
4. Security, Resilience and Privacy	• given possible **Critical National Infrastructure** interactions, must have appropriate cyber-physical **security and resilience** • given **consumer** interactions, must have appropriate **data privacy and consent** mechanisms
5. Competitive and Innovative	• must **avoid vendor or technology lock-in** • must be **technology-agnostic** while supporting the use of the latest technology developments
6. Legally Deliverable	• the relevant entities must have the **necessary powers**
7. Effective Accountability	• must have clear **responsibilities**, ability to **convene** stakeholders, and operate **transparent** processes

Q5. Do you agree with the functional outcomes? Should anything else be considered?

Q6. Do you agree with the design principles? Should anything else be considered?

4. Flexibility Market Asset Registration – Activities & Delivery

Section summary

This section focuses on the activities and delivery needed to realise our proposals for Flexibility Market Asset Registration. We set out the key activities of enablers work to align and digitise flexibility market processes and design work to specify the digital infrastructure itself. We propose that the Market Facilitator should be responsible for these activities, using Working Groups to involve stakeholders. We also propose that the ENA should consider delivering these activities in the interim if suitable. We then set out a range of delivery body options for the digital infrastructure itself and describe possible advantages and disadvantages for each. Finally, we outline timeline considerations for deployment.

Enablers and design activities

Enablers activities for alignment

4.1 Before developing common digital infrastructure, the ESO and DSOs first need to align their flexibility market processes to be common. The focus should be on flexibility market registration, including pre-qualification. The ESO and DSOs need to have the same procurement processes and data requirements for flexibility services.

4.2 Additionally, to digitise these processes requires the same reference architectures, standard data models and communications protocols. These should be aligned to international standards and be open source where possible.

4.3 Some of these activities are already underway though the ENA Open Networks programme, for example the workstream on aligning standard contracts. This existing work should be used and expanded where necessary to deliver and implement these activities, as discussed below.

4.4 We propose the Market Facilitator should deliver these enablers activities through appropriately scoped and constituted Working Groups, or similar arrangement. This ESO-DSO market alignment work is the core remit of the Market Facilitator.

Design activities for digital infrastructure

4.5 Before deploying common digital infrastructure, the requirements need to be defined and hence appropriate designs developed. This should cover initially developing the requirements and designs, as well as ongoing review and change management as needed.

4.6 This work should cover defining and updating the socio-technical requirements and digital infrastructure detailed designs, for the storage and associated backend APIs. This will include the technical functionality and architecture; service level agreements and performance; commercial and legal considerations; operational processes and governance aspects; and digital infrastructure interfaces e.g. with the DSI. Specifically, this work should include defining the necessary data fields and functional outcomes.

4.7 The requirements and designs should be developed to meet the scope, functional outcomes, and design principles set out in sections 3.21 – 3.22 and 3.23 – 3.24 respectively. They should also be developed to fully align with the DSI, from both a technical and governance perspective.[26]

4.8 As discussed below, we propose the Market Facilitator should deliver these design activities through appropriately scoped and constituted Working Groups, or similar arrangement. These Working Groups should work in close alignment with the accountable entity for the delivery option taken forward and also with the DSI governance frameworks. This ESO-DSO digital infrastructure work fits within the market coordination remit of the Market Facilitator.

The Market Facilitator to deliver activities

4.9 We propose that the activities above should be assigned to a single accountable body that has the expertise, authority, coordination, and oversight to convene Working Groups, facilitate decisions, support change management, and monitor implementation.

4.10 Given the strong alignment between these activities and the Market Facilitator, we propose assigning them to the Market Facilitator as a specific sub-activity of flexibility market registration alignment and digitisation. We believe this is appropriate as DSO-DSO and DSO-ESO market alignment is the Market Facilitator's core remit, and the enablers activities clearly fit within the scope of the "market coordination" function, while the digital infrastructure design activities would fit within the "strategic leadership" function.[27] Additionally, the Market Facilitator assignment was based on similar requirements for accountability, expertise and oversight.

[26] Governance of the Data Sharing Infrastructure | Ofgem
[27] Consultation: Market facilitator delivery body | Ofgem and Decision: Market facilitator delivery body | Ofgem

4.11 The Market Facilitator Role has been assigned to Elexon.[28] We believe that Elexon meets these requirements and is capable of delivering these activities due to its independence and track record of delivering a substantive, robust and transparent change process. We are satisfied that Elexon can be held to account by the proposed mechanisms of the Market Facilitator governance.

4.12 We considered assigning these activities to other candidates, such as the ESO, the ENA, code administrators or other third parties. However, we believe that assigning this activity to a candidate other than the Market Facilitator risks duplicating responsibilities and causing misalignment across the sector.

