Department for Energy Security & Net Zero

Improving the visibility of distributed energy assets

A call for evidence

Closing date: 10 September 2025

July 2025

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Any enquiries regarding this publication should be sent to us at: digitalisation@energysecurity.gov.uk

Contents

General information

Why we are publishing this call for evidence

This call for evidence seeks to gather information on the benefits of asset visibility, a strategic view of the landscape of relevant organisations and activities, and on appropriate methods to realise those benefits for multiple stakeholders in the energy sector.

The government would like to hear from a wide range of stakeholders, including energy network companies, system operators, installers and manufacturers of small-scale assets, energy suppliers, and any organisations with an interest in energy, data and digitalisation.

Consultation details

Issued: 23 July 2025

Respond by: 10 September 2025

Enquiries to:

Flexibility and Digitalisation Strategy

Electricity System Flexibility

Department for Energy Security and Net Zero

7th floor

3-8 Whitehall Place

London

SW1A 2EG

Email: digitalisation@energysecurity.gov.uk

Consultation reference: Improving the visibility of distributed energy assets

Audiences:

This call for evidence will be of interest to installers and manufacturers of distributed energy assets, energy sector stakeholders (including energy suppliers, network, transmission and system operators, and flexibility market operators), energy aggregators and intermediaries, trade bodies and industry groups, consumer advocacy groups, local authorities and digital sector companies using energy asset data.

The call for evidence is not limited to these stakeholders, any organisation or individual is invited to respond.

Territorial extent:

The territorial scope of this publication is GB wide, while recognising that certain energy policy areas are devolved in some jurisdictions.

This call for evidence will inform future policy development by the government in areas where it is responsible for energy policy and related matters, and engagement with devolved governments in relation to devolved policy.

How to respond

We encourage respondents to use the online e-consultation platform wherever possible as this is the government's preferred method of receiving responses. However, responses in writing or by email will also be accepted.

If you wish to submit your main response on the e-consultation platform, but provide supporting information by hard copy or email, please be clear that this is part of the same response.

Respond online at: https://energygovuk.citizenspace.com/energy-security/improving-visibility-of-distributed-energy-assets

Or

Email to: digitalisation@energysecurity.gov.uk

Write to:

Flexibility and Digitalisation Strategy

Electricity System Flexibility

Department for Energy Security and Net Zero

7th floor

3-8 Whitehall Place

London

SW1A 2EG

When responding, please state whether you are responding as an individual or representing the views of an organisation.

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential please tell us, but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

We will process your personal data in accordance with all applicable data protection laws. See our privacy policy.

We will summarise all responses and publish this summary on GOV.UK. The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the government's consultation principles.

If you have any complaints about the way this consultation has been conducted, please email: bru@energysecurity.gov.uk.

Executive summary

Asset visibility refers to the ability to identify and understand the capacity, location, and usage of devices that generate, store, or consume energy including those capable of altering these behaviours in response to market signals. Such devices include electric vehicle chargers, solar panel installations, heat pumps and domestic energy storage batteries. These assets operate locally (such as in homes), near the point of consumption, help households and businesses manage their energy use and are essential enablers of the government's Clean Energy Superpower Mission - helping to make the UK a leader in clean energy by 2030. When visible to authorised parties like Distribution Network Operators (DNOs), these assets can be effectively integrated into a smarter, more flexible energy system.

In the Clean Power 2030 Action Plan, DESNZ and Ofgem committed to working with NESO to make distributed energy assets more visible. This call for evidence contributes to that commitment and is being published alongside the Clean Flexibility Roadmap which sets out the measures that the government, Ofgem, NESO, Elexon and others will take to help realise the Clean Energy Superpower Mission.

Asset visibility is essential for effective network planning, system resilience, and the growth of flexibility markets. Electricity demand is expected to double by 2050, and millions of distributed energy assets will be installed. DNOs and the National Energy System Operator (NESO) need timely, accurate, and standardised data from the assets to balance electricity supply and demand (such as high demand at peak times), optimise infrastructure investment, and enable consumer participation in flexibility services.

Network Operators currently lack a comprehensive and accurate understanding of what assets are connected to their networks. DNOs estimate that less than half of small-scale distributed energy assets are registered with them, and access to operational asset data (such as consumption and generation profiles) is restricted. Key challenges to gaining visibility of these assets include unclear obligations to register them with DNOs, inconsistent standards for data storage, and the administrative burden of registration on installers.

These issues limit the completeness and usefulness of data that network companies hold, and flexibility organisations have access to. This means the benefits of small-scale distributed assets cannot be maximised, and they cannot be fully integrated into the network. This call for evidence therefore seeks views on a future vision for asset visibility, that considers the flow of asset data across its lifecycle from installation to day-to-day use. It maps the landscape of projects, and standards used for asset data.

In addition, the government seeks views on a range of options for improving asset visibility, including:

- Reviews of DNO processes, to promote consistency in the connection of small-scale assets and to ensure asset data is usable across the sector.

- Clarifying installer obligations for asset registration, while simultaneously easing compliance through the use of digital tools and streamlined solutions.
- Leveraging smart meter data and other industry datasets to identify assets.
- Enhancing DNO processes and standardising how asset data storage is accessed.

Stakeholders are invited to provide evidence and views on the proposed definitions, benefits, and policy options. Responses will shape the next steps in government policy to enhance asset visibility, enabling progress on decarbonisation, system efficiency, and consumer value.

1 Introduction

1.1 Energy data and digitalisation

The UK government is on a mission to achieve clean power by 2030 and achieve net zero emissions by 2050. The Clean Power 2030 Action Plan outlines the government's strategy to deliver the first part of the mission, with a core role for digitalisation in transforming our energy system[1].

With the transition from a fossil-fuel-based energy system to one reliant on renewables, the system will become more complex. At the same time, the electrification of heat and transport will continue to increase electricity demand.

As set out in the Clean Flexibility Roadmap, published alongside this call for evidence, digitalisation is a critical enabler of a decarbonised, flexible energy system, driven by real-time, standardised data exchange across diverse systems and devices[2]. A modern, flexible energy system needs high-quality data and digital tools to integrate renewable energy and maintain resilience. Digitalising the energy sector will enhance processes such as forecasting, network planning, and informed decision-making, and will be crucial for maximising flexibility, including consumer-led flexibility[3] (empowering consumers to shift, reduce or increase electricity consumption in response to signals, helping balance the energy system).

The government, the energy regulator (Ofgem) and the National Energy System Operator (NESO) are advancing the digitalisation of the energy system through various technical and policy projects. These initiatives focus on improving data practices, enhancing access to energy data, and developing digital energy infrastructure.

Without greater visibility and a more accurate picture of distributed energy assets they cannot be fully integrated into the network or be part of flexibility markets. The overall operation of the energy system would be less efficient. In the Clean Flexibility Roadmap, the government commits to designing a joined-up, end-to-end framework, to improve the visibility of assets for the energy sector. This call for evidence is a key contribution to that commitment.

1.2 What is asset visibility?

Asset visibility refers to the ability to identify and understand the capacity, location, and usage of devices that generate, store, or consume energy including those capable of altering these behaviours in response to market signals. Unlike centralised power stations, these assets operate locally (such as in homes or businesses), near the point of consumption. When visible

[1] Clean Power 2030 Action Plan
[2] Clean Flexibility Roadmap
[3] Previously referred to as Demand Side Response (DSR)

to authorised parties like DNOs, these assets can be effectively integrated into a smarter, more flexible energy system.

Distributed energy assets

Technology and asset types: electric vehicle (EV) charge points, heat pumps, solar photovoltaic (PV) systems, and domestic-scale batteries are among the most rapidly expanding and influential technologies driving the shift toward a flexible, low-carbon energy system. As highlighted in NESO's Future Energy Scenarios, these technologies are pivotal in enabling consumer-led flexibility (with the potential to contribute to reducing peaks of electricity demand) or in providing low-carbon sources of energy.

In this call for evidence, our definition of distributed energy assets includes those listed above, while also encompassing other microgeneration-certified technologies (such as small-scale wind and micro-CHP[4]). The list of technologies as part of this definition is not intended to be exhaustive, and remains open to future technologies.

Scale of assets: This call for evidence focuses on improving visibility of small-scale distributed energy assets, where visibility is limited for multiple reasons. Distribution Network Operators (DNOs) also already maintain asset registers for installations above 50kW and for larger commercial generators. Therefore, the government proposes that future policies should prioritise assets below the 50kW threshold.

