

Whole electricity system webinar Open Networks programme

27th June 2022

Thank you for joining this Webinar.

This webinar will commence at 14:02.

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- All microphones have been set to mute to avoid background noise.
- Please ask questions or make comments **via the chat function** throughout the meeting.
- Please note that the webinar will be recorded and made publicly available on [ENA's YouTube channel](#). Please do not turn your video on if you don't want your likeness to be recorded and shared.
- The slides from the webinar will be made publicly available on ENA's website.
- If you would like any further information about the Open Networks programme or have any feedback you would like to submit, please get in touch with us at opennetworks@energynetworks.org.

Agenda

Item	Start	Finish	Time	Item	Presenter
1	14:00	14:05	5	Welcome. Welcome from Chair	Ian Povey (Chair of Whole Electricity System Workstream, ENWL)
2	14:05	14:15	10	Open Networks & WS1B overview - Background & context	Ian Povey (Chair of Whole Electricity System Workstream, ENWL)
3	14:15	14:35	20	Distribution Future Energy Scenarios (WS1B P2) - Overview of DFES, the Best View scenario, and its use in NDP followed by Q&A	Christos Kaloudas (Product Lead, ENWL)
4	14:35	15:00	25	Network Development Plans (WS1B P5) - Key NDP work developments and seeking feedback on the Form of Statement followed by Q&A.	Rita Shaw (Product Lead, UKPN)
5	15:00	15:10	10	Co-ordination register (WS1B P9) - Overview of co-ordination register and signposting DNOs registers followed by Q&A	Garreth Freeman (Product rep, ENWL)
6	15:10	15:15	5	Next Steps & AOB	Ian Povey (Chair of Whole Electricity System Workstream, ENWL)

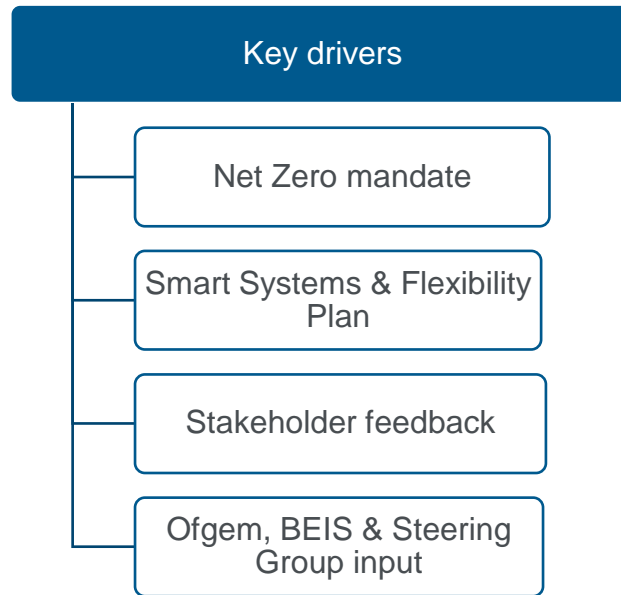
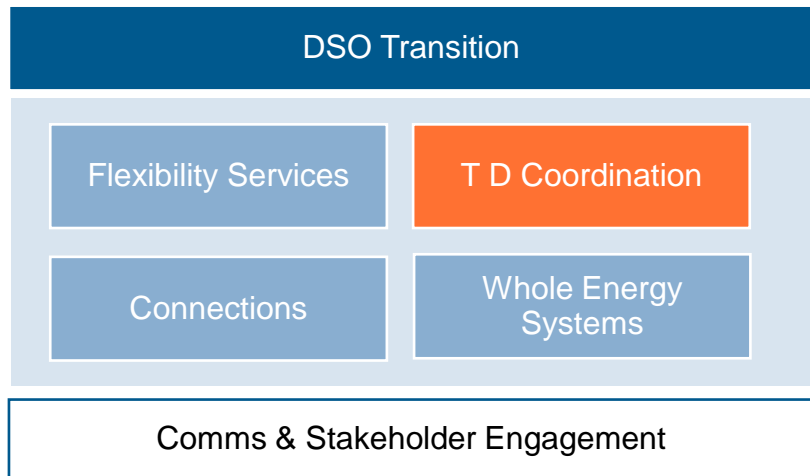
Open Networks & WS1B overview

Ian Povey (Chair of Whole Electricity System Workstream, ENWL)

