Open Networks Project

2020 in Review

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Foreword

The energy networks are at the heart of the UK's ambitious challenge to meet net zero carbon emissions. In 2020, the challenges presented by the Coronavirus pandemic have also further reinforced how vital our energy networks are to our communities, and the integral role they will play to powering driving the green economic recovery of the country.

David Smith
Chief Executive
Energy Networks Association

2020 has been a difficult year, but never before has there been such clarity and ambition to drive towards building a secure, reliable, and clean energy system that works for all. Although the pandemic has brought many challenges, the urgency of hitting net zero remains. At Energy Networks Association, our Open Networks Project continues to be at the heart of delivering the key changes and innovation needed to transition to a fully smart grid. This year, despite shifting to agile online working, the project has kept up its pace of change to deliver an energy grid that our communities and customers need and can rely on – an energy system that can work for all.

Now in its fourth year, in 2020 the Open Networks project has:
- Delivered a standard contract for procuring flexibility services
- Published an interactive roadmap to deliver Distribution System Operation (DSO), and a transparent data-driven smart grid
- Developed a whole energy system cost benefit analysis to support better decision making within gas and electricity networks
- Brought out flexibility work to the industry and implemented improvements to local flexibility markets based on stakeholder feedback to our wide reaching consultation
- Increased visibility of network capacity data and further standardised Distribution Future Energy Scenarios to enable customers to more easily identify opportunities for investment
- Championed the publication of Embedded Capacity Registers, opening up and standardising data on connected resources and any services they provide

Flexibility is already playing an important role in managing capacity on the network, a fundamental part of enabling the decarbonisation of heat and transport. Growing markets for flexibility servces will give networks more headroom to handle the growing number of electric vehicles and low carbon heating solutions we need to reach net zero emissions. By opening up local markets for flexibility services, Open Networks is helping customers all over the country realise the value from any of their technology connecting to the networks, earning additional revenue through these new markets, at the same time as decarbonising our energy supply.

Delivering Distribution System Operation (DSO) will underpin our future energy system, and this year Open Networks delivered an industry leading interactive DSO Implementation Plan, laying down the path and tracking the progress networks are making towards a transparent, data-driven smart grid. DSO will help networks take advantage of the rapidly growing number of low carbon technologies being used all over this country by managing the network at a more local level to better control future shifting patterns of energy use.

In a big step forward for energy data transparency, early 2020 saw all DNOs in Great Britain release Embedded Capacity Registers, providing information on connected and 'accepted to connect' resources. These registers, initially developed as System Wide Resource Registers under Open Networks, are a major ongoing commitment by DNOs to publish and update on a monthly basis to give the best view of where new capacity might be needed in the country, and to give the opportunity for new low carbon electricity generation to connect.

