FES and DFES Purpose of Energy Scenarios

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Distribution

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Introduction

About ENA

Energy Networks Association (ENA) represents the owners and operators of licenses for the transmission and/or distribution of energy in the UK and Ireland. Our members control and maintain the critical national infrastructure that delivers these vital services into customers' homes and businesses.

ENA's overriding goals are to promote UK and Ireland energy networks ensuring our networks are the safest, most reliable, most efficient and sustainable in the world. We influence decision-makers on issues that are important to our members. These include:

- Regulation and the wider representation in UK, Ireland and the rest of Europe
- Cost-efficient engineering services and related businesses for the benefit of members
- Safety, health and environment across the gas and electricity industries
- The development and deployment of smart technology
- Innovation strategy, reporting and collaboration in GB

As the voice of the energy networks sector, ENA acts as a strategic focus and channel of communication for the industry. We promote interests and good standing of the industry and provide a forum of discussion among company members.

About Open Networks

Britain's energy landscape is changing, and new smart technologies are changing the way we interact with the energy system. Our Open Networks programme is transforming the way our energy networks operate. New smart technologies are challenging the traditional way we generate, consume and manage electricity, and the energy networks are making sure that these changes benefit everyone.

ENA's Open Networks programme is key to enabling the delivery of Net Zero by:

- opening local flexibility markets to demand response, renewable energy and new low-carbon technology and removing barriers to participation
- providing opportunities for these flexible resources to connect to our networks faster
- opening data to allow these flexible resources to identify the best locations to invest
- delivering efficiencies between the network companies to plan and operate secure efficient networks

We're helping transition to a smart, flexible system that connects large-scale energy generation right down to the solar panels and electric vehicles installed in homes, businesses and communities right across the country. This is often referred to as the smart grid.

The Open Networks programme has brought together the nine electricity grid operators in the UK and Ireland to work together to standardise customer experiences and align processes to make connecting to the networks as easy as possible and bring record amounts of renewable distributed energy resources, like wind and solar panels, to the local electricity grid.

The pace of change Open Networks is delivering is unprecedented in the industry, and to make sure the transformation of the networks becomes a reality, we have created six workstreams under Open Networks to progress the delivery of the smart grid.

2022 Open Networks programme Workstreams

- WS1A: Flexibility Services
- WS1B: Whole Electricity System Planning and T/D Data Exchange
- WS2: Customer Information Provision and Connections
- WS3: DSO Transition
- WS4: Whole Energy Systems
- WS5: Communications and Stakeholder Engagement

Our members and associates

Membership of Energy Networks Association is open to all owners and operators of energy networks in the UK.

- Companies which operate smaller networks or are licence holders in the islands around the UK and Ireland can be associates of ENA too. This gives them access to the expertise and knowledge available through ENA.
- Companies and organisations with an interest in the UK transmission and distribution market are now able to directly benefit from the work of ENA through associate status.

ENA members

Cadent – Your Gas Network
electricity north west – Bringing energy to your door
ESB NETWORKS
gtc
nationalgrid
nationalgridESO
Northern Gas Networks
Northern Ireland Electricity Networks
NORTHERN POWERGRID
Scottish & Southern Electricity Networks
SGN – Your gas. Our network.
SP ENERGY NETWORKS
UK Power Networks – Delivering your electricity
WALES&WEST UTILITIES
WESTERN POWER DISTRIBUTION – Serving the Midlands, South West and Wales

ENA associates

- Chubu
- EEA
- Guernsey Electricity Ltd
- Heathrow Airport
- Jersey Electricity
- Manx Electricity Authority
- Network Rail
- TEPCO

Executive Summary

Energy scenarios are produced as part of the annual long-term forecasting activities undertaken by all GB Distribution Network Operators (DNOs) and the GB Electricity System Operator (ESO). The GB DNOs produce their Distribution Future Energy Scenarios (DFES), which are granular scenario projections for electricity demand, distributed generation and storage that incorporate regional factors. The ESO produces their Future Energy Scenarios (FES), which provide a set of scenario projections for Great Britain and focuses on the whole energy system through the lens of how the energy system can be decarbonised.

This report explains the purpose of the energy scenarios in DFES and FES. It also highlights the benefits from the alignment between DFES – FES and the further standardisation of DFES across all DNOs.

Focusing on the purpose of the energy scenarios, the DFES are used for the strategic planning of the distribution systems and networks. The FES is used for transmission network planning, security of supply national system operability. Beyond these primary purposes, there are other important uses of these energy scenarios. The DFES support Local Area Energy Plans (LAEPs), Local Heat and Energy Efficiency Strategies (LHEES), Climate Action Plans (CAPs) and in general local stakeholder decarbonisation and other plans. The FES is also regularly used beyond the regulated businesses, for example in consultancy, academia, public sector and investment planning.

Alignment between DFES and FES and further DFES standardisation across all DNOs can better support whole system planning and facilitate information and data exchanges between DNOs and the ESO to improve the energy scenarios. Alignment and standardisation also help stakeholders better understand and use the scenarios through improved consistency and transparency.

