Electricity Distribution

DSO Electricity Futures Autumn Conference

System Planning: shaping our ED3 business plan

21 October 2025

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Emily Taylor

Regional Decarbonisation Manager
Distribution System Operator

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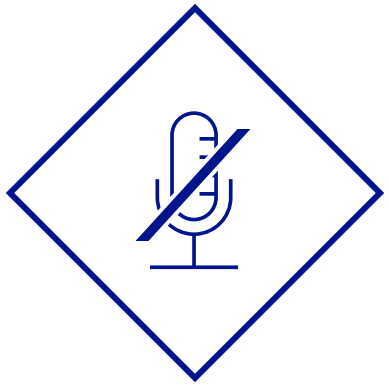
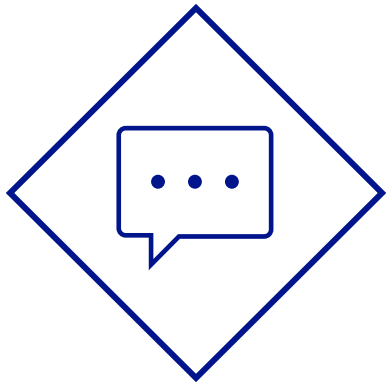
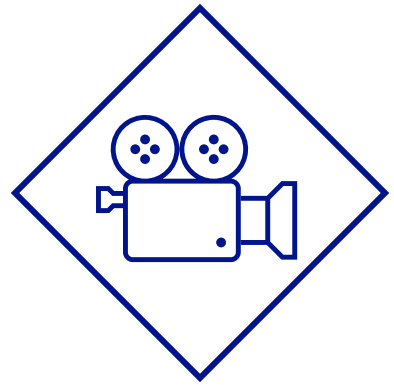
Housekeeping



Please make sure your microphone is muted when not speaking



For questions or feedback, please raise your hand or use the Q&A/chat box



We are recording this session for sharing with our stakeholders

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Agenda

11.00 Welcome, housekeeping and session outline
Emily Taylor, Regional Decarbonisation Manager

11:05 System Planning in action: ED2
Oli Spink, Head of System Planning and Matt Pope, Secondary System Planning Manager

11:20 Working alongside Regional Energy Plans (RESP)
Hannah Lewis, DSO Engineer

11:30 Looking ahead: ED3
Oli Spink, Head of System Planning

11:40 Overview of ED3 – how to keep involved
Marena Lesskiu, Stakeholder Engagement Officer, ED3

11:50 Q&A

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Getting to know you

It's important for us to understand your needs and how we support your involvement in system planning.

How familiar are you with how we deliver system planning?

How familiar are you with our preparation for ED3?

?

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System planning process

Forecasting

The **Distribution Future Energy Scenarios (DFES)** identify how customers will use our energy in the future

Network impact assessment

The **Network Development Plan (NDP)** uses forecasts to analyse and identify future network constraints

Optioneering

The **Distribution Network Options Assesment (DNOA)** outlines how we plan to invest in our network to solve constraints

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System planning in action: ED2

Oli Spink
Head of System Planning

Matt Pope
Secondary System Planning Manager

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System Planning - key successes

Data driven innovation

- Assessed 190,000 low voltage transformers across the network
- Overlaid with energy use forecasts to 2050
- Created a priority list for upgrades, targeting only where needed

Smarter Use of Existing Infrastructure

- Extended asset lifespans by changing how we use them, not just replacing
- Avoided unnecessary upgrades, saving money and reducing waste

Lower Costs, Greater Reliability

- Reduced operational costs by maximising asset value
- Ensured safe, reliable power at the lowest possible cost to customers

Thoughtful Planning, Real Impact

- Reinforcement decisions based on asset health and customer need
- A responsible approach that balances cost, performance, and longevity
- Future-proofing the network to serve communities for the next 25+ years

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Using stakeholder feedback to shape system planning

- **Local ambitions**: We've built relationships with all 120 Local Authorities, with 80% sharing their local plans—now reflected in our DFES 2024 and 2025 modelling

- **Pathway alignment**: This year's engagement confirmed that the Holistic Transition pathway closely aligns with Local Authority ambitions

- **Improving Network Development Plans**: Our 2024 plans were shared widely, and feedback is shaping a more stakeholder-friendly approach for 2026