Definitions across related industry programmes and policy initiatives: Flexibility Market Asset Registration (FMAR) considers all assets under the 1MW capacity threshold as in scope, but with an initial focus on smaller-scale assets (<50kW)[5][6]. NESO's definition of decentralised consumer energy resources[7] provides good alignment in terms of device type coverage. The Smart Secure Electricity Systems (SSES) programme supports standards and interoperability for communication-enabled devices that can respond to signals to shift or modulate electricity use. Most assets in this call for evidence fall within the scope of SSES, though some (such as solar installations) may not be smart communications enabled.

[4] Combined heat and power (CHP), is a technology that simultaneously generates heat and electricity from the same energy source, typically in residential or small commercial buildings

[5] The FMAR will be a common asset registration system and single source of truth for recording details of assets registered into flexibility markets. Flexibility Market Asset registration programme webinar FAQs -May 2025, Elexon, 2025

[6] Ofgem decision: flexibility market asset registration (Decision: flexibility market asset registration | Ofgem)

[7] NESO Transformation to Integrate Distributed Energy (TIDE) programme, exploring both business-owned small-scale generation and storage (DER) and that of residential, consumer-owned assets (CER): Transformation to Integrate Distributed Energy | National Energy System Operator

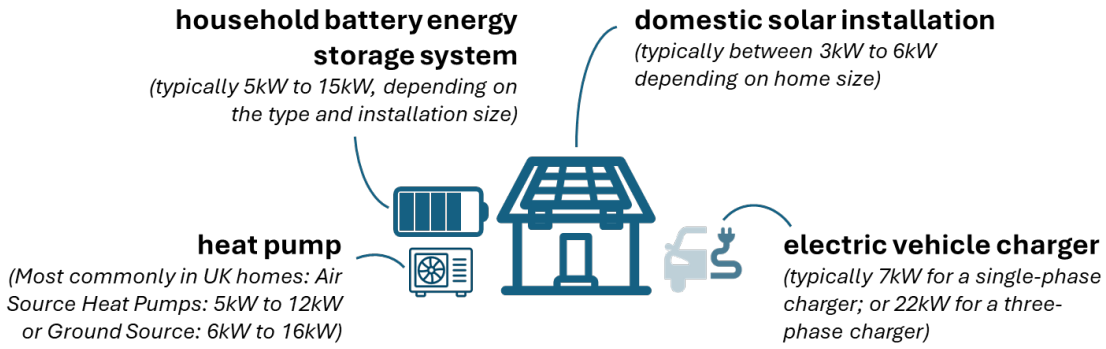

Figure 1: illustration of small-scale distributed energy assets (electric vehicle chargers, domestic solar installations, heat pumps and battery energy storage systems)

Definition of visibility

For the purposes of this call for evidence, visibility refers to timely, accurate, and standardised access to asset data (see below for a view on different types of relevant asset data) by authorised organisations, in accordance with appropriate privacy and security measures.

As outlined in the following sections, different energy system participants require access to different asset data: DNOs need it to approve installations, low voltage network load forecasting, and disconnection awareness; certification bodies for compliance verification and grant processing (such as for the Boiler Upgrade Scheme); flexibility service providers and markets for service design, participation, tracking and payment processing; NESO for system planning and forecasting; and manufacturers and local authorities for warranty registration and regulatory oversight. Installers may benefit from insight into local capacity and installations.

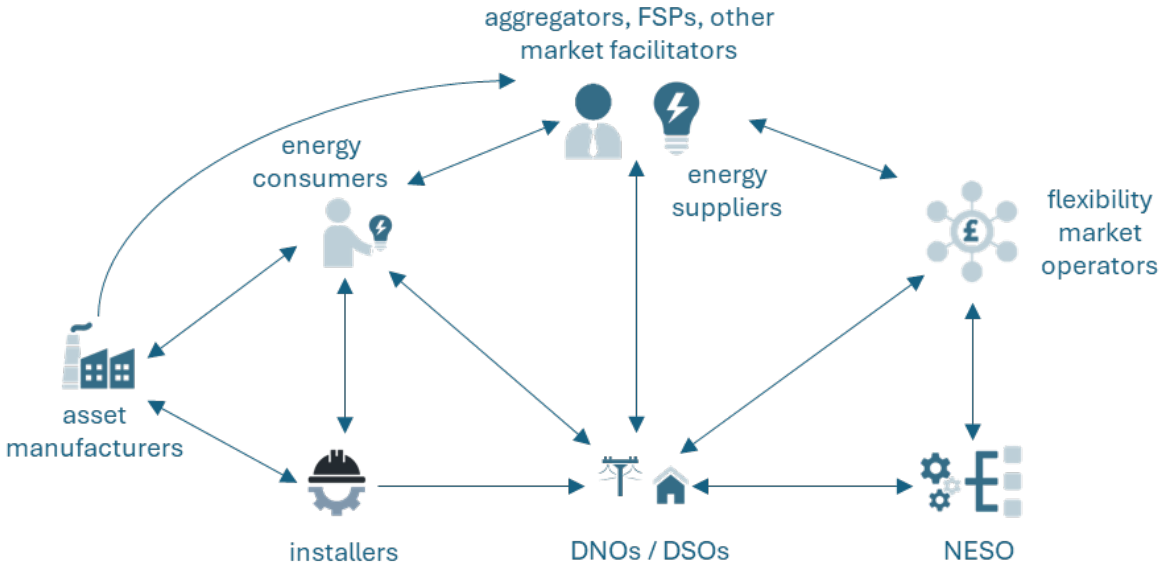

Figure 2: landscape of industry actors and the optimal flow of distributed energy asset data

DNOs, in particular, play a central role in integrating and optimising small-scale distributed energy assets, especially as they evolve into Distribution System Operators[8] (DSOs) with greater responsibility for enabling system-wide flexibility. For DNOs, assets are visible primarily when they are registered through a pre-installation application or post-installation notification. Asset data at the point of registration may also be complemented by operational data to provide a more comprehensive view of how the asset is used and what flexibility services it can support.

Relevant asset data for visibility

The data required to ensure asset visibility varies depending on the organisation collecting it, including differences between individual Distribution Network Operators (DNOs). Typically, this data includes technical specifications such as model type, storage capacity, and generation output, along with location and details of ownership or control relationships ('static' data, which remains constant).

Operational information ('dynamic' data, which changes through usage), like the asset's consumption and generation profiles, associated energy tariffs, and commercial market registration, are becoming increasingly important. This information enables market participants to assess the asset's flexibility potential, allowing for more effective integration into an optimised energy system. In turn, this creates opportunities for asset owners (energy consumers) to benefit financially. In this call for evidence, both the visibility of an asset from the perspective of DNOs, and to broader industry actors are considered.

Respondents are invited to share views on the types of asset data to be collected and to which access is required, in order to help unlock flexibility and support network planning and management. The government is also interested in views on the proposed asset focus outlined in this section, including any suggestions for its expansion or refinement.

1. What are your views on:

a. The definition of assets relevant for consumer flexibility, network planning or other benefits of asset visibility?

b. Who do you think will need to have visibility of these assets?

c. What information about the asset will be most relevant?

[8] A DSO is a network operator that actively manages electricity flows on the local distribution network to balance supply and demand in real time.

2 Benefits of asset visibility

This section sets out the case for improving the visibility of distributed energy assets to support the UK's Clean Power 2030 goals. It explains why visibility matters, evaluates current obligations, and invites views on potential government interventions.

2.1 Why asset visibility is important for clean power by 2030

The Clean Power 2030 Action Plan set out the government's plans to decarbonise the power system by 2030. It is expected that by 2050 electricity demand will have at least doubled, as the electrification of our economy progresses. This electrification will be coupled with changes in seasonal demand. This will require the electricity networks, particularly at the distribution level, to be strengthened[9] and be used more flexibly.

According to NESO Future Energy Scenarios 2024 holistic transition scenario, it is projected that by 2030 there will be 10 million EVs on the road with smart charging capacity and some with vehicle-to-grid (V2G) capability; 3.2 million heat pumps contributing to seasonally shifted demand patterns, up to 42GW of domestic and commercial solar and up to 0.4GW of small-scale battery storage[10].

The scale and pace of growth in distributed energy assets will fundamentally reshape the energy system. This will create opportunities for innovation, consumer empowerment, and economic growth. However, this rapid expansion in assets also presents challenges for system operation and planning, with a more fragmented landscape of devices consuming and generating electricity, localised constraints, and increased pressure on the grid during peak periods (the time of day when electricity demand is at its highest, currently typically occurring early morning and evening, when households and businesses are most active)[11].

These risks underscore the need for a coordinated, end-to-end approach to asset visibility and data sharing—ensuring that the energy system is smarter, more flexible and capable of managing the volatility and decentralisation that electrification brings.

