

# **ENA Open Networks Project**

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**The Voice of the Networks**

**Energy  
Networks  
Association**



**Introduction to ENA  
Open Networks  
Project**

# Introduction: ENA Open Networks Project

- In December 2016 ENA gave their commitment to a major new long-term project that will transform the way that both local Distribution Networks and national Transmission Networks will operate.
- Launched in January 2017, the Open Networks Project will lay the foundations of a smart energy grid in the UK.
- It will enable the UK's energy networks to:
  - Address the challenges caused by the continued uptake of distributed generation. The UK now has 30GW of locally connected generation.
  - Move from their traditional role of simply delivering electricity, to one where they are a platform and enabler for a whole range of new smart energy technologies that will deliver benefits to households, businesses and network operators
- Network operators must meet challenges whilst:
  - Continuing to deliver safe and secure operation of distribution networks.
  - Ensuring efficient and timely access to the network for customer.
  - Providing value for money.

In recent years, the UK's energy networks have faced a number of challenges:

- The physical need to connect more distributed generation to the local networks
- The increasing capacity interactions between distribution and transmission networks
- Increasing requirements of distribution networks to manage less predictable and more active energy flows, which are met by contracting 'system operator' services
- Increasing use of capacity based services at distribution level
- New data requirements to manage the system efficiently and securely
- Need to assess investment and operational decisions across the whole energy system rather than just one part of it
- Reducing system inertia and increasing whole energy system reliance on distributed generation which largely uses renewable technologies
- The transition of traditional Distribution Network Operators (DNOs) to more active and empowered Distribution System Operators (DSOs) as they take on more system responsibilities

# Overview: Open Networks Project

A **major energy industry initiative** that will transform the way our energy networks work, underpinning the delivery of the smart grid:

- Brings together all 7 of Great Britain's electricity grid operators, respected academics, NGOs, Government departments and the energy regulator Ofgem
- Takes a 'blank-sheet' approach that will consider all options and models for the transition of DNOs to DSOs, including how it will interact with the gas network
- Will deliver options for change across 4 areas (transmission-distribution processes, customer experiences, the DNO to DSO transition & charging) in 2017

Will give help **give households, businesses & networks the ability to take advantage** of new energy technologies to take control of their energy and lower their costs:

- Move distribution networks from passive distributors to active managers, helping create markets for new services for the end user
- Empower distribution networks to access new products and services to operate networks in a more cost-efficient way
- Defines the new relationship between transmission and distribution networks

# Overview: Open Networks Project

Will help **underpin business growth, attract investment and deliver real economic benefits** to the UK:

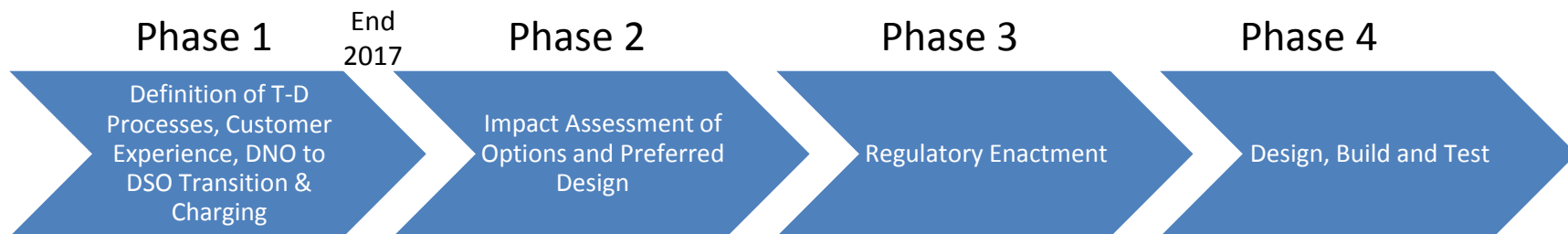
- Help create the market place for products & services to deliver cost-effective energy to British businesses, as part of the Government's Industrial Strategy.
- Existing LCNF has already enabled close to £1bn of cost savings that will be delivered between now and 2023, clearly demonstrating the economic potential of smarter networks.