This report also presents progress made within ENA Open Networks around the alignment and standardisation of DFES and FES. Progress so far has resulted among others in a) the adoption of the initial alignment and feedback model between DFES and FES; b) the use of a common DFES methodology framework; and, c) the use of a ‘Best View’ scenario with a standardised definition. The report also explains why the adopted approach also facilitates a competitive framework for research and innovation that allows sharing of learnings, best practices and newly developed tools whilst not foreclosing research work that will improve DFES and FES, e.g. by capturing the latest learnings from changes in customer behaviours as part of the transition to Net Zero.

Definition and purpose of energy scenarios

Overview

Through the Open Networks programme run by the Energy Networks Association (ENA), networks have been working closely to align process and provide clarity on the purpose of the Distribution Future Energy Scenarios (DFES) and Future Energy Scenarios (FES) activities to stakeholders.

The DFES is an annual forecasting activity undertaken by Distribution Network Operators (DNOs) across Great Britain. They provide granular scenario projections that incorporate regional factors and can be used at a local level for strategic planning of electricity distribution systems and networks. These projections are informed by local stakeholder engagement to understand the needs, plans and delivery progress of local authorities and other regional stakeholders, e.g., County Councils, Combined Authorities. The DFES provides an evidence base for DNOs to develop the business case necessary to support future investment, including regulated business plans.

The FES is an annual process undertaken by National Grid Electricity System Operator (ESO). It provides a set of scenario projections for Great Britain and focuses on the whole energy system, through the lens of how the energy system can be decarbonised. FES utilises information, insight and data from all sectors of the energy industry and is used as a fundamental part of the annual transmission network planning, security of supply and national system operability analysis. The FES is also regularly used beyond the regulated businesses, for example in consultancy, academia, public sector and investment planning.

Purpose of FES and DFES	
Scenarios	**Purpose of Scenarios**

Distribution Future Energy Scenarios (DFES).	• Primary purpose:
	  ○ strategic planning of distribution systems and networks
	• Other purposes
	  ○ supporting local stakeholder decarbonisation and other plans
	  ○ supporting Local Area Energy Plans (LAEPs), Local Head and Energy Efficiency Strategies (LHEES) and Climate Action Plans (CAPs)
	  ○ supporting FES (e.g., with local plan data, distribution connected demand and generation)

Future Energy Scenarios (FES)	• Primary purposes:
	  ○ strategic planning of transmission networks
	  ○ security of supply analysis
	  ○ national system operability

	• Other purposes:
	  ○ supporting energy industry stakeholder plans
	  ○ supporting DFES (e.g., with national data, FES framework, transmission connected generation)

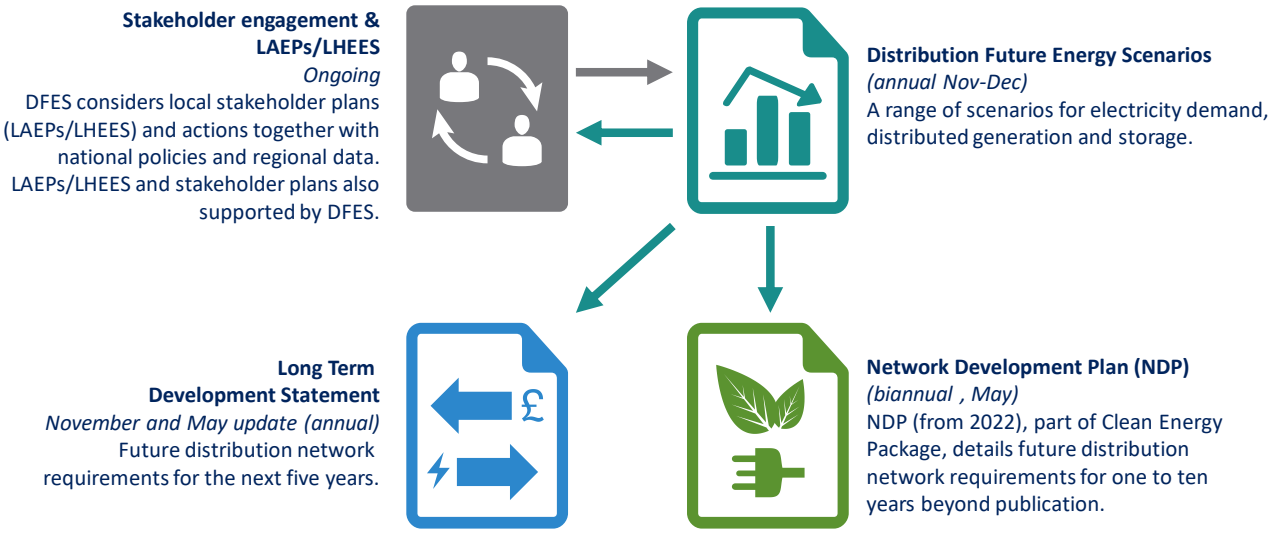
Distribution Future Energy Scenarios (DFES)

The transition of DNO planning processes to Distribution System Operation (DSO) functions requires DNOs to make well informed, optimal and transparent decisions to justify load related investment that includes among other interventions the flexibility services and conventional reinforcement. The DFES are a key component of the DSO planning process. As part of the annual DSO planning cycle, the long-term forecasts of electricity demand, distributed generation and storage from the DFES are used to inform:

- the Long-Term Development Statements (LTDS); and,
- from May 2022 the Network Development Plans[1] (NDP) of DNOs.