We built on our industry-leading work towards whole energy system solutions this year, implementing more changes to bring about efficiencies between the gas and electricity networks. As a part of this work Open Networks developed a functioning whole energy system cost benefit analysis, which is on track to be used for the Ofgem Coordinated Adjustment Mechanism in the next regulatory price control period.
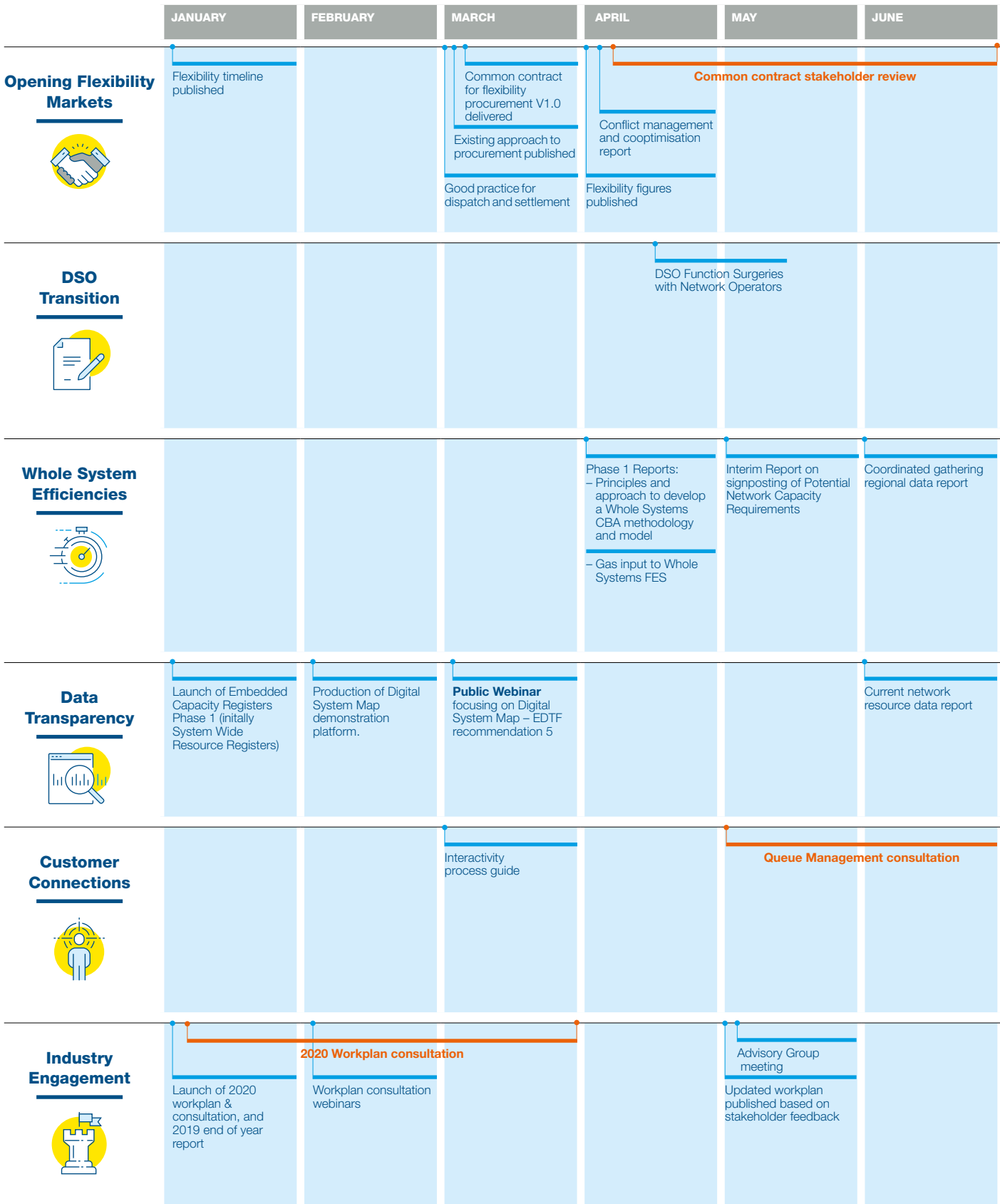
Together with our recently launched sister project Gas Goes Green, as the natural home for gas and electricity network collaboration we're planning to bring the networks closer together in 2021 through joint workstreams, cementing a deeper joint effort to deliver changes.

Working with our friends and partners in the industry and taking our initiatives to as many people as possible has given the project vital direction in the development of the UK's smart grid. The views and feedback we receive are incredibly important. In addition to our public consultations and Advisory Group meetings, we increased our outreach through more frequent webinars, interactive seminars, and guest presentations at industry events. We also launched our new Community Energy Forums, a dedicated series of forums for community groups to talk to the networks on the issues that are most pressing to them, and feedback on important developments and priorities to help us build a system that works for all.

Our work is not done, and the momentum the project has built will continue into 2021 with further improvements to our standard contract for flexibility services, improvements to the accessibility of the data in our DSO Implementation Plan, and increasing transparency of data planned. Working together with industry will help us to deliver the future smart, low-carbon energy system our country needs.

2020 highlights
Themes and publications

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
Opening Flexibility Markets	Flexibility timeline published		Common contract for flexibility procurement V1.0 delivered Existing approach to procurement published Good practice for dispatch and settlement	Conflict management and cooptimisation report Flexibility figures published	**Common contract stakeholder review**	
DSO Transition				DSO Function Surgeries with Network Operators		
Whole System Efficiencies				Phase 1 Reports: – Principles and approach to develop a Whole Systems CBA methodology and model – Gas input to Whole Systems FES	Interim Report on signposting of Potential Network Capacity Requirements	Coordinated gathering regional data report
Data Transparency	Launch of Embedded Capacity Registers Phase 1 (initially System Wide Resource Registers)	Production of Digital System Map demonstration platform.	**Public Webinar** focusing on Digital System Map – EDTF recommendation 5			Current network resource data report
Customer Connections			Interactivity process guide		**Queue Management consultation**	
Industry Engagement	Launch of 2020 workplan & consultation, and 2019 end of year report	**2020 Workplan consultation** Workplan consultation webinars			Advisory Group meeting Updated workplan published based on stakeholder feedback	

JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER

Row 1

JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Active power service parameters published Full publication of flexibility deliverables	**Flexibility Consultation** Deliverables consulted on: Common evaluation methodology, Procurement processes, Active power services parameters, New DSO services, Non-DSO services, Baselining Methodology, Interactions bwteen flexible connections (Active Network Management) and flexibiliy services stacking, Residential flexibility			Flexibility figures updated ONP response to consultation issued Implementation plan delivered for active power service parameters	Flexibility Common Evaluation Methodology issued Procurement Coordination Implementation Learnings from industry trials on non-DSO services Recommendations issued on baselining methodologies

