

Glossary of Terms

Access and Forward-looking Charges Significant Code Review (Access SCR): Ofgem review to ensure electricity networks are used efficiently and flexibly; reflect users' needs so consumers can benefit from new technologies and services; and avoid unnecessary costs on energy bills.

Aggregators: energy service providers that increase or moderate the electricity consumption of a group of consumers in response to total electricity demand on the grid. Aggregators can also operate on behalf of a group of consumers producing their own electricity, by selling their excess electricity.

Alan Turing Institute: the national institute for data science and artificial intelligence, with headquarters at the British Library.

Anchor organisation: an institution that has an important presence in a place, usually through a combination of being a largescale employer, the largest purchasers of goods and services in the locality, controlling large areas of land and/or having relatively fixed assets; and one that is tied to a particular place by its mission, histories, physical assets and local relationships.

Assets: physical electricity network infrastructure, such as cables, power lines, poles, substations and other equipment, digital assets (e.g. IT systems) as well as others such as financial assets.

Auto-switching: a service that compares the market to find the best deals for individual consumers then switches them automatically, notifying previous suppliers and setting up the new supplier on behalf of consumers.

Biodiversity: a measure of the number of different species of living organism that are present within a given area, also including the number of representatives of each species, and the variety of habitats within the area.

Business Plan Guidance: Ofgem guidance document directed at electricity distribution network companies and their stakeholders. It sets out the information Ofgem expects to see in companies' business plans for RIIO-ED2 and how it will assess those plans.

BPI: Business Plan Incentive. Elements of the Business Plan that have performance based financial incentives.

Challenges: a request by the CEG to Northern Powergrid asking the company to address or reconsider a significant aspect of their draft proposals which, in the CEG's assessment, was not adequately fulfilling the potential to address stakeholder needs or preferences.

CO2: carbon dioxide – the most common greenhouse gas.

Community energy advisors: new community-based Northern Powergrid roles responsible for delivering advice and support to communities, partners and local organisations, including decarbonisation advice and support to households, community groups, local organisations and businesses, as well as signposting to external partners, offering energy efficiency advice and support. They will be able to refer vulnerable households to external partners for support.

Connections: the term for connecting to the electricity network. Types of connection can include new buildings, EV chargers, or small- and large-scale electricity generation such as solar panels.

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COP21 Paris Agreement: an international agreement on climate change. It was adopted by 196 Parties at COP21 in Paris, on 12 December 2015, and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.

COVID-19: An infectious disease caused by coronavirus 2 (SARS-CoV-2).

Customer-Led Network Revolution (CLNR): a 2014 smart grid project by Northern Powergrid and partners to show how UK electricity networks can rise to the challenges and opportunities of a low carbon future.

Customer Load Active System Services (CLASS): uses network voltage control to manage electricity consumption.

Customer panel: a representative stakeholder panel of Northern Powergrid customers, including domestic consumers, rural customers and future consumers.

Customer relationship management (CRM): processes and systems that compile, manage and analyse customer data across multiple channels, such as website, telephone, live chat, direct mail, marketing materials and social networks.

Cyber information technology (IT): a field within information technology that protects computer systems – software, networks and information – and prevents unauthorised use, changes or access to electronic data.

Cyber operational technology (OT): physical technology (hardware) including industrial control systems (ICS), supervisory control and data acquisition (SCADA) and distributed control systems (DCS). Where cyber IT is concerned with information confidentiality, integrity and availability, cyber OT prioritises safety, reliability and availability.

Data: facts and figures collected for statistical analysis, which may include customer data (names and addresses), network data, financial data.

Decarbonisation: the reduction, and ultimately elimination, of greenhouse gas (GHG) emissions.

Decentralised energy system: a system where energy generation is not concentrated in fewer, large capacity sites and instead numerous, smaller-scale energy generation units connect to the distribution network to deliver energy to local customers.

Demand Side Response (DSR): changes in the power consumption of an electric utility customer in response to changes in the electricity complex such as wind and solar power output. Often supported with financial incentive.

Digitalisation: focused digital and technology agenda that supports the integration of digital technologies to improve everyday business activities.

Distributed Energy Resource (DER): smaller-scale power generators and controllable loads (like electric vehicles) that are connected to the local distribution networks.

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Distributed generation: these are generators connected to ("embedded" in) the distribution system, rather than the transmission system.

Diversity, Equality and Inclusion (DEI): separate but interlinked issues. Equality refers to treating everyone fairly, challenging discrimination and removing barriers to create equal opportunities. Diversity refers to different values, abilities, and perspectives, and creating environments that welcome and value diverse backgrounds, thinking, skills and experience. Inclusion refers to equal access to opportunities and resources, and making reasonable adjustments to facilitate participation.

