

Strategic Roadmap for Flexibility (2023)

Open Networks



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Introduction

About ENA

Energy Networks Association represents the companies which operate the electricity wires, gas pipes and energy system in the UK and Ireland.

We help our members meet the challenge of delivering electricity and gas to communities across the UK and Ireland safely, sustainably and reliably.

Our members include every major electricity and gas network operator in the UK and Ireland, independent operators, National Grid ESO which operates the electricity system in Great Britain and National Grid which operates the gas system in Great Britain. Our affiliate membership also includes companies with an interest in energy, including Heathrow Airport and Network Rail.

We help our members to:

- Create smart grids, ensuring our networks are prepared for more renewable generation than ever before, decentralised sources of energy, more electric vehicles and heat pumps. Learn more about our [Open Networks programme](#).
- Create the world's first zero-carbon gas grid, by speeding up the switch from natural gas to hydrogen. Learn more about our [Gas Goes Green programme](#).
- Innovate. We're supporting over £450m of [innovation investment](#) to support customers, connections and more.
- Be safe. We bring our industry together to [improve safety](#) and reduce workforce and public injury.
- Manage our networks. We support our members manage, create and maintain a vast array of electricity codes, standards and regulations which support the day-to-day operation of our energy networks.

Together, the energy networks are [keeping your energy flowing](#), supporting our economy through [jobs](#) and investment and [preparing for a net zero future](#).

Our members and associates

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

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

ENA members



ENA associates

- [Chubu](#)
- [EEA](#)
- [Guernsey Electricity Ltd](#)
- [Heathrow Airport](#)
- [Jersey Electricity](#)
- [Manx Electricity Authority](#)
- [Network Rail](#)
- [TEPCO](#)

Introduction

About Open Networks

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

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

Launched in 2017, ENA's Open Networks programme has been a key to enabling the delivery of Net Zero by:

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

Going forward Open Networks will have a stronger focus on DSO and flexibility markets. In 2023, Open Networks will focus on increasing participation and volume in the local flexibility market. In line with the actions from BEIS and Ofgem's Smart System Flexibility plan (2021), we will focus on:

- Making it easier for flexibility service providers to participate in the flexibility market by standardising products, processes and contracts.
- Improving operational coordination between networks and companies to remove barriers to the delivery of Flexibility services.
- Improving the transparency of processes, reporting and decision-making.

2023 Open Networks Programme Workstreams

The programme objectives will be delivered by consolidating the programme into three new workstreams aligned with the DSO roles defined by Ofgem (and the Flex framework introduced in the paper).

- **Planning and Network Development**
- **Network Operation**
- **Market Development**

Background and purpose

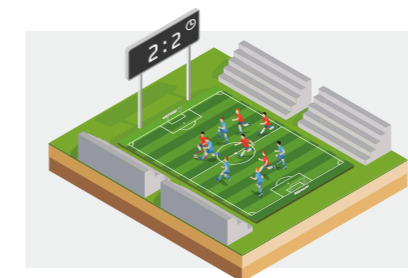


Since its inception in 2017, Open Networks has played a pivotal role in supporting the move towards Net Zero by enabling local flexibility markets and implementing the processes required to support them. We strive to enable networks to deliver open, transparent, accessible and efficient markets for local flexibility, in coordination with the ESO and accounting for impacts across transmission and distribution systems. The programme's work has helped the UK to establish world-leading local flexibility markets through standardisation (across DNOs and with the ESO), simplification and transparency in decision-making.

Six Principles of Flexibility

In December 2018, Britain's local electricity network operators launched ENA's first Flexibility Commitment. In this, we committed to openly testing the market to compare relevant grid reinforcement and market flexibility solutions for all new projects of significant value.

As part of the Flexibility Commitment, Britain's six Distribution Network Operators (DNOs) committed to six key steps as flexibility services are rolled out more widely and we transition to a more efficient, smarter and low-carbon energy system fit for Britain's future.



