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"A key focus for DNOs is the development and roll-out of innovative smart grid technologies. New challenges for operators of the UK's regional electricity networks have already started to arise from shifts in the way electricity is produced to include more renewable electricity (mainly onshore wind and solar PV) directly connected at the regional network level, known as distributed generation."

Claudia Preedy - B2B Analyst

This report looks at the following areas:

- Will the UK's decision to leave the EU affect the country's renewable energy generation and decarbonisation targets?
- What are the key drivers for network investment by electricity distribution network operators (DNOs) over the coming years?
- What opportunities do smart meters offer for energy suppliers?
- How does Ofgem intend to encourage competition for the installation of new connection assets?

Definition

The terms of reference for this report are predominately the 15 DNOs in the UK, comprising 12 in England and Wales (though some are now grouped within broader companies), two vertically integrated companies in Scotland, and one in Northern Ireland. The report examines the capital expenditure and financial performance of these companies, and provides an insight into the key challenges facing the industry. The report also covers the electricity supply sector, providing an analysis of key competitors and issues.

The electricity industry in Great Britain explained:

- Electricity generation refers to companies producing electricity in power stations that
 operate under generation licences. Generation prices are not regulated in England and
 Wales, though prices for the vertically-integrated ScottishPower and Scottish HydroElectric, which generate for their monopoly markets, are indirectly regulated through
 supply price controls.
- Transmission refers to transmitting electricity from power stations through high voltage wires, with the system extending across Britain and nearby offshore waters.
 Transmission activities are monopolies operating under transmission licences. The transmission system is owned and maintained by regional transmission companies, while the system as a whole is operated by a single system operator (SO). This role is performed by National Grid Electricity Transmission (NGET), which is responsible for ensuring the stable and secure operation of the whole transmission system. In Scotland, both Scottish Power and Scottish Hydro-Electric own and operate transmission systems. The transmission sector is regulated through price control periods, where Ofgem sets the maximum revenue operators can recover from users.
- Distribution refers to the 14 DNOs in England, Scotland and Wales, including two Scottish
 companies that own and operate lower voltage distribution systems for taking electricity
 from transmission systems to customers' premises. These are owned by seven different
 groups, though there are also six independent network operators that own and run
 smaller networks embedded in DNOs. DNOs are monopolies because there is only one
 owner/operator for each area. Ofgem administers a price control regime to ensure that
 efficient distributors can earn a fair return after capital and operating costs, while still
 limiting the amount customers can be charged.

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The supply of electricity involves buying electricity and selling it on to customers, billing, customer services, and the collection of customer
accounts. Suppliers buy energy from the wholesale market or directly from generators and arrange for it to be delivered to the end
consumer. They set the prices that consumers pay for the electricity they use. Full competition was introduced into Britain's electricity
retail market in 1999.

Capital expenditure is defined by Ofgem as any expenditure which, for the purpose of regulatory accounts, has been included in the value of the fixed assets of a distribution business provided that:

(a) the expenditure conforms with at least one of the following:

- the expenditure relates to the purchase, development or construction of a new asset
- the expenditure will increase the capacity or functionality of distribution assets
- the expenditure will significantly reduce the ongoing maintenance of assets
- the expenditure will extend the service life of distribution assets beyond that expected when the assets were originally installed

(b) the expenditure is determined in accordance with applicable accounting standards.

Capital expenditure excludes the following:

- renewal and replacement of insulation medium in switchgear, whether reprocessed or not
- capitalised interest
- revaluation amounts

Fault costs are defined as the reactive replacement of a system asset following an occurrence where the asset's functional failure has resulted in an unplanned incident, and where the asset must be replaced before full system functionality can be restored. This includes expenditure incurred following an unplanned incident, as defined for Quality of Service reporting, where such costs are the result of physically replacing assets to return them to their pre-incident performance. Fault costs cease when supplies have been restored, rectification works have been completed, and the DNO foresees no further work to be required to achieve pre-incident performance.

However, this excludes:

- all costs where assets are not replaced
- the cost of planned asset replacement
- replacement of assets that have faulted in the past on one or more occasions, have been repaired and returned to operation, and are subsequently replaced as a planned activity due to an assessment of their condition (not in response to a particular unplanned incident occurring)

Load-related new connections and reinforcements costs include new system assets installed on the network following new customer connections (contestable and non-contestable works), reinforcement as a result of a new connection, and general reinforcement due to changes in system demand.

Non-load, non-fault new and replacement asset costs include the installation of new assets and the planned installation of replacement assets for reasons other than fault replacement or load-related reasons. Related expenditure refers to spending on maintaining the integrity, safety, and performance of the distribution network.

Non-operational capital costs are defined as spending on new and replacement assets that are not system assets. This includes:

- vehicles (including mobile plant and generators)
- plant and machinery
- small tools and equipment
- office equipment
- land and buildings used for administrative purposes
- IT and telecoms
- IT software upgrade costs

Engineering indirect costs include activities of network policy, network design, project management and engineering management, and clerical support.

Network indirect costs refer to activities of wayleave administration, control centre, system mapping, call centre, stores and procurements, vehicles and transport, health and safety, and operational training.



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Business support costs include activities of IT and telecoms, property management, HR and non-operational training, finance and regulation, CEO, etc.

The figures in this report solely reflect the electricity supply industry and therefore do not include generating or National Grid expenditure. However, electricity generation is included in MBD's UK Process Plant Market Development report.

Throughout this report, the term capital expenditure refers to gross expenditure rather than investment, which is more often quoted by individual companies.



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