4.13 However, in the interim ahead of the Market Facilitator go live, the ENA should consider whether any of these activities, especially the enablers work, are sensible priorities to include in Open Networks programme forward work plans.

4.14 The Market Facilitator should work in close collaboration with whoever is selected to be the delivery body for the digital infrastructure, especially for the design work.

Stakeholder involvement in activities

4.15 We propose that the Market Facilitator should deliver the activities set out in sections 4.1 – 4.8 through Working Groups, or other similar arrangements. The approach should enable stakeholder collaboration focused on the specific activities outlined, to deliver and then implement outputs.

4.16 The Working Groups should have appropriate stakeholder representation. This will vary slightly depending on the activity, but ESO and DSOs will be required for all activities. In particular, relevant stakeholders are likely to include:

- users – such as FSPs and consumer groups
- technical solution operators – such as ESO and DSOs or their contractors and the DSI Coordinator
- technology providers – such as technology companies, and asset OEMs

Q7.	Do you agree with the enablers and design activities needed and for the Market Facilitator to coordinate Working Groups for them? If not, what other activities and governance arrangements should be considered?

[28] Decision: Market facilitator delivery body | Ofgem and Elexon | Delivering the Balancing and Settlement Code (BSC) - Elexon BSC

Delivery options for digital infrastructure

The digital infrastructure

4.17 There are three aspects of the digital infrastructure that will need to be delivered; (1) how the data is collected, (2) where the data is stored, and (3) how that data is accessed. We propose that a delivery body be assigned the overall responsibility for deployment and ongoing maintenance, with specific additional aspects delivered by the ESO and DSOs. This should all be done with strong stakeholder engagement, to ensure the digital infrastructure meets user needs.

4.18 For (1) data collection, the delivery body will be responsible for ensuring that the relevant data for flexibility market asset registration is collected at any time. The delivery body will provide or procure backend and frontend APIs for this collection and depending on user needs additional interfaces could also be provided e.g. a Graphical User Interface (GUI). As the primary point of data collection will be upon flexibility market entry, the ESO and DSOs should develop or procure common client API deployments which integrate with the backend API of the storage solution provided or procured by the delivery body. The Market Facilitator will provide oversight to ensure common approaches.

4.19 For (2) data storage, the delivery body will be responsible for developing or procuring and owning the data storage solution. This must securely hold data and provide a single source of truth that is trusted by the ESO and DSOs for use in flexibility market asset registration processes. It should have backend APIs to support the data collection and access services described.

4.20 For (3) data access, the delivery body will be responsible for ensuring that the ESO, DSOs, and FSPs are able to access the relevant data for their assets and markets. The delivery body will provide or procure APIs for this access and depending on user needs additional interfaces could also be provided e.g. a GUI. This will also involve aligning with and contributing to the DSI specifications as they are developed, to enable a decentralised interoperable data sharing ecosystem. The delivery body should work closely with DSI governance frameworks.

4.21 The design process, and hence the digital infrastructure itself, should be aligned with the DSI governance frameworks and technical approaches.[29] In practice this means the data storage element serving as a "data preparation node" and the

[29] Governance of the Data Sharing Infrastructure | Ofgem

collection and access APIs as "data sharing mechanisms" and formal arrangements to participate in DSI governance processes. This approach delivers a common single source of truth for flexibility market asset data within a decentralised data sharing ecosystem.

Delivery body options

4.22 To deliver the digital infrastructure described above, an appropriate body will need to be made responsible for deployment and ongoing maintenance. These delivery body options are set out below and in *Table 3*, to provide high level descriptions and potential advantages and disadvantages for each. We are consulting on which of these options, or potential alternatives, we should give delivery responsibility to. Therefore, we particularly welcome your feedback on the consultation question in this section.

4.23 Potential delivery body options which Ofgem could give the responsibility to develop or procure Flexibility Market Asset Registration digital infrastructure include:

- **Option 1** – As part of business as usual (BAU) without specific policy intervention, a commercial solution which emerges. This could possibly emerge from an innovation project such as NZIP AAR or FMU or from existing commercial organisations offering new products and services. However, the commercial solutions used today across the ESO and DSOs are disparate and there are currently no business plan commitments to align registration digital infrastructure. It is unlikely that FSPs have the funding or governance frameworks to deliver a digital infrastructure collectively. Therefore, we do not believe BAU is likely to deliver the desired policy outcomes.
- **Option 2** – DNOs being given the responsibility through their licence conditions. They could possibly deliver the digital infrastructure through expanding DNO systems and registers, by adding requirements in market platform tenders to require high levels of integration and data-sharing between IMPs, or a joint procurement similar to Electralink and the Data Transfer Service.
- **Option 3** – The ESO being given the responsibility through their licence conditions. They could possibly deliver the digital infrastructure as an extension of the existing Single Markets Platform, or as a separate in-house development or procurement.