Will take a **whole energy system approach** to designing solutions by consulting with a wide range of stakeholders, including the gas networks, through the Advisory Group.

- Gas and electricity networks face many of the same issues.
- Perceived successes and failures in one area of energy policy can inform the government's or regulator's view of future energy policy and regulatory changes in an other.
- Potential for strong benefits from thinking across the whole energy system and from networks working closely together, speaking with a common voice and learning lessons from each other's experiences.
- Benefits can include more efficient processes and projects, cheaper costs for customers, better safety, simpler policy and avoiding bad practice.

# Workstreams, Objectives & Timelines

- First Phase to deliver in 2017
- Expect Second Phase in 2018 and then beyond to RIIO ED2/T2 (2023)



Workstreams aligned with 2017 objectives:

1. Develop improved **T-D processes** around connections, planning, shared TSO/DSO services and operation
2. Assess the gaps between the **experience our customers** currently receive and what they would like and identify any further changes to close the gaps within the context of 'level playing field' and common T & D approach
3. Develop a more detailed view of the required **transition from DNO to DSO** including the impacts on existing organisation capability
4. Consider the **charging** requirements of enduring electricity transmission/distribution systems
5. **Communicate** and engage on Open Networks developments

- Whilst the high level principle of the DSO transition has come to be well understood within the industry, there is a wide range of activity that could fall within its definition, and understanding what that role will entail is a vital prerequisite to delivering the transition.
- The Open Networks Project's definition of the DSO transition, seeks to satisfy four key principles:
  1. That a DSO is non-discriminatory and technology neutral: favouring solutions that provide the most optimal solutions rather than particular technologies;
  2. That it uses market mechanisms that are fair, transparent and competitive, providing a level playing field for providers of network services and providers of energy products/services in order to deploy the most efficient and effective solutions;
  3. That it supports flexibility and innovation in responding to customer future requirements and in developing the network services they require, including enabling and facilitating innovation by others; and
  4. That it delivers value and service to a range of customers and communities.