2.2 Importance of asset visibility for flexibility

Distribution Network Operators (DNOs) own and manage the local electricity distribution network, including low voltage (LV) networks to which small-scale distributed energy assets are connected. DNOs ensure safe and reliable connections and upgrade the network to meet growing electricity demand.

[9] Clean Power 2030 Action Plan
[10] Future Energy Scenarios 2024: NESO Pathways to Net Zero – Data Workbook
[11] Review of GB Energy System Operation

With the growth of renewable and flexible energy sources connected at distribution level (such as solar, wind), DNOs' roles in the energy system are evolving, as part of a transition to Distributed System Operators (DSOs). DSOs will have an active role in integrating distributed energy resources (including solar, storage systems and EV charging infrastructure) and facilitating flexible connections. Central to the DSO transition will be the identification and operationalising of flexibility capable assets to help reduce unnecessary conventional network build. Visibility of these assets is therefore a critical step in enabling local flexibility market growth. This includes ensuring that aggregators and flexibility market operators have timely and accurate access to asset-level data, enabling them to effectively coordinate and dispatch flexibility services across the system.

Finally, end consumers benefit from improved network asset visibility in two main ways: through reduced energy bills and opportunities for more streamlined access to flexibility markets. By managing the network well, and reducing the amount of new network and generation to be built, costs passed on to billpayers can be minimised. Ofgem has appointed Elexon (in its role as Market Facilitator) to deliver Flexibility Market Asset Registration (FMAR), a common asset registration system to support the growth of consumer-led flexibility[12].

2.3 Importance of asset visibility for network management

Distribution Network Operators (DNOs) will be key to delivering the goals of the government's Clean Power by 2030 Action Plan by accelerating grid connections, upgrading local infrastructure, and enabling smart, flexible energy systems that can dynamically balance supply and demand. As the number of distributed energy assets rapidly increases, DNOs will need to improve visibility and coordination of these assets, which is currently limited, to ensure efficient integration and maintain grid stability[13]. For Distribution Network Operators to manage and plan their networks efficiently, they require accurate data on the location and capacity of distributed energy assets.

Registration of distributed energy assets gives DNOs granular visibility of their network such as localised demand and generation, enabling more accurate assessments of network utilisation. Increased registration of assets will aid their decision making on planning and infrastructure reinforcement which in turn reduces costs for network companies and consumers[14].

At a whole system level, the National Energy System Operator (NESO) has a responsibility for managing and planning GB's electricity and gas networks, and facilitating a transition to net zero[15]. Part of its role is the development of Regional Energy System Plans (RESPs) with regional entities (such as local authorities), to assess and evaluate the energy requirements, consumption patterns and availability of resources in different regions. Clear visibility of distributed energy assets allows NESO to understand and monitor aggregated load and output

[12] Decision: flexibility market asset registration
[13] Connections end-to-end review consultation,
[14] NIC – Electricity Distribution Networks Report
[15] Strategic Planning | National Energy System Operator

from these assets by location, to help maintain system resilience, enhance operational forecasting and provide effective voltage constraint management.

Preliminary analysis by the government has found that increased asset visibility could help improve network planning, to avoid unnecessary network infrastructure build, saving significant costs for network companies. Better understanding of the current network's capacity could allow DNOs to better utilise existing infrastructure, instead of simply building additional. Even modest improvements can yield substantial benefits: a 1% increase in network utilisation could avert between £0.6 billion and £1.4 billion in network investment costs by 2050, based on current low-voltage network capacity headroom estimates[16]. The scale of these savings depends on both the existing level of headroom and the extent to which improved visibility contributes.

2. To what extent do you agree with the benefits and use cases for asset data visibility and access set out in section 2, and how might they support increased system flexibility?

3. What level of asset registration (the minimum rate of registration of all installed assets, by asset type) do you believe is necessary to support effective network planning and operation? Please explain your reasoning.

[16] Internal DESNZ analysis using the Distribution Network Model. Network headroom refers to the available capacity within an electricity network to accommodate additional demand or generation without causing network issues or requiring reinforcement. Thermal headroom is defined as the difference between peak demand and the safe operating limit (firm capacity) of network components. For example, 80% headroom designates 80% of the network capacity is unused.

3 Strategic view of asset visibility

This section provides our understanding of the landscape of interlinked programmes and systems which contribute to the visibility of distributed energy assets connected to the network. A future view for increased distributed energy asset visibility, access to this data and associated use cases is also set out. Through this section the government invites responses to this view and suggestions for other relevant solutions and measures that may not have considered.

3.1 A vision for asset data access

In a decarbonised energy system, **network companies (including DNOs) and system operators** have timely and reliable visibility of distributed energy asset installations from the point of connection, along with access to granular consumption and demand data to support effective planning, forecasting, and flexibility services.

For installers, the registration process is streamlined and fully integrated into their workflow, ensuring compliance without adding administrative burden. Installers are also able to access local level asset information, for example in the form of connection heat maps, to inform operational planning.

Energy consumers can invest in small-scale assets with confidence, knowing that (should they choose to make them available to do so) these assets can support system flexibility, with commercial benefits returned to them (the owner) in a seamless and transparent manner.

Aggregators and flexibility service providers benefit from clear, consistent access to asset data and interoperable systems that enable seamless onboarding of assets into flexibility markets on behalf of their customers.

Table 1 summarises asset data flows which will support the realisation of the vision set out above, across the lifecycle of an asset.

Table 1: asset data flows required to support the vision for asset visibility

Asset lifecycle stage	Associated activities	Data flows to providing visibility
Installation of the asset	A competent installer conducts a thorough site assessment, designs and plans the installation, secures necessary permits, and carries out the physical installation while ensuring safety and compliance. The installer provides relevant documentation, certification, and maintenance instructions to the asset owner, ensuring the system is functional and meets required standards.	Simplified, streamlined and where possible automated flow of asset information, strengthening existing data flows: • to the DNO: seeking approval for installation (above certain capacity limits) and notifying the DNO of successful installation • to certification schemes: such as the MCS (notifications are captured as updates to the MCS Installation Database), as a requirement for microgeneration installations under government schemes. • to manufacturers, Local Authority Building Control (LABC): in turn, the installer provides asset data to the manufacturer (warranty information) and LABC (to comply with Building Regulations) And potential future data flows: • to flexibility service providers and aggregators: allowing them to tailor consumer propositions aligned to the assets installed, and to group such assets for participation in capacity markets • to installers: providing them with an understanding of already installed capacity in different areas

Day-to-day use of the asset	User friendly, effortless registration of assets with multiple flexibility markets enables their participation in demand response, optimising both network management and consumer return. Operational data insights help optimise performance and inform smarter network decision-making, in an automated way where possible.	• to flexibility markets: registering asset data with relevant NESO and DSO markets, to allow for flexibility services to be provided • to the DNO: flexibility market registration and consumption profile data to support accurate load forecasting • to NESO: to support the development of RESPs and enhance cross-system operational forecasting
Maintenance and replacement	Consumers, asset owners or installers to perform scheduled maintenance tasks to prevent breakdowns and extend the asset's lifespan. Promptly address any faults to minimise downtime and maintain performance. A competent installer to safely decommission the asset, install and commission the new asset. Documentation updated to reflect the replacement, ensuring all new asset details, performance data, and compliance records are accurately recorded.	• to flexibility markets: providing visibility of assets no longer able to provide flexibility services • to the DNO: understanding of assets disconnected / without load, to support load forecasting

3.2 Asset visibility landscape summary

The following diagram and accompanying table set out the existing and developing components of providing visibility of distributed energy assets connected to the network, in support of promoting flexibility. These components are comprised of asset registers, digital data sharing solutions, processes and standards.

