Energy Networks Association

Open Networks Project

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The Voice of the Networks

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Energy Networks Association (ENA) represents the ‘wires and pipes’ transmission and distribution network operators for gas and electricity in the UK and Ireland.

ENA’s overriding goals are to promote the UK and Ireland energy networks ensuring our networks are the safest, most reliable, most efficient and sustainable in the world.
The Electricity Networks are facing unprecedented change as a result of decarbonisation, digitisation and decentralisation. This is known as the transition to a 'Smart, Flexible Energy System'.
ENA’s Open Networks Project is a major energy industry initiative that will transform the way that both local Distribution Networks and national Transmission Networks will operate and work for customers. This is being driven by the 3Ds; digitisation, decentralisation and decarbonisation.

The Open Networks Project will help customers connect and realise value; as well as reducing cost for consumers through more cost effective planning.

The Open Networks Project is a key initiative to deliver Government policy set out in the Ofgem and BEIS Smart Systems and Flexibility Plan, the Government’s Industrial Strategy and the Clean Growth Plan.

We are taking a ‘learn-by-doing’ approach; we are using innovation funding to trial and test aspects of the various future electricity system options.

Short Animation that can be found at: https://www.youtube.com/watch?v=8GxeWsppmBI
Open Networks project is a long-term piece of work that is informing the DSO transition and is a key forum for addressing challenges around evolving roles and responsibilities in the short, medium and long term.
The Voice of the Networks

Scope

WS1A Flexibility Services
WS1B Whole Electricity System Planning & T-D Data Exchange
WS2 Customer Information Provision & Connections
WS4 Whole Energy Systems
WS5 Comms & Stakeholder Engagement

WS3 DSO Transition

Delivering benefits in the short to medium term.

Longer term focus
Future Worlds
A Distribution Operator (DSO) securely operates and develops an **active distribution system** comprising networks, demand, generation and other flexible distributed energy resources (DER).

As a **neutral facilitator** of an open and accessible market, it will enable competitive access to markets and the optimal use of DER on distribution networks to deliver security, sustainability and affordability in the support of whole system optimisation.

A DSO enable customers to be both producers and consumers; **enabling customer access, customer choice and great customer service.**
We have modelled five potential Future Worlds - Industry structures for ways in which DER services can be provided for both Transmission and Distribution requirements.

- **World A**: DSO Coordinates – a World where the DSO acts as the neutral market facilitator for all DER and provides services on a locational basis to National Grid in its role as the Electricity System Operator (ESO).

- **World B**: Coordinated DSO-ESO procurement and dispatch – a World where the DSO and ESO work together to efficiently manage networks through coordinated procurement and dispatch of flexibility resource.

- **World C**: Price-Driven Flexibility – a World where changes developed through Ofgem’s reform of electricity network access and forward-looking charges have improved access arrangements and forward-looking signals for Customers.

- **World D**: ESO Coordinate(s) – a World where the ESO is the counterparty for DER with DSO’s informing the ESO of their requirements.

- **World E**: Flexibility Coordinator(s) – a World where a new national (or potentially regional) third-party acts as the neutral market facilitator for DER providing efficient services to the ESO and/or DSO as required.
The Smart Grid Architecture Model (SGAM) methodology is a way to represent a complex electricity system and break it down into its individual parts. It is three dimensional which allows complex aspects of the electrical network to be considered from a variety of perspectives.
How the SGAM Model was built

The model was built using a top down approach through a series of industry workshops, starting with the main functions of a DSO as a neutral market facilitator.

DSO Functions
- System Coordination
- Network Operation
- Investment Planning
- Connections & Connections Rights
- System Defence and Restoration
- Service/Market Facilitation
- Service Optimisation
- Charging
How the SGAM Models are presented

- Full models available online as interactive webpages
- Can navigate by function or by actor
- Understand data flows and interactions between different actors in different worlds
Impact Assessment of Future Worlds & Next Steps

**Development phase**
- DSO definition & functions
- DSO functions
- Commercial Principles paper
- SGAM modelling
- Key Enablers
- Future Worlds consultation
- Refining SGAM & key enablers

**Review phase**
- Independent Impact assessment
- Further consultation

**Final conclusions**
- Evidence base for BEIS and Ofgem

Baringa Partners have undertaken an independent assessment on the Future Worlds and we are consulting on the key insights and next steps.

Other Areas of Work
**Whole System & Customer Experience**

**Flexibility Services**
- DSO product definitions & requirements
- Flexibility market principles
- DSO procurement processes
- Commercial arrangements
- Facilitation of new markets

**Whole Electricity System Planning & T-D Data Exchange**
- Investment Planning
- Whole System FES
- Data exchange

**Customer Information Provision & Connections**
- Good practice for various stages of the connections process
- System wide resource register#
- Queue Management

**Whole Energy Systems**
- Undertaking scoping exercise to identify potential areas of work to progress such as:
  - Cross vector Investment Planning and System Operation

Please visit our [2019 Project Initiation Document](#) to see details of products/deliverables planned for this year.