1. **Champion a level playing field**



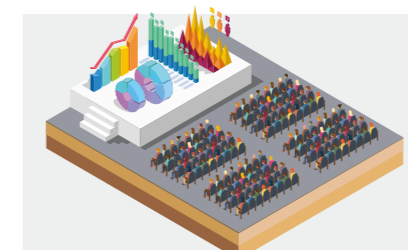
2. **Ensure visibility and accessibility**



3. **Conduct procurement in an open and transparent manner**



4. **Provide clarity on the dispatch of services**



5. **Provide regular, consistent and transparent reporting**



6. **Work together towards whole energy system outcomes**

Background and purpose

Open Networks also published a [cross-functional flowchart](#) to map the progress across 2018 - 2022.

Since that time, we have seen a major uplift in tenders for flexibility services. Their progress has been striking. The UK has the largest flexible energy market in the world - a title the UK has earned for the fourth year running - with network companies tendering for 3.7GW of flexibility in the 2021/22 financial year.

The recent Ofgem and BEIS Smart Systems and Flexibility Plan (2021) recognises the role of Open Networks and our work to date and has given us a clear mandate to deliver a common framework for flexibility by 2023. BEIS and Ofgem's Smart Systems and Flexibility Plan, coupled with stakeholder feedback provided through a public consultation undertaken in Q4 2021 has guided the prioritisation of the development of a common framework in the 2022 workplan.

Purpose of this document

The framework and strategic roadmap were introduced by Open Networks to coordinate and consolidate the various building blocks of flexibility into a common framework and to set out a descriptive view of further development required for the proliferation of existing and future flexibility markets.

The framework and roadmap for flexibility combined form a non-prescriptive representation of the status of the industry and set out a high-level trajectory, catering to a wide industry audience.

It is not specific to any individual network company or the outputs from the Open Networks programme. However, it was used to guide some of the discussion around the key priorities for the Open Networks programme in 2023.

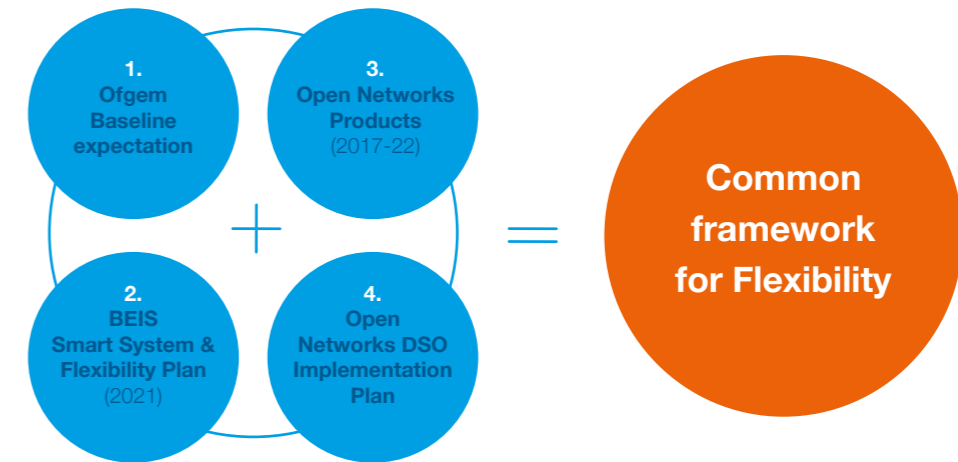


Framework for Flexibility

The Framework sets out a high-level consolidated view of key areas of work that are relevant to the proliferation of flexibility. The Framework is structured to reflect existing (e.g. ESO and DSO) and future flexibility markets (e.g. peer-to-peer, capacity trading) and is contextualised under Ofgem's three main Distribution System Operation roles that are identified in the baseline expectation.

The key areas circled with a blue dashed line (see graphic on page 8) indicate actions that have been identified in the BEIS Smart System and Flexibility Plan.

