

Electricity  
Distribution

# Customer Connections Steering Group

October 2023

nationalgrid



# Director update

**Alison Sleightholm**  
Regulation and Corporate Director

**October 2023**

**nationalgrid**



**Community Energy** - 2015 the group actioned to produce an engagement plan



**Community Engineer**  
Community Strategy  
2022 Community project completed  
[National Grid - Community Energy](#)

**Network Information – Improve availability of network information** (i.e. capacity register, online mapping, provision of asset data)



**Embedded capacity register**  
**Distributed generation EHV constraint maps**  
**Live data viewer**  
**Network capacity map**  
**Network Flexibility Map**  
**EV capacity map**  
**DFES Map**  
[National Grid - Maps hub](#)

**Connections digitalisation** - Implement web-based application and job tracking functionality for large / high volume customers including



**Small connections online application**  
(1- 4plots, 1 x commercial up to 69kVa)

**Connections portal** – online tracking system for the small customer to feedback to the customer where NGED is in their application process, from beginning to acceptance Launched Q1 2023

**Domestic EV online self serve** - You can notify for an electric vehicle charge point on the self serve application and received a real-time response.

**Budget estimate online self serve tool** - If you'd like to get a rough idea of connection costs before you send us your application, take a look at our budget estimate information.

[National Grid - Homepage](#)

**Pre application** -Investigate pre-application service and availability of advice to assist customers before commencing the application process.



**Connection surgeries** - Surgeries provide more detail to help you understand the process, timescales, technical considerations, consents and possible constraints of making a connection to the network.

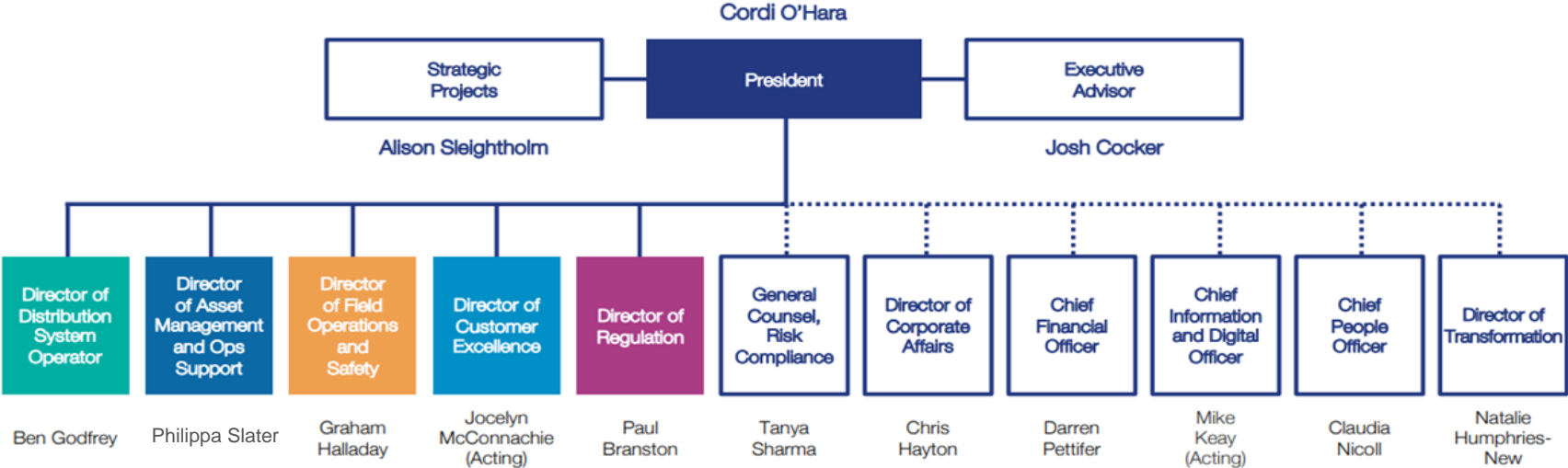
[National Grid - Engage with us](#)

# New Operating Model

National Grid



# New operating structure



# CCSG

**This is an exciting and busy time for the Electricity Industry, Customer and Stakeholders.**

**Customers are at the heart of our vision to deliver a clean, fair and affordable energy future.**

**To deliver a great experience for every customer, every time, we need to understand what they need from us.**



**Thank you for all  
your help and  
support**

An orange sticky note with a white border and a subtle drop shadow, containing the handwritten text "What's next?".

*What's  
next?*

national**grid**

**Electricity  
Distribution**

## **Customer Excellence**

**Jocelyn McConnachie**  
**Director of Customer Excellence**



**nationalgrid**





# Customer Excellence organisational chart



## Is responsible for:

delivering customer excellence and value for money, through fault response, connections strategy and delivering improvements, working closely with Field Operations

# Customer Excellence Vision draws on the Group, NGED performance scorecard and Customer priorities agreed by Group Executive

Our Purpose – We bring energy to life

Our Vision – To be at the heart of a clean, fair and affordable energy future

GROUP PRIORITIES

Enable energy transition for all

Deliver for our customers efficiently

Grow our organisational capability

Empower our people for great performance

CUSTOMER PRIORITIES

Enable energy transition for all through a digitally enabled network that reflects customers' future electric network priorities