The LTDS is a licence condition for all DNOs and presents the future distribution network requirements for the next five years. The NDP is a new licence condition for all DNOs to provide stakeholders with transparency on network headroom. NDP is part of the European clean energy package[2], which was adopted in 2019 to help decarbonise EU's energy system in line with the European Green Deal objectives. The NDPs will detail future distribution network requirements for one to ten years beyond publication.

DFES as part of annual DNO planning processes



[1] Proposals for the Form of Statement of Network Development Plans, Open Networks WS1b P5, December 2021. Online: here
[2] Clean Energy for all Europeans Package, Energy Strategy, European Commission, 2019.

A key component of the DFES process is stakeholder engagement that includes local authorities (LAs), customers, energy communities and investors. Stakeholders provide valuable inputs to the DFES including both data directly provided by them, but also how implications of network development affect their decisions and connection behaviour. The learnings of this direct interaction with stakeholders put DNOs and DSO planning in a unique position to produce well informed and bottom up forecasts.

The DFES should be also seen as an input to stakeholders' plans including LAEPS, CAPs and LHEES, LA & business decarbonisation plans and any type of planned developments. Granular data and insights on the local drivers for electricity demand and generation help stakeholders make well informed decisions.

Focusing on LAEPs/CAPs/LHEES, the DFES can help LAs and other local stakeholders understand how future trends around the electrification of transport, heating, renewable generation and efficiency measures drive planned network developments, capacity provision and flexibility service opportunities presented in LTDS, NDP and flexibility service tenders. At the same time this bidirectional interaction between LAEP/CAPs/LHEES and DFES means that any developments that are part of LAEPs/CAPs/LHEES need to be shared with DSO forecasting and planning teams to inform DFES, which in turn inform network planning and load related investment.

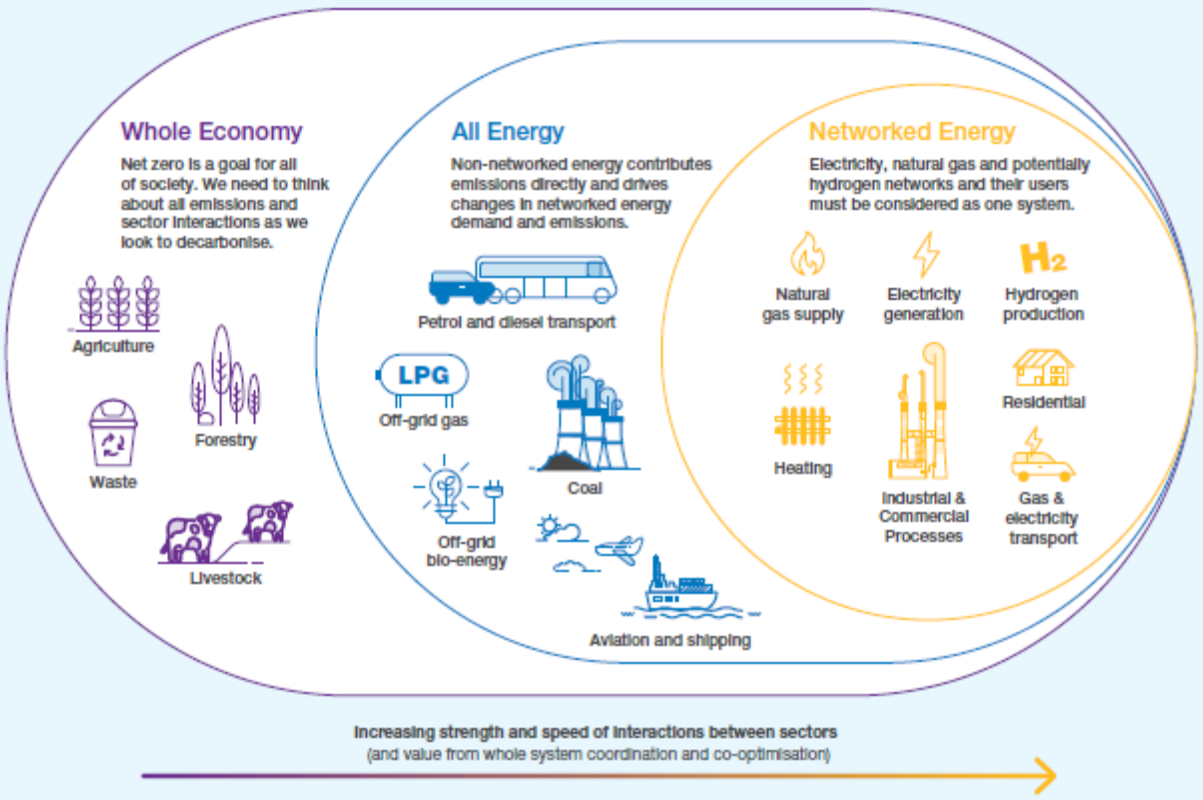
Future Energy Scenarios (FES)