# Definition of a DSO

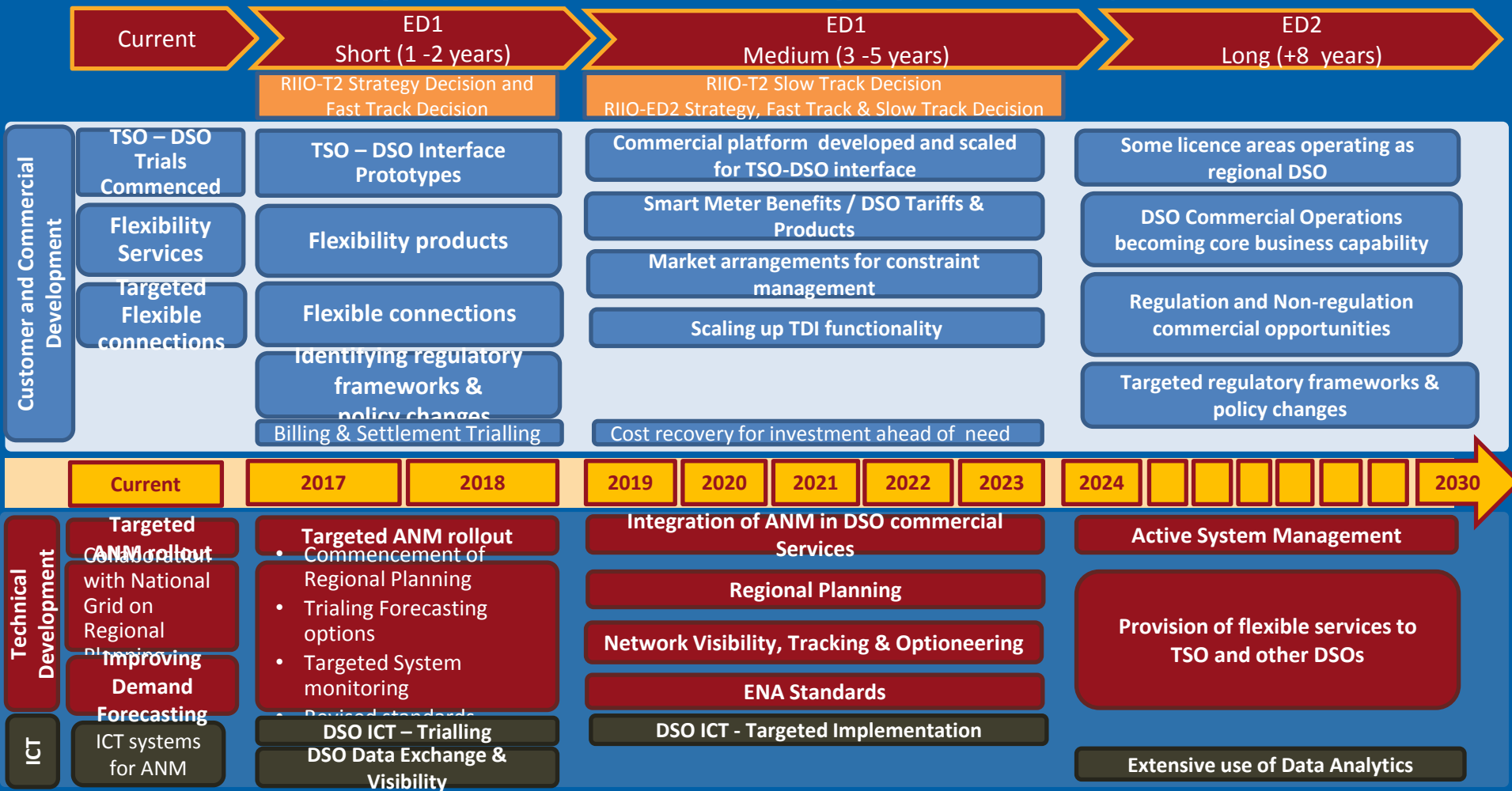
*“A Distribution Operator (DSO) securely operates and develops an active distribution system comprising networks, demand, generation and other flexible distributed energy resources (DER).*

*“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.”*

- As a cross-industry effort, the Open Networks Project is mindful of the fact there is more to learn and that this is a fast moving picture.
- The definition provides a starting point for the development of the DSO with a range of potential paths.
- It is not an exhaustive, or closed definition, but will evolve over time as the knowledge of the networks increases and the industry develops.

# DSO Development – Roadmap to 2030 (Tier 1)



- Purpose of this work is:
  - To assess the experience of different types of customers through their customer journeys and identify issues for different types of customer
  - To understand potential contract options for the categories of customers that wish to engage in providing flexibility services
  - As input to other workstreams to test the outcomes of processes (TD), models (DSO Transition) and mechanisms (charging) to see that improvements/changes work for different types of customer
- Connected customers will evolve and may move between categories through the lifetime of connection and this is being considered in customer journey mapping
- The categorisation would be based on the what the customer wishes to do not limited to what it is doing now
- Categorisation is not used to identify journeys; it is used to consider how the journeys work for different categories of customer
- Vulnerable customers have not been identified specifically as they can fall into any category, but they are important to consider