Open Networks – Delivering a Smart Grid

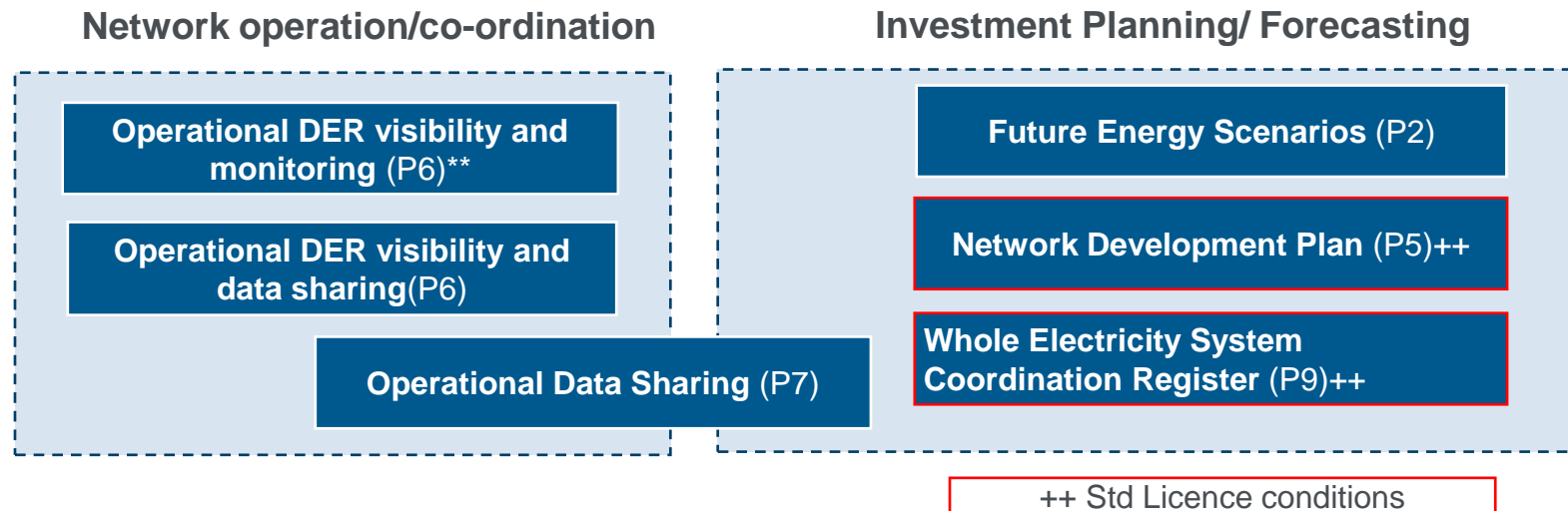
Started in 2017, the Open Networks programme is working with the networks and industry to lead the transition to a smart and flexible energy system that will enable net zero.

- ✓ Opening local flexibility markets to demand response and renewable energy
- ✓ Helping customers connect faster
- ✓ Opening data to enable customers identify best locations to invest
- ✓ Delivering efficiencies between network companies to operate secure and efficient networks



Whole Electricity System (WS1B) 2022

- Optimise existing planning and forecasting processes across the Transmission-Distribution boundary, through streamlining of Future Energy Scenarios (FES) and Distribution Future Energy Scenarios (DFES) by identifying synergies and reviewing key assumptions in their building blocks.
- Develop and implement approaches to improve the quality and the consistency of data sharing in operational and planning timescales between DNOs, TOs, ESO, and non-network market participants.



** Carry forward form 2021

Distribution Future Energy Scenarios (WS1B P2)

Christos Kaloudas (Product Lead, ENWL)

Energy scenarios

Distribution Future Energy Scenarios (DFES)

- produced by each of the six Distribution Network Operators (DNOs) across GB
- local bottom up scenarios for electricity demand, distributed generation and storage
- reports & datasets/heat maps online available

Future Energy Scenarios (FES)

- produced by the Electricity System Operator (ESO)
- national scenarios for electricity demand, generation, gas and hydrogen demand and storage
- reports & datasets online available
- Regional FES aims to capture local trends (incl. use of bottom up DFES). New interactive document available.

DFES reports



FES & Regionalisation reports



Distribution Future Electricity Scenarios (DFES)

What are they?

- Long-term forecasts of electricity demand, distributed generation & battery storage and associated components, e.g. EV volumes
- Forecasts as a set of scenarios capturing future uncertainties
- Four scenarios following common framework with National Grid's ESO FES
- Fifth "Best View" scenario for DNOs/DSOs