FES outlines four pathways or scenarios for the future of energy in GB from now to 2050 – exploring the different ways energy may be used or provided. These scenarios are not forecasts or predictions, but they do represent a credible range of likely outcomes for the whole energy system. FES is built upon extensive stakeholder engagement and market research to ensure the outer edges of the credible envelope of outcomes that our industry foresees are captured.

All scenarios are designed to meet the relevant security of supply standards (i.e. for both electricity and gas) in all years.

The scope of FES involves the production of whole system scenarios out to 2050 covering a credible range (not tail events) using a full and intact network, meeting security of supply standards, built of stakeholder engagement and modelling insight. Scenarios cover energy delivering annual and peak demand and supply. The diagram below outlines the Whole System Interactions the FES captures.

Fig. 1. Whole system interactions captured in FES



The FES narrative and data are used by the National Grid ESO, Gas System Operator (GSO) and the energy networks as a fundamental part of annual network planning and operability analysis.

Stakeholders have said that the FES is also used for:

- inform investment decisions;
- support policy development; and
- help people understand the different ways we may supply and consume energy between now and 2050.

The table below sets out some of the uses of FES across the ESO, GSO and the regulated network businesses.

Purpose	Who	What	Why
System planning	NG-ESO & Electricity TOs	NOA & ETYS process	Identify points on the transmission network where more transfer capacity is needed. Assessing stakeholder provided solutions to these requirements. Recommending which solutions should proceed. Re-assessed annually to allow decisions to change if the external environment changes.

Purpose	Who	What	Why
	Electricity DNOs	DFES and downstream processes	FES and DFES data flows both ways between the DNOs and ESO as part of an ongoing cycle to improve forecasting accuracy.
	NG-Gas and Gas DNs	GTYS & GDN processes	FES data is used within the business planning, asset planning and operational planning tools and processes for the National Transmission System (NTS) and Gas Distribution Networks (GDNs).
	ESO	NOA for Interconnectors	The 'NOA for Interconnectors' (NOA IC) analysis identifies the optimal level of interconnection by examining social economic welfare, capital costs and reinforcement costs.
	ESO	Offshore transmission planning (OTNR & HND)	The ESO is developing a Holistic Network Design (HND) as part of the BEIS-led Offshore Transmission Network Review (OTNR) that is supporting delivery of the Government's 2030 offshore wind targets.
	ENTSO	European system planning (via TYNDP)	FES data is used as the GB contribution into ENTSO analysis including the biennial Ten Year Network Development Plan (TYNDP). This provides an overview of the European electricity and gas infrastructure and its future developments.
Security of supply	NG-ESO and BEIS	Capacity Market	Analysis is undertaken to determine the volume of capacity to secure through the Capacity Market auctions to meet the security of supply reliability standard. The inputs to the process include the four Future Energy Scenarios and a Base Case scenario which is developed alongside the FES.
	NG-Gas	'N-1' security standard	The gas demand and supply forecasts are used to calculate the 'N-1' security standard for the NTS.
	NG-ESO & NG-Gas	Winter and Summer Outlooks	Investigating next six-months for issues and opportunities. Early communication with stakeholders.
	ENTSO	ERAA	The European Resource Adequacy Assessment (ERAA) is a pan-European monitoring assessment of power system resource adequacy of up to 10 years ahead.
Operability	NG-ESO	System Operability Framework	The FES data is used to analyse future operability challenges across multiple workstreams such as thermal, voltage and stability requirements over a 10-year period.

Purpose	Who	What	Why
	NG-Gas	Gas Future Operability Planning	Exploring future role of NTS, as gas NTS and hydrogen NTS.

The FES is also regularly used beyond the regulated business, for example in consultancy, academia, public sector and investment planning

Regionalisation of FES

The ESO is currently enhancing regional assumptions and modelling to more accurately represent aspects of the scenarios which vary due to local factors. At the moment the GB FES scenarios are created from a top-down view of the individual components of demand and supply. This is then split into regions for network development purposes. Regional scenarios mean the ESO will work with the network companies and other stakeholders to adopt a more “bottom-up” approach on a regional basis (where it is relevant and material to do so). This will improve data and insights, allowing the ESO to model spatial and temporal variations to a greater level of accuracy and comparability. This will build upon and enhance the regional information currently produced, such as the regional datasets that are used in the Electricity Ten Year Statement process.

Regionalisation of FES will simplify and optimise the interface with the scenarios currently developed by gas and electricity network companies, such as the DFES, which will be used to enrich future iterations of FES and further development of the regional breakdown of the GB scenarios. A common scenario framework is used for FES and the regional scenarios developed by network companies. This allows for comparison of datasets for all network and system operators. Whilst a common scenario framework is used, regional variations in projections from local network companies mean that the summation of the regional forecasts may not have identical alignment to the GB FES forecast.