Deliver for our customers efficiently by building operational excellence in all that we do and placing Customer at the heart of our business

Grow our organisational capability by developing a new regulatory paradigm to secure right and timely outcomes, engaging & influencing key stakeholders and developing digital & data capabilities

Empower our people for great performance by building the leadership & workforce capabilities needed for the future<sup>8</sup> and embed the right behaviours to drive performance

OUR VISION FOR GREAT CUSTOMER OUTCOMES

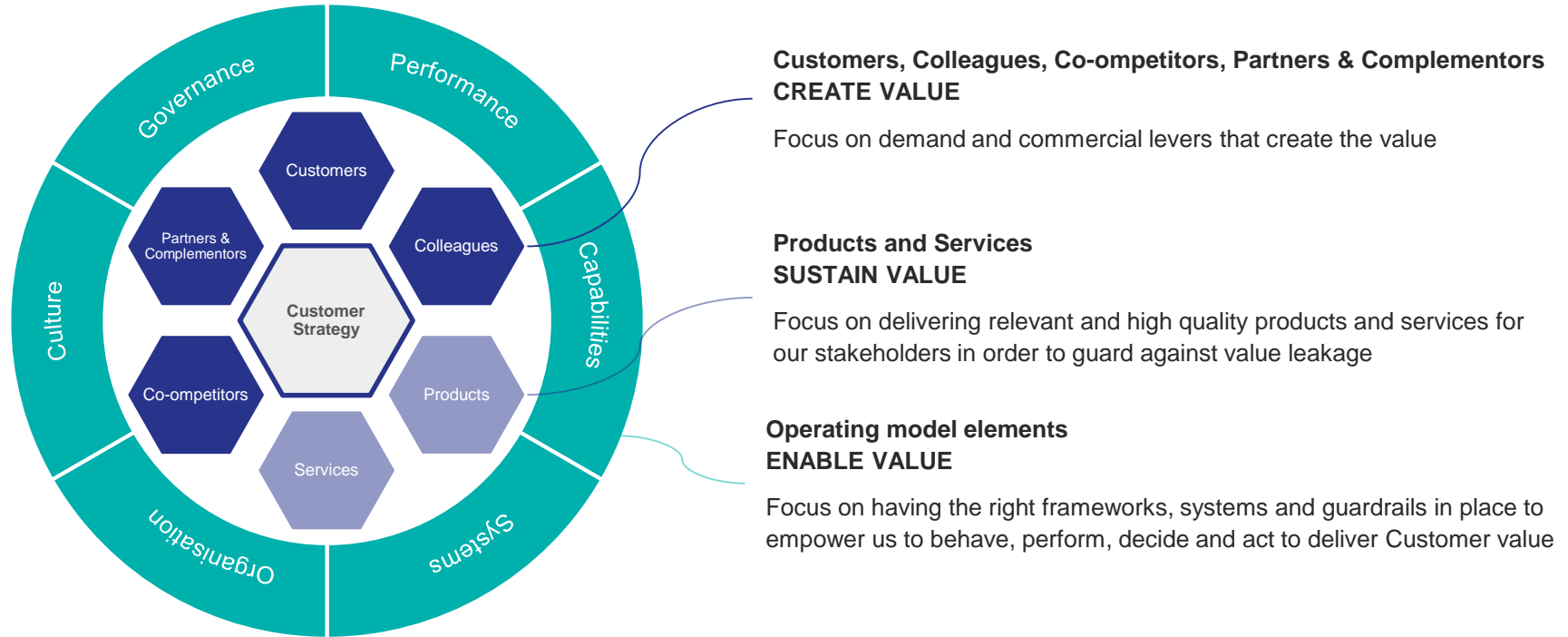
- We enable Customers to use information to connect increased volumes of clean & green energy, when and where they want, to a cost-effective network that enables low-cost energy

- We are a top quartile DNO for Customer Satisfaction: we listen and respond to customer sentiment and we deliver what customers need when they need it
- We are inclusive and caring of our vulnerable customers in everything we do