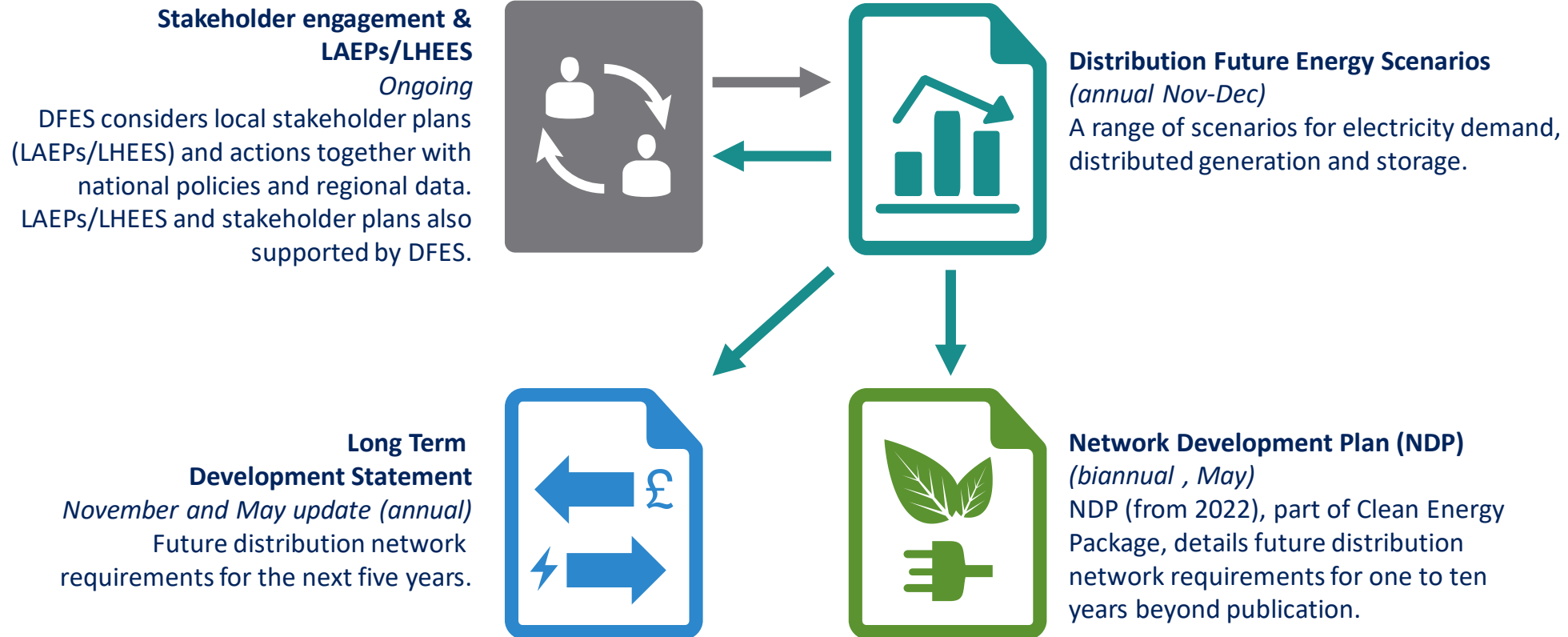
Purposes of DFES

- Primary purpose: use of scenarios for the strategic planning of distribution systems & networks
- Secondary purposes:
 - supporting local stakeholder decarbonisation & other plans
 - supporting Local Area Energy Plans (LAEPs), Climate Action Plans (CAPs)
 - supporting National Grid's ESO FES

Role of stakeholder engagement

- local stakeholder decarbonisation & other plans reflected in DFES
- DFES is the vehicle to release capacity and facilitate stakeholder plans
- bidirectional engagement: stakeholders share their plans & DNOs/DSOs provide help and advice based on forecasts

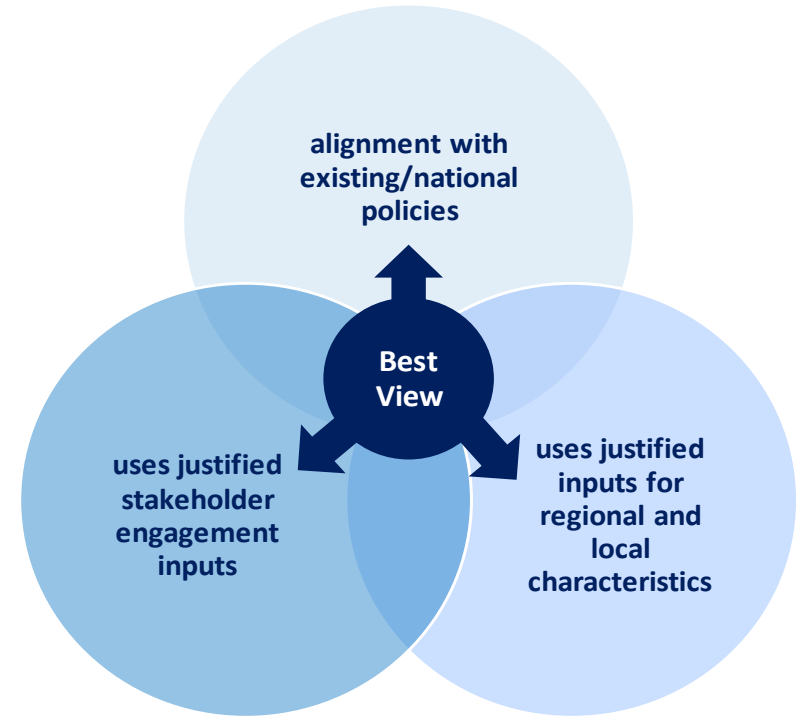
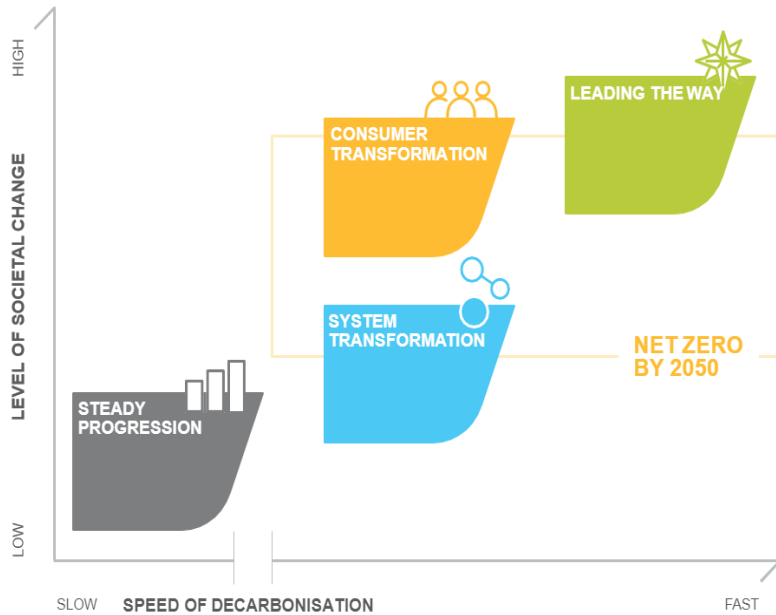
DFES as part of standardised DSO processes