Alignment between DFES and FES

Alignment challenges and limitations

Both DFES and FES use a common scenario framework and definition of technologies, to allow for information exchange and comparison of datasets for all network and system operators. However, as described in the previous section, the DFES and FES serve two different primary purposes, i.e. DFES supports distribution planning and FES supports transmission planning & national system operability. This difference in the scenarios use in practice means that not all datasets between DFES and FES can be directly used or compared as the DFES and FES outputs need to be tailored and fit for purpose for the planning requirements at distribution and transmission level.

Whilst a common scenario framework is used, regional variations in projections mean that the summation of DFES forecast ranges may not have identical alignment to the GB FES forecast range. A typical example to understand the alignment challenges is around the electricity peak demand forecasts from DFES and FES.

Both DSO and ESO planning need to provide the available network capacity to supply demand at distribution and transmission level, respectively. The distribution network planning standards require the use of true (or underlying or gross) demand, which is effectively the maximum demand on the network in case that local generators go off. Any adjustments for generation are made by planning standards (e.g., ER P2/7), but importantly this approach recognises the real risk in providing sufficient network capacity in local networks in case that one or a small number of local generators disconnect / go off and the network capacity needs to supply higher levels of demand. For transmission network planning the corresponding risk of disconnection of a larger number of small local generators is in practice negligible and what is required for cost efficient planning is to identify as peak demand the maximum measured demand that is suppressed by many small distributed generators.

Beyond peak demand there are more examples of limitations for alignment that are due to the different uses of the DFES and FES outputs that aim to properly optimise planning in terms of reducing both costs and risks in DSO and ESO planning. For example, more diverse EV charging profiles should be used at transmission and sub-transmission voltage levels compared to lower voltage distribution levels to properly reflect the increase in demand diversification at higher voltage levels.

Initial alignment and feedback model

The DNOs and ESO have established within ENA Open Networks an alignment process between DFES and FES to:

- improve standardisation,
- better facilitate information exchanges
- support whole system thinking and processes
- help industry participants identify network issues and opportunities.

In 2020 the DNOs and ESO first adopted the "*Initial Alignment & Feedback Model*" approach to increase the level of standardisation and improve information exchange. Based on this model the DFES across all DNOs and the ESO FES:

- use a common scenario framework (see diagram below);
- use the same high level assumptions per scenario; and,

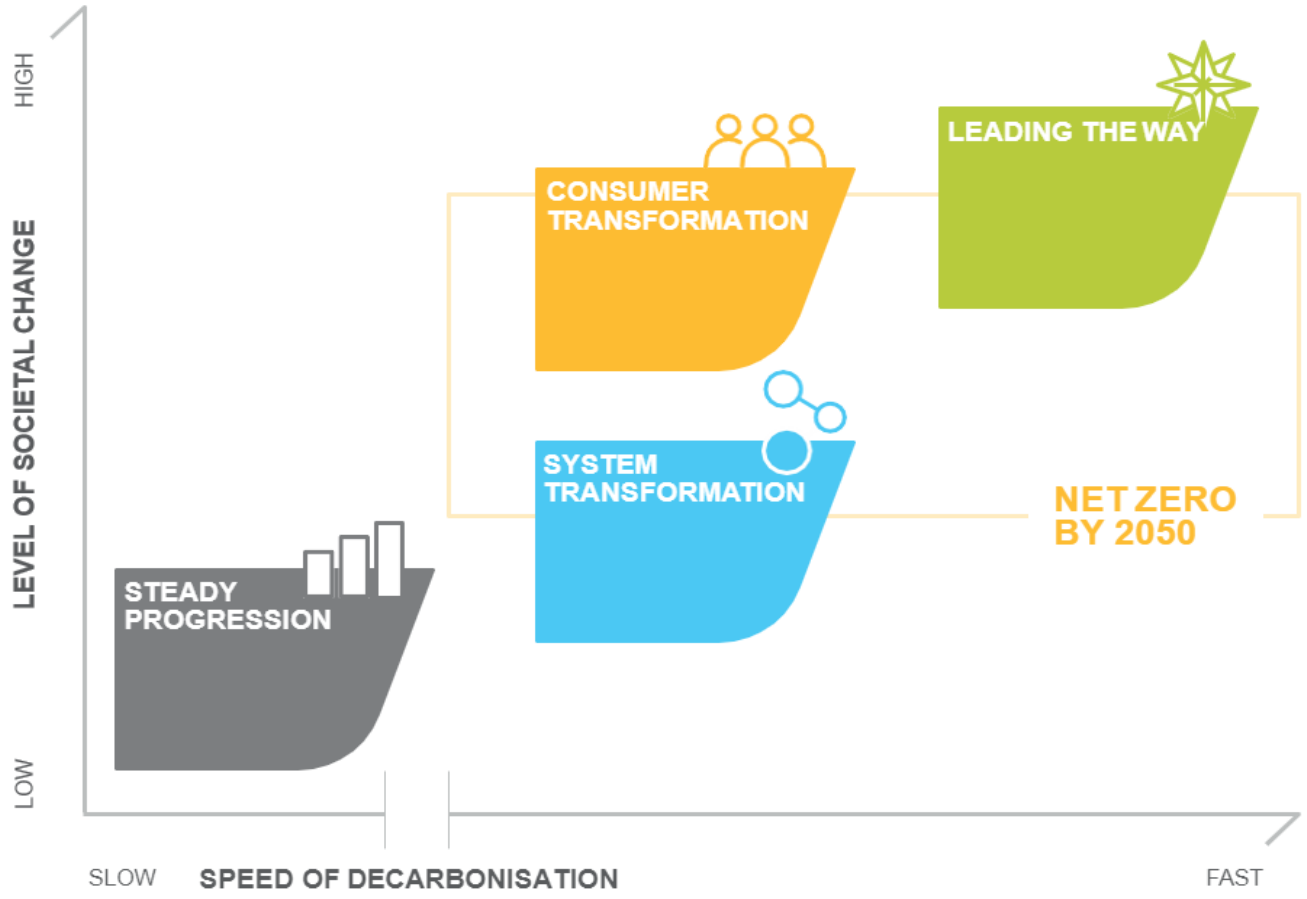
- established the data exchange process of the whole system FES building blocks.