Four key sets of information were used in the development of this Common Framework for Flexibility, as seen in the figure below:



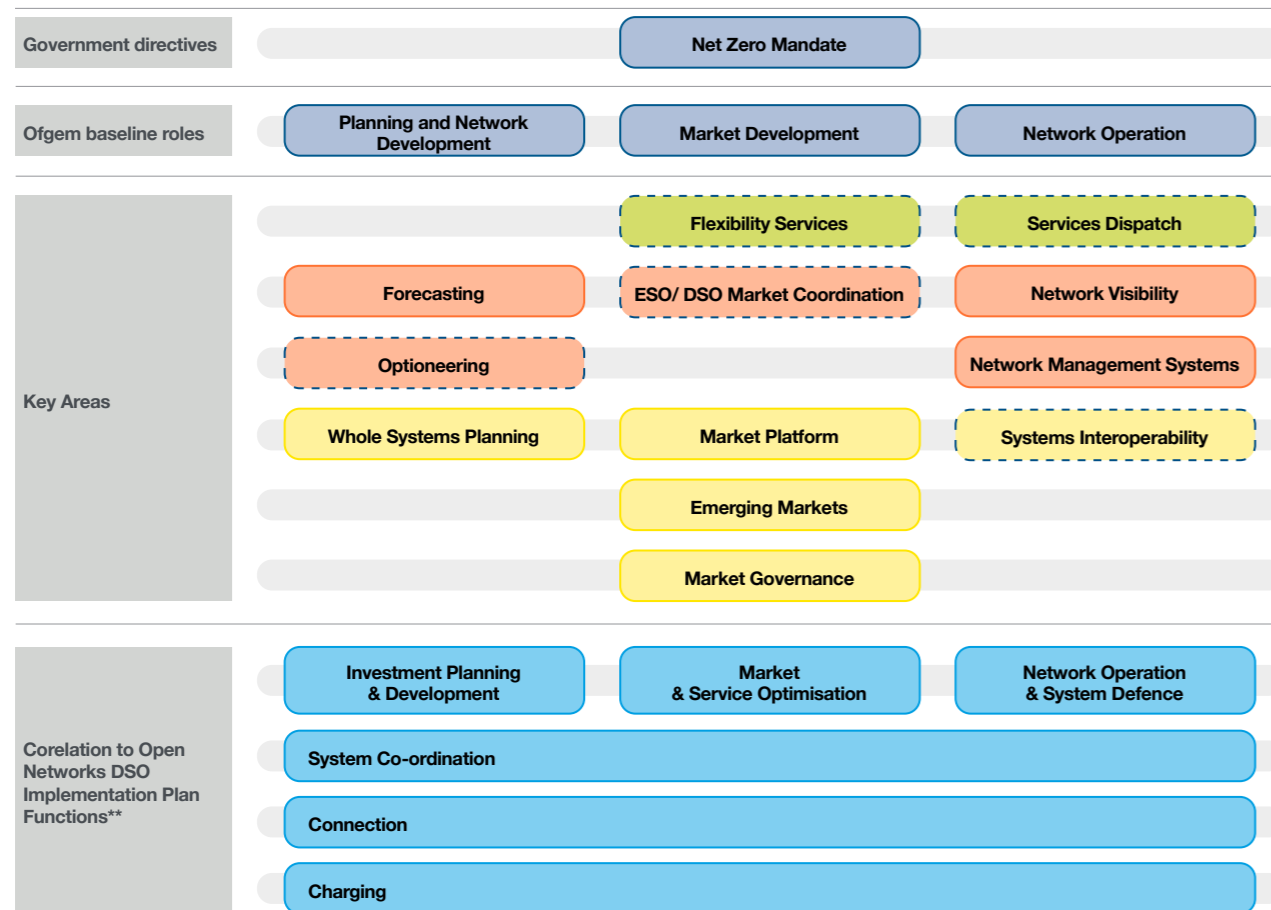
1. Ofgem's RIIO-ED2 Business Plan Guidance to DNOs: Electricity networks and system operators have submitted their business plans setting out how they will deliver best value to customers and Net Zero ready networks capable of supporting the transformation of energy systems to a future low carbon economy. These plans were drafted based on the common baseline expectation set out by Ofgem. This guidance document helped determine key focus areas for DNOs in shaping their business plans for the next regulatory period.