- **Option 4** – The Market Facilitator role, now appointed to Elexon,[30] being given the responsibility though the appropriate mechanisms (e.g. through assigning this as an additional role, via code modification, or through the governance framework). This additional responsibility for digital infrastructure would extend its work to align ESO and DSO markets. The digital infrastructure it provides could be a single mutual solution or could be the coordination of separate but fully integrated ESO and DSO solutions.
- **Option 5** – An entity with a formal enduring role in the energy sector could be assigned a new responsibility. This could be a code administrator or Central Systems Delivery Body (CSDB) for example Elexon, Electralink, DCC, Gemserv, or the Retail Energy Code Company.

[30] Consultation: Market facilitator delivery body | Ofgem and Decision: Market facilitator delivery body | Ofgem

Table 3 – Advantages and disadvantages of potential digital infrastructure delivery bodies

Options	Advantages	Disadvantages
1. BAU / Commercial solution	• Minimal policy intervention • Market-based solution drives competition and innovation	• Unlikely to emerge in a timely manner, if at all • Unclear how appropriate governance structures would emerge
2. DNO/DSOs	• Regulated entities that can be held to account • Experience in distributed flexibility and digital service procurement • Already collect data on assets connected to the distribution network	• Not neutral entities in flexibility markets • Significant divergence in existing approaches
3. ESO	• Regulated entity that can be held to account • Experience in flexibility and digital service development • Owner of Single Markets Platform	• Not neutral entity in flexibility markets • Unclear if Single Markets Platform will be suitable for distributed assets
4. Market Facilitator	• Appropriate mechanisms to hold to account • Neutral entity increases trust and impartiality • Aligns well with remit as already coordinating ESO and DSO markets • Experience delivering digital services and operating markets	• Additional responsibility for new role which increases resource requirements • Not currently a subject matter expert in ESO and DSO flexibility markets
5. Entity with formal enduring role	• Neutral entity increases trust and impartiality • Range of experience delivering IT services and operating markets	• Less clear mechanism to assign responsibility and hold to account • Not necessarily aligned with current role • Less experience of ESO and DSO flexibility markets

4.24 We have considered and discounted the option of Ofgem creating a new delivery body to be responsible for the Flexibility Market Asset Registration digital infrastructure. We believe this would duplicate the role of the Market Facilitator, which was only recently created itself.

4.25 We have also considered and discounted an approach where IMPs themselves are primarily responsible for holding asset data, as is currently the case for DSO flexibility markets. We believe this approach is unsuitable for a number of reasons. IMPs are neither licensed nor required to be party to the industry codes, so there are limited legal mechanisms to assign them responsibilities or hold them to account. They are direct competitors, so they have a strong disincentive to share data with each other. It is also more complex and unclear how coordinated governance and synchronisation mechanisms would work, especially with the possibility of market entries and exits. However, IMPs could provide procured services for multiple options, especially option 2.

4.26 We are not currently proposing that the data storage architecture itself should be centralised or decentralised; this is likely to be a decision for the delivery body and Working Groups convened by the Market Facilitator. However, all architectures do require a responsible body for their delivery and the choice of delivery body may influence the architecture. Centralised architectures align more with options such as the ESO or the Market Facilitator providing a joint solution or a formal enduring entity. Decentralised architectures align more with options such as the DSOs providing solutions or the Market Facilitator overseeing integrated ESO and DSO solutions. The discounted Independent Market Platforms (IMPs) option aligns more with a decentralised architecture.

4.27 We welcome your views on these options to help inform our future decision-making process. We intend to decide on a suitable delivery body in due course, following the normal formal policy making processes.

Q8.	What are the advantages and disadvantages of the proposed delivery body options for the Flexibility Market Asset Registration digital infrastructure? Are there any additional options that should be considered? Do you agree with the justification for discounting approaches?

Timeline considerations

4.28 By 2035 there could be around 20 million battery electric vehicles, and 10 million heat pumps connected to distribution networks in Great Britain.[31] We want as many of these assets as possible to participate in flexibility markets, so asset registration should be improved as soon as possible.

4.29 The move to Market-wide Half-Hourly Settlement in 2026 is also a key milestone for distributed assets participating in markets. Additionally, the Review of

[31] From each of the pathways in the 2024 Future Energy Scenarios | National Grid ESO

Electricity Market Arrangements (REMA) consultation[32] set out a vision that *"By 2028, Great Britain is the international leader in flexibility enabling all low carbon flexibility to move seamlessly between markets driven by effective signals, delivering whole system value to consumers"*.