Scenarios in DFES: four common with FES and a “Best View”

scenarios following common DFES/FES framework

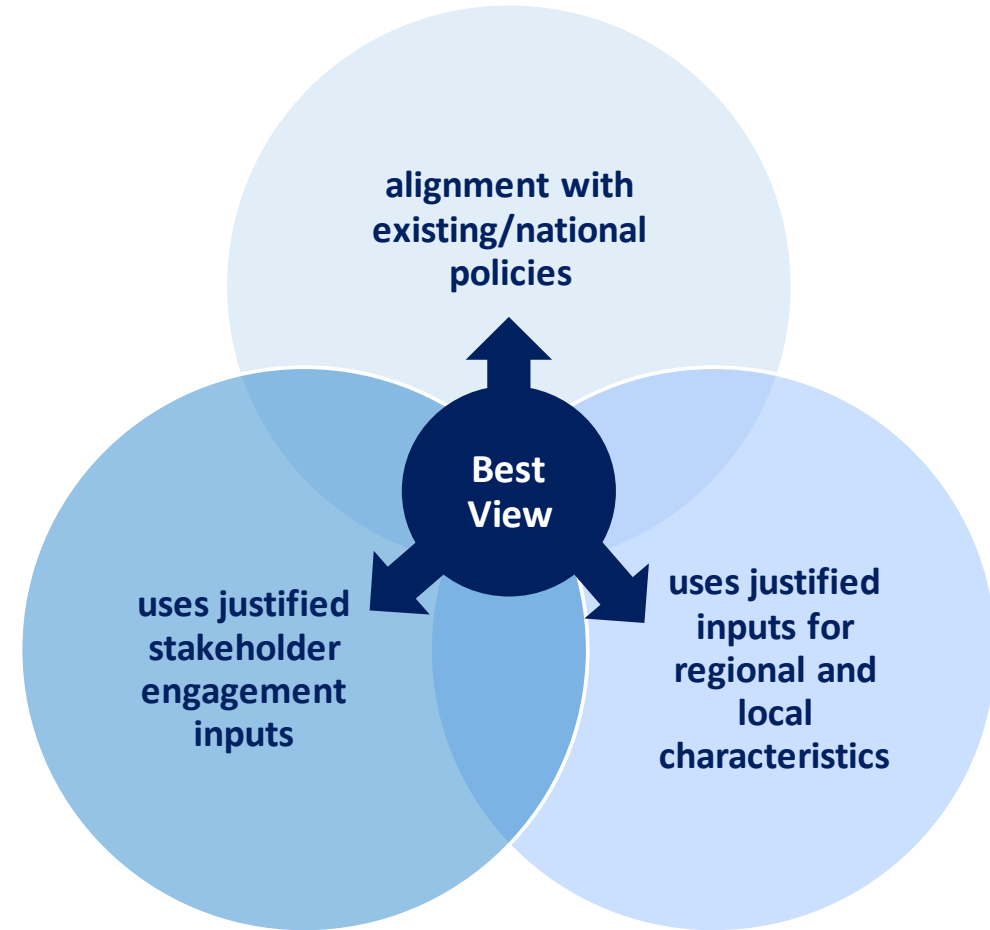
“Best View” scenario



**in late 2022 the Steady Progression scenario will be replaced by Falling Short scenario. This is still part of the same framework.*

“Best View” scenario definition

- “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”, each building block needs to be checked against three categories to justify that the developed scenario reflects the highest certainty for the region.