At present, the common scenario framework consists of the following four scenarios:

- **Steady Progression (SP)**[3]: this is the only scenario that does not meet Net Zero. It exhibits the slowest credible decarbonisation and minimal behaviour change.
- **System Transformation (ST)**: this scenario meets Net Zero by 2050. Consumers are less inclined to change behaviour, there is lower energy efficiency compared to the other scenarios that meet the Net Zero target and importantly hydrogen play a key role in the future of heating.
- **Consumer Transformation (CT)**: this scenario also meets Net Zero by 2050. Consumers are willing to change behaviour, there is higher energy efficiency and heating is predominantly electrified through electrification
- **Leading the Way (LW)**: this scenario considers the fastest credible decarbonisation with consumers willing to significantly change behaviour to accelerate decarbonisation.

[3] Steady Progression is changing name in 2022 to become “Falling Short”, but it will retain the same principles and high level assumptions.

Fig. 2. Common scenario framework between DFES and FES



Even though forecasts of natural gas demand and hydrogen production are included in FES, DFES focuses on customer types and technologies that are expected to connect to the distribution networks.. Using the common scenario framework the DFES take into account the effects from future uncertainties around the role of gas and hydrogen for industrial processes and domestic heating. For example, in the ST scenario all DNOs consider that hydrogen will play a dominant role in the future of heating, which results in low uptakes for heat pumps in this scenario.

As part of the "*Initial Alignment & Feedback Loop Model*", all DNOs have agreed to share their whole system FES building blocks. These are effectively forecasting components for each transmission-distribution interface. The building blocks are reviewed on an annual basis. The 2021 building blocks are the latest and can be grouped at high level as follows:

- Generation building blocks: these include installed capacities in MW for different distributed generation technologies including solar and wind generation, combined heat power plants, biomass and biofuel units, gas and diesel fuelled turbines, hydro generation and others.

- Demand building blocks: these include volumes of domestic and non-domestic customers, floor space projections for non-domestic customers and energy (electricity consumption) forecasts for baseline demand and different low carbon technologies such as electric vehicles (EVs) and heat pumps
- Low Carbon Technology (LCT) building blocks: these include volumes of LCTs including EVs and heat pumps, as well as volumes of EV chargers
- Storage and flexibility building blocks: these include data around installed battery storage projections and data on domestic and non-domestic customer availability to provide flexibility services..

Next steps in DFES-FES alignment

As part of the annual review of the whole system FES building blocks, all DNOs and the ESO have identified through Open Networks areas to improve alignment. These include:

- an agreed approach to the alignment in the definition of transmission-distribution interfaces for whole system FES building blocks. This approach will improve the comparison of regional forecasts.
- an approach that is currently under review to
    - reduce the number of building blocks in order to better facilitate the feedback loop of the adopted "*initial alignment & feedback loop*" model
    - establish an annual meeting between all DNOs and the ESO for the review of the whole system FES building block forecasts, where the identified differences will result to learnings through additional data and information exchanges.