Row 2

JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
DSO Implementation Plan: Interactive roadmap and report	Conflicts of Interest and Unintended Consequences register updated	DSO Implementation Plan stakeholder seminar			Conflicts of Interest and Unintended Consequenses register updated

Row 3

JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
	Proposal published for standardisation of Distribution Future Energy Scenarios Report published on Operational Tripping Schemes and data exchange requirements based on industry trials				Whole Energy Systems cost benefit analysis issued Gas and Electricity network led approach to coordinate gathering of regional data Report on operational forecasting published Proposal for Network Capacity Sign Posting Report issued Case for including assets <1MW into ECR Published updated Queue Management and inactivity user guides (P2 & P3)

Row 4

JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Public Webinar focusing on Data Triage – EDTF recommendation 2	Formation of third DWG subgroup addressing coordination and collaboration across the Energy Data Landscape Implementation of phase 2 ECRs			Agreement to publication of Networks Capacity Signposting Report July 2021	

Row 5

JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Queue Management consultation and interactivity webinars		Interactivity process guide version 2			Interactivity process guide version 3 Queue Management user guide

Row 6

JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Advisory Group meeting	Flexibility panel discussion	Community Energy Forum 1 Advisory Group meeting	Community Energy Forum 2 Community Energy Forum 3 Advisory Group meeting		Energy Networks Innovation Conference

2020 highlights
The year in numbers

Delivering further standardisation to flexibility markets, bringing industry along with a wide reaching consultation

Published an interactive DSO Implementation Plan to track implementation of the functions of Distribution System Operation

Increasing the provision and transparency of data through an Embedded Capacity Register

Supported Net Zero by reforming the connections processes for customers looking to connect renewable energy and flexible resources

2GW
Of Flexibility service tendered out by the distribution networks for 2020.

OVER 70%
Of Stakeholders believe that DSO Implementation is being progressed at a good pace

39
Community energy groups reached through our Community Energy Forums

50
Total responses from across the industry to our 2020 consultations

OVER 50
Product deliverables completed in 2020

15
Wide reaching stakeholder events

DSO transition

The way we use electricity is changing; Britain needs a modern, low carbon energy system that can keep our energy flowing. Managing the grid on a more local level through Distribution System Operation (DSO) will give networks the opportunity to procure more local and low carbon energy and minimise disruption by managing constraints locally, in a more cost-effective manner.

This year, the project built on the previous work done to define and model the future world of energy in order to tackle the DSO transition head on.

DSO Implementation Plan
Delivering DSO and its functions will underpin how networks operate in the future. By managing more of the network at a local level, networks will be able to use the right solutions to keep our energy flowing, which includes using the growing number of low carbon generation technologies being installed across the country.

To track how these functions are being developed and embedded into day-to-day operations, Open Networks launched an interactive roadmap that tracks progress against company activities. The DSO Implementation Plan lays down the path for a transparent, data-driven smart grid, maps out the eight key DSO functions as defined by Open Networks, and captures short, medium, and long-term activities that need to be progressed in order to deliver DSO.

Tracking risks to implementation
First published in 2019, Open Networks' Conflicts of Interest and Unintended Consequences tracker is a risk log that analyses the Open Networks Project's work programme and captures any potential conflicts of interest or unintended consequences which could arise and potentially compromise the energy system's ability to operate at its best and most efficient. The register has been developed with stakeholder feedback at every stage, and the project is always open to hearing thoughts on how it can be improved.

This year a new, refreshed version was published that captures more of the risks associated with the transition to DSO and provides more detail on the actions required to mitigate the risks, as well as who is responsible for making these changes.

The action required to mitigate these risks lies with a number of industry parties, including networks, Ofgem, and BEIS. Open Networks continues to monitor the implementation of associated actions.

Opening local markets for flexibility

Flexibility is a cornerstone of our future smart grid, and this year Open Networks' ambitious programme of work on flexibility made it even easier for customers to provide services all across the country.

Flexibility is already allowing the networks to defer costly network reinforcement and manage capacity, something vital to allowing as many electric vehicles and low carbon heating solutions to be used across the country. The standards the Open Networks Project is creating are world-leading; they allow for flexibility providers of all types to more easily offer their services consistently across the country to create a competitive marketplace and drive down prices whilst directly enabling more renewable power and new technology to be built-out.

Wide reaching public consultation
To help inform further standardisation of flexibility markets, Open Networks launched a public consultation across the summer to hear the thoughts of the industry. Generally, respondents were very supportive of the Open Networks Project and our objectives, citing support of continued standardisation, increasing transparency, and increasing confidence in markets. In addition to general support for the standardisation and alignment the project is spearheading, a number of respondents picked out priority areas to address or particular areas of interest, including:
- Incentivising green flexibility
- Adopting a "Flexibility First" approach
- Increasing aggregation and residential flexibility opportunities
- Proposing potential changes to existing flexible connection arrangements to reflect their interactions with competitive flexibility markets

The project has provided a comprehensive response to the points raised on our consultation showing where and how we are taking these points into account.