2. Smart System and Flexibility plan (2021): This key Ofgem and BEIS policy paper sets out a plan for transitioning to a smart, flexible and decarbonised energy system and identifies Open Networks for delivery of several planned actions. These actions were mapped into key Open Networks 2022 products. Mapping of the relevant actions from the Smart Systems Plan and Open Networks products can be found in the 2022 Open Networks Programme Initiation Document (PID). These actions and, by extension, the 2022 PID form a key input to the development of the framework.

3. Open Networks programme (2017 - present): Through its work over the past five years, the Open Networks programme has introduced real momentum into the transition to a smart and flexible energy system and has set out a clear, least regrets delivery pathway. Our vision is to ensure networks are at the forefront of the UK's transition to Net Zero by working proactively with the Government, Ofgem and industry to identify, drive and deliver the changes required for networks to become smart, flexible and Net Zero ready, whilst maximising customer benefits. The 2022 overarching programme objectives are delivered through six workstreams, each with key focus areas.

4. Open Networks DSO Implementation Plan: One of the key products in the DSO transition workstream (WS3), the DSO Implementation Plan, tracks individual network companies' progress toward distribution system operation across over 400 granular steps, spread across nine key DSO functions. This plan is useful for maintaining consistency in the interpretation of some key areas and activities in this framework and roadmap. The mapping of the framework areas and the implementation plan functions are included in the framework for transparency.

Framework for Flexibility



Key

- **'Status of Key Area: Mature** - Indicates this subject area is in an advanced stage of development with several activities under the area being implemented as BaU in more than one network company.
- **'Status of Key Area: Initiated/WIP** - Indicates this subject area is under development with some activities being implemented as BaU or BaU implementation is imminent in at least one network company.
- **'Status of Key Area: Not initiated/Planned** - Indicates this subject area is in not presently initiated and/or in early stage of development, scoped for trial as a pilot in at least one network company.
- This key area is identified in BEIS's Smart System and Flexibility Plan.**

Activities under individual key areas are listed in the Strategic Roadmap.

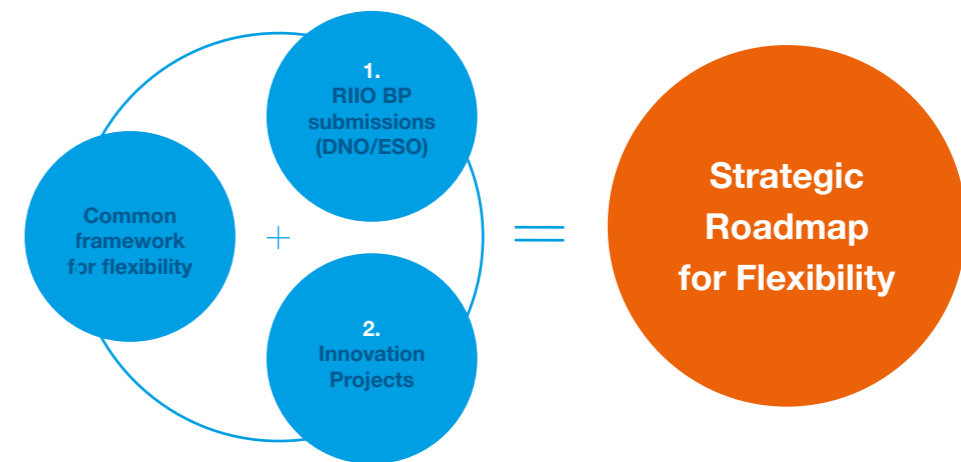
**The correlation between the Ofgem Baseline Roles and the Open Networks DSO Implementation Plan is included for transparency

Strategic Roadmap for Flexibility

The roadmap sets out the state of play and high-level, non-prescriptive trajectory of the flexibility industry based on the information available as of publication. The roadmap lists activities across the key areas of development identified in the framework and tracks the development status of these activities. The status captures a view of further development envisioned (required) to mature processes across key aspects of flexibility in short, medium and longer term across RIIO-ED1 and RIIO-ED2 timeframes.