DFES Standardisation

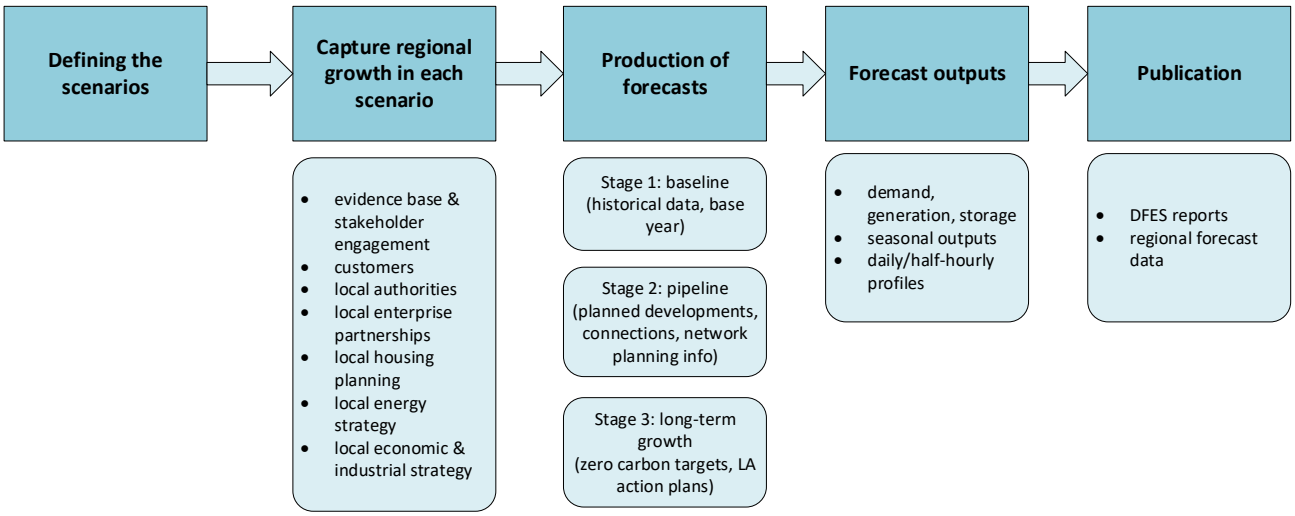
The common DFES methodology framework

All DNOs follow the same methodology framework to produce their DFES. The agreed framework is a 6-step process where in step 1 requires the definition of scenarios, which should include:

- the four common scenarios between DFES and FES (Steady Progression, System Transformation, Consumer Transformation and Leading the Way); and,
- a fifth "Best View" scenario that captures the highest certainty trends in the next 1 to 10 years horizon.

DNOs could have additional scenarios in their DFES. Even though this could increase stakeholder complexity, the use of additional scenarios could be particularly useful in cases that the other five scenarios cannot capture short and long-term uncertainties, e.g. due to accelerated decarbonisation.

Fig. 3 Common DFES methodology framework



The second step of the common methodology framework considers the DFES focus on capturing regional growth in the scenarios. Stakeholder engagement is critical to achieve this. This engagement includes a wide range of stakeholders from LAs and local enterprise partnerships to businesses, investors, local communities and other local bodies.

Next step is the production of the forecasts, which consists of three stages:

- stage 1 – baseline: use of local measurements from substations and local generators to identify historical demand and generation, data processing to identify generation and other technology installations (e.g., heat pumps, battery storage)
- stage 2 – pipeline: modelling of planned developments (incl. connections offers and acceptances) and other DSO planning information.

- stage 3 – long term trends: consideration of LA action plans and Net Zero carbon targets to define long-term demand and distributed generation growth

The forecasting outputs in step 4 cover for all DNOs the necessary load related data to inform network planning and load related investment. This includes for all DNOs electricity demand, distributed generation and battery storage. Focusing on demand, the forecasting outputs are not purely about annual peak demand, but also for seasonal and daily variations.

The final step of the common methodology framework is the publication of the DFES report and associated data. All DNOs present their scenarios, assumptions and messages based on the forecasting results in their DFES reports. All DNOs also publish more detailed and granular data that is accessible by stakeholders to help inform their decarbonisation and other plans.

The common DFES methodology framework improves consistency and standardisation, but it also provides sufficient flexibility to DNOs to optimise the use of DFES in network planning through:

- the facilitation of a competitive environment where learnings and best practices from developed tools and research findings can be shared between different DNOs. This competitive environment promotes transparency and sharing more data that improves stakeholder utility.
- allowing individual DNOs capture particular characteristics in parts of their region, e.g. using additional scenarios to capture accelerated decarbonisation trends whilst allowing stakeholders understand how these compare with the common DFES-FES scenarios
- disincentivising static forecasting methodologies where importantly as more LCTs (e.g., EVs and heat pumps) novel modelling approaches will be soon required to capture customer behaviour

The Best View scenario

Further to the four common scenarios, DNOs have recently agreed (December 2021) to include a fifth Best View scenario in their DFES. The Best View scenario can be used together with the other DFES scenarios to produce the NDP and inform other network planning and reporting processes, e.g. LTDS.

The main difference between the Best View scenario and the other DFES scenarios is that it will focus on high certainty in a 1 to 10 years horizon. As a single scenario that reflects highest certainty, the Best View scenario can:

- provide clarity and remove the complexity of multiple scenarios. This will help stakeholders understand local demand and generation trends over the short-term.
- provide the highest certainty basis for assessing network impact and the need for interventions
- support a “best view” / optimal Network Development Plan together with:
    - other network factors including asset health
    - all other DFES scenarios that have equal/lower certainty than “Best View” and can provide more insights on the uncertainty range in the >10 years horizon.