Open Networks is building a power grid that works for all, and this year our Community Energy Forums gave community energy groups a chance to respond to the flexibility consultation as a collective voice. Community groups are passionate about getting to net zero carbon emissions and want to see local projects play a big part in meeting our new climate targets. Getting views from these groups and representatives has been incredibly valuable to the project as it looks to deliver further standardisation across the country.

Transparency in decision making
In order to build confidence in local markets for flexibility services, Open Networks have defined a common methodology for assessing the use of flexibility over more traditional reinforcement where there is a network need, allowing the more effective use of existing resources on the path to net zero emissions. The methodology includes a cost benefit analysis to consider the best choice between Active Network Management, flexibility, or reinforcement, and will give those wishing to provide services transparency in how networks make their decisions, applying this methodology as standard across all DNOs.

Interactions between Flexible Connections (ANM) and Flexibility Services; DNO Flexibility Services Stacking

This year the project completed ongoing work from 2019 on Conflict Management & Co-optimisation for DSO Services, which was further developed into work on the interactions between Flexible Connections (ANM) and Flexibility Services. During the summer 2020 consultation, stakeholders identified this as a key priority to progress, which has been included as a high priority item in 2021:

- Delivering flexibility service stacking opportunities
- Principles to review legacy ANM contracts
- Apportioning Curtailment Risk
- Improving Provision of Curtailment Information
- Ensuring that the trading of capacity and shared access are included in our non-DSO Service developments
- Improving stakeholder understanding of the role of ANM

Delivering further network standardisation

The Open Networks Project has been standardising and aligning network processes where possible since it started, and in 2020 the project delivered further standardisation in flexibility markets to build a level playing field across the country. Reducing any variations in geography in the customer journey to provide flexibility services will make it easier and simpler for customers to participate to earn additional revenue.

In 2019 Open Networks standardised four active power services, the services that networks can procure to address certain issues. In 2020 Open Networks further aligned across network operators:

- Operational, commercial, and technical parameters, which received great industry support in the summer flexibility consultation
- The end-to-end procurement processes for active power services to improve the experience of customers tendering for flexibility, including:
  - The format of information provided
  - Timing of procurement services and tender processes
  - How tenders are submitted
  - How and when stakeholder engagement is carried out pre- and post-tender.

Consistent contracts

Flexibility providers all over the country are now benefiting from a standardised contract for the procurement of the services offered by all of Great Britain's DNOs. The contract was drafted with input from all UK DNOs and National Grid ESO to provide a consistent agreement across the country for those wishing to provide vital flexibility services to the networks. The release of the contract will boost market confidence and participation in flexibility markets by building a level playing field, with liabilities and indemnities capped at contract value. Open Networks also plans to build on this first release of the standard contract with a second version that aligns with the ESO.

An industry first – establishing a baseline

To properly understand the impact of a connected asset on the network, a consumption baseline must be established. This year in an industry first, the Open Networks Project sought to standardise the methodology for baselining DSO services, ensuring customers know how they will be assessed for service delivery. The methodology was tested in our public consultation, and respondents welcomed a move towards a more standardised approach for distribution flexibility baselining, and most stakeholders believe that a range of different baselining methodologies should be used for differing types of technology.

Other areas of Flexibility development

The summer consultation asked whether it was appropriate to define any further new DSO Services. The feedback to the consultation concluded that further market need and trialling is necessary before standardising further.

The project will continue to develop work to facilitate Non-DSO Services and work with a number of existing trials on how network operators can enable other contestable markets (e.g., with the provision of data).

Customer connections

Making it quicker, easier, and clearer for customers connecting to the grid, including those offering flexibility, will help solve the challenges the grid faces as demand patterns change.