Distribution Future Energy Scenarios (DFES): distributed forecasting scenarios undertaken by every Distribution Network Operator to enable the organisations to picture possible energy futures and explore the issues they raise. Inputs include variable predictions on low carbon technology (LCT) uptake, generation and energy efficiency, with assumptions informed by government policy, stakeholder engagement, regional knowledge and market information.

Distribution Network Operator (DNO): DNOs own, operate and maintain the electricity distribution networks.

Distribution System Operation (DSO): DSOs securely operate and develop an active distribution system comprising networks, demand, generation and other flexible DER.

Distribution Use of System (DUoS): distribution network charges.

ED2: The Electricity Distribution price control for 2023-2028. See RIIO-ED2.

ED3: The Electricity Distribution price control to follow ED2, probably for five year period.

Extra high voltage (EHV): electricity conveyed at 33,000 or 66,000 volts.

Emerging Thinking: Northern Powergrid document published in August 2020.

Energy Networks Association (ENA): the industry body representing energy network operators in the UK and Ireland.

ENA Common Evaluation Methodology: an approach to standardise the framework for network investment decisions across DNOs from April 2021 onwards.

Energy networks: for electricity this is also referred to as 'the grid'. Energy networks are the wires and pipes that carry electricity and gas to properties – they differ from the energy supplier, which sells consumers the actual electricity and gas consumed.

Energy Systems Catapult: an independent, not-for-profit organisation set up to accelerate the transformation of the UK's energy system, using a whole system view to identify and address innovation priorities and market barriers to decarbonisation.

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Energy transition: the shift from fossil fuels-based energy production and consumption, such as oil, natural gas and coal, to renewable energy sources such as wind and solar, and the use of batteries, as part of global economic decarbonisation.

Engineering Justification Papers (EJPs): Ofgem-regulated documents that set out the scope, costs and benefits for major projects or aggregated investment programmes aimed at reinforcing the network or improving asset health.

Environmental Action Plan (EAP): the assessment and profiling of environmental impacts and designing strategic interventions to mitigate and address those impacts, and report on the progress.

Electricity System Operator (ESO): National Grid ESO is the electricity system operator for Great Britain, managing national electricity flows to ensure that supply and demand are balanced.

EV: Electric Vehicle.

Extreme weather events: the Intergovernmental Panel on Climate Change (IPCC) defines such events as those “that is rare at a particular place and time of year”, while an extreme climate event is “a pattern of extreme weather that persists for some time, such as a season”. They include “temperature extremes, heavy precipitation and pluvial (precipitation) floods, river floods (alluvial), droughts, storms (including tropical cyclones), as well as compound events where two or more events, not necessarily individually extreme, occur together or in succession and thus cause severe impacts”. Storm Arwen is a recent example.

Flexibility: the ability to increase or decrease the production or consumption of energy at a given or requested time to support the wider electricity network and optimise capacity available for customers.

Fuel Poverty Advisory Group: now called the Committee on Fuel Poverty (CFP), an advisory non-departmental public body, sponsored by the Department for Business, Energy & Industrial Strategy (BEIS), to advise on the effectiveness of policies aimed at reducing fuel poverty, and encourage greater coordination across the organisations working to reduce fuel poverty.

Fuel poverty: there are different definitions of fuel poverty and metrics for measuring the extent and depth of the problem. In England, the government has refined the way in which it measures fuel poverty and uses a Low Income Low Energy Efficiency indicator (LILEE). Under LILEE a household is considered to be fuel poor if they are living in a property with a fuel-poverty energy efficiency rating of band D or below (E,F,G) and when they spend the required amount to heat their home they are left with a residual income below the official poverty line. The three important elements in determining whether a household is fuel poor are household income, household energy requirements, and fuel prices.

GB FES: Future Energy Scenarios for Great Britain. The Energy System Operator’s scenarios outline four different credible future of energy pathways for the next 30+ years. GB FES considers energy demand and supply on a whole system basis.

Granularity: the inclusion of many small details that make understanding more clear.

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Green economy: the low-carbon sector comprising businesses such as recycling plants, LCT manufacturing and other schemes, jobs and projects that contribute to decarbonisation.

Gross Demand: the total energy demand of a given region. It represents the quantity of energy necessary to satisfy consumption within the designated geographical region.

GW: gigawatt – one thousand megawatts (million kilowatts) of electrical power.

GWh: gigawatt hour – a measure of electrical energy equivalent to a power consumption of one thousand megawatts (million kilowatts) for one hour.

Heat pump: electrical heating, working somewhat like a refrigerator in reverse.

High voltage (HV): electricity conveyed at 11,000 (or 6,000, 6,600 or 20,000) volts.

InTEGReL: the UK's Integrated Transport Gas Electric Research Laboratory, a multivector integrated energy systems research and demonstration facility investigating utility scale infrastructure operated by Newcastle University in partnership with Northern Gas Networks and Northern Powergrid.