4.30 This consultation proposes activities for the Market Facilitator and alignment with the DSI. The Market Facilitator due to launch in late 2025 or early 2026 and the DSI is due to go live as a minimum viable product in 2025 and expand out towards 2028.

4.31 Relevant NZIP innovation projects, AAR and FMU, are due for completion in March 2025**.** We believe their outputs may inform our ongoing policy development.

4.32 Therefore, we believe the common Flexibility Market Asset Registration digital infrastructure should be deployed between 2025 and 2028. This will be before the vast majority of new distributed assets are installed and aligns with when various technical solutions are completed or expanded. It aligns with associated policy considerations being completed, including for impact assessments considering delivery options to be undertaken if necessary.

Q9.	Do you agree with the timelines proposed? Should anything else be considered?

[32] Review of electricity market arrangements (REMA): second consultation | UK.GOV

5. General Asset Visibility

Section summary

This section sets out the previous government's Energy Digitalisation Strategy (EDS) policy vision for general asset visibility. We discuss the progress made towards achieving that vision and key remaining considerations towards realising it fully. We believe there is value in common Flexibility Market Asset Registration aligning with policy for general asset visibility in the long term.

Aligning long term

5.1 This consultation focuses on asset registration specifically for the flexibility market entry use case. The previous government's Energy Digitalisation Strategy had commitments to improve asset visibility in general for many use cases and with continuing policy development in this area. We believe there is whole-system value in aligning our policy on Flexibility Market Asset Registration with any general asset visibility policy over the long term as it develops. This enables many use cases to be addressed in a coordinated way to maximise value.

5.2 Therefore, to support long term alignment, we now provide an overview of the EDS asset visibility commitments and seek your feedback. This feedback will be passed to the Department for Energy Security and Net Zero to support their ongoing policy development.

Asset visibility vision

5.3 At present, assets are registered via one of two processes depending on the electrical current rating:

- Installers of devices with current ratings up to and including 16A per phase, are required to notify DNOs within 28 days of installation via an EREC G98 form (known as a 'Connect and Notify' installation).
- Owners of devices with current rating above 16A per phase, require approval from a DNO before connection, this is applied for via an EREC G99 form (known as a 'Apply to Connect' installation).

5.4 In part due to the administrative burden of these processes, it is thought that only around 40% of new small-scale assets are registered with DNOs.[33]

[33] Automatic Asset Registration | Energy Systems Catapult

5.5 The ENA recently launched the Connect Direct solution.[34] It is a single online form simplifying and digitising the DNO registration processes for asset installation. It aims to make the application process faster and easier for installers, which should in turn improve the rates of asset registration with DNOs. This new development will hopefully improve asset registration; however, measurable impacts are not yet clear.

5.6 In 2021 Ofgem, Innovate UK and the Department for Business, Energy & Industrial Strategy(BEIS),[35] published the EDS[36] which set out a commitment for improving the visibility of assets, that: *"BEIS will work across government and industry to simplify data collection of small-scale assets by streamlining the registration process to improve visibility, aiming towards a common registration solution that benefits installers, consumers and network companies."*

5.7 The EDS identified four key problems with small-scale asset registration. These include limited awareness of registration responsibilities, few incentives or penalties associated with registration, an overly complex registration process, and disparate data collection and storage.

5.8 General asset visibility policy could address these problems, providing for a range of use cases which benefit from improved asset visibility. These include but are not limited to:

- Giving system operators clear visibility of what assets are on system, improving short- and long-term decision-making for the operation of the energy system.
- Supporting flexibility markets, for example by facilitating consumer access to FSPs and shifting between FSPs quickly and easily, alongside maximising the participation of assets in flexibility markets.
- Providing network operators with a better understanding of the geographic position, characteristics, and use of energy assets, to optimise planning decisions.
- Empowering innovators to consider new uses for asset data, to maximise any other economic and operational benefits of decarbonisation.

[34] Connect Direct | Energy Networks Association (ENA)
[35] Now the Department for Energy Security and Net Zero
[36] Energy Digitalisation Strategy | GOV.UK

5.9 The policy and innovation activities to date have primarily focussed on small-scale assets,[37] because many new electric vehicle chargers, heat pumps, and home battery storage systems being installed are not being registered, and millions more are coming. An asset visibility solution for these small-scale assets would be a significant contribution to achieving the EDS commitments. There may be additional benefits to being able to consider both small-scale and larger assets in unison.

Progress towards vision

Technical solutions

5.10 There are activities underway that have progressed technical solutions which may be required to achieve the EDS vision and its associated outcomes. A range of technical solutions are in development, funded both commercially and through innovation funding.