“Best View” scenario definition

national inputs to increase certainty

national net zero policies

UK gov supported projects

categories of justification criteria to produce Best View scenario

1. Best View uses justification criteria for alignment with existing/announced policies

- “best view” models national policies, which are currently to meet 2050 net zero
- local policies used only if justified they can prevail, e.g. to accelerate decarbonisation

2. Best View uses justification criteria for stakeholder engagement inputs

- “best view” considers connections pipeline and supporting evidence from local customer engagement or historical performance to model planned developments
- regional strategic developments modelled in “best view” only if specific justification criteria can be presented, such as LA or UK gov backing and secure funding

3. Best View uses justification criteria for regional and local characteristic inputs

- local trends in “best view” are justified as the high certainty assumptions based on how regional and local characteristics can influence local customer/stakeholder actions differently from a national average (*e.g., DFES trends affected by access to gas grid, planning permission requirements, socioeconomic conditions, housing stock and other local factors*)

local inputs to increase certainty

local net zero policies
(only if well justified)

LA/LEP supported projects and customer quotes for connection

local characteristics / data

Using “Best View” in Network Development Plan (NDP)

What scenarios inform an NDP?

- use of “Best View” scenario to inform NDP is mandatory
- DNOs can choose to use more DFES scenarios to reflect short- and importantly long-term uncertainties

Why do we need a “Best View” scenario in Network Development Plan?

- to provide clarity and remove the complexity of multiple scenarios → help stakeholders understand local demand & generation trends over next 1 to 10 years
- provide the highest certainty basis for assessing network impact and the need for interventions
- support a best view 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

Open Q&A

Network Development Plans (WS1B P5)

Rita Shaw (Product Lead, UKPN)

Network Development Plans

New regulatory requirement for DNOs from 1st May 2022

- **A medium-term view of their ‘best view’ plan for network development**
 - 2021 base, using the network in November 2021 Long Term Development Statement

- **Proposed infrastructure and flexibility services for next ten years**
 - Shares what, where and why with stakeholders
 - What development occurring in my area?
 - What flex services will be procured?

Contents of the NDP

The “NDP” comprises three standalone reports – all to be published for the first time 1st May 2022

1) Network Development Report (NDR) – update every 2 years

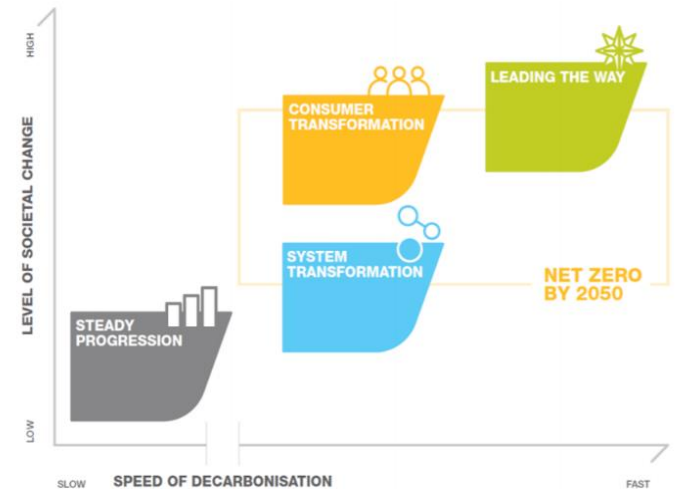
- Introduction to the purpose of the NDP
- High level plans 0-10yrs from highest distribution voltage (eg 132kV) to the lower voltage of primary substation
 - For network infrastructure & flexible service requirements, plus justification

2) Network Headroom Report (NHR) – update annually – consultation version produced August 2021

- For all Grid and Primary substations (those in LTDS)
- Demand headroom and Generation headroom over time to 2050 in all DFES

3) NDP Methodology – update as required

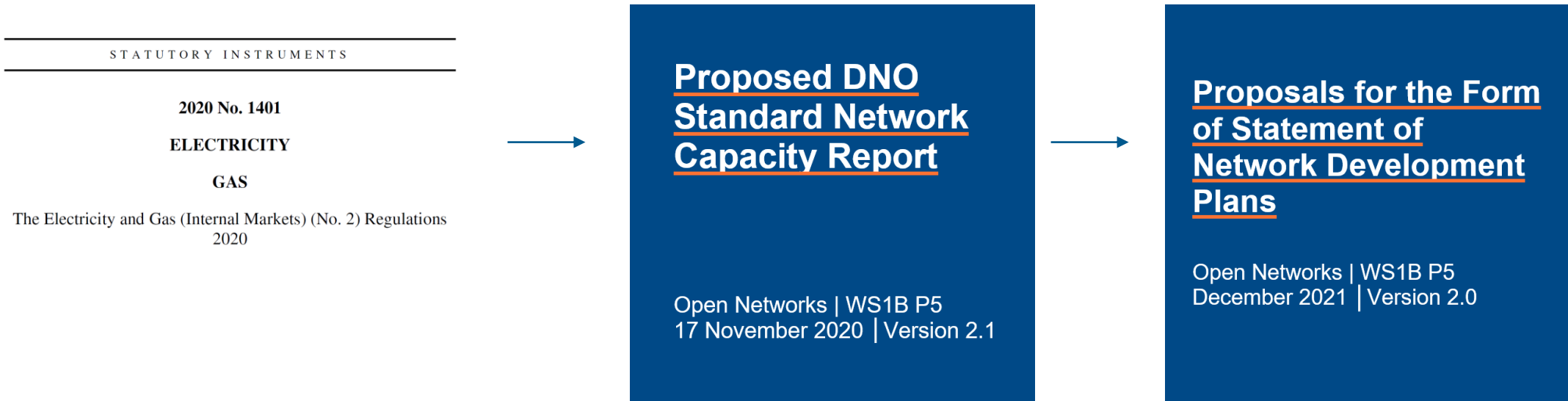
- Explain calculation of the network headrooms
- Explain end-end process and assumptions to justify network developments



