



Open Networks Project
DSO Definition and R&R
Agreed in Principle & Updated 02/06/17

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Energy Networks Association

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Restriction: N/A

Purpose

To provide a starting point for the development of the DSO framework that will help guide us along our journey. The definition will evolve over time as the industry develops and more learning becomes available.

DSO Definition

A Distribution System 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 enables customers to be both producers and consumers; enabling customer access to networks and markets, customer choice and great customer service.

DSO Roles and Responsibilities

- Maintain distribution network resilience and security
- Support whole system stability
- Provide fair and cost-effective distribution network access
- Provide capacity in an efficient, economic, coordinated and timely manner
- Support whole system optimisation
- Enabling and facilitating competition in energy markets
- Provide and maintain systems, processes and data to facilitate markets and services

Principles of operation

- Ensures non-discriminatory and technology neutral: favouring solutions that provide the most optimal solutions rather than particular technologies;
- 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;
- Supports flexible and innovative solutions in responding to customer future requirements and in developing the network services they require, including enabling and facilitating innovation by others; and
- Delivers value to customers and communities.

Transitioning to DSO

Function	DNO Role	DSO Role	GBSO Role
Network Operation	<p>Deliver safety and reliability (i.e. keep the lights on) through the maintenance and operation of distribution network assets. Respond to customer needs.</p>	<p>Operate the electricity distribution network to maintain a safe and secure system.</p> <p>Ensure that network powerflows remain within limits and that the network operates within acceptable voltage limits. Ensure that the network remains secure against credible events such as circuit trips and generation loss. Identify and manage current and future risks.</p> <p>Coordinate and collaborate with Great Britain System Operator (GBSO) to manage potential conflicts to support whole system optimisation. Respond to customer needs.</p>	<p>Operate the electricity transmission network to maintain a safe and secure system. Manage potential conflicts to enable GB whole system optimisation</p>
System Defence & Restoration	<p>Support local and whole system resilience and security.</p>	<p>Enhance whole system security through the provision of local and regional flexible services.</p> <p>Provide system resilience to very low probability but high consequence events using risk based approaches.</p> <p>Provide the means</p>	<p>Coordinate whole system security through defence and restoration plans agreed with government, the regulator, other relevant agencies, DSOs and service providers.</p>

Function	DNO Role	DSO Role	GBSO Role
		to re-establish the wider synchronous area in the event of widespread disruption.	
Connections & Connection Rights	Provide fair and cost effective distribution network access.	Provide fair and cost effective distribution network access that includes a range of connection options that meet customer requirements, and system needs efficiently.	<p>Provide fair and cost effective transmission network access for customers through a range of connection options.</p> <p>These options should meet NETS SQSS requirements and would generally provide firm access including “connect and manage” arrangements.</p> <p>Connection options may also include arrangements where customers opt for non-firm access. Address the transmission impacts of distribution connections where required.</p>
Investment Planning	Deliver a network that securely operates through efficient, co-ordinated and economical network assets.	<p>Identify capacity requirements on the distribution network and secure the most efficient means of capacity provision to customers.</p> <p>Coordinate with the GBSO and Transmission Owners to identify whole system options. These would include commercial DER options as well as distribution network investment.</p>	Coordinate with DNO’s, DSOs and Transmission Owners to determine optimal whole system investment options. These would include whole system and commercial/operability options as well as network investment options.

Function	DNO Role	DSO Role	GBSO Role
Services / Market Facilitation	Limited at present. For example, enable the flexible connection of DER to provide wider system services.	Interface with the GBSO and other network operators to enable the development of distribution capacity products, the creation of local network service markets and to enable DER access/participation in wider services for whole system optimisation. Facilitate local and national markets to access and settle services through auctions and other market arrangements for whole system efficiency. Provide information and control system architecture to facilitate local and national markets and service provision.	Facilitate markets to provide services through the operation of market arrangements. Provide data / information to facilitate markets and service provision. A potential further role includes interfacing with DSOs (including information and control infrastructure) to enable the development of distribution capacity products, the creation of local network service markets, and to enable DER participation in wider balancing services for whole system Optimisation.
Charging	Adopts common methodologies and principles to set pricing for Distribution Use of System and Connections.	Sets Distribution Use of System prices for local network Determines Point of Connection Determines connections charges and informs connectees of Transmission reinforcement charges (if applicable) Considers impact of Exit Charging	Set and administer Connection and Use of System charges for parties connecting to and using the GB transmission system.

Function	DNO Role	DSO Role	GBSO Role
		(dependent on size, variations and apportionment)	
System Coordination	Minimal at present.	Operate local and regional areas and co-ordinate energy and power transfers with other networks and systems to enable whole system planning, operation and optimisation across different timescales. System Co-ordination could include local actions to support thermal, voltage and frequency management across networks including actions to minimise losses, manage constraints and provide capability.	<p>Procure services from transmission connected resources, distributed energy resources (DER) and potentially, in the future, distribution and transmission networks.</p> <p>The GBSO would have no role in the direct provision of services but would invoke emergency Grid Code provisions if required to address market shortfalls.</p>
Service Optimisation	Minimal at present.	Ensure system needs can be efficiently met across all timescales by identifying network requirements, understanding the limitations of network assets and providing network access for additional flexibility services from smart solutions and DER services. Ensure whole system optimisation and resilience through the optimal selection of flexibility services.	<p>Act as residual balancer for GB network. Define and procure energy and network balancing services ahead of time (in market timescales) and close to real-time (as sole counter-party in the national Balancing Mechanism) to balance generation and demand and ensure security and quality of supply.</p> <p>A potential further role is to work with DSO's to co-ordinate local and regional balancing areas and to utilise residual distribution</p>

Function	DNO Role	DSO Role	GBSO Role
			capability for wider system balancing and whole system optimisation.