5.11 In particular, the NZIP AAR innovation programme[38] enables industry to develop innovative technical solutions for many asset visibility use cases. This supports the EDS outcomes and provides learnings which contribute to the wider asset visibility policy evidence base. The NZIP AAR innovation programme is exploring technical solutions for asset registration, including automatic registration of assets and a central asset register (CAR). The AAR/CAR will register small-scale domestic and small business (up to 1MW capacity) assets upon installation, collecting and securely exchanging static asset data and enabling real-time exchange of dynamic asset data.

5.12 As discussed above, the recently launched ENA Connect Direct[39] solution focuses on the DNO visibility use case. It simplifies and digitises the connections process previously covered by the EREC G98 and G99 forms. It provides installers with a single online form, which collects a limited amount of data directly (including asset type and serial number), with additional data being drawn from the Type Test Register,[40] before being passed to DNOs to approve the connection. ENA Connect Direct is used for domestic assets only, and collects data at the pre-

[37] NZIP Automatic Asset Registration (AAR) Programme | GOV.UK The NZIP AAR innovation programme competition guidance defines small-scale assets as*: "Assets in domestic and smaller non-domestic buildings, with a maximum capacity of 1MW, which typically require registration by an installer".* This aligns with asset installations registered under EREC G98, and those registered in category A under EREC G99.
[38] NZIP Automatic Asset Registration (AAR) Programme | GOV.UK
[39] Connect Direct | Energy Networks Association (ENA)
[40] Type Test Register | Energy Networks Association (ENA)

installation stage, which is passed on to and stored by DNOs, not retained by Connect Direct.

5.13 There are also several developments towards asset registers for various specific use cases outside of the UK, including: the EU-funded OneNet programme,[41] which includes a flexibility register for market operations; the Australian Energy Market Operator's DER Register,[42] which registers devices at installation to support grid management; and the German Network Agency's Marktstammdatenregister,[43] which registers generation and large consumption.

Considerations to achieve vision

5.14 There are a number of considerations relevant to achieving the vision for asset visibility set out in the EDS. Many of these considerations are at an early stage of policy development and are subject to change as work on them progresses. As such we welcome feedback to assist in guiding our thinking going forward.

Policy lever approaches

5.15 The new technical solutions outlined above should improve the overall visibility of small-scale assets. However, these developments alone may not go far enough. We believe there are potential policy levers that may improve asset visibility, alongside technical solutions. Subject to a feasibility assessment, potential options could include:

5.16 The GB Distribution Code, including EREC 98, could be modified to require installers to notify DNOs of all small-scale asset installations, and to require DNOs to maintain a comprehensive record of those assets.

5.17 The IET Wiring Regulations (BS7671) could be amended to reference small-scale energy assets as notifiable work, and to update the requirement for electrical compliance certificates which currently mandate sharing information with homeowners, to include sharing information with DNOs.

5.18 Building regulations, specifically Approved Document P (electrical safety, dwelling), could be modified to include domestic energy assets as notifiable work.

5.19 Additionally, the success of technical solutions may depend on the ways that they are deployed, and how they are taken up by industry. There may be policy approaches that can encourage common deployment approaches to make it

[41] One Network for Europe | OneNet Project
[42] Distributed Energy Resource Register | AEMO
[43] Marktstammdatenregister | Bundesnetzagentur

easier to develop and use solutions. There may be policy areas to explore to encourage the uptake of solutions.

Q10.	What existing or new policy levers could be used to improve asset visibility?

Prioritising use cases

5.20 The joint asset visibility policy aims to provide common approaches which benefit multiple use cases that each individually require improved asset registration data. This consultation focuses just on solutions for the flexibility market entry use case. The ENA Connect Direct solution focuses just on the DNO visibility use case.

5.21 Analysis, including cost-benefit, will be required to determine which use cases are a priority for progression. Progressing multiple use cases in parallel could help ensure that asset visibility policy is as broadly applicable as possible. This would enable commonalities across use cases to guide the scope and functionality of an underlying common approach, ensuring it is suitable for many use cases.

Q11.	What use cases for asset visibility should be considered as priorities and why?

Costs/benefits of solutions

5.22 Cost-benefit analysis and impact assessments will likely be required to assess current asset registration processes and determine which potential approaches to an asset visibility solution are most suitable. This analysis may assist in identifying priority use cases.