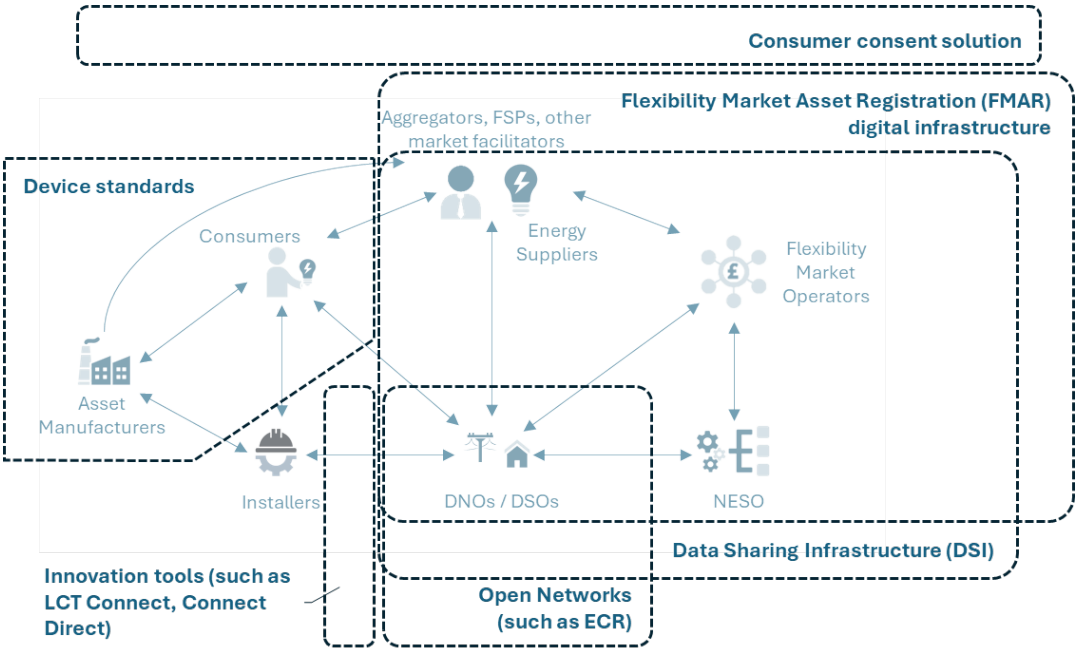

Figure 3: overlay of in-flight programmes and policy work

Table 2: summary of in-flight programmes and policy work; and contributions to the asset visibility landscape

Landscape Component	Overview
Distribution Network Operator (DNO) asset registers	DNOs maintain asset registers – a database of assets connected to their networks, particularly those with significant capacity (>1MW, although some DNOs include any assets >50kW too). The Energy Networks Association (ENA) provides guidance on the connection of low-carbon technologies to the networks. For connecting EV chargers and heat pumps, installers have the responsibility to inform network operators when making modifications to a service. For the connection of generation to the network, compliance with the requirement to complete and submit to the DNO EREC G99 and EREC G98 forms[17], notifying of a connection to the network.

[17] ENA Distributed Generation Connection Guide: G98 & G99. 2024_DG_Guides_Combined_Document.pdf

Connect Direct	The Energy Networks Association's (ENA) Connect Direct platform[18] offers a single online form for installers to apply to connect and register low-carbon technology installations with DNOs. The platform is available for the installation of domestic solar panels, heat pumps, EV charge points and battery systems across GB. Following its launch in 2024, over 100,000 applications have been processed through Connect Direct, offering a standardised and more automated process for installers.
The Embedded Capacity Register (ECR)	DNOs and independent DNOs are obligated through the Distribution Connection and Use of System Agreement (DCUSA) to publish a register consisting of generation and storage resources connected to the Party's Distribution System and which: (a) have an import capacity of 1 MW or more and are subject to a DSR Contract; and/or (b) have an export capacity of 1 MW or more. Some DNOs include resources that are ≥50kW within their ECR publication, as well as flexibility services provided by these connected resources. At these capacity limits, however, small-scale generative and demand assets typically installed at domestic premises will not be captured within ECRs.
Microgeneration Certification Scheme (MCS) Installation Database (MID)	MCS produces product and installation standards, and runs an installer certification scheme. Government schemes, such as the Boiler Upgrade Scheme, currently require installers to be MCS accredited. Assets installed by MCS accredited installers are registered on the MID.

[18] ENA Connect Direct – Energy Networks Association (ENA)

Flexibility Markets Asset Registration (FMAR)	In 2024 Ofgem consulted on common Flexibility Market Asset Registration[19] for ESO and DSO[20] markets. FMAR aims to reduce the burden on owners (individuals, households) and operators of small-scale energy assets (such as heat pumps, EV chargers and home battery energy storage systems) to register their assets multiple times, to access different flexibility markets. This increases liquidity (by making it easier to participate in multiple flexibility markets in parallel), and improves visibility for network operators, ultimately benefiting system operators, asset owners, and consumers. In their 2025 decision[21] Ofgem appointed Elexon (in its role as Market Facilitator) as the delivery body responsible for the alignment of flexibility market asset registration processes and the deployment and operation of new digital infrastructure where data is collected once, stored as a single source of the truth, and can be accessed multiple times by authorised stakeholders across flexibility markets.
Data Sharing Infrastructure (DSI)	The DSI is a socio-technical solution that enables secure and resilient data sharing at scale across the energy sector, between participants. This includes solutions to prepare data (within an originating organisation's environment), control access to data and to provide secure data sharing mechanisms. Ofgem has asked NESO to coordinate the delivery of the Data Sharing Infrastructure for the energy sector until 2028[22].

[19] Flexibility Market Asset Registration Consultation
[20] National Energy System Operator and Distribution System Operation flexibility markets
[21] Decision: flexibility market asset registration
[22] Governance of the Data Sharing Infrastructure Decision

Consumer Consent solution	In 2025 Ofgem published a decision[23] to appoint the Retail Energy Code Company (RECCo) as the delivery body to deliver an enduring, system wide digital consumer consent solution. The solution will enable consumers to grant and manage consent to share their energy data, providing 'one version of the truth'. While not a distributed energy asset register, the consumer consent solution will be relevant in facilitating data sharing, through clear, system-wide processes to control data held across repositories listed here.
Energy Smart Appliance (ESA) Standards	The Smart Secure Electricity Systems (SSES) Programme will help enable consumer-led flexibility (CLF) by ensuring that energy smart appliances (ESAs) can respond to price and grid signals. It establishes mandatory technical standards for ESAs with high potential for flexibility, including heat pumps and other smart heating systems, domestic-scale batteries and EV charge points. Standards being introduced cover cybersecurity, interoperability, and grid stability - to support a secure, flexible, and decarbonised electricity system.
Innovation programmes	The Automated Asset Registration (AAR) Programme was funded by the government's Net Zero Innovation Portfolio, and was designed to improve visibility of small-scale assets such as solar PV, EV chargers, and domestic batteries. Its core objective was to streamline and automate the registration of these assets, enabling consumers to more easily participate in demand flexibility services and unlock new energy offerings.

3.3 Barriers to realising asset visibility across the system

Even accounting for work already in-flight, the government perceives there to be gaps and overlaps to reaching the ideal flow of asset data in a decarbonised energy system. Specifically:

- **Inconsistent registration of assets with DNOs**: existing obligations to register assets with networks are disparate, unclear and not created with the express intent of providing visibility of assets connected to the network. An assessment of existing obligations is set

[23] Consumer Consent decision | Ofgem

out in Section 4. This lack of a consistent and clear obligation means DNOs' visibility of assets being connected to the network is understood to be low. Although difficult to estimate without knowing how many of these assets exist overall, visibility is estimated at <50% of all installed assets, with variations depending on asset type[24].

- **Lack of access to operational asset data**: current processes allow primarily for a 'static' view of assets when registered or notified to a DNO (such as those maintained in the ENA's Type Test Register[25]). As more distributed assets are connected to the system, giving networks access to commercial and usage data could be justified, providing insight on time and scale of use, to support effective planning and management. This isn't currently captured and notified to DNOs at the point of installation, but would be available through other sources, such as a flexibility market platform, energy supplier tariff details or through disaggregated consumption data.
- **Lack of visibility of already connected assets**: existing visibility of installed assets (in comparison to those registered with the MCS installation database for example) is already low. Solutions to identify assets already connected, but not registered or notified with the DNOs, is required to build a comprehensive view of load and flex potential across the network.
- **Data accessibility**: asset data holds value for various industry participants, including installers, flexibility service providers, and NESO (at least at an aggregate level). However, the storage and access to small-scale distributed energy asset data is inconsistent currently. Furthermore, there are restrictions on what asset data DNOs can share.

4. Do you have a view of the comprehensiveness of the distributed energy asset visibility landscape set out in this call for evidence, or are there any other pertinent components, actors, gaps, barriers or duplication which should be considered?

5. Do you have a view of the efficiency of the current asset visibility landscape?

[24] Based on engagement with DNOs, who are understood to have derived estimates based on assets registered in alternative datasets, volume of assets sold and LCT grants processed.
[25] Type Test Register hosted by ENA of LCT manufacturers' data and statements of compliance to promote product identification and information sharing ENA Connect Direct

4 Opportunities to increase visibility and access to asset data

4.1 A review of DNO processes

The role of DNOs is central to the successful registration of distributed energy assets and the overall visibility of low-carbon technologies. It is understood that inconsistencies between DNOs' minor connections processes represent operational challenges for installers[26]. Furthermore, the true value of asset data can only be unlocked if the data is stored and accessible in a consistent way. This sub-section reflects on potential improvements to how DNOs support the connection of smaller-scale electricity assets, store data about the assets and provide access to this data.