The changes made to Application Interactivity and Connections Queue Management will benefit customers through more timely and efficient connections, and lower bills by deferring the need to build more network reinforcement.
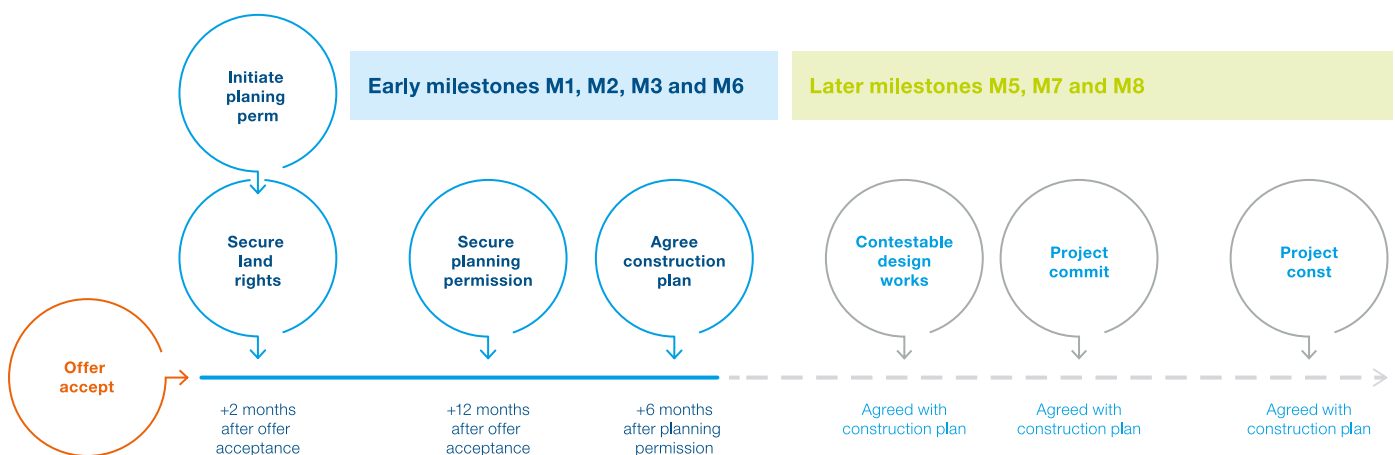
Queue Management
Connections Queue Management is a key process on the network that promotes projects that are ready to connect, or are progressing ahead of other projects, in the connections queue. By prioritising those ready to connect or those that don't need network reinforcement to be built, networks are able to take advantage of the services offered by those connecting, leading to fewer disruptions and lower bills.

The project delivered two key changes to the Queue Management process in 2020: agreeing common milestones to apply within the connections process to make it more efficient, as well as ensuring DNOs can promote flexible resources in the connections queue where they can free up capacity. The ability to promote flexible resources in the queue is due for implementation in 2021, and addresses part of the Government's Smart Systems and Flexibility Plan.

Application Interactivity
A user guide was published in the Spring, detailing the consistent process all networks will take in determining how to manage applications that impact each other. The Conditional Interactivity process is currently being introduced by networks through 2020. With an increasing number of connections at the Distribution level, interactivity between connections at Transmission and Distribution is becoming more common in many areas and we are further developing and publishing user guides for different circumstances.

Initiate planing perm

Early milestones M1, M2, M3 and M6

Later milestones M5, M7 and M8

Secure land rights

Secure planning permission

Agree construction plan

Contestable design works

Project commit

Project const

Offer accept

+2 months after offer acceptance

+12 months after offer acceptance

+6 months after planning permission

Agreed with construction plan

Agreed with construction plan

Agreed with construction plan

A whole energy system approach

In 2019 we launched an industry-first working group to look at delivering efficiencies between the gas and electricity networks, reducing disruption and bringing down bills for customers.

In order to deliver the low-carbon network of the future both the gas and electricity networks have been working together through Open Networks' Whole Energy Systems workstream to deliver changes to the whole system. In 2021, Open Networks and Gas Goes Green plan to bring the networks closer together, with representatives from both networks collaborating through product development across a range of issues that face the networks as a whole. The efficiencies the networks deliver will ensure the right resource is used at the right time, keeping our energy flowing and customers' bills low.

Whole Energy Systems Cost Benefit Analysis

It has been widely recognised that in order to bring about effective whole system decision making, a whole systems cost benefit analysis is an essential part in determining whether a solution on the network is the best choice. A cost benefit methodology has been developed from initial concept to functioning model by the project team this year, which is on track to be used for the Coordinated Adjustment Mechanism in the RIIO-2 price control period which commences in 2021.

Working with local authorities to aid strategic planning

The future of energy is as much local as it is national, and this year the project collaboratively developed and tested models for joined up whole systems data sharing for strategic planning between local authorities and energy networks. Before this work was undertaken, data was gathered independently by networks in different formats. By collecting this data and opening it up for all, the networks can deliver efficiencies and consistency for local area energy planning. The model developed has been recommended to be taken forward as a pilot in 2021.

Our work in action

Working with local authorities in Coventry, Oxford, and London (Isle of Dogs), the project has helped to progress pilot projects to explore the value of whole systems optioneering in strategic development plans. Local authorities and other regional bodies are developing increasingly challenging infrastructure plans to support ambitious growth strategies. Exploring the value of whole systems optioneering in a real-world setting will lead to better investment planning that will deliver more options, timely capacity, and lower costs.