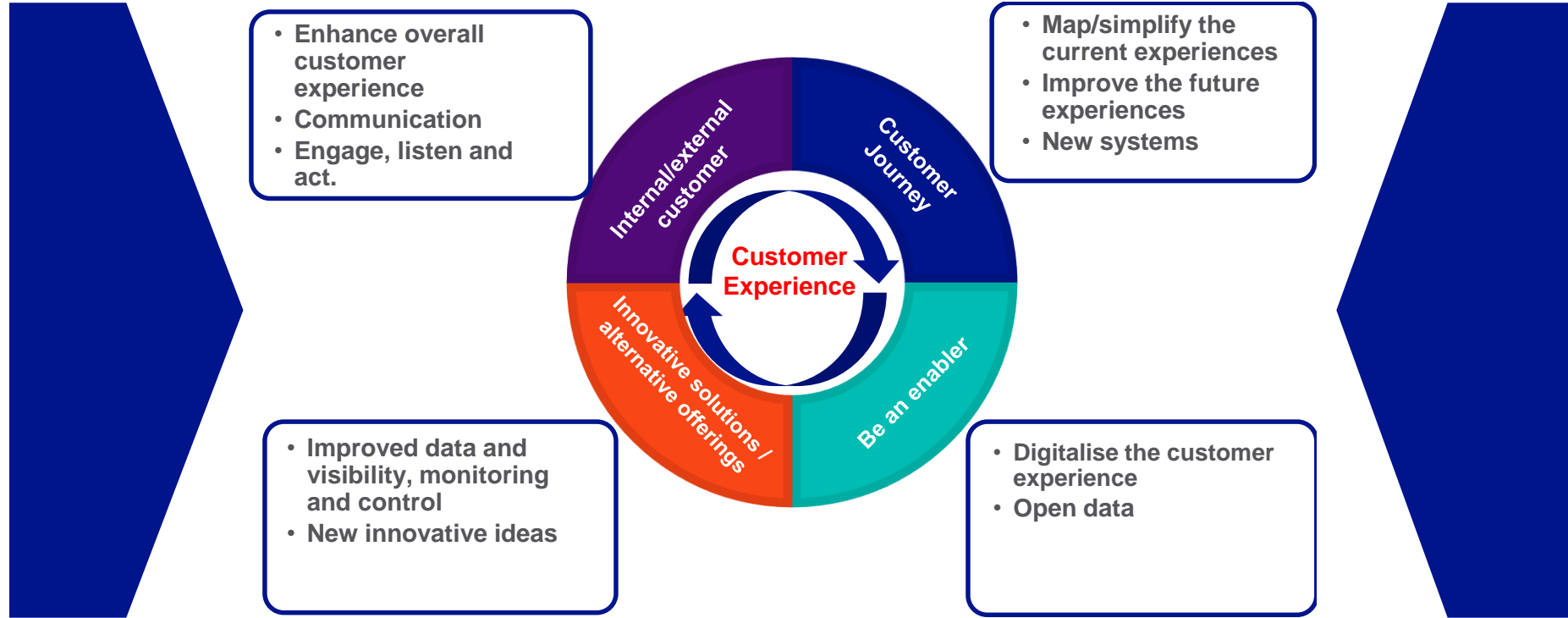
- We are trusted and valued by all customer segments as an enabler in realising their net zero ambition
- We are a highly valued partner with Ofgem & other key industry bodies and influence great regulatory outcomes for our customers

- We have the maturity in customer capabilities needed to effectively deliver for our customers
- We have the maturity in digital capabilities needed to effectively deliver for our customers
- We have trusted and secure customer data that enables customer value
- We have an operating model that incentivises the right behaviours

# Our scope includes the customer value creating, sustaining and enabling elements



# The Customer Challenge



# Key objectives for connections

In ED2, we will be measured by “can a customer connect what they want to connect, when they want to connect it”

- Future- proof connections delivery.....
- Deliver for customers....
- Grow our organisational capability....
- Continue effective call centre delivery....
- Improve commercial connections performance....



# ENA 3 Point Plan overview

**Kester Jones**  
Head of Connections

October 2023

**nationalgrid**



# The ENA 3-Point Action Plan

The Energy Networks Association published a three-step plan to speed up connections to the grid.

The three immediate priority areas to support customers connecting to the distribution network are:

1. Reforming the Distribution network connection queue

2. Changing how transmission and distribution coordinate connections

3. Greater flexibility for storage distribution customers

# The 3-step Action Plan to improve and accelerate connections

## ACTION 1

**Reforming the distribution network connection queue**

- **Spring clean. Migrate pre 2017 offers to milestones contracts**
- **First ready, first connected.** Prioritise 'shovel ready' connections

## ACTION 2

**Changing how Transmission and Distribution coordinate connections**

- **Clear & consistent boundaries. Create technical boundaries.**
- **Co-ordinating the queue. Reallocate capacity.**

## ACTION 3

**Greater flexibility for storage distribution customers**

- **Flex capacity.** Connect battery customers more quickly and improve the network's ability to manage capacity



# NGED is making progress on the ENA 3 point plan to reform the network connections queue across the priority areas

Priority Area	Progress
<b>1. Reforming the distribution network connections queue<sup>1</sup></b>	<ul style="list-style-type: none"><li>• <b>Eliminating aged offers</b> and have closed or reissued all 28 of NGED's pre-2017 offers</li><li>• <b>Updating and consistency applying the Queue Management policy</b> to ensure mature projects close to delivery can be promoted above slow or non-movers in a fair and consistent way</li><li>• <b>Improving Queue Management data quality</b> to ensure our teams and customers are aligned on progress, and supporting systems are accurate for fair decision support and continuous improvement insights</li></ul>
<b>2. Changing how transmission and distribution networks coordinate connections<sup>2</sup></b>	<ul style="list-style-type: none"><li>• <b>Releasing additional capacity at the TD boundary:</b> Expressions of Interest for expediated curtailed connections. 195 EOIs received (70+% response rate from customers contacted). Initial triage of Phase 1A GSPs and continued comms to customers and industry. Looking to launch Phase 1B (10 GSPs)</li><li>• <b>TD pass through clause:</b> Feedback provided to ESO &amp; awaiting confirmation from ESO/NGET before including in offers and contract amendments</li></ul>
<b>3. Greater flexibility for storage customers through new contractual options</b>	<p>Updating Electricity Storage to be treated flexibly to enable network needs to be met without over reinforcing the network. This will allow Energy Storage customers to connect more quickly and simply, whilst reserving capacity for LCT demand customers.</p> <ul style="list-style-type: none"><li>• <b>Amending clauses in offers and contracts</b> to reflect tactical solutions 1-3 approved by Ofgem in May</li><li>• <b>Delivery of tactical solutions in progress</b> with communications with customers and industry on changes for Tactical Solution 1 (Bulletin &amp; webinars) on going</li></ul>