- **Developing flexibility services**: Stakeholder engagement carried out alongside consultations on the 2024 NDP, along with ongoing engagement on our use of flexibility services, has helped shape the development of the Distribution Network Options Assessment (DNOA)

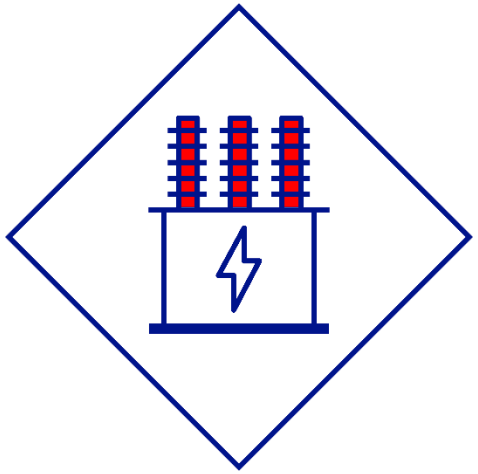
ED2 – Primary reinforcement case study

Ilkeston Primary is a **33/11 kV site**

It houses **two primary transformers**, fed by two 33 kV circuits

What would happen if:

- There was a **first circuit outage** on either one of the 33 kV circuits (or associated equipment) which feed Ilkeston Primary?



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ED2 – Primary reinforcement case study

Optioneering in action

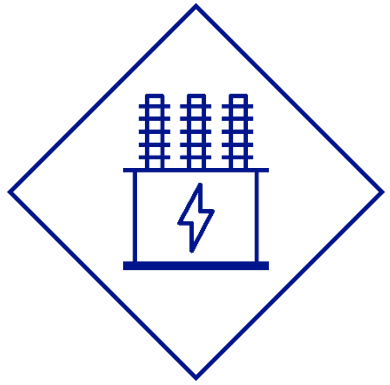
Do nothing	✗	Risk of thermal overload
Uprate the transformers	✓	Would alleviate the constraint, providing additional capacity for future growth. Circuits likely to need uprating in the future (not before 2034)
Install a third primary transformer	✗	Not an economical solution
Active Network Management	?	Could help to manage constraints if customers are able to accept being curtailed
Procure flexibility services	✓	Projected overloads seen on the transformers could be alleviated through flexibility services

ED2 – Primary Reinforcement Case Study

Two-stage solution

Procure flexibility services

- Short term solution
- Delivers additional capacity
- Rapid implementation



Replace the transformers

- Addresses future capacity needs
- Improves asset condition
- Three-year replacement schedule

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ED2 – Primary Reinforcement Case Study

Updates

- Ilkeston Primary established as a Constraint Management Zone
- Over 200 registered assets are now within the zone – allowing the constraint to be effectively managed
- DSO are actively tendering for flexibility services
- Further flexibility assessments carried out to determine the kWh required and estimated utilisation

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ED2 – Secondary reinforcement case study

Mountsorrel Primary is a **33/11 kV site**

It has **nine 11 kV circuits**, which feed 134 distribution substation serving 11,346 customers

What would happen if:

- There was a **first circuit outage** on any one of the 11 kV circuits (or associated equipment) which Mountsorrel Primary feeds?

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ED2 – Secondary reinforcement case study

Optioneering in action

Do nothing	✗	Risk of thermal overloads
Revise Normal Open Points	✗	Due to the thermal ratings of numerous cable sections, this option is not viable
Procure flexibility	?	Multiple constraints across the network, with adequate supply quantity more difficult to procure in secondary networks
Install a voltage regulator	✗	Due to constraints primarily being of a thermal nature, a voltage regulator would not solve the issues
Uprate small low rated conductors along existing routes	✓	Uprating low rated conductors is viable, but would only alleviate constraints for some circuits in the short-term
Uprate all conductors along existing routes	✗	Uprating all affected conductors along their existing routes would not be cost effective, due to length circuit lengths
Uprate circuits along new route	✓	Installing conductors via new shortened routes, directly from the primary, removes thermal constraints for a much longer term