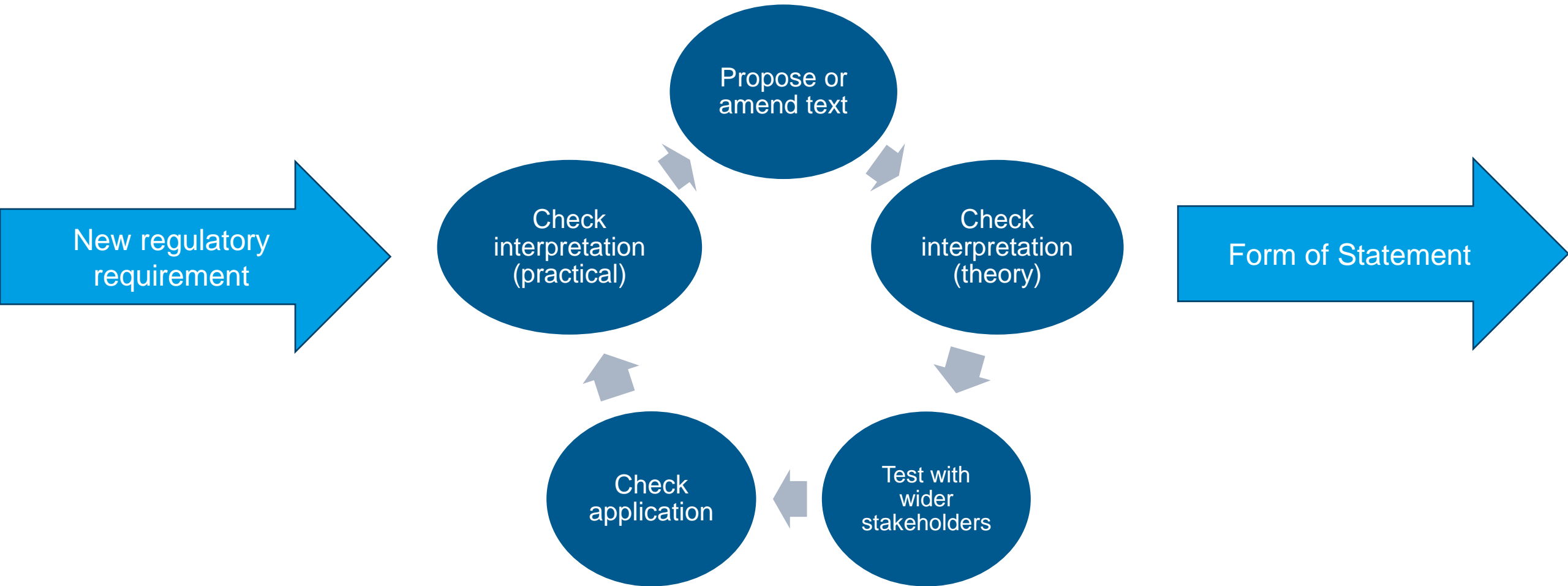
What has been produced?

The ENA Open Networks programme engaged and developed a ‘form of statement’ with the detail of how to deliver on the licence requirement.

This delivers a common approach for all DNOs’ NDPs.



Benefits of working via Open Networks on defining NDP



Excerpts from the ‘Form of Statement’

ON21-WS1B-P5 NDP Form of Statement Template and Process (22 Dec 2021) Published.pdf
(energynetworks.org)