# Definition of Customer Categories

Category		Characteristics	Customer Type Examples	Contract Examples
A	<b>System Service Providers</b>	Their core function (or a key element of their overall business portfolio) is to manage load, generation or storage <b>to sell ancillary services to TSOs and DSOs.</b>	<ul style="list-style-type: none"> <li>• TSO <b>contracted</b> service provider, e.g.                             <ul style="list-style-type: none"> <li>• Balancing Mechanism Units (BMUs)</li> <li>• Enhanced Frequency Response services</li> <li>• Ancillary Services</li> </ul> </li> <li>• DSO service <b>contracted</b> flexibility service provider</li> </ul>	<ul style="list-style-type: none"> <li>• Bilateral agreements between the customer and the DSO / TSO</li> <li>• Could be DSO / DSO agreements for DNO-DNO interconnection</li> </ul>
B	<b>Active Participant</b>	Have invested in generation, storage, demand side management and / or low carbon products. They will <b>actively participate in the energy market</b> to make money from generation, reduce operating costs and/or for low carbon social responsibility reasons. They <b>do not have contracts for services</b> to TSOs or DSOs. Could have automated controls to maximise savings / returns.	<ul style="list-style-type: none"> <li>• Distribution connected generation, e.g. solar farm exporting</li> <li>• Behind the meter generation/storage, e.g. for peak lopping, triad avoidance</li> <li>• Demand side response e.g. for peak lopping, triad avoidance</li> <li>• Residential customers actively engaged e.g. timing of EV charging, use of heat pumps/solar/storage</li> </ul>	<ul style="list-style-type: none"> <li>• Power Purchase Agreements</li> <li>• Suppliers via Time of Use tariffs or products</li> <li>• Contracts with Aggregators – residential and industrial and commercial</li> </ul>
C	<b>Passive Participant</b>	Energy conscious low carbon investor generally off-setting demand for benefits ( <b>passive/fit and forget</b> ). Have invested in 'off the shelf' low carbon <b>products</b> such as solar panels, heat pumps, EV or smart appliances <b>to reduce energy bills.</b> May be exporting and importing and would be interested in reducing costs via Time of Use tariffs.	<ul style="list-style-type: none"> <li>• Businesses or residential with installed products, e.g. solar panels, heat pumps, EV or smart appliances</li> <li>• Residential customers with customised Time of Use tariffs</li> </ul>	<ul style="list-style-type: none"> <li>• Suppliers via Time of Use tariffs or products</li> </ul>
D	<b>Passive Consumer</b>	Normally demand customers. Little or no knowledge or interest in Time of Use tariffs. Normally on standard single rate tariff but could include customers on standard 2 rate tariffs and storage heaters.	<ul style="list-style-type: none"> <li>• Business or Residential customers</li> </ul>	<ul style="list-style-type: none"> <li>• Basic Supplier tariff contract</li> </ul>

- Published:
  - Mapping Current SO, TO and DNO Processes
- To present a set of papers to the Advisory Group that includes:
  - Gaps & Issues in current processes
  - Commercial Principles – Creation of new Flexibility markets
  - Statement of Works Update
- Ongoing work to develop:
  - Develop whole system investment and operational Planning Processes/Models
  - Approach for the co-ordination of T & D constraints in an operational timeframe
  - Whole system commercial agreements for ANM with DG
- There is a large body of development work and analysis behind Workstream 1 products

*“To consider the charging requirements of an enduring electricity transmission/distribution system, whose purpose is to facilitate a market place between producers and consumers. Consequently, understanding the drivers of cost and benefits in delivering those requirements. The overall aim is to develop the appropriate whole-system price signals for the TSO-DSO transition.”*

## **Short-term – July 2017**

1. Identify problems caused for customers through the interaction of current charging arrangements across Transmission and Distribution
2. Capture the root causes of these problems
3. Establish the level of commonality that might be required to resolve identified root causes and deliver project and workstream objectives/goals
4. Develop options to resolve

The above development work is being undertaken whilst reviewing how TSO DSO charging work fits with other industry charging initiatives and in discussion with Ofgem on coordination.