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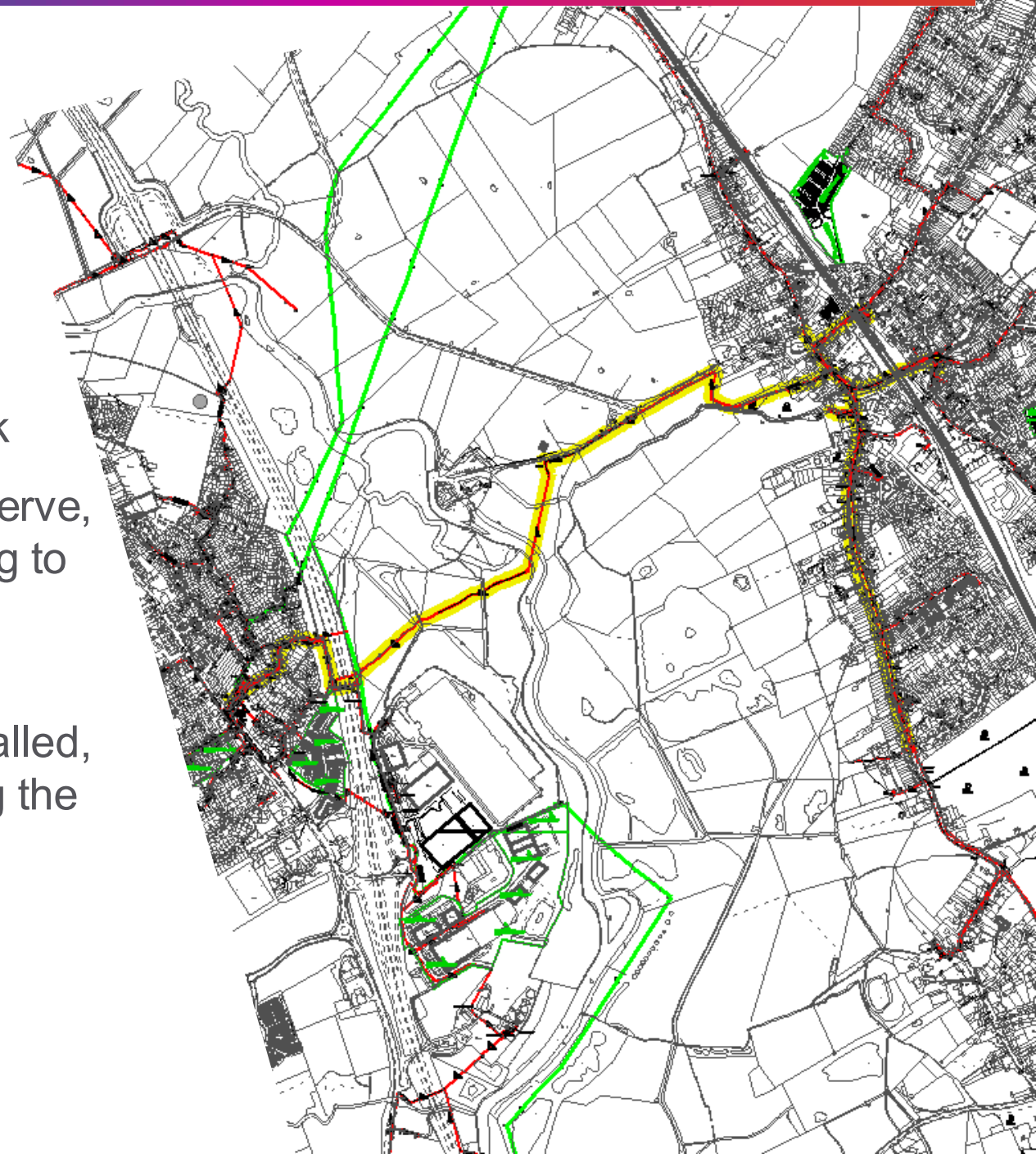
ED2 – Secondary Reinforcement Case Study

Updates

- £1.8m of investment in the Mountsorrel network
- Three circuits installed through local nature reserve, crossing the River Soar, using directional drilling to minimise impact across protected land and waterways
- Total of 8.4km of 11 kV underground cable installed, benefiting over 10,000 customers by increasing the network capacity, improving reliability and resilience, and reducing future interruptions



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Summary – Benefits Created by the DSO

Primary Reinforcement

Growing the flexibility market – providing opportunity for wider participation, especially from domestic customers

Rapid additional capacity – providing reliable, affordable power in the short term without additional network costs

Long term growth – preparing the network for local social and economic growth

Secondary Reinforcement

Increased capacity – network is ready to accommodate decarbonisation ambitions

Improved routes – reducing circuit lengths to help reduce the risk of future voltage constraints

Additional resilience – removal of common points of failure and additional sectionalising included, so future faults impact fewer customers

Enhanced amenity – removal of overhead lines crossing the wetlands

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Working alongside Regional Energy Strategic Plans (RESP)

Hannah Lewis, DSO Engineer

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What is NESO and RESP

National

National Energy System Operator (NESO) is an independent, public corporation at the centre of the energy system. They have three roles in strategic energy planning:

- Strategic spatial energy plan
- Centralised strategic network plan
- Regional energy strategic plan

Regional

Regional Energy Strategic Plan (RESP) is a new strategic planning framework led by NESO to develop Regional Energy Strategic Plans for England, Scotland, and Wales.