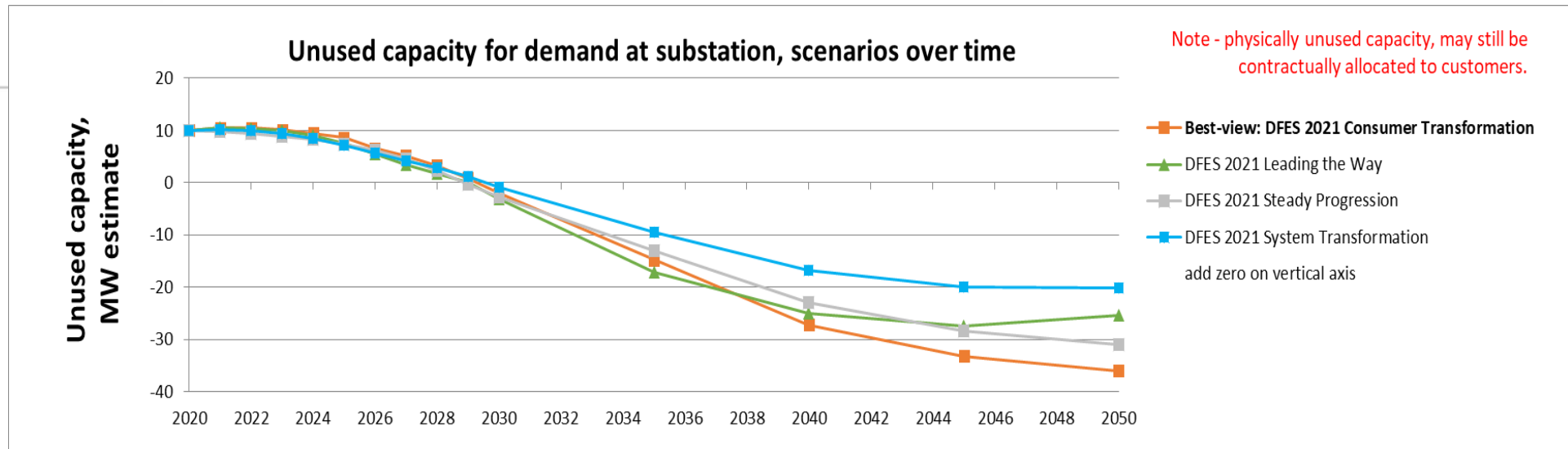
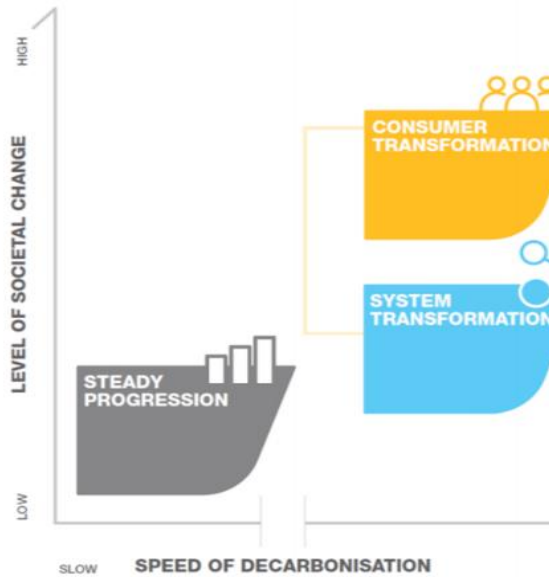
Network Headroom Report (per scenario and year)

Substation Name	Voltage kV	BSP Group	GSP	Substation location	Demand Headroom MW	Generation Headroom MW
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Network Development Report

Flexibility services	New infrastructure
<ul style="list-style-type: none"> • Magnitude • Expected timescale • Voltage • Location of the requirement • Nature of requirement / flexibility product type, for example post or pre-fault • Nature of the service, for example demand-side response, energy efficiency, or other alternative to asset-based reinforcement 	<ul style="list-style-type: none"> • Expected timescale • Details of connectivity including voltage • Asset quantities approx. circuit lengths, number of transformers etc • Equipment ratings • Approximate geographical locations and options for possible circuit routes

Example output from Network Headroom Report



Physically unused v contractually available capacity

Example: 20MW of unused demand capacity on a substation last year

Consider 3 x 5 MW accepted connections, of which 2 expected to connect by 2025.

Contractually-available capacity (heat map style) = 20 MW – 15 MW = 5 MW (single value)

Unused capacity (per scenario in NDP) = from 20 MW now to 10 MW in 2025

Published Network Development Plans

Distribution Network	Link
1. Scottish and Southern	Network Capacity Information - SSEN [ssen.co.uk]
2. SP Energy Networks	Network Development Plan - SP Energy Networks [spenergynetworks.co.uk]
3. Northern Powergrid	https://www.northernpowergrid.com/network-data [northernpowergrid.com]
4. Electricity North West	https://www.enwl.co.uk/get-connected/network-information/dfes/ [enwl.co.uk]
5. Western Power Distribution	Western Power Distribution - Network Development Plan [westernpower.co.uk]
6. UK Power Networks	Long Term Development Statement and Network Development Plan Landing Page — UK Power Networks



Areas for future clarification – within the NDP

Definition of headroom as unused rather than contractually available capacity

Approach to consultation

Clarifying the upper and lower voltage boundary in the NDP
MW or MVA units

Scope of infrastructure projects in the Network Development Report
Comparison and relationship between the LTDS, NHR and NDR methodologies

Areas for future clarification – beyond the NDP

- Transmission-distribution interface is outside the NDP scope
- BUT potential gap and clear stakeholder interest in providing investment, headroom and capacity information at the transmission-distribution interface.