Transmission and Distribution Collaboration

Improving Transmission and Distribution interactions has underpinned the work of the Open Networks Project since the beginning, implementing improvements to long-term planning through changes to the Network Options Assessment (NOA) and Future Energy Scenarios (FES) processes through to more real-time operational data exchanges.

In 2020, the project delivered further standardisation across network company Future Energy Scenarios, and opened up even more data on network requirements for all. In addition, the project is also further progressing operational data exchange opportunities from Regional Development Programmes and the proposed Code Modifications to support the use of the Common Information Model.

Whole System FES

National Grid ESO's Future Energy Scenarios (FES) describe the potential options and scenarios for energy in Great Britain. This year, network companies developed and agreed the form of Distribution Future Energy Scenarios (DFES) to be published at the end of each year. Users of the FES and DFES will see greater consistency throughout these publications which will mean they can more consistently understand the long-term opportunities across Great Britain.

Signposting Potential Network Capacity Requirements

A signposting report has been developed for DNOs to more clearly identify longer-term network capacity requirements. This is something that has been asked for by customers and investors to help identify potential areas with network needs and therefore would be most advantageous for investment.

This report will provide a basis for the Network Development Plan (NDP) which is being introduced as a Clean Energy Package (CEP) licence requirement for networks to publish in July 2022. However, the network companies are not waiting for this regulatory requirement. We are developing a Network Capacity Signposting Report to publish in July 2021 as an interim publication to help customers before 2022 and to enable the network companies to trial what might work best for the NDP itself.

DNO process to identify future needs

Development of DFES and co-ordination with other GB DNOs and ESO

Signposting of potential network capacity requirements

Definition of principles and scenarios → **Forecasts** of LCT, EV, HP and DG numbers → **Electricity forecasts** (detailed profiles define max and min etc) → **Evaluate** network capacity and constraints → **Report** network capacity and constraints
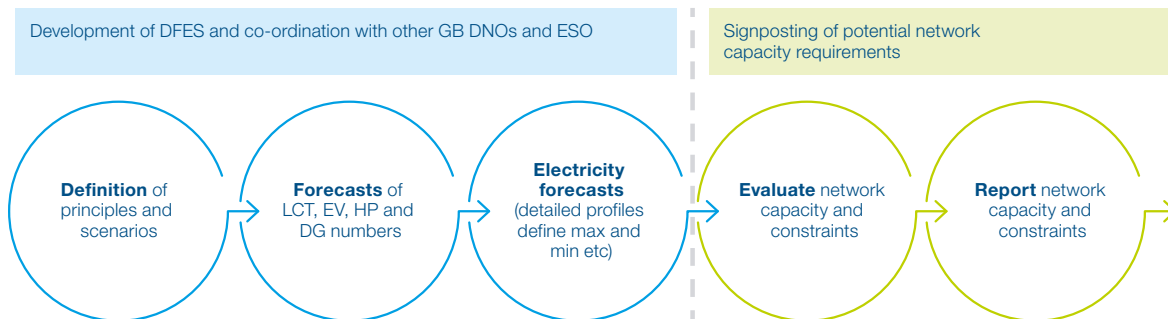
Looking ahead to 2021

2020 was a year of change and delivery for the Open Networks Project, launching key initiatives and delivering further standardisation to bring us closer to a net zero smart grid. The momentum the project has built will continue into 2021 with an ambitious programme of work and industry engagement. In 2021, the project will:

Further develop the Common Evaluation Methodology to include work on option value and the evaluation of carbon.

Update the standard contract for flexibility procurement with industry comments, and issue a second version that aligns with ESO services in the summer.

Further develop arrangements relating to the interaction of Flexible Connections (and associated Active Network Management schemes) and flexibility markets and procurement.

Ensure markets for flexibility services are smooth and fair by developing principles and primacy rules for service conflicts to support coordination and co-optimisation.

Conduct flexibility market simulations and trials for trading/sharing capacity.

Consider the benefits and use cases for expanding the Embedded Capacity Register by including assets less than 1MW.

Continue our series of Community Energy Forums, bringing in experts from the Project and across the networks to inform and listen to community groups and representatives to build an energy system that works for all.

Update the DSO Implementation Plan and Conflicts of Interest Register in Q1 and Q3, with the DSO Implementation Plan updated with DNO-level data across all activities following the publication of the ED2 Business Plans in Q3.

Building the future digital landscape

ENA's Data Working Group, supported by the Open Networks Project as well as Gas Goes Green, is modernising data from the energy networks, bringing together gas and electricity networks to address data issues, access new datasets and identify opportunities in existing datasets.

As our traditional energy system undergoes a major transition to a smarter digital energy system, the challenges and opportunities that data presents are becoming clearer.