Regarding its guiding principles, the Best View scenario should:

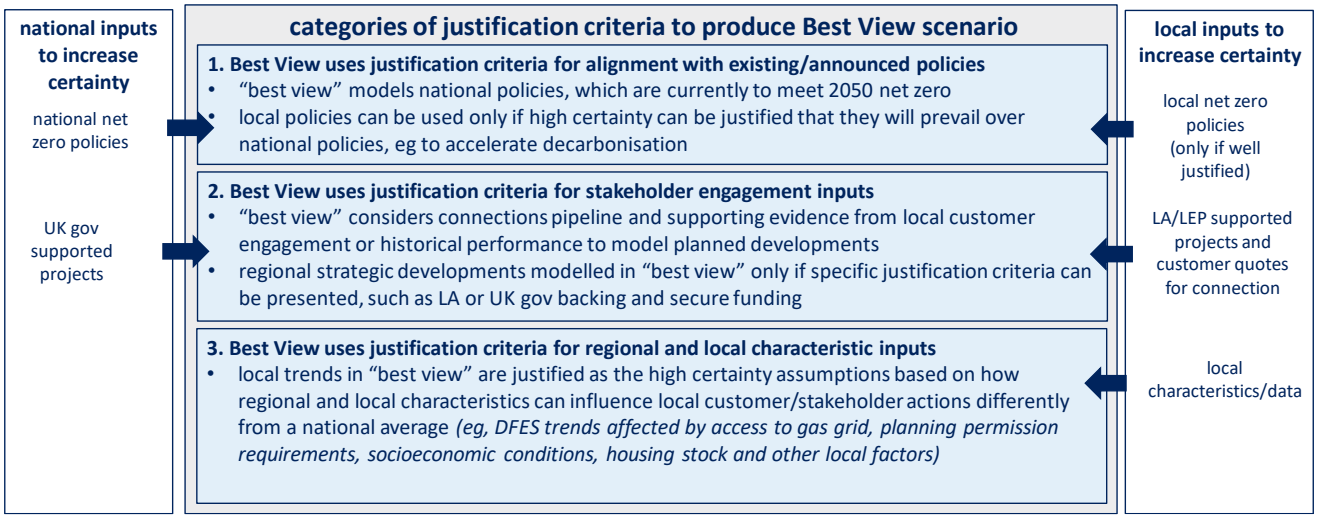
- be well understood through a transparent development methodology;
- not allow a broad interpretation, but instead be well defined through an associated methodology that justifies it as the highest certainty scenario among all other DFES; and,
- be consistent with wider scenario methodologies.

The proposed Best View scenario development methodology:

- incorporates the above mentioned guiding principles;
- builds on the current DFES methodology;
- is open to encourage improvements through decentralised thinking and competition across DNOs in developing and sharing learnings and methodologies;
- considers opportunities to explain regional sensitivities and justify the “best view” forecast of the future;
- is building on Ofgem’s RIIO-ED2 guidance and Load Related Expenditure (LRE) framework;
- reduces subjectivity, for example by aligning with Scottish government draft framework for devolved regional and local (DRL) planning. The “Best View” scenario can comply with this framework and therefore evidence is required on:
    - how local plans will be financed and that relevant government will use policy levers in the way required
    - ascertaining that stakeholders involved in local plans acknowledge and accept actions to deliver the plan
    - ensuring that local plans start from true reflection of the system today
    - justifying that local plans are deliverable with credible timescales

The Best View scenario is defined as the highest certainty scenario across all other DFES scenarios, focusing in specific on certainties that can be justified in a 1-10 years horizon acknowledging that longer term forecasts can be more uncertain. To produce the Best View scenario, each building block needs to be checked against three categories as shown in Fig. 4 to justify that the developed scenario reflects the highest certainty for the region.

Fig. 4. The three categories of justification criteria to produce the Best View scenario



More information around the three categories of the justification criteria and information around how each DNO will produce a Best View scenario can be found in ENA Open Networks website[4].

[4] Best View scenario description, Open Networks WS1b Product 2, December 2021. Online: on21-ws1b-p2-best-view-scenario-description-and-justification-criteria-(13-dec-2021).pdf (energynetworks.org)

Glossary

CAP	Climate Action Plan
CT	Consumer Transformation scenario (in both DFES and FES)
DFES	Distribution Future Energy Scenarios
DNO	Distribution Network Operator
DSO	Distribution System Operation
ENA	Energy Networks Association
ESO	Electricity System Operator
FES	Future Energy Scenarios
GSO	Gas System Operator
LA	Local Authority
LAEP	Local Area Energy Plans
LHEES	Local Heat and Energy Efficiency Strategies
LTDS	Long Term Development Statement
LW	Leading the Way scenario (in both DFES and FES)
NDP	Network Development Plans
NOA	Network Options Assessment
SP	Steady Progression scenario (in both DFES and FES)
ST	System Transformation scenario (in both DFES and FES)

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