**Electricity Ten Year Statement
for transmission system**

Grid Supply Points

**Network Development Plan
for distribution**

→ Area for future recommendations outside the NDP

Future recommendations deliverable – November 2022

- Updated version of an NDP template and/or Form of Statement
- Incorporating internal and external stakeholder inputs
- Recommendations for future work relating to the NDP
- Recommendations for the governance of the NDP and how this relates to other publications

Open Q&A

Whole electricity system co-ordination register (WS1B P9)

Garreth Freeman (ENWL)

Licence Condition

New Standard Licence Conditions D17 and 7A enforce Whole System Collaboration between electricity transmission owners, transmission Licencees, and electricity distributors.

- **Electricity Distributors and transmission owners** to clearly and transparently demonstrate the **process** each has undertaken to coordinate and cooperate with other electricity network Licencees
- The Coordination Register should **be evidence based, and detail active and completed actions**, rather than forthcoming actions.
- Electricity Distributors and transmission owners **to consider proposals from systems users** which seek to advance the efficient and economical operation of its network
- Allow other electricity network Licencees and users **to understand what opportunities have been identified and learn from them**, advancing the industry's understanding of the possibilities across a broad range of scenarios.

Coordination register – Activities and Actions

All relevant **coordination and cooperation activities** completed with other electricity network Licencees
 Any **actions or processes** that have been implemented (or are being implemented) as a result of coordination and cooperation activities.

Column	Description
Identifiers	Unique id for each row, Licencee, collaborating other Licencees and stakeholders
Description of the activity	Details of the activity (could be an activity from a project or an activity that is used in multiple projects). Only activities that improve the economy and efficient of the whole electricity system is to be considered. Register is of activities in progress or completed not planned
Timeline	Date of initiation, status, updates
Relevance	Details of why it is relevant to whole system.
Data	Description of any data that was shared. Include the format of the data, if applicable, and highlight any data that cannot be widely shared due to commercial sensitivity. Links to the data not the project/activity
Impacts (on whole system and on Licencee)	A brief description, mainly along the lines of positive, neutral or negative
Latest stage and justification	Details the most recent update, recommendation for next steps and the justification for this.

Coordination register – User suggestions

All proposals received during a relevant period from system users to advance the efficient and economical operation of the whole system

Column	Description
Identifiers	Unique id for each row, Licencee, collaborating other Licencees and stakeholders
User category	domestic customer; customer commercial; Group of domestic customers; Group of commercial customers; local authority; combined authority; other infrastructure networks; generators; aggregators etc.
Suggestion date	Date
Suggestion	Details of the suggestion. Only those suggestions that improve the economy and efficiency of the whole system is to be considered, suggestions benefitting just one user is not to be included.
Relevance to whole system	Details of the relevance to whole system
Description of the action taken on the suggestion and justification	Action taken based on the suggestion and the justification for the action. Could even be decision to not take forward.
Next stage (including justification)	What is the recommended next stage? Positively, this activity would result in actions/processes that will then move on to the 'actions from coordination' sheet. If it is not taken forward, add justification.

Networks co-ordination register links

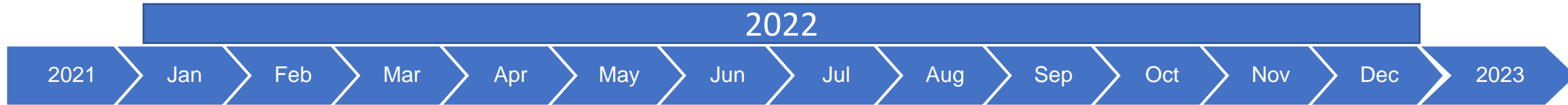
- [NPg](#)
- [UKPN](#)
- [ENWL](#)
- [WPD](#)
- [SPEN-D](#)
- [SSEN-D](#)
- [SPEN-T](#)
- [SSEN-T](#)
- [NGET](#)

Open Q&A

Next Steps

Ian Povey (Chair of Whole Electricity System Workstream, ENWL)

T-D Co-ordination (WS1B) Timeline for 2022



P2 –Whole system Future Energy Scenarios (FES)

Consistent T-D interface naming and definition

Review of Whole system Future Energy Scenarios (FES) building blocks

Recommendations on forecasting outputs from DFES that can be used as inputs in NDP processes

Stakeholder engagement ††

P5 – Network Development Plan**

Capture key learning from each DNOs experience populating the template proposed in 2021

Stakeholder engagement ††

Joint workshop with P2

Recommendation for future work and governance of NDP

P9 – Whole electricity system Coordination register**

Capture key learning from each DNO's experience populating the template proposed in 2021

Stakeholder engagement ††

Recommendation for future work and governance of register

†† Joint session together with P2, P5 and P9

** Light touch Product- Not resource intensive

AOB

Ian Povey (Chair of Whole Electricity System Workstream, ENWL)

Useful Links

Programme
Scope for 2022

2021 End of Year
report

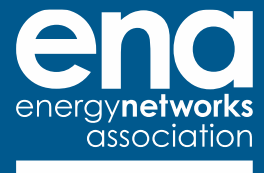
Stakeholder
events &
supporting
material

Open Networks
homepage

We welcome feedback and your input

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