Working with our partners from the industry, including the Department for Business, Energy, and Industrial Strategy, UK Research and Innovation, and the regulator Ofgem, the Data Working Group is delivering the recommendations of the Energy Data Taskforce, looking at data triage, and modernising energy data competitions.

Embedded Capacity Register
Early in 2020 all DNOs in Great Britain published Embedded Capacity Registers through the Open Networks Project, opening up data of connected and soon-to-be connected assets greater than 1MW. Formerly named the System Wide Resource Registers, these databases represent a major commitment by DNOs to publish and update information on these resources on a monthly basis. The data will highlight constraints on the network where customers can connect and provide services to reduce congestion, all while earning additional revenue through local markets for flexibility services.

Open Networks is considering the benefits and use cases for increasing the granularity of the data provided to <1MW.

Modernising energy networks data
The energy sector has an unprecedented challenge in evolving to incorporate large amounts of Distributed Energy Resources (DER) such as solar panels and electric vehicles, the uptake of which is increasing all the time as we strive to achieve our net zero targets. Digitalisation will ensure that energy networks are in the best possible position to tackle this challenge, by having quality data that can inform investment, optimise processes and enable innovation to future-proof the whole energy system.

All ENA members have produced individual digitalisation strategies, which describe how they plan to move towards digitalised networks. These strategies are transparent, giving clarity to users about the data services that are available today and those that will be available in the future.

National Energy System Map
The Energy Data Taskforce recommended that a unified digital system map of the energy system should be established. The Data Working Group is delivering the standardised, transparent energy system map that will identify areas of opportunity for new renewable generation to connect to the network and has been using learning and resources from other associated activities to compile the map.

Open Networks case studies
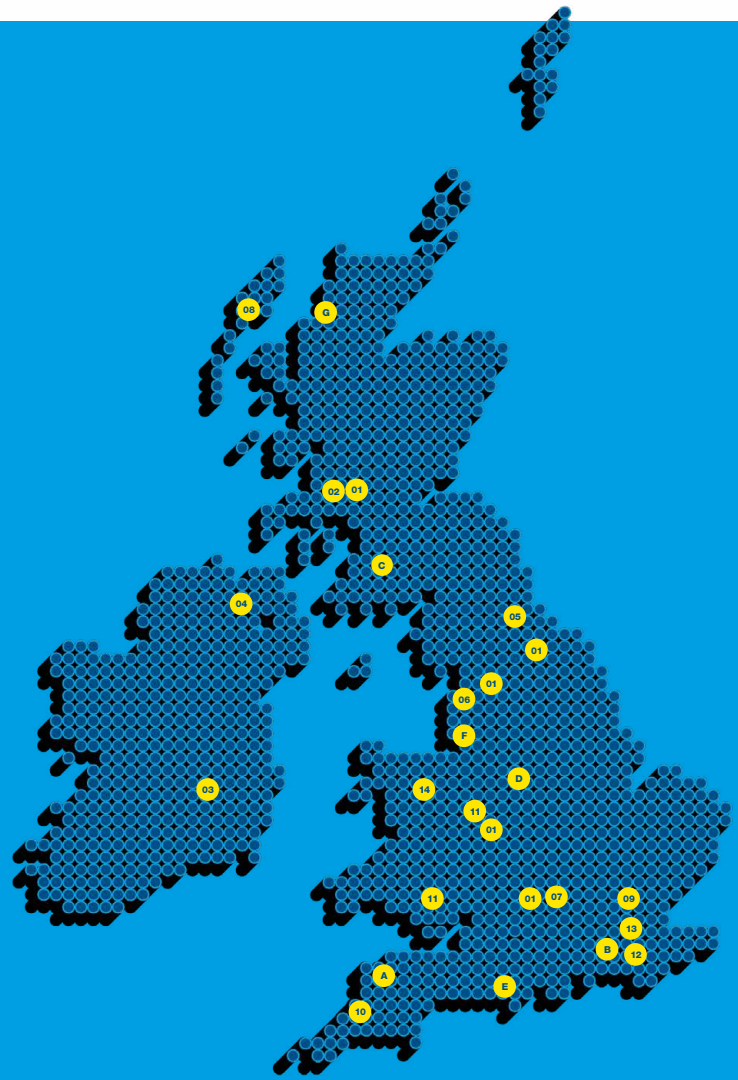
01 UK DNOs collaborate to deliver Flexible Power (NPG, SPEN, SSEN, WPD)
Four UK Distribution Network Operators have joined forces for the first time to provide flexibility providers with a direct path to participate in flexibility markets on multiple networks. Western Power Distribution, SP Energy Networks, Scottish and Southern Electricity Networks, and Northern Powergrid have announced they are collaborating on 'Flexible Power' – a power portal to signpost and operate all of their flexibility requirements.