Q12.	What costs, benefits or factors should be considered in a Cost-Benefit Analysis for asset registration solutions? Consideration should be given to: a) the time (in minutes) and resources required to complete current EREC G98, EREC G99 and MCS asset registrations (accounting for any recent process improvements, including ENA's Connect Direct) b) the current rate of duplicative registration processes for assets (e.g. networks and MCS) c) whether any additional asset data (beyond that of the current registration processes) needs to be registered to enable the benefit cases to be realised d) the costs to establish and maintain a register of assets e) the process required to assess suitability in accessing asset data f) what the essential asset registration requirements are to enable the benefit cases to be realised

6. Next Steps and Consultation Responses

Next steps

6.1 Having set out various initial views and specific proposals in this consultation we welcome your feedback. We will review your consultation responses, using the evidence to inform our ongoing policy development on Flexibility Digital Infrastructure. We will also pass feedback on general asset visibility to the Department for Energy Security and Net Zero to support their ongoing policy development.

6.2 We are gathering your evidence to inform our decisions for implementing common Flexibility Market Asset Registration. This covers proposals to:

- assign the Market Facilitator as responsible for delivering enablers and design activities, through convening Working Groups
- deliver a common Flexibility Market Asset Registration digital infrastructure for data collection, storage, and access, according to the scope, functions, and principles described
- consider a suitable delivery body option for the digital infrastructure.

6.3 Policy development for Flexibility Market Asset Registration may need to address other relevant aspects. These might be considerations such as what powers or mechanisms could be used to appoint a delivery body; whether an impact assessment is needed; what cost recovery model is suitable; and possibly addressing security and privacy related matters. We will consider whether Ofgem, the Market Facilitator, or the delivery body is best placed to address these aspects.

6.4 FDI policy aims to achieve other outcomes, beyond Flexibility Market Asset Registration, in order to deliver transparent, coordinated, and trusted flexibility markets. We will monitor industry progress to determine if Ofgem has a role to play in delivering other FDI outcomes in future.

6.5 Our ongoing policy work is strongly aligned with various other policy workstreams. We will work closely with Ofgem colleagues delivering Market Facilitator policy, DSI policy, and Consumer Consent policy; being aware of their timelines and possible dependencies. We will also work with Government to align our policy with any general asset visibility policy over the long term.

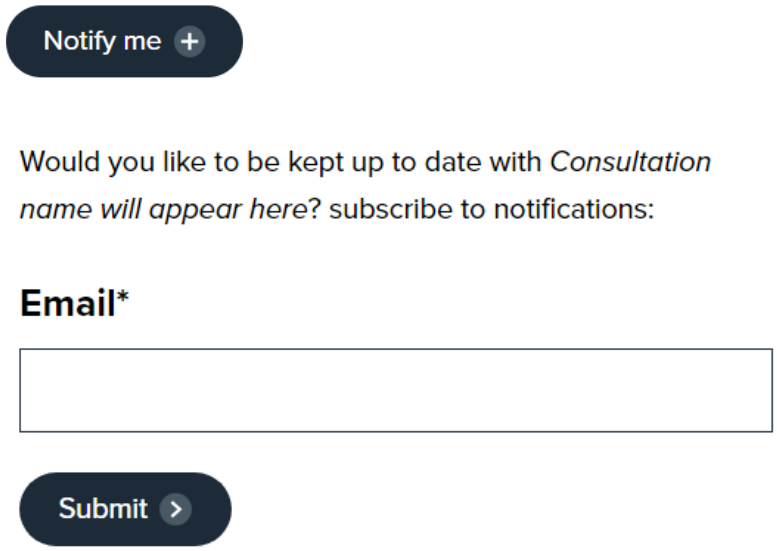
Consultation stages and how to respond

6.6 This consultation was published on 29 July 2024 and will be open for 8 weeks, with the closing date of 23 September 2024. Thereafter, we will review responses and intend to make a decision in winter 2024.

6.7 We have asked for your feedback in each of the questions throughout. Please respond to each one as fully as you can. We want to hear from anyone interested in this consultation. Please send your response to the person or team named on this document's front page.

6.8 We will publish non-confidential responses on our website at www.ofgem.gov.uk/consultations.

6.9 You can track the progress of a consultation from upcoming to decision status using the 'notify me' function on a consultation page when published on our website. Choose the notify me button and enter your email address into the pop-up window and submit. ofgem.gov.uk/consultations



6.10 Once subscribed to the notifications for a particular consultation, you will receive an email to notify you when it has changed status. Our consultation stages are:

Upcoming > **Open** > **Closed** (awaiting decision) > **Closed** (with decision)

Your response, your data and confidentiality

6.11 You can ask us to keep your response, or parts of your response, confidential. We will respect this, subject to obligations to disclose information, for example, under the Freedom of Information Act 2000, the Environmental Information Regulations 2004, statutory directions, court orders, government regulations or where you give us explicit permission to disclose. If you do want us to keep your

response confidential, please clearly mark this on your response and explain why.