ISO 14001: the International Organisation for Standardisation's criteria for environmental management systems.

Issues: a request from the CEG to Northern Powergrid, arising from the early discussions on development of the plan, to consider an action to improve either the process for ensuring the plan reflects the balance of stakeholder views or an aspect of the proposals in the plan itself.

Local Area Energy Plan (LAEP): an approach for local and sub-regional institutions to explore different future local energy scenarios to help inform and support local authorities, distribution network operators, business and communities to plan for a cost effective low carbon transition.

Low carbon energy system: an energy system that uses energy sources that do not produce carbon dioxide emissions, such as solar and wind.

Low carbon technologies (LCTs): technologies that have the ability to reduce carbon dioxide emissions traditionally associated with energy consumption (e.g., electric vehicles, electric heat pumps, solar panels).

Low Income High Cost metric: UK government measurement of fuel poverty, replacing the former Low Income High Costs (LIHC) indicator. See fuel poverty, above.

LV cables: low voltage power cables.

LV network: low voltage network – network less than 1,000 volts.

Major connections: connections to the network (see connections, above) requiring substantial work on the network, "upstream" of the point of connection.

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MW: Megawatt – one thousand kilowatts of electrical power.

MWh: Megawatt hour – a measure of electrical energy equivalent to a power consumption of one thousand kilowatts for one hour.

National Cyber Security Centre (NCSC): UK government organisation providing advice and support on cyber-security threats for the public and private sector.

NERA: economic consulting firm.

Net zero: legally binding greenhouse gas emissions target which requires the UK to reduce its net emissions by 2050. Net zero by 2050 was enshrined into UK law in June 2019.

Network constraints: areas of the network where the demand or generation exceed the designed network capacity.

Network Investment Strategy: Ofgem says this “sets out the process for the cost benefit analysis undertaken to provide understanding of the interventions that can be efficiently applied to manage losses.”

Northern Powergrid: electricity distributor for the North East, Yorkshire and northern Lincolnshire, covering 3.9m homes and businesses.

ODI-F: Ofgem’s Outcome Delivery Incentive (financial) aimed at driving service improvement.

ODI-R: Ofgem’s Outcome Delivery Incentive (reputational) aimed at driving service improvement.

Ofgem: independent energy regulator governed by the Gas and Electricity Markets Authority (GEMA).

Open Data Institute: UK non-profit working with companies and governments to build an open, trustworthy data ecosystem.

OSHA: Occupational Safety and Health Administration.

Peak demand: when the most electricity is being used on the network at any given time.

Price Control Deliverable: Ofgem framework for ED2 (2023-28) business plans, where price control funding is linked to the delivery of outputs specified in the licence. This framework provides for the adjustment of the level and timing of allowances in the event the output is not delivered, not delivered to the specification required, or delivered late.

Price Control Reopener: Ofgem mechanism for cost categories where there is significant uncertainty or change in expenditure requirements. The reopener mechanism allowed network operators to propose adjustments to baseline expenditure allowances during a specific window.

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Priority Services Membership (PSM): a database of customers who may need additional support or be more vulnerable, due to medical dependence on electricity, poor mobility, age or other needs. Previously known as the Priority Services Register.

ProductBoard: a software product management platform.

Propositions: specific outcomes and proposals for each section in Northern Powergrid's ED2 business plan.

PV generation: solar photovoltaics – another term for solar panels.

Real Price Effects (RPEs): cost changes that increase in price faster or slower than the Office for National Statistics' (ONS) Consumer Prices Index including owner occupiers' housing costs (CPIH) measure of inflation used as standard in Northern Powergrid's revenue allowances.

Resilience: the Intergovernmental Panel on Climate Change (IPCC) defines resilience as “the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity of self-organisation, and the capacity to adapt to stress and change.” In the context of ED2, resilience refers to Northern Powergrid's asset resilience (ability of the company's assets to withstand age-related risks and the increase in electricity usage due to decarbonisation), climate resilience (ability of the company, its assets and the network to withstand the impacts of climate change), and physical and cyber resilience (ability of the company's IT and OT assets to withstand the impacts of climate change, physical threat, and cyber-attacks).

RIIO-ED1 or ED1: the current price control period for electricity distribution network operators that runs from 1 April 2015 to 31 March 2023. RIIO stands for Revenue=Incentives+Innovation+Outputs

RIIO-ED2 or ED2: the next regulatory price period, set by Ofgem, which runs from 1 April 2023 to 31 March 2028.

Roadmap for Digitalisation: Northern Powergrid document published in January 2020 and later updated, outlining its digitalisation plan.

Scenarios: see DFES, above.