- Published:
  - Analysis of Commonality of Approach and Principles
  - Options for Increasing Commonality of Approach in T&D Charging
  - Entitlements & Rights
- To present a set of papers to the Advisory Group that includes:
  - EDCM/CDCM Update
  - Transmission Charging Update
  - Ofgem TCR & CCG Update
  - Charging Issues Paper
  - Charging Scenarios Paper
- The intention is to consider Advisory Group feedback and pause further work pending feedback from the Ofgem Charging Coordination Group.
- Ofgem planning to convene Charging Coordination Group Steering Group in September with 2 meetings.
- Ofgem CCG should provide direction on the scope and content of work to be done and Open Networks project and ENFG should provide approval of using resource to support.

## Analysis of Commonality of Approach and Principles

CEER Guidelines	<ul style="list-style-type: none"><li>• <i>“There is a need for a coherent approach across all voltages.”</i></li><li>• 7 key principles for distribution network tariffs presented</li></ul>
Licence Obligations – Use of System	<ul style="list-style-type: none"><li>• No material differences in ‘relevant objectives’ for T&amp;D charges</li></ul>
Licence Obligations – Connection	<ul style="list-style-type: none"><li>• No material differences in ‘relevant objectives’ for T&amp;D charges</li></ul>
Connection Charging Methodologies	<ul style="list-style-type: none"><li>• Significant differences in methodologies between T&amp;D charges.</li><li>• Locational signal greater in D</li><li>• D charges recovered upfront vs focus on annualised recovery at T</li></ul>
Use of System Charging Methodologies	<ul style="list-style-type: none"><li>• Two distinct D methodologies – EDCM and CDCM</li><li>• EDCM and T methodologies have similar features in identifying long run investment/marginal cost components</li><li>• CDCM produces average tariffs across all users with no locational component – focus rather on voltage of connection</li><li>• Significant differences in recovery of residual revenues</li></ul>



## Options for Increasing Commonality of Approach in T&D Charging

Option 1	Align T connection boundary with D – deeper T boundary
	<ul style="list-style-type: none"><li>• Unlikely to have major impact on removing distortions?</li><li>• Significant implementation issues</li></ul>
Option 2	Align D connection boundary with T – shallower D boundary
	<ul style="list-style-type: none"><li>• Unlikely to have major impact on removing distortions?</li><li>• Significant implementation issues</li></ul>
Option 3	Agree common cost drivers / scenarios for cost modelling
	<ul style="list-style-type: none"><li>• Harmonisation of diverse cost drivers essential for development of whole system approach?</li></ul>
Option 4	Harmonise modelling approaches
	<ul style="list-style-type: none"><li>• Questionable benefits</li></ul>
Option 5	Harmonisation of residual charges / scaling approaches
	<ul style="list-style-type: none"><li>• Focus of Targeted Charging Review</li></ul>

Overview:

<http://www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-overview/>

Factsheet is embedded in there:

[http://www.energynetworks.org/assets/files/electricity/futures/Open\\_Networks/CURRENT%20Open%20Networks%20Factsheet%20June%202017.pdf](http://www.energynetworks.org/assets/files/electricity/futures/Open_Networks/CURRENT%20Open%20Networks%20Factsheet%20June%202017.pdf)

Stakeholder Engagement:

<http://www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-stakeholder-engagement.html>

Published Products:

<http://www.energynetworks.org/electricity/futures/open-networks-project/open-networks-project-workstream-products.html>

# Thank you

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**AOB**

## Next meetings

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**August**

**9**

**Wednesday**

**September**

**13**

**Wednesday**

**October**

**11**

**Wednesday**

Will be an 10:30am start unless otherwise notified.

# We value your feedback and comments

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If you have any **questions** or would like to give us **feedback** or share **ideas**, please email us at:

[cusc.team@nationalgrid.com](mailto:cusc.team@nationalgrid.com)

Also, from time to time, we may ask you to participate in surveys to help us to improve our forum – *please look out for these requests*

# Close

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