6.12 If you wish us to keep part of your response confidential, please clearly mark those parts of your response that you *do* wish to be kept confidential and those that you *do not* wish to be kept confidential. Please put the confidential material in a separate appendix to your response. If necessary, we will get in touch with you to discuss which parts of the information in your response should be kept confidential, and which can be published. We might ask for reasons why.

6.13 If the information you give in your response contains personal data under the General Data Protection Regulation (Regulation (EU) 2016/679) as retained in domestic law following the UK's withdrawal from the European Union ("UK GDPR"), the Gas and Electricity Markets Authority will be the data controller for the purposes of GDPR. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations, see Appendix 4.

6.14 If you wish to respond confidentially, we will keep your response itself confidential, but we will publish the number (but not the names) of confidential responses we receive. We will not link responses to respondents if we publish a summary of responses, and we will evaluate each response on its own merits without undermining your right to confidentiality.

General feedback

6.15 We believe that consultation is at the heart of good policy development. We welcome any comments about how we have run this consultation. We would also like to get your answers to these questions:

1. Do you have any comments about the overall process of this consultation?
2. Do you have any comments about its tone and content?
3. Was it easy to read and understand? Or could it have been better written?
4. Were its conclusions balanced?
5. Did it make reasoned recommendations for improvement?
6. Any further comments?

Please send any general feedback comments to stakeholders@ofgem.gov.uk

Appendices

Index

Appendix 1 – Consultation questions

Section 2

Q1. Do you agree that policy intervention is needed to deliver common Flexibility Market Asset Registration?

Q2. Do you agree that for other FDI outcomes policy intervention is not needed at this stage? Are there any risks to consider with this approach to FDI delivery?

Q3. Are there any other policy alignments or industry developments, in the UK or internationally, which should be considered as part of ongoing FDI policy development?

Section 3

Q4. Do you agree with the scope proposed for markets, assets, and data? Should anything else be considered?

Q5. Do you agree with the functional outcomes? Should anything else be considered?

Q6. Do you agree with the design principles? Should anything else be considered?

Section 4

Q7. Do you agree with the enablers and design activities needed and for the Market Facilitator to coordinate Working Groups for them? If not, what other activities and governance arrangements should be considered?

Q8. What are the advantages and disadvantages of the proposed delivery body options for the Flexibility Market Asset Registration digital infrastructure? Are there any additional options that should be considered? Do you agree with the justification for discounting approaches?

Q9. Do you agree with the timelines proposed? Should anything else be considered?

Section 5

Q10. What existing or new policy levers could be used to improve asset visibility?

Q11. What use cases for asset visibility should be considered as priorities and why?

Q12. What costs, benefits or factors should be considered in a Cost-Benefit Analysis for asset registration solutions? Consideration should be given to:

a) the time (in minutes) and resources required to complete current EREC G98, EREC G99 and MCS asset registrations (accounting for any recent process improvements, including ENA's Connect Direct)

b) the current rate of duplicative registration processes for assets (e.g. networks and MCS)

c) whether any additional asset data (beyond that of the current registration processes) needs to be registered to enable the benefit cases to be realised

d) the costs to establish and maintain a register of assets

e) the process required to assess suitability in accessing asset data

f) what the essential asset registration requirements are to enable the benefit cases to be realised

Appendix 2 – Glossary

Term	Definition
AAR/CAR	The Automatic Asset Registration (AAR) Programme provided an opportunity to develop innovative solutions for asset registration that will facilitate digitalisation of the energy system. Phase 2 of the Automatic Asset Registration (AAR) Programme, currently underway, will support a project to develop a solution for automatically registering small-scale energy assets and an accompanying Central Asset Register (CAR). The Phase 2 project was selected from the Phase 1 winning projects.
ANM	Active Network Management is the use of DNO control systems to monitor network limits and provide signals to control DER operation in line with these limits.
API	Application Programming Interface. A software intermediary that allows two applications to talk to each other. For example, to allow data to be extracted or shared within or between organisations.
CDEI	The Common Digital Energy Infrastructure. The previous name for the Flexibility Digital Infrastructure.
Distributed flexibility	The ability for DERs and CERs, connected to a distribution network, to modulate their operation in response to an external signal to deliver a flexibility service. CER – Consumer Energy Resources is the collective term for consumer owned energy system assets. These can include demand, storage, and generation assets, such as EVs (including V2G), heat pumps, HVAC, white goods, batteries, and rooftop solar or wind. DER – Distributed Energy Resources is the collective term for business-owned small-scale power generation or storage devices connected to the distribution network, located close to where energy is consumed. Their purpose is to provide energy system services or business services. Examples include medium sized solar farms, wind farms or batteries, commercial electric vehicle fleet charging, and industrial and commercial demand-side response from equipment or buildings.
DESNZ	The Department for Energy Security and Net Zero (DESNZ) is focused on the energy portfolio from the former Department for Business, Energy & Industrial Strategy (BEIS).
DSI	Data Sharing Infrastructure. An Ofgem policy for a mechanism to securely share standard data between energy sector organisations. This develops and delivers the Energy Digitalisation Taskforce recommendations for a Digital Spine.