The roadmap is not specific to the Open Networks programme or any individual network company.

The common framework of flexibility is overlaid with the network companies' business plan submissions and network innovation projects to identify the key activities and their status (see figure below):



1. RIIO Business plan submissions: Electricity networks and system operators have submitted their business plans setting out their plans to deliver the best value to customers and Net Zero ready networks capable of supporting the transformation of the energy systems to a future low carbon economy. The activities captured in the roadmap are mostly consistent across DNOs and are representative of the industry, although there are variances in the interpretation and implementation of these activities across individual network companies. Similarly, the status of the activities is an industry-level representation and not intended to be the status of any specific DNO or ESO. (Details of specific company status can be found in the Open Networks DSO Implementation plan).

2. Network innovation trials: We will continue to closely monitor relevant network innovation projects that help develop TRLs of emerging technology relevant to existing and future flexibility markets. The status of affected activities will be updated to reflect the status and learning from these projects. A collated list is available on [ENA's Smarter Networks Portal](#).

It is important to note that the activities in the roadmap are not attributed for delivery by Open Networks or by any specific network company at this stage. A draft version of this document was consulted on in 2022 and feedback reflected in the current updated version. We will continue to develop this roadmap further using it to guide the discussion around the key priorities for the Open Networks programme in 2023.

Appendix

Tracking some of the key use cases progressed by Open Networks

Development area	Key Indicator	DNO Commentary	Expected progression
Products	Product design	The most recent Open Networks consultation received feedback indicating that DNOs should look to create new products to accommodate near real-time services.	To be updated once 2023 ON Programme is established.
	Evaluation methodology	The Common Evaluation Methodology (CEM) tool should look to define the use case for shorter term markets, and specify within the CEM Good Practice Guide.	To be updated once 2023 ON Programme is established.
	Settlement mechanics and penalties	Further work through Open Networks should be undertaken to establish common approaches to settlement and penalty mechanisms.	From 2024.
Processes	Contract inclusion	Work completing in 2022 by the Open Networks Common Contract Product will allow the common contract to be used as a framework, a key enabler for the adoption of near real-time procurement. Further work through Open Networks should be undertaken to agree standardised approaches for the addition of near real-time processes within the Services Terms.	From 2023.
	Procurement and Service selection timelines	To date, the Open Networks has looked to consult with Stakeholders and standardised the timelines DNOs use for their existing flexibility procurement activities. Once near real-time products are established, Open Networks should look to similarly align. In addition, work currently being undertaken within the Open Networks Primacy Rules development will inform how service conflicts across the DNO and ESO will be resolved.	From 2023.
Systems	Developing existing and new tooling requirements	DNOs are already identifying their tooling requirements and looking to collaborate on standardising these where possible. Attention is being given to the digitalisation and automation of processes and establishing commonality where possible.	From 2023.
	Developing System interfaces	Open Networks Dispatch and Settlement product has recommended that common APIs should be established for the benefit of market interactions. Further work should continue to develop these.	From 2023.
Engagement	Reporting and market transparency	As we approach ED2 further development of reporting practices will be needed. Defined reporting requirements from Ofgem will better enable this once they are established.	To be updated once 2023 ON Programme is established.
	Market liquidity	DNOs continually consider the liquidity of their network as it is essential to the success of near real-time markets. Better visibility of operational assets through the work recommended by Open Networks to establish a standard data layer for pre-qualification is needed to support this.	From 2023.
	Stakeholder consultation	Processes to consult with Stakeholders and respond to their feedback is in place through annual C31E & ENA consultation – collectively respond through Open Networks.	Annually.
Knowledge sharing	Relevant industry trials/roll-outs	Outcomes from notable projects like ESO's Single Market Platform and projects trialling near real-time procurement through Ofgem's Strategic Innovation Fund (SIF) (e.g., TEF, Intraflex and BiTraDER are regularly shared across network operators, both within Open Networks and innovation-led events like the annual Energy Innovation Summit (EIS).	As required.



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