Improving the minor connections process

Ofgem's connections end-to-end review consultation[27] has set out challenges with existing connections processes, including avoidable delays to connections and a lack of transparency and consistency between DNOs' processes. The consultation also explores the potential to review current thresholds for when a DNO must undertake an assessment of the network impacts of the connection, which can cause further delays and potential increased costs[28]. Our understanding from installer organisations is that simpler, more consistent and seamless processes would offer operational benefits, as well as act to encourage greater levels of installer notification and registration of assets.

While recent improvements, such as ENA's Connect Direct platform, have simplified aspects of the registration process, inconsistencies between DNOs' minor connections processes continue to present operational challenges for installers. These inconsistencies can lead to an increase in administrative burden for installers (installer burden) and, particularly for smaller operations, act as a deterrent to following existing notifications processes. Addressing these issues could therefore improve installer engagement, increase registration rates, and enhance the visibility of distributed energy assets across the network.

The government welcomes Ofgem's ongoing end-to-end connections review and believes this work will be critical to improving the installer experience and supporting compliance with existing registration requirements.

[26] As defined in Ofgem's Connections End-to-End Review; Minor connections are those at lower voltages on the distribution network, typically including connections at the domestic level to small, non-domestic level connections. This includes upgrades to existing connections, e.g. a domestic fuse upgrade, as well as new connections).
[27] Connections End-to-End Review
[28] The G98 threshold, 3.68kW per phase, is in place to determine when a DNO must undertake an assessment of the network impacts of the connection which can cause further delays and potentially increase costs.

Standardising asset data storage and access

In addition to process improvements, the value of asset registration data will only be fully realised if it is stored in an interoperable way, with appropriate access mechanisms for relevant industry stakeholders (as set out in the vision for asset data in section 4).

Currently, variations in how DNOs collect, store, and share asset data may limit its usefulness to other market participants, including to installers (such as aggregated, local level heat maps of existing LCT installations), service providers (such as flexibility service providers, who would benefit from visibility of assets capable of providing flexibility services) or NESO.

The government supports Ofgem's commitment, as set out in the Clean Flexibility Roadmap, to consult by the end of 2025 on new DNO licence requirements to maintain asset registers which support data exchange to improve asset visibility.

6. **Do you agree that the improvements to the minor connections process Ofgem has consulted on will encourage asset registration by installers, increasing asset visibility with DNOs?**

7. **What use cases or practical applications do you see for improved DNO registers of small-scale distributed energy assets and what industry actors would require access? Please reference and where possible quantify benefits, as well as relevant access arrangements that would be required.**

4.2 Clarifying asset registration obligations and reducing installer burden

There are existing obligations on installers and consumers to register assets with various parties. These are outlined in certain regulatory frameworks, including the Electricity Safety, Quality and Continuity Regulations 2002 (ESQCR) and the Distribution Code. These regulations and guidance impose notification duties, but they differ in scope, terminology, and assignment of responsibility. This can create confusion about who is required to notify, what must be notified, and how.

When it comes to registering assets with DNOs, this takes two main forms: 'apply to connect' (notifying the network operator in advance of installation) or 'connect and notify' (within 28 days of installation)[29]. The division of duties between consumers and installers varies across regulations and asset types, creating ambiguity and gaps in accountability. Consumers may also be unaware of their obligation to notify.

Installers are vital to bringing low carbon technologies into homes and communities across the UK, helping to ensure these solutions are safely and effectively adopted as part of the

[29] ENA Distributed Generation Connection Guide, setting out what type of registration should be completed and using which forms: G99 Type A Final 2020.pdf

country's journey toward a cleaner, more sustainable future. Therefore, as outlined in this section, there is value in reviewing and streamlining current obligations to reduce complexity, while also exploring other opportunities to ease administrative burdens on installers wherever feasible.

Assessment of existing obligations

Electrical Safety, Quality and Continuity Regulations (ESQCR) 2002

Parts of the Electricity Safety, Quality and Continuity Regulations 2002 impose legal obligations on individuals and organisations connecting to or operating in parallel with the electricity distribution network[30]. The Health and Safety Executive (HSE) and DESNZ are responsible for administering these regulations. However, the application and enforcement of key provisions, particularly regulations 22 and 25, present challenges in practice.

Regulation 22 – Parallel Operation with the Distribution Network

Regulation 22 requires that any person intending to install or operate a source of energy in parallel with a DNO's network must first agree specific technical and safety requirements with the DNO. Where the installation meets certain criteria, the obligation to agree can be replaced by a responsibility on installers to advise the distributor of the intention to use the source of energy in parallel (ESQCR regulation 22(2)). The ESQCR guidance defines the term 'parallel operation' to mean situations where the source of energy is directly or indirectly connected to the grid or to the local distributor's network[31].

Whilst this regulation imposes responsibilities on the person who installs or operates the energy source, in practice there is limited assurance of compliance.

Regulation 25 – Consent for Connections

Regulation 25 requires that any person installing or altering a connection from a distributor's network to a consumer's installation, street furniture, or another network must obtain the distributor's consent. However, regulation 2(2) exempts individuals acting as agents, contractors, or subcontractors acting on behalf of the duty holder from this obligation.

In circumstances where installers are considered agents, contractors or subcontractors of the duty holder, regulation 25 shifts the legal responsibility for obtaining consent to duty holder. If there are circumstances where the duty holder is a consumer, they typically lack the technical knowledge or awareness of these regulatory requirements, making compliance difficult without professional support.

[30] The Electricity Safety, Quality and Continuity Regulations 2002
[31] GUIDANCE ON THE ELECTRICITY SAFETY, QUALITY AND CONTINUITY REGULATIONS 2002

Key Issues Identified

- Ambiguity of responsibility: Legal responsibility between installers and consumers under regulations 22 and 25, compounded by the exemption in regulation 2(2), creates confusion over who must obtain consent and ensure compliance.
- Unclear monitoring and enforcement: The enforcement mechanisms for regulations 22 and 25 are unclear, likely due to the ambiguity of the responsibility.
- Penalties: Non-compliance can result in summary conviction and fines. It is unclear if these penalties could affect consumers, who may be unaware of their obligations.

The Distribution Code

The Distribution Code sets out the technical requirements for potential and existing users of electricity distribution networks, with Section DPC5.2.1 requiring users to notify DNOs of significant changes to connections. The definition of users does not explicitly include installers, however it does encompass consumers, either as the end consumer or the owner of the installation. This may further compound uncertainty with ESQCR regulation 25, which imposes responsibility on the installer of assets.

ENA Guidance and EREC Forms

The Energy Networks Association (ENA) provides guidance on the connection of low-carbon technologies to the networks[32]:

- For connecting EV chargers and heat pumps, the ENA guidance states that installers have the responsibility to inform network operators when making modifications to a service. This can be done using the paper heat pump/EV notification form or ENA's Connect Direct.
- For the connection of generation to the network, the ENA states that compliance with the engineering recommendations (EREC) G99 and G98 is the responsibility of the customer, who is often, but not always, the owner of the generation. Owners are required to ensure that generation equipment they purchase and install on their premises complies with the law. This can be done via the G98 and G99 forms or Connect Direct (G98 only).

While ENA guidance provides practical tools and forms to support asset registration, it specifies split responsibilities between installers and consumers, and the lack of regulatory enforcement limits its effectiveness in ensuring consistent notification.

Government self-certification schemes requirements

[32] Connecting commercial generation to the electricity networks – Energy Networks Association (ENA)

Set up in 2002, the main function of government authorised self-certification scheme (SCS) operators is to ensure Building Regulations compliance. The work of registered companies accepted as members of an SCS operator is not subject to building control inspection. The objective of the schemes is to make work that is within the scope of Schedule 3 of the regulations[33], including electrical installations, is as inexpensive and efficient as possible whilst ensuring that it fully complies with the relevant legislative requirements.

To be registered with a SCS operator, installers need to demonstrate that they meet the relevant Mandatory Technical Competence (MTC) criteria. The MTC criteria define the competence requirements for SCS registered individuals and organisations working directly on work for which self-certification is required under the Building Regulations, including Approved Document P on electrical safety in dwellings[34], and the IET Wiring Regulations (BS 7671)[35], which provide the key standards for domestic electrical installations in the UK.

The MTC requirements currently do not require DNO notification.

Regulation / Guidance	Relevant Sections	Responsibility	Asset Type	Enforcement Mechanism
ESQCR 2002	Regulation 22	Installers & persons who operate	Parallel sources of energy	Penalties can include summary conviction and a fine.
	Regulation 25	Any person installing or altering a connection	Technology agnostic	Enforcement as above.
Distribution Code	DPC5.2.1	Consumers (as 'users')	Technology agnostic; Significant changes to connections	Enforced by DNOs. Non-compliance may result in refusal to connect, delays, or technical non-conformance.