# ENA 3 Point Plan – queue management

Cuan Rowlands  
Connections Strategy Engineer

October 2023

nationalgrid



# The 3-step Action Plan to improve and accelerate connections

## ACTION 1

### Reforming the distribution network connection queue

- Spring clean. Migrate pre 2017 offers to milestones contracts
- First ready, first connected. Prioritise 'shovel ready' connections

## ACTION 2

### Changing how Transmission and Distribution coordinate connections

- Clear & consistent boundaries. Create technical boundaries.
- Co-ordinating the queue. Reallocate capacity.

## ACTION 3

### Greater flexibility for storage distribution customers

- Flex capacity. Connect battery customers more quickly and improve the network's ability to manage capacity

# The Energy Landscape

**Target to fully decarbonize the power sector by 2035.**

**Electricity demand will more than double by 2050.**

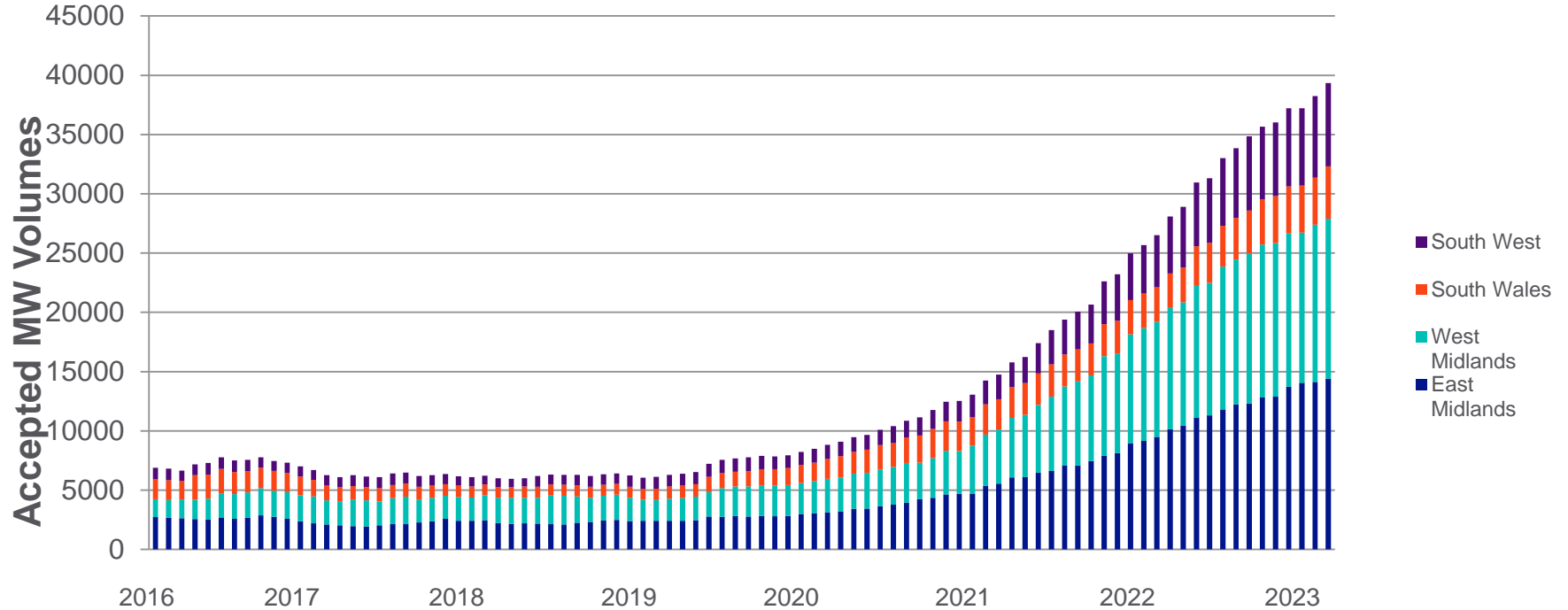
**Government target to install 600,000 heat pumps per year by 2028.**

**We have 9.8GW of Distributed Energy Resource (above 1MW) already connected to our network.**

**Customers have seen an increase in connection timescales due to the scale of connection enquiries.**

# How is our network changing?

# Connection Volumes



# Connection Queues

**Over 395 GW of generation projects are currently seeking to connect to the electricity transmission system.**

**The ESO received 100GW of applications in the last 5 months!**

**Transmission data shows that up to 70% of those projects may never be built.**

**Projects with no desire to connect are taking up network capacity for others behind them.**

# How are we implementing the ENA plan and facilitating quicker connections?



# Queue Management and Optimisation

Reforming the distribution network connections queue and promoting mature projects that are closer to delivery above those that may be 'blocking' the queue.