Science-based targets: clearly defined and measurable targets for companies to limit greenhouse gas emissions. The Science Based Targets initiative (SBTi) defines targets as “science-based” if they are in line with what the latest climate science deemed necessary to meet the goals of the Paris Agreement.”

Scope emissions: Scope 1 emissions are direct greenhouse gas emissions that occur from sources that are controlled or owned by an organisation (e.g., emissions associated with fuel combustion in boilers, furnaces and owned or leased vehicles and equipment). Scope 2 emissions are indirect emissions associated with the purchase of electricity, gas, steam, heat, or cooling. Scope 3 emissions relate to wider footprint such as emissions from the production of goods procured by the organisation, business travel (other than in company-owned vehicles), and employee commuting.

SF6: sulphur hexafluoride, a greenhouse gas used as an electrical insulating material.

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Sia Partners: management consulting firm specialising in strategy, business transformation, IT and digital strategy, and data science.

Smart grid: an electricity network using digital technology, flexibility of network users and two-way communication with them, and various other tools and technologies in order to maximise system efficiency and serve end users most effectively.

SMART metrics: Specific, Measurable, Achievable, Relevant and Time-Bound objectives.

SME: small or medium-sized enterprise.

Social Issues Expert Group (SIEG): Independent group of six experts that provides feedback to Northern Powergrid on how well its plan addresses social issues in the region it serves.

Social return on investment (SROI): a method for measuring values that are not traditionally reflected in financial statements, including social, economic, and environmental factors. They can identify how effectively a company uses its capital and other resources to create value for the community.

Socialise costs: spreading the cost of projects and works across all customers' bills, whether or not those customers directly benefit from the work.

Solar PV: solar photovoltaics – solar panels.

Stakeholder: a party that has an interest in a company and can either affect or be affected by the business.

Stakeholder engagement: the identification of stakeholders, and communication and consultation with them for research and input – in the case of Northern Powergrid's business plan, stakeholder engagement took the form of phone calls, panels, webinars, roundtables and surveys with a variety of stakeholders, from other utilities and local authorities to vulnerable customers and expert panels.

STEM: science, technology, engineering and mathematics.

Storm Arwen: extratropical cyclone that affected the UK, Ireland and France, bringing strong winds and snow from 25-27 November 2021, causing several fatalities and widespread, long-lasting power outages.

Stranded assets: the International Energy Agency (IEA) defines stranded assets as “investments which have already been made but which, at some time prior to the end of their economic life, are no longer able to earn an economic return”. In the RIIO framework, distribution assets may be stranded if they are properly built according to scenario analysis but become under used because the evolution of energy production and consumption differs significantly from the scenario analysis.

Substations: a key part of the grid, substations transform voltage from high to low, or the reverse, between electricity generating stations and customers' properties.

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Technical Panel: independent panel of industry experts that scrutinised and challenged the technical aspects of Northern Powergrid's 2023-28 business plan.

Time-of-use tariff: tariff that better reflects the true cost of electricity based on the time, i.e., higher at peak times and lower at times when the demand is low.

Totex: ties together capital spend (capex) and operational spend (opex), over a long-term whole-of-life view of total expenditure (TOTEX).

Transmission Network Use of System (TNUoS): transmission network charges.

Treasury Green Book: guidance issued by HM Treasury on how to appraise policies, programmes and projects.

UK Energy Research Centre (UKERC): independent research centre into sustainable future energy systems.

Ultra-low or zero emission vehicles (ULEVs or ZEVs): low emission vehicle that emits 75g/km CO₂ or less.

Uncertainty mechanisms: means of allowing price control arrangements to respond to change, protecting both consumers and licensees from unforecastable risk or changes in circumstances.

V2G: Vehicle to Grid - In which the electric vehicle supports the system, for example by exporting power to the grid.

Volume driver: a numerical measurement, count, percentage, factor, or volume amount that impacts workload – a volume driver typically varies significantly over short periods of time.

Vulnerable customers: Ofgem defines vulnerability “as when a consumer’s personal circumstances and characteristics combine with aspects of the market to create situations where he or she is: significantly less able than a typical domestic consumer to protect or represent his or her interests; and/or significantly more likely than a typical domestic consumer to suffer detriment or that detriment is likely to be more substantial.”

Whole system: a cross-sector coordinated approach that incorporates more than the electricity system or energy system, but considers all sectors, industries, stakeholders and participants, joining up elements such as generation, transmission, distribution, buildings and customers with electricity, heat and transport, together with physical, digital and marketing systems, and policy.

Willingness to Pay (WTP): testing to discover the amount customers are willing to pay for a service or plan proposition.

Worst-served customers (WSC): Customers who experience more frequent and longer interruptions. Ofgem’s definition of worst-served customers for ED2 is those that experience 12 HV interruptions (power cuts) over a three-year period, with a minimum of two per year. This definition currently only includes power cuts where the fault was at high or extra high voltage.