[33] The Building Regulations 2010
[34] Electrical safety: Approved Document P - GOV.UK
[35] BS 7671 - 18th Edition

ENA Guidance	EREC G98 & G99	Consumers (owners)	Generative (such as solar PV, wind turbines)	Mandatory under Distribution Code. Enforced by DNOs. Non-compliance may result in connection refusal or disconnection.

Table 3: Summary of existing regulations and guidance for notifying DNOs of the installation of distributed energy assets

Clarifying and streamlining obligations

To address the inconsistencies and low levels of asset notification, a range of regulatory and non-regulatory interventions can be considered. These options vary in enforceability, implementation timelines, administrative burden, and long-term sustainability. The following outlines each option, its mechanisms, and its potential impact.

Single, clarified obligation introduced through primary legislation

A single and clear obligation could be introduced through primary legislation, to require registration and notification for all relevant asset types, in place of the multiplicity of current obligations. For example, a new obligation could place responsibility for DNO registration compliance on installers only, removing the current ambiguity. This example would likely require secondary legislation to set out a tailored framework, such as giving a single body the authority to monitor compliance and tackle the complex issues behind low registration rates. The secondary legislation would be subject to further policy development and consultation, with relevant components addressing:

- Legal requirements on installers to register installations with DNOs or via a designated third party.
- An enforcement body empowered to oversee compliance.
- Proportionate penalties to be available in the event of non-compliance. The legislation would define clear responsibilities and enforcement powers.

However, implementation timelines could be lengthy and there is a risk of increasing administrative burden for installers, if the obligation is not combined with measures to simplify installation notifications. This option would likely require amendments to regulations 22 and 25 of the ESQCR to avoid inconsistencies.

Amending existing obligations through secondary legislation

As an alternative to a new, streamlined obligation being introduced, the ESQC regulations could be amended to place responsibility on installers for notifying DNOs of the connection of both generative and non-generative assets, removing the exemption under regulation 2(2) and consumers' responsibility.

The obligation could use existing DNO notification routes (as set out in ENA guidance and through this section), with HSE and DESNZ responsible for enforcement. There is no routine mechanism for DNOs to report non-compliance to the HSE or DESNZ, and no central body currently monitors asset registration compliance. Any amended obligations or new secondary legislation would be limited in scope by what can be lawfully included within the existing parameters of the regulations, under the enabling powers of the Electricity Act of 1989[36].

Non-regulatory option

Awareness Campaigns

Implementing awareness campaigns to educate consumers and installers about the importance of DNO notification and the benefits of compliance could increase registrations. This option would aim to increase awareness and engagement through targeted campaigns.

This option is unlikely to substantially increase registrations without complementary obligations and improvements to registration processes. It may also not be suitable for consumers to remain a party responsible for registration, as the information required is technical and the process is lengthy.

Summary Points and Questions

The government acknowledges the need to strike a careful balance between amending obligations to enhance clarity and certainty for installers and avoiding the introduction of additional burdens. The government therefore welcomes feedback on whether the assessment above is comprehensive, and on how the proposed clarifications might support the delivery of asset visibility policy objectives.

8. Do you have a view of the completeness of installer obligations to register assets with DNOs as set out in section 4.2? Are there obligations and existing requirements that have not been covered, but relevant in providing visibility of assets to DNOs?

[36] Electricity Act 1989

9. Which installer obligation clarification and streamlining option(s) would you support for increasing the registration of assets with DNOs? Please explain your view.

Administrative burden for installers

The administrative tasks associated with distributed energy asset installation require considerable additional effort from installers, particularly for heat pumps, and may limit the number of installations that they are able to complete[37].

Installers are required to separately notify multiple organisations when installing a distributed energy asset, including DNOs, self-certification schemes or local authorities manufacturers for warranty guarantees and, where applicable, the Microgeneration Certification Scheme (MCS) and government scheme administrators such as Ofgem (e.g. for the Boiler Upgrade Scheme). These processes often involve duplicative data entry and fragmented digital systems.

The burden is particularly challenging for small businesses and sole traders with limited administrative capacity, which make up approximately 95% of the heating and cooling sector[38]. Reducing this burden could therefore support market growth whilst improving DNO registration compliance and asset visibility.

To address this issue, the government and industry have supported the development of tools to streamline registration and reduce administrative overhead. These include:

- The Energy Networks Association (ENA) Connect Direct platform, which streamlines DNO notifications[39].
- The Automatic Asset Registration (AAR) Programme, funded through the government's Net Zero Innovation Programme, which developed and demonstrated a technical solution for automated registration and a central asset register[40].
- Integration of the MID and Benchmark Online, to create an integrated heat pump commissioning service.
- Reforms to the MCS scheme, which although not directly related to notifications, aim to reduce administrative burden and prepare for the mass rollout of microgeneration technologies[41].

As part of this call for evidence, the government is seeking views on how to further reduce administrative and regulatory burden on installers, particularly in relation to registration with DNOs.

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[37] Nesta's Installer Survey found that time spent on unnecessary tasks or administration was the third largest challenge for installers who wanted to increase the number of heat pumps they install (19% of respondents). Over half of respondents (56%) also reported that they take too long on MCS, BUS, DNO and other post-installation paperwork.

[38] Heating and cooling installer study - GOV.UK

[39] ENA Connect Direct – Energy Networks Association (ENA)

[40] Automatic Asset Registration Programme: successful projects - GOV.UK

[41] What the redeveloped Scheme means for installers - MCS

Improving digital tools for asset registration

The DNO registration process can be technically complex and time intensive. To combat this the Energy Networks Association (ENA) launched the Connect Direct platform, which aims to streamline and standardise the notification process across all GB DNOs. The platform currently supports notifications for most domestic solar panel, heat pump, EV charger and battery systems, within the limits of the EREC G98 notifications only. There is ongoing development to expand the service to G99 limits.

In its first year of operation Connect Direct has processed over 100,000 applications[42]. However, MCS data indicates that approximately 260,000 certified installations (excluding EV charge points) were completed in 2024, suggesting that a proportion of installers are not using available digital platforms[43]. Anecdotally, the government is aware that some installers continue to use legacy paper-based routes, even for assets eligible for digital notification.

Barriers to adoption may include limited awareness, data requirement complexity, and a lack of integration with other administrative systems. As a relatively new solution, ongoing enhancements (like improved detection of different cut-out types[44], an understanding of which is needed to help determine the suitability of electricity services for accommodating additional load) will continue to make the digital tool more useful and support increased registrations. Some DNOs also have their own online platforms for asset registration (such as UKPN's Smart Connect), separate to Connect Direct, which may lead to confusion. The ENA has indicated that it is actively seeking opportunities to enhance the Connect Direct service and explore integration with other systems.

Single point of notification

An ambitious option would be the development of a single point of notification solution, through which installers could submit all the data required for installation notifications once, with relevant information shared securely with the appropriate parties; such as DNOs, MCS, the SCSs, manufacturers and, where relevant, Ofgem for relevant grant schemes

Stakeholder engagement has highlighted support for a digital solution that consolidates installation notifications, benefitting installers by avoiding administrative duplication and streamlining of the installation journey.

The government previously funded the AAR programme to develop and demonstrate an automated registration solution and centralised register that could share asset data with

[42] Online platform ENA Connect Direct reaches over 100,000 applications – Energy Networks Association (ENA),
[43] 2024 was a record year for small-scale renewables - MCS
[44] A cut-out is a piece of electrical equipment that is located at the end a power line into a property. It is usually located next the electricity meter and the responsibility of the DNO. It is directly attached to the main incoming power cable and contains what is known as the 'main fuse'. A number of different cut-out types exist, with different suitability to accommodate increased load from installed energy assets: LCT_Cut-Out Rating Guidance to EV-HP Installers v1.1.docx.pdf.

multiple parties. GreenSync and Energy Systems Catapult developed the LCT Connect solution through the programme, which concluded in March 2025[45].

An industry example of the feasibility and benefits of combining notifications is the integration of the MCS Installation Database (MID) with Benchmark Online[46]. The MID is the official database used by MCS to record certified low-carbon technology installations in the UK. Benchmark Online is the digital version of the long-standing commissioning checklist used by heating engineers to demonstrate compliance with building regulations and manufacturer standards[47]. Through this integration, heat pump installers can now complete both commissioning and certification requirements via a single digital interface. This removes the need to duplicate data entry, reducing administrative burden, improving data accuracy, and accelerating the commissioning process for MCS-certified contractors.