## Sub-task 1: Spring Clean

- Removal of non-progressing schemes that accepted a Connection Offer prior to 2017.

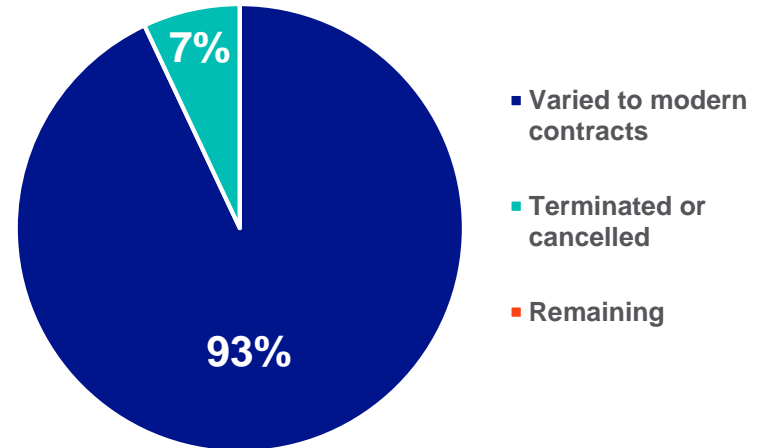
April 2023

- 28 generation schemes, totalling 633MW.

October 2023

- 26 schemes varied onto modern milestone contracts, totalling 611MW.
- Two schemes removed, totalling 22MW.

Progress against sub-task 1



# Queue Management and Optimisation

## Sub-task 2: First Ready, First Connected

- ‘Shovel Ready’ projects will be invited to connect, ahead of those with earlier application dates, without detrimental impact on those ahead of them.

**Shovel  
Ready**

- Must evidence the minimum requirements listed below:
  - Secured land
  - Obtained planning consent
  - Secured sufficient funding
  - That design and engineering readiness is advanced
  - That overall development of the project is in a stage that can enable construction to start within a short space of time.

**At present, we offer Shovel Ready projects, where possible, non-firm access to facilitate a quicker connection to the network.**

**Customers will be informed of any further developments in this area.**

# Data Reporting

It is important to measure progress against all actions to ensure that we are moving in the right direction

## Ofgem

- Current reporting to Ofgem highlights various datasets, including the current volume of connections applications and the volumes subject to particular reinforcement.

## ENA

- Current reporting to the ENA is designed to measure the progress of each DNO against the 3-point plan to facilitate quicker connections.
- This includes datasets such as the number of offers removed and the volume of schemes offered quicker connection dates.

**Enduring data reporting will ensure networks continually progress against each initiative.**

# Next Steps

Industry discussions have progressed towards supporting Demand customers, ahead of increasing connection volumes.

Our updated internal policy will aid our teams with consistent queue management and reflect a first ready, first connected approach.

Developing data quality will remain a key focus so that we better understand progress and continually improve our processes.

**Our ask:** If you have any outstanding, contracted Offers, please ensure that progress is up to date against the agreed progression milestones.

# Transmission – Distribution (T-D) Technical Limits

Dave Tuffery  
Network Modelling & Whole  
System Manager

October 2023

nationalgrid



# The 3-step Action Plan to improve and accelerate connections

## ACTION 1

**Reforming the distribution network connection queue**

- **Spring clean.** Migrate pre 2017 offers to milestones contracts
- **First ready, first connected.** Prioritise 'shovel ready' connections

## ACTION 2

**Changing how Transmission and Distribution coordinate connections**

- **Clear & consistent boundaries.** Create technical boundaries.
- **Co-ordinating the queue.** Reallocate capacity.

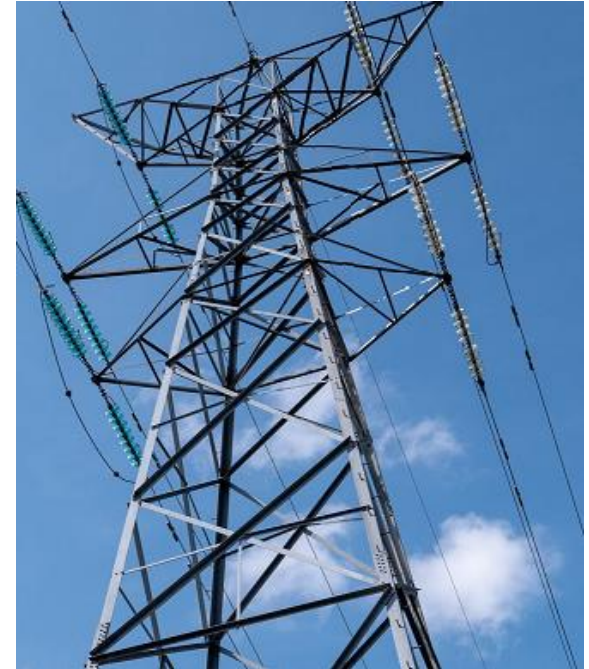
## ACTION 3

**Greater flexibility for storage distribution customers**

- **Flex capacity.** Connect battery customers more quickly and improve the network's ability to manage capacity