SP Energy Networks (SPEN)
02 Project FUSION
Seeking to demonstrate the effectiveness of harnessing local flexibility markets, using a standardised market framework known as the 'Universal Smart Energy Framework' (USEF), to alleviate distribution network congestion issues and complement national balancing requirements within the existing regulatory framework.

03 ESB Networks (Republic of Ireland)
Improving connections for customers and building on Open Networks development for Flexibility services.

Northern Ireland Electricity Networks (NIEN)
04 DNO to DSO Evolution
Taking a customer-centric approach to defining the evolution of the Northern Irish electricity networks.

Northern Powergrid (NPg)
05 Restore Flexibility
Northern Powergrid's customer flexibility programme launched a reverse Dutch e-auction to procure flexibility from customer assets for network resilience.

Electricity North West (ENWL)
06 Connecting Community and Local Energy to the system transition with a dedicated community energy manager to work with customers involved in community energy projects.

Scottish & Southern Energy Networks (SSEN)
07 Project LEO – Local Energy Oxfordshire
A £40m, flagship project supported by Innovate UK, helping Oxfordshire to deliver its net zero ambitions. It has nine partners from across academia, industry, local councils and community groups. The project is trialling the matching of renewable generation and demand at a local level.

08 Project TRANSITION
A £12.8m Ofgem NIC funded innovation project being led by SSE Networks with collaboration from ENWL. TRANSITION is looking at the design, development and demonstration of the common tools, data and system architecture required to implement the industry and market models for DSO produced by the ENA Open Networks Project workstreams.

09 UK Power Networks (UKPN)
Collaborating with organisations from all backgrounds to deliver transparency in decision making for its flexibility procurement. The company publishes complete tender information on it's Flexibility Hub to give industries users complete visibility of its procurement process. It also hosts open Flexibility Forums twice per year to co-design products with market participants, answer questions and share insights.

Western Power Distribution (WPD)
10 Electricity Flexibility and Forecasting System (EFFS)
Funded through Ofgem's Network Innovation Competition (NIC), EFFS will specify, implement and trial a software system that will support the procurement, arming and dispatch of flexibility services in operational timeframes. The project is working collaboratively with Scottish and Southern Electricity Networks' TRANSITION project and Scottish Power Energy Networks' FUSION project.

11 Parc Errin Project
Home heating is another key area for the future. WPD is working closely with Welsh Government and Sero on the Parc Errin development at Tonyrefail, where 250 net zero homes are being built. The network used to support this estate has already demonstrated the future for networks, with three phase service cables and monitoring of demands across the estate.

National Grid ESO and UK Power Networks
12 Power Potential
The Power Potential project between National Grid Electricity System Operator (ESO) and UK Power Networks (UKPN) is creating a new – and world-first – market for renewable energy. It's anticipated the initiative will save energy consumers over £400m by 2050, and enable connection of up to an additional 4GW of local generation in the south east region of the UK.
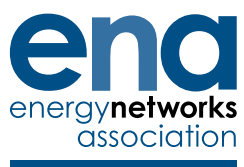
13 N3 Intertrip
A collaboration between National Grid Electricity System Operator (ESO), National Grid Electricity Transmission (NGET) and three distribution network operators – UKPN, SSEN, and WPD – to introduce a new operational system to more efficiently manage the growing volume of distributed energy resources in the south of England, providing better visibility of the resources to ESO's control room and boosting whole system resilience.

14 Distributed ReStart
The Distributed ReStart project is rethinking the electricity system's most important back-up plan for a zero carbon future. A collaboration between National Grid ESO, SP Energy Networks and TNEI Services, the project is exploring how Distributed Energy Resources (DERs) such as solar, wind and hydro power can be used to restore power to the transmission network in the unlikely event of a nationwide blackout.

Regional Development Programmes (RDPs)

A	**South West**	ESO WPD, NGET	Developing the most cost-effective way of enabling renewable generation to connect to the whole network.
B	**South East**	ESO UKPN NGET	Maximising opportunities for further efficient deployment of distributed resources and reducing overall system costs for energy consumers.
C	**South West Scotland**	ESO SPEN	Developing new ways to use technology and operational methods to provide cost efficient outcomes for the renewable developments.
D	**Connecting Storage**	ESO WPD	Extend the flexibility arrangements given to generation so they apply for storage demand. This will enable storage projects to become part of the solution to network capacity issues rather than capacity planning standards being a potential blocker to them.
E	**South Coast**	ESO SSEN NGET	Developing whole system technical solutions that facilitate efficient transmission and distribution system operation.
F	**Heysham GSP**	ESO ENW NGET	Analyse the Heysham GSP and the distribution network behind it as a 'whole system', in order to deliver the most economic solution for GB consumers.
G	**North of Scotland**	ESO SSEN	Developing the most efficient whole system network development to meet the load and non-load drivers in the area.

The voice of the networks