Directionally, these examples illustrate how industry collaboration can help deliver digital solutions to simplify installer processes.

Enabling self-registration by assets

Enabling the self-registration of smart and connected devices to designated body(s) could also increase asset visibility. This would involve embedding connectivity and registration functionality into distributed energy assets, as set out in relevant device standards. For example, assets could automatically register via APIs (hosted by DNOs or via the existing Connect Direct platform).

At a minimum, this approach would require:

- Introduction of technical standards requiring devices to have this capability. The government's Smart Secure Electricity Systems (SSES) programme[48] explores the introduction of standards covering cybersecurity, interoperability and grid stability, which could be relevant. Market-led initiatives, such as 'Project Mercury'[49], also explore the establishment of global standards for smart energy device integration.
- Collaboration with manufacturers to implement relevant functionality in devices.
- Consideration of consumer consent mechanisms and data privacy constraints, ensuring that the asset owner is informed and in control of personal data shared by the asset.

This approach could reduce the administrative burden on installers, improve the accuracy and timeliness (at the point of activation) of asset data provided to DNOs, and therefore enhance the visibility of distributed energy resources on the electricity network. However, there are also

[45] Automatic Asset Registration Programme: successful projects - GOV.UK,
[46] MID/Benchmark Online integration set to make heat pump commissioning quicker and easier - MCS
[47] What Is Benchmark — Benchmark
[48] Energy Smart Appliances section of the government's response to the SSES consultation: Delivering a smart and secure electricity system: implementation - government response
[49] 'Project Mercury' Announcement (17th of October 2024): Octopus Energy unveils 'Project Mercury' – a global vision for a smart energy tech ecosystem | Octopus Energy

downsides to this option, which may limit its value in driving greater asset visibility within reasonable timeframes:

- Data collected through a self-registration route (such as device type, capacity, and location) is limited and cannot replace the requirements of pre-installation connection processes (such as those in place for 'apply to connect' installs). Installers would still be required to calculate property maximum demand and submit this for DNO approval[50] for certain installations, which single devices may not be able to do autonomously.
- Coverage under SSES-introduced standards would also be incomplete; for instance, solar installations not linked to smart-enabled devices would still fall outside the scope of future ESA standards. Therefore, new primary powers would be needed to introduce these requirements.

The government welcomes evidence on the technical, regulatory, and commercial considerations associated with enabling self-registration of smart devices. As well as on the feasibility and expected impact of other digital tool and solution options to reduce installer burden set out in this sub-section.

10. How effectively could enhancements to existing digital tools (such as Connect Direct), or the development of new solutions, streamline the notification and registration process for installers, particularly in the context of minor connections processes and asset visibility objectives?

11. Which existing notification and data provision requirements across distributed energy asset installation processes could be consolidated or streamlined and in what priority order? What evidence supports the benefits of such consolidation in reducing installer burden and/or improving asset visibility?

12. What delivery routes would you see as appropriate for streamlining and consolidating of installer notification requirements, given that it would involve coordination across multiple recipient organisations? Please consider cost and implementation feasibility for market participants in providing your views.

13. How could the usage of digital tools and solutions be encouraged, making them desirable in reducing administrative burden on installers?

14. To what extent do you consider asset self-registration to be a desirable approach in this context? In addition to the considerations outlined in Section 4.2, are there any other factors you believe are relevant to assessing the feasibility of this option?

Please provide evidence to support which measure(s) may be of most benefit or if you don't believe any of the listed options would support meeting the policy objective.

[50] Estimated annual kWh consumption and After Diversity Maximum Demand (ADMD) calculation for properties, setting out the maximum demand that is assumed at the time at which peak demand occurs on the substation or low voltage circuit (National Grid: Design of Low Voltage Domestic Connections Directive)

4.3 Alternative routes to visibility

Capturing asset information at the point of installation is one means of enhancing visibility, but other mechanisms may also support this objective. This sub-section explores options such as the innovative use of data, the combination of different asset registers and opportunities to align with the Market Facilitator in growing flexibility markets.

Innovative use of data

DNOs can use smart metering data to detect distributed energy assets and understand how they are used. The government understands that DNOs are exploring the use of machine learning and artificial intelligence to analyse the data, and identify unregistered distributed energy assets connected to the network. These capabilities, including the application to disaggregated consumption data with consumer consent, have been demonstrated through innovation initiatives and offer promising avenues for enhancing visibility and planning[51][52][53].

DNOs can access smart metering data, subject to gaining consumer consent and maintaining compliance with consumer protections through the Data Access and Privacy Framework[54] and in line with their Smart Meter Data Privacy plans, which set out how they will access and use this data responsibly. This includes consumption information, which can be used in aggregated form to enhance visibility of the low-voltage (LV) network.

There may be other ways to use smart meters to identify assets. Smart meters which are compliant with the SMETS 2[55] standard are equipped with registers capable of recording 'maximum demand' values for imported and exported energy. Recorded maximum demand may be useful in determining the presence of distributed energy assets at the premise where the meter is installed, without needing access to more granular consumption data.

Respondents' views on the applications and use of Smart meter or other industry data, for the purposes of increasing asset visibility are welcomed. As part of the responses, the government would also like to hear about any regulatory or other constraints which may impede more innovative use of data to help meet the policy objective, and suggested options for overcoming these.

Use of industry datasets

Alongside the innovative use of data, cross-referencing with existing or planned industry datasets may support DNOs in expanding and validating their asset registers, contributing to

[51] Network Innovation Allowance 'LCT Detection' project – concept model using cognitive analytics and AI to spot unregistered LCTs connected to the network. National Grid - LCT Detection
[52] Network Innovation Allowance 'Smart Meter Innovations and Test Network (SMITN)' project – LCT identification of potential locations and types. National Grid - Smart Meter Innovations and Test Network (SMITN)
[53] 'Detecting LCTs from Smart Meter Consumption Data' - Northern Powergrid Low TRL Research Project: Detecting LCTs from Smart Meter Consumption Data | ENA Innovation Portal
[54] Smart Metering Implementation Programme: Review of the Data Access and Privacy Framework. Smart Metering Implementation Programme: Review of the Data Access and Privacy Framework
[55] Smart Metering Equipment Technical Specifications version 2: Smart metering equipment technical specifications: second version - GOV.UK

greater overall visibility. This is particularly relevant where data is drawn from multiple sources or where differing incentives, such as installation accreditation or grant-linked requirements, enhance what is recorded in those datasets, compared to what is submitted to DNOs.

It is understood that DNOs are already exploring the potential for cross-comparing and harmonising datasets, with a focus on:

- Alignment with other existing LCT datasets. Access to alternative asset registries such as the MCS installation database may help enhance DNOs' asset registers. While the MCS database will not contain all installed LCT assets (registration is completed only by MCS certified installers, and does not for example include EV chargers), it would provide an additional data source of assets such as solar panels, batteries and heat pumps, particularly where installation of such assets is supported by grant schemes requiring certification (such as the Boiler Upgrade Scheme).

As outlined in section 3, ongoing industry programmes are expected to provide additional data sources to support this option. This could include:

- A Flexibility Market Access Registration (FMAR) digital solution. Once in place, an objective for FMAR is to provide a single source of the truth for assets registered across NESO and DSO flexibility markets. While not all installed distributed energy assets will be entered into flexibility markets, a large proportion are expected to be, with commercial incentives for the asset owner to do so. In this way, with appropriate consumer (asset owner) consents in place, DNOs could seek access to FMAR asset registries in order to enhance their own registers and asset visibility.

Image recognition-based detection

Complimenting registers, DNOs may use aerial imagery, field teams or GIS systems to help identify the location and type of assets connected to the network. The use of satellite imagery combined with machine learning or generative AI solutions could support the identification of installed solar panels. Street-level imagery (such as from Google Street View or field teams) could be utilised to identify EV charging infrastructure and visible heat pumps.

While these solutions may provide valuable insights into identifying connected assets in specific locations, their effectiveness across the broader network may be constrained by several challenges. Notably, they often lack the capability to accurately determine an asset's capacity or consumption profile based solely on visual data. Furthermore, such tools are generally unable to detect non-visible infrastructure, such as off-street electric vehicle chargers, battery storage systems, or heat pumps, which limits their comprehensiveness.

15. What existing industry data may be used to help increase distributed energy asset visibility, with reference to:

a. **What additional routes to access such data would be considered necessary and why?**

b. **What provisions (data safety, security and appropriate access consent) should be put in place to enable the better use of such data within the constraints of protecting critical national infrastructure (CNI) sensitive information? .**

16. **Beyond the options already outlined, are there any additional policy or technical solutions that could effectively support the achievement of the objective to improve visibility of small-scale distributed energy assets? In your response, please consider opportunities to enhance data collection, storage, and access processes.**

17. **Are there particular groupings or pairings of the proposed options that should be considered jointly to help deliver increased asset visibility?**

4.4 Assessment of options

Through this call for evidence, the government is seeking your input to inform the case for any future measures aimed at improving asset visibility. To support a robust and transparent assessment of policy options, the government proposes using a structured framework based on defined impact assessment criteria.