# Why do we need to change how Transmission and Distribution coordinate connections?

- Nationally there are constraints on the transmission system with reinforcement lead times out to 2038
- Across GB, 31% (38 GW) of distribution projects in the pipeline are dependent on Transmission reinforcement
- Standard designs are offered due to time restrictions and flexible solutions such as those used on distribution networks (e.g. ANM) are not being used effectively to enable connection
- DNOs are required to seek permission from the ESO ahead of connecting any DER above 1MW
- Due to the traditional first come, first served approach of queue management, distribution connections are behind large transmission connection, which may not be connecting for many years



# Technical Limits

## What changes are we making?

- We are setting technical limits at GSPs where customers are currently unable to connect due to transmission reinforcement works
- This will provide customers on the distribution network with the option of an interim non-firm connection arrangement, which is curtailable and uncompensated
- This will enable more agile and shovel ready customers lower in the connection queue at GSPs to connect earlier, thereby releasing capacity that is not currently being utilised
- Once transmission reinforcement is complete non-firm requirements will be removed
- Distribution constraints and delivery will need reviewing before a scheme can progress on a transmission non-firm arrangement



# Phase 1a

- Phase 1a has 22 of the 55 NGED GSPs:

South Wales	West Midlands	East Midlands	South West
Cardiff East 132kV	Bustleholm 132kV	Berkswell 132kV	Alverdiscott 132kV
Grange 66kV	Feckenham 66kV	Bicker Fen 132kV	Bridgwater 132kV
Pyle 132kV	Kitwell 132kV	Staythorpe 132kV	Exeter 132kV
Rassau 132kV	Nechells East 132kV	Stoke Bardolph 132kV	Indian Queens 132kV
Upper Boat 132kV	Penn 132kV		Taunton 132kV
Upper Boat 33kV	Port Ham 132kV		
	Willenhall 132kV		

## Requirements for inclusion in Phase 1a:

- Transmission Thermal Enabling Works are identified before any more DER can connect
- No works are required for eligible DER to resolve fault level (headroom >1kA)
- Single User or a single User and contracted/ connected tertiary
- GSP has a volume of unconnected unrestricted customers/capacity

# Changes to Bilateral Connection Agreements

- Since 2018 NGED have used Appendix G in a DNO's Bilateral Connection Agreements (BCA) to keep track of embedded customers' transmission access
- The technical limits solution will require changes to be made in BCA Transmission terms and conditions between the ESO and DNOs
- The 1<sup>st</sup> Phase of technical data was submitted to ESO in August
- The Phase 1a GSPs are coming through in batches of 5
- We have received the first batch of technical limit variations back from ESO

## What that means for customers:

- Non-firm technical limit requirements will be added to customer connection offer terms through variations

# Next Phases

## The next phase (1b) will be sites that:

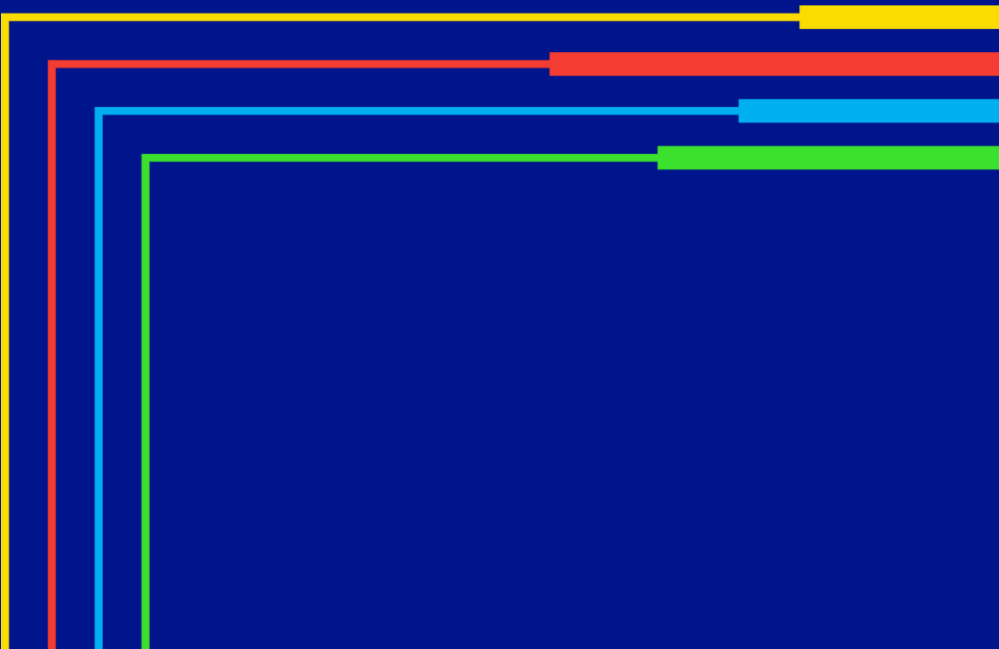
- Transmission Enabling Works are identified before any more DER can connect
- Fault level headroom <1kA are applicable
- single User or a single User and contracted/ connected tertiary
- GSP has a volume of unconnected unrestricted customers/capacity

These GSPs have now been submitted to ESO and are pending approval:

GSP	Site Classification
Bishops Wood 132kV	Connection
Bushbury 132kV	Connection
Chesterfield 132kV	Connection
Coventry 132KV	Connection
Enderby 132kV	Connection
Swansea North 132kV	Connection
Abham 132kV	Connection
Landulph 132kV	Connection
Seabank 132kV	Connection
Sandford 132kV	Connection

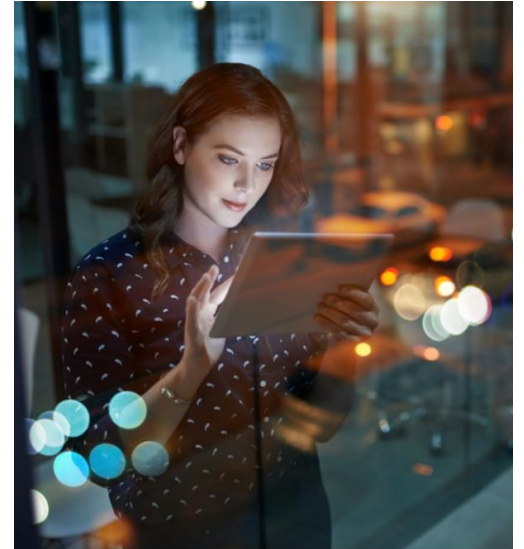
- Infrastructure and more complex sites will be in future phases

# Expression of Interest (EOI)



# What is the Expression of Interest (EOI)?

- Initially inviting customers on the 22 phase 1a GSPs
- Targeted at customers that have transmission delays or are pending a transmission outcome – including ESO 2-step offers
- The purpose of EOI was to:
  - To understand which customers would like to accelerate their connection date on a non-firm basis
  - Help NGED understand the short-term need for acceleration
  - Informing future phases for other GSPs as they become applicable
- Phase 1A EOI closed on the 30<sup>th</sup> September
- First tranche will focus on customers looking to connect by end of October 2024



# In September we launched the T- D capacity release EOI for Phase 1a: customers engaged well and we are now assessing a plan of work

**22 NGED GSPs**

included in Phase 1a – 212 customers contacted

**70%**

of customers submitted EOIs

**68%**

requested earlier connection with curtailment

**9%**

requested later connection than current offer

**31%**

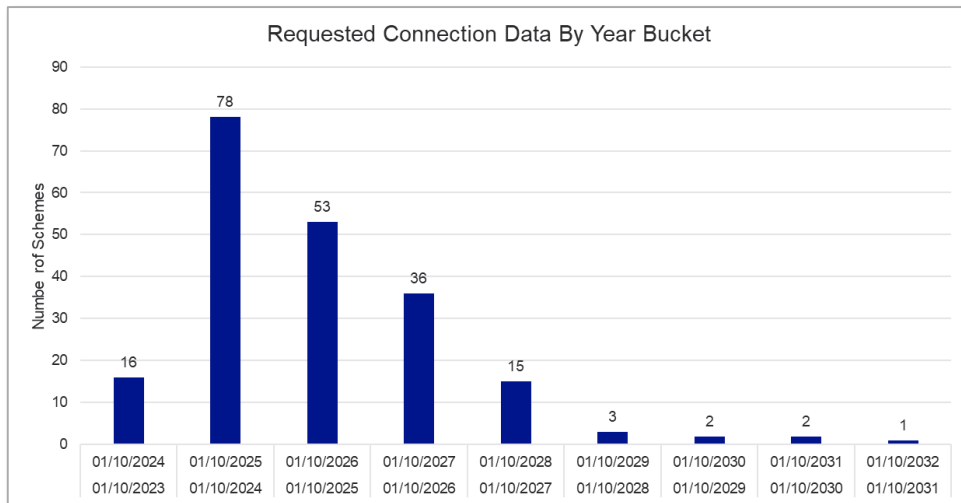
requested earlier connection but no curtailment