DSO	Within a DNO, the Distribution System Operator role manages the operation of the distribution network. This can include network planning, network operation, and flexibility market development.
EDS	Energy Digitalisation Strategy. The 2021 joint DESNZ (then BEIS), Ofgem, Innovate UK strategy and action plan for digitalising our energy system for net zero.
FDI	Flexibility Digital Infrastructure is an Ofgem workstream aiming to maximise the participation of distributed assets in flexibility markets by coordinating digital infrastructure to address market barriers.
Flexibility market **Flexibility service** **Flexibility product**	Flexibility market is the general term for a market, service, or product used to procure flexibility. This can include DSO local flexibility markets, ESO balancing and ancillary services including the Balancing Mechanism, the Wholesale Market, the Capacity Market, and peer-to-peer P2P services (i.e. PPAs), etc.
FMU	Flex Markets Unlocked. A DESNZ NZIP innovation programme, with Ofgem collaboration, which supports industry to develop technologies for transparent coordinated flexibility markets.
FSP	Flexibility Service Provider is an umbrella term for the party who takes delivery and other contractual risks when providing flexibility services. This may be the asset owners, asset operators, aggregators, Virtual Lead Parties, and Demand Side Response Service Providers.
GUI	Graphical User Interface. A human-to-machine user interface which displays information, such as text and images, so that humans can interact with it to communicate actions and exchange data.
NZIP	Net Zero Innovation Programme. A DESNZ innovation funding mechanism which supports industry innovation in net zero technologies.
OEM	The Original Equipment Manufacturer is the organisation which produced and sold an asset, such as an EV or heat pump to a consumer or battery storage to a business.
Single Source of Truth	A single trusted source of data, which may draw data from various sources to present a single "master record."
Stacking rules	Stacking rules refer to the decision frameworks for coordinating ESO and DSO access to the same flexible asset, essentially defining which markets a single asset can participate in concurrently.

Appendix 3 – Related publications

- Call for Input: The Future of Distributed Flexibility | Ofgem
- Open letter on the Open Networks Project | Ofgem
- Consultation: Market facilitator delivery body | Ofgem
- Decision: Market facilitator delivery body | Ofgem
- Governance of the Data Sharing Infrastructure | Ofgem
- Data Sharing in a Digital Future | Ofgem
- Energy Digitalisation Strategy | Ofgem, BEIS, Innovate UK
- Net Zero Innovation Portfolio Automatic Asset Registration Competition Guidance | Department of Energy Security and Net Zero
- Net Zero Innovation Portfolio Flex Markets Unlocked Competition Guidance | Department of Energy Security and Net Zero

Appendix 4 – Privacy notice on consultations

Personal data

The following explains your rights and gives you the information you are entitled to under the General Data Protection Regulation (GDPR).

Note that this section only refers to your personal data (your name address and anything that could be used to identify you personally) not the content of your response to the consultation.

1. The identity of the controller and contact details of our Data Protection Officer

The Gas and Electricity Markets Authority is the controller, (for ease of reference, "Ofgem"). The Data Protection Officer can be contacted at dpo@ofgem.gov.uk

2. Why we are collecting your personal data

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters.

3. Our legal basis for processing your personal data

As a public authority, the GDPR makes provision for Ofgem to process personal data as necessary for the effective performance of a task carried out in the public interest. i.e. a consultation.

4. With whom we will be sharing your personal data

All consultation responses will be shared with the Department for Energy Security and Net Zero

5. For how long we will keep your personal data, or criteria used to determine the retention period.

Any personal data collected as part of this consultation will be held until 6 months after the project is closed.

6. Your rights

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right to:

- know how we use your personal data
- access your personal data
- have personal data corrected if it is inaccurate or incomplete

- ask us to delete personal data when we no longer need it
- ask us to restrict how we process your data
- get your data from us and re-use it across other services
- object to certain ways we use your data
- be safeguarded against risks where decisions based on your data are taken entirely automatically
- tell us if we can share your information with 3rd parties
- tell us your preferred frequency, content and format of our communications with you
- to lodge a complaint with the independent Information Commissioner (ICO) if you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at https://ico.org.uk/, or telephone 0303 123 1113.

7. Your personal data will not be sent overseas

8. Your personal data will not be used for any automated decision making.

9. Your personal data will be stored in a secure government IT system.

10. More information for more information on how Ofgem processes your data, click on the link to our "ofgem privacy promise".