These plans aim to:

- Align local energy infrastructure with regional net zero goals and economic growth
- Enable joined-up planning across electricity, gas, and hydrogen networks
- Support targeted investment and community access to clean, affordable energy

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The RESP and transitional RESP (tRESP)

Eleven bespoke regional energy strategic plans (RESPs) are being developed for Scotland, Wales, and nine English regions — five of which fall within our licence areas: Central England, East and West Midlands, South West, and Wales

These plans will then be used as key inputs to the business plans for the electricity and gas distribution network companies, ensuring consistency across regions

Transitional RESP has been developed to act as a bridge between the current approach to local energy network planning, and the enduring RESP approach

Transitional RESP will be published by the end of January 2026. DNOs will incorporate these pathways and assumptions into their ED3 plans, to be submitted at the end of 2026.

The first set of full RESPs will be published by the end of 2027.

NGED's contribution to tRESP

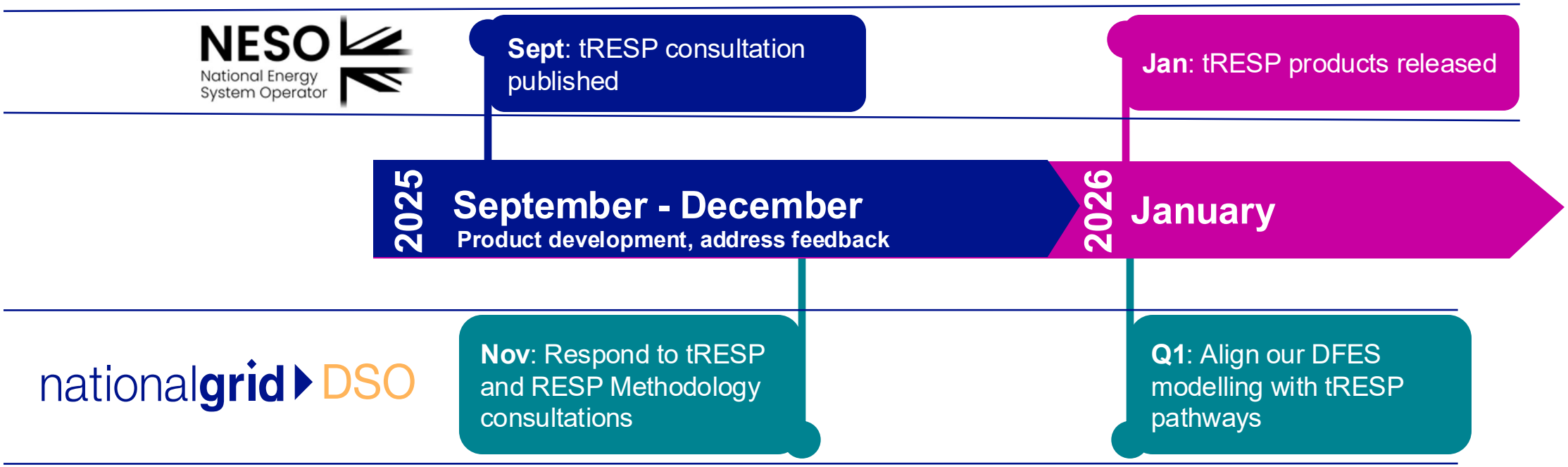
We are providing our DFES outputs to NESO, with a consistency check on the first 10 years to help form tRESP, directly reflecting DFES engagement and LAEPs submitted to NGED.

We have engaged with NESO to share planning assumptions and provide early feedback on CPAs ahead of consultation.