**1 customer**

requested curtailment for existing energisation date

**24-25**

Most popular energisation date and peak of requests



## Next steps:

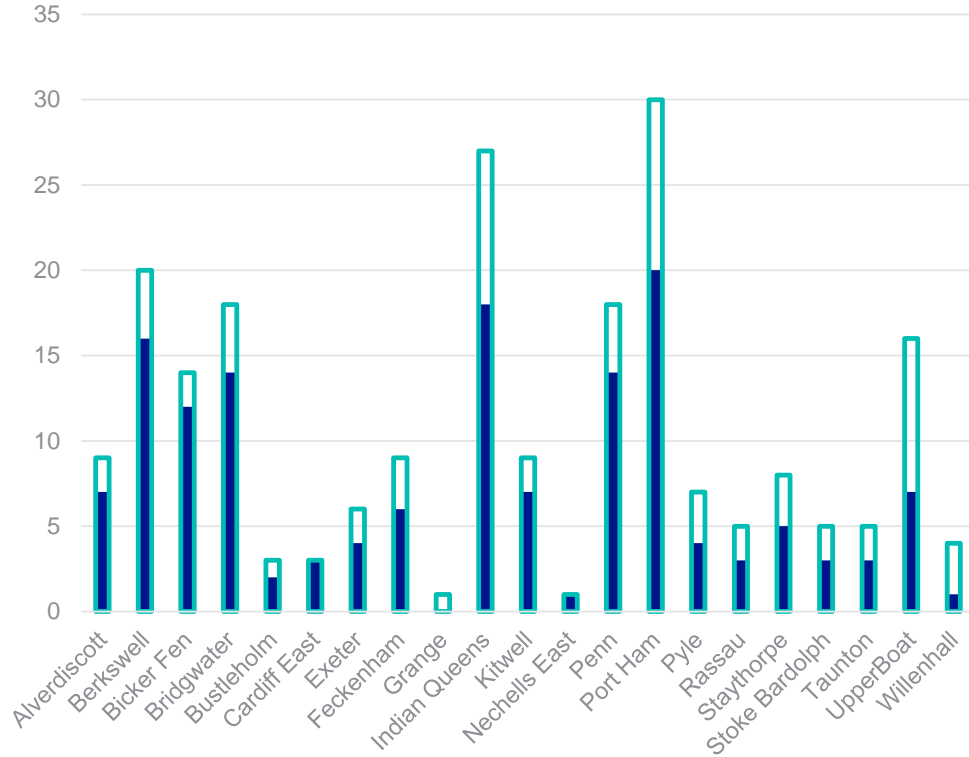
- **13 Oct:** contacted all EOI customers directly
- **End of Oct:** webinar for update on Phase 1A and next steps and launch Phase 1B

# Expression of Interest - Impact

In Phase 1a we have this volume of accepted-not-yet-connected schemes:

	MW	Scheme Numbers
Confirmed Transmission Delays	2,700	92
Pending Transmission Delays	5,600	119
No Transmission Delays	7,850	186

# EOI Response Analysis



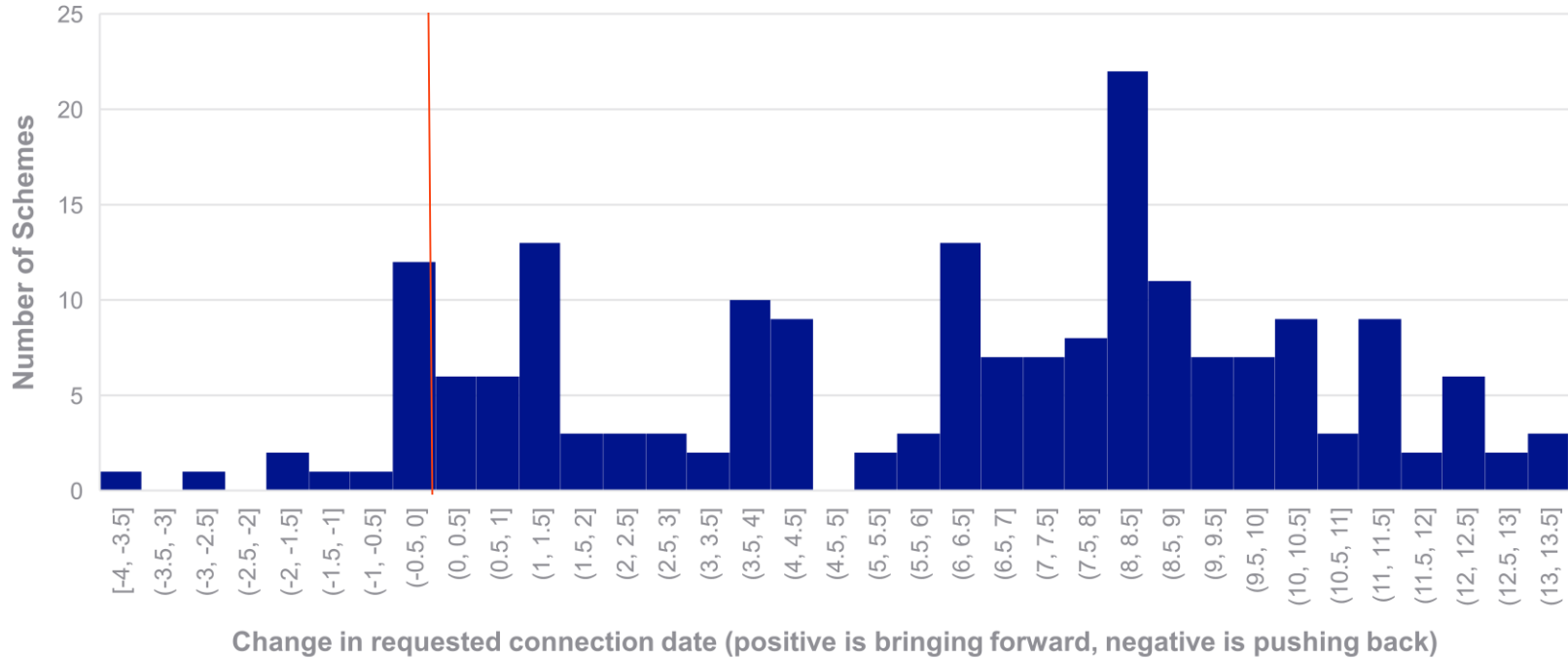
Over a **70%** response rate to requested EOIs at Phase 1A GSPs

- Requested EOI Applications recieved back for Phase 1a GSPs
- Requested EOIs for Phase 1a GPS