The criteria should ensure that any proposed measure is not only effective in achieving the core policy objective (enhanced visibility of distributed energy assets) but also strategically aligned with national energy goals, efficient, equitable and resilient to future system needs and technological developments. They should also allow for the assessment of what an appropriate measure should be, in terms of the need for intervention from the government and regulators.

Proposed assessment criteria include:

- **Effectiveness in providing visibility**: The degree to which each option improves visibility of distributed energy assets for key use cases, including the reliability, granularity, and timeliness of the data it enables. While some options may offer partial benefits, a combination of targeted interventions may ultimately be required to fully meet the policy objective.
- **Efficiency**: Evaluation of both direct and indirect implementation costs, including administrative burden and the degree to which it could lead to duplication of existing, established industry processes. Priority will be given to options that deliver high impact at proportionate cost.
- **Equity**: The degree to which the responsibilities and costs of the option fall with the parties who are best able to bear them and who have a stake in the benefits
- **Deliverability**: The degree of speed and simplicity that would be involved in implementing the option. This would include an assessment of delivery risk.

- **Future-proofing**: The extent to which each option can adapt to evolving system needs, including integration with digital infrastructure, scalability, and resilience to future policy or market changes, while maintaining strategic fit and alignment with the government's Clean Energy Superpower Mission and Clean Flexibility vision.

The government welcomes views, supported by evidence, on the suitability and completeness of these criteria. Responses will be valuable in informing and shaping any next steps, following this call for evidence.

18. Do you agree with the proposed criteria for assessing future policy options to improve visibility of distributed energy assets, or are there any additional criteria that you feel should be considered?

Next Steps

This call for evidence will close on 10 September 2025. The government will consider the responses we receive to this call for evidence to inform what further steps may be required to realise the benefits set out.

The government will respond to this call for evidence by end-2025.

Call for evidence questions

1. What are your views on:
    a. The definition of assets relevant for consumer flexibility, network planning or other benefits of asset visibility?
    b. Who do you think will need to have visibility of these assets?
    c. What information about these assets will be most relevant?
2. To what extent do you agree with the benefits and use cases for asset data visibility and access set out in section 2, and how might they support increased system flexibility?
3. What level of asset registration (the minimum rate of registration of all installed assets, by asset type) do you believe is necessary to support effective network planning and operation? Please explain your reasoning.
4. Do you have a view of the comprehensiveness of the distributed energy asset visibility landscape set out in this call for evidence, or are there any other pertinent components, actors, gaps, barriers or duplication which should be considered?
5. Do you have a view of the efficiency of the current asset visibility landscape?
6. Do you agree that the improvements to the minor connections process Ofgem has consulted on will encourage asset registration by installers, increasing asset visibility with DNOs?
7. What use cases or practical applications do you see for improved DNO registers of small-scale distributed energy assets and what industry actors would require access? Please reference and where possible quantify benefits, as well as relevant access arrangements that would be required.
8. Do you have a view of the completeness of installer obligations to register assets with DNOs as set out in section 4.2? Are there obligations and existing requirements that have not been covered, but relevant in providing visibility of assets to DNOs?
9. Which installer obligation clarification and streamlining option(s) would you support for increasing the registration of assets with DNOs? Please explain your view.
10. How effectively could enhancements to existing digital tools (such as Connect Direct), or the development of new solutions, streamline the notification and registration process for installers, particularly in the context of minor connections processes and asset visibility objectives?
11. Which existing notification and data provision requirements across distributed energy asset installation processes could be consolidated or streamlined and in what priority order? What evidence supports the benefits of such consolidation in reducing installer burden and/or improving asset visibility?

12. What delivery routes would you see as appropriate for streamlining and consolidating of installer notification requirements, given that it would involve coordination across multiple recipient organisations? Please consider cost and implementation feasibility for market participants in providing your views.
13. How could the usage of digital tools and solutions be encouraged, making them desirable in reducing administrative burden on installers?
14. To what extent do you consider asset self-registration to be a desirable approach in this context? In addition to the considerations outlined in Section 4.2, are there any other factors you believe are relevant to assessing the feasibility of this option?
15. What existing industry data may be used to help increase distributed energy asset visibility, with reference to:
    a. What additional routes to access such data would be considered necessary and why?
    b. What provisions (data safety, security and appropriate access consent) should be put in place to enable the better use of such data within the constraints of protecting critical national infrastructure (CNI) sensitive information?
16. Beyond the options already outlined, are there any additional policy or technical solutions that could effectively support the achievement of the objective to improve visibility of small-scale distributed energy assets? In your response, please consider opportunities to enhance data collection, storage, and access processes.
17. Are there particular groupings or pairings of the proposed options that should be considered jointly to help deliver increased asset visibility?
18. Do you agree with the proposed criteria for assessing future policy options to improve visibility of distributed energy assets, or are there any additional criteria that you feel should be considered?

Glossary

Term	Definition
Aggregator	An aggregator is a third-party service provider that combines the energy capacity or flexibility of multiple small-scale energy users or producers (like homes, businesses, or EVs) and offers it as a single resource to the electricity market or grid operator.
Asset register	A structured collection of data that is stored and accessed electronically.
BSC	Balancing and Settlement Code - the framework governing electricity balancing and financial settlement in the UK energy market.
CER	Consumer energy resources - distributed energy assets owned or controlled by consumers, connected to the distribution network at the consumer premises, such as solar panels, batteries, or smart appliances.
CLF	Consumer-led flexibility – ability for consumers to adjust their energy usage in response to signals, helping balance supply and demand.
CNI	Critical National Infrastructure are those critical elements of infrastructure whose loss or compromise could severely impact the delivery of essential services or have significant impact on national security, national defence, or the functioning of the state.
CPAP	Clean Power Action Plan - the UK government's action plan which sets out a pathway to a clean power system by 2030.
DER	Distributed energy resources – business-owned small-scale energy generation or storage technologies connected to the distribution network, located close to where energy is consumed.
DFS	Demand Flexibility Service - a programme led by the National Energy System Operator (NESO) that incentivises consumers to reduce or shift electricity use during peak demand periods, helping to balance the grid and lower system costs

Distributed energy asset	Small-scale local generation and flexible systems connected to the grid.
Distribution Network Operator	A company licensed to distribute electricity within a specific geographic area in Great Britain. Also referred to as a Network Operator.
Distribution System Operator	A DSO is a network operator that actively manages electricity flows on the local distribution network to balance supply and demand in real time.
DSI	Data Sharing Infrastructure - a programme run by NESO to enable secure and efficient data exchange across the energy sector
ESA	Energy smart appliances – communications enabled devices capable of automatically adjusting their energy consumption in response to signals from the grid or energy supplier, helping to optimise energy use.
EV	Electric Vehicle - a vehicle powered entirely or partially by electricity, typically using rechargeable batteries. Some are enabled with vehicle-to-grid technology, enabling them to not only draw power from the grid but also send it back.
FES	Future Energy Scenarios - projections published by NESO outlining possible pathways for the UK energy system to meet net zero and other targets.
FMAR	Flexibility Market Asset Registration programme run by Elexon to standardise and streamline the registration of assets participating in flexibility markets.
HSE	The Health and Safety Executive - the UK's national regulator for workplace health, safety, and welfare.
Low Carbon Technology	Technologies that produce significantly lower greenhouse gas emissions compared to conventional fossil fuel-based systems. LCTs include electric vehicles (EVs), heat pumps, solar photovoltaic (PV) systems, battery storage, and other renewable or energy-efficient solutions that support the transition to a net zero carbon energy system.

MCS	Microgeneration Certification Scheme - maintain product and installation standards, and runs an installer certification scheme.
MHHS	Market-wide Half-hourly Settlement – electricity settlement reform in the UK, mandating the use of half-hourly settlement for all consumers.
SSES	Smart Secure Electricity Systems – a programme establishing mandatory technical standards for ESAs with high potential for flexibility, including heat pumps and other smart heating systems, domestic-scale batteries and EV charge points.
TIDE	NESO's Transformation to Integrate Distributed Energy programme.
Type Test Register	Device register hosted by ENA of LCT manufacturers' data and statements of compliance to promote product identification and information sharing.

This publication is available from: https://www.gov.uk/government/calls-for-evidence/improving-the-visibility-of-distributed-energy-assets

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