NESO engaged with energy networks and Local Authorities in Summer 2025 to identify Strategic Investment Needs. We submitted 24 RFI responses, drawing on our DFES, network analysis, and insights from broad stakeholder engagement, across the following themes:

- Heat networks
- Port electrification
- Freeports
- An industrial cluster
- Major generation expansion
- Zones of high aggregated demand growth

Timeline



We will continue to work closely with NESO and the local RESP team to ensure any information on strategic investment within our four licence areas is shared.

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Looking ahead: RIIO ED3

Oli Spink,
Head of System Planning

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How is Distribution System Planning changing?

2025 2050

Ofgem's latest Sector Specific Methodology Consultation outlines new expectations on Distribution Network Operators for the next price control period.

This includes the creation of a **Long-Term Integrated Network Development Plan.**

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What do you need to consider?

To create a Network Development Plan that spans 25 years, the following key questions need to be answered:

How do we remove uncertainty on what work needs to be done?

- This can appear as the specific location and timing of domestic LCT uptake, but also as what the future transmission system will look like.
- This makes detailed power systems analysis difficult, so we need to achieve a balance between technical accuracy and strategic direction.

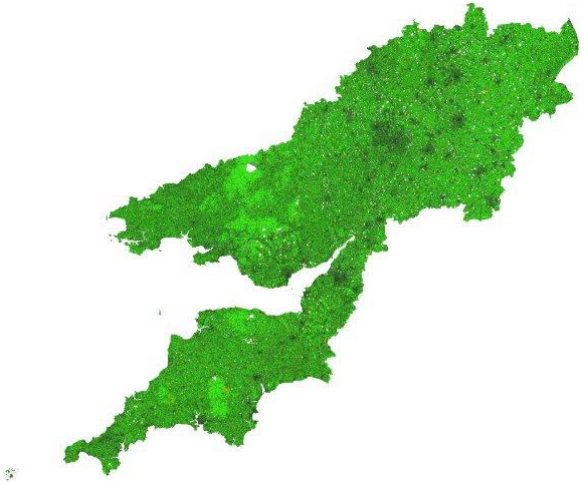
How do we remove uncertainty on what investments we need to make?

- Often lots of different options available to solve a problem, with a common theme throughout our planning of 'how big should we go'?
- Need to embed option value into our decision, to release capacity for now whilst leaving room for future expansion that means we can be adaptable.

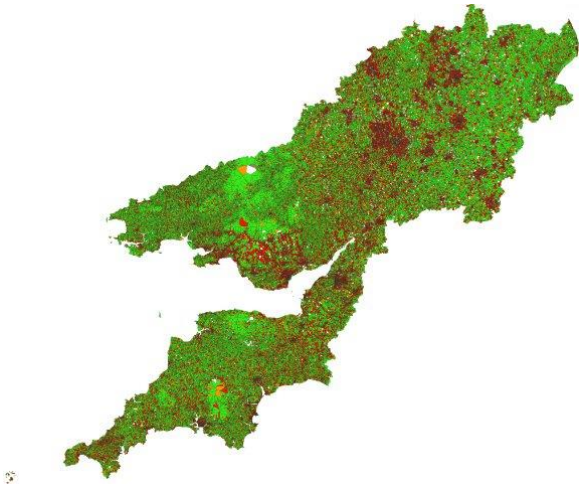
What other factors affect our delivery plan?

- Grouping activities together for more efficient delivery can help reduce disruption to our customers (programmatic approach) and directing more capacity when investing for other reasons (e.g. condition, new connections not in RESP).

Distribution Transformer utilisation (today)



Distribution Transformer utilisation (2050)



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How are we approaching this?

Below outlines how we are approaching the task for the RIIO-ED3 busines plan to create a Network Development Plan that spans 25 years:

How do we remove uncertainty on what work needs to be done?

- RESP helps remove uncertainty of what needs to be done by providing a pathway for networks to plan against
- Ensuring that the long-term demand needs of our customers are captured in Connections Reform is essential for reducing uncertainty on the location of future transmission infrastructure.

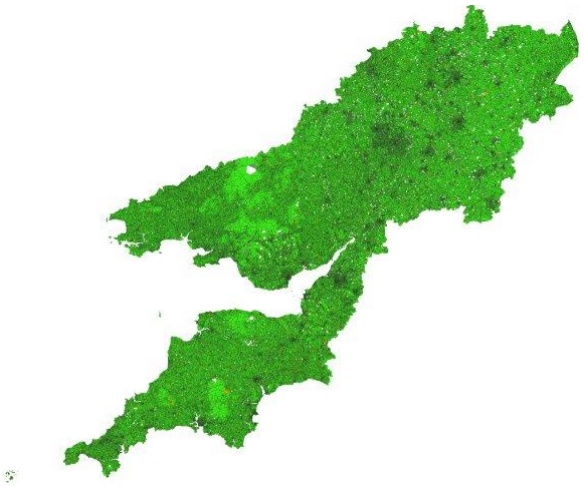
How do we remove uncertainty on what investments we need to make?

- Transparency is key, working on making our data and decision-making processes as clear as possible to stakeholders

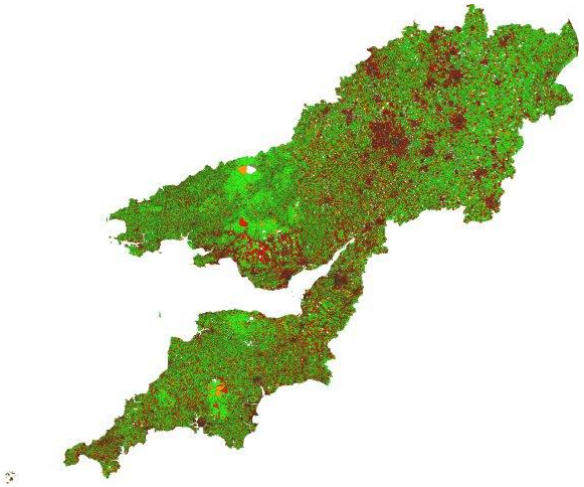
What other factors affect our delivery plan?

- Embedding our long-term strategic outlook into decision making for other investment drivers.
- Considering some activities as more of a long-term programme of works where we have relative certainty of 2050 need and solution.

Distribution Transformer utilisation (today)



Distribution Transformer utilisation (2050)



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We want to hear your views

It's important to us to make sure we are delivering what you need.

Has today improved your understanding of how we are evolving our system planning processes?

What's the best way for us to stay accountable to you on our long-term plans?

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Where we are with ED3

Marena Lesskiu,
Stakeholder Engagement Officer

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ED3 Engagement timeline

Phase 1: Discover & Define

Mid 2025

Key aims

- Shape our vision, ambition and priorities for ED3

Key activities

- Regional and national roundtables
- Drumbeat of engagement through summer fairs and pop-ups at festivals, events and shopping centres etc.
- Industry conferences
- Formation of the Independent Stakeholder Group (ISG)

Phase 2: Develop

Mid 2025 to early 2026

Key aims

- Develop the plan with targeted stakeholder engagement with specific interest groups

Key activities

- Engage with expert stakeholders to inform plan development
- Collaborate with existing stakeholder groups to obtain valuable feedback
- Build targeted engagement with different groups to provide specific insights in the plan

Phase 3: Test & Refine

Early 2026 to end of 2026

Key aims

- Take draft plan to a wide group of stakeholders to test and refine ahead of submission

Key activities

- Use established stakeholder networks to gather broad feedback
- Conduct acceptability testing on the draft business plan
- Re-engage with groups on anything that needs further exploration
- Preparing communications approach for the launch of the ED3 Business Plan

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box.theBIGconversation@nationalgrid.com to stay in touch about ED3 engagement

We are working on our ED3 priorities

Powering tomorrow

Building cleaner, greener networks to power growth and prosperity.

We'll use existing assets wisely and invest intelligently to deliver growth and enable an affordable transition to a secure, cleaner energy system.

Always here

Energy you can rely on, with care for those who need it most.

We'll deliver high-quality services that people can count on, with a commitment to supporting those in vulnerable circumstances and making sure no one is left behind.

Smarter energy

Unleashing tech and new ideas to keep costs down and boost efficiency.

We'll drive down costs and creatively meet future needs for our customers by embracing digitisation, data, new technology and innovation.

Lasting value

Investment that benefits customers, communities and the environment for generations.

We'll invest responsibly in a way that delivers long-term value for all.

Our vision is to power a brighter future with a reliable and resilient network that connects people to the energy they need, embraces innovation, and delivers growth and lasting value for customers, communities and the regions we serve.

Our ED3 vision

It's important for us to understand your views as we develop our ED3 plans

What is most important to you when you think about your electricity network?

Is there anything else you would like us to focus on while shaping our ED3 Business Plan?

Has today made you more aware of our preparation for ED3?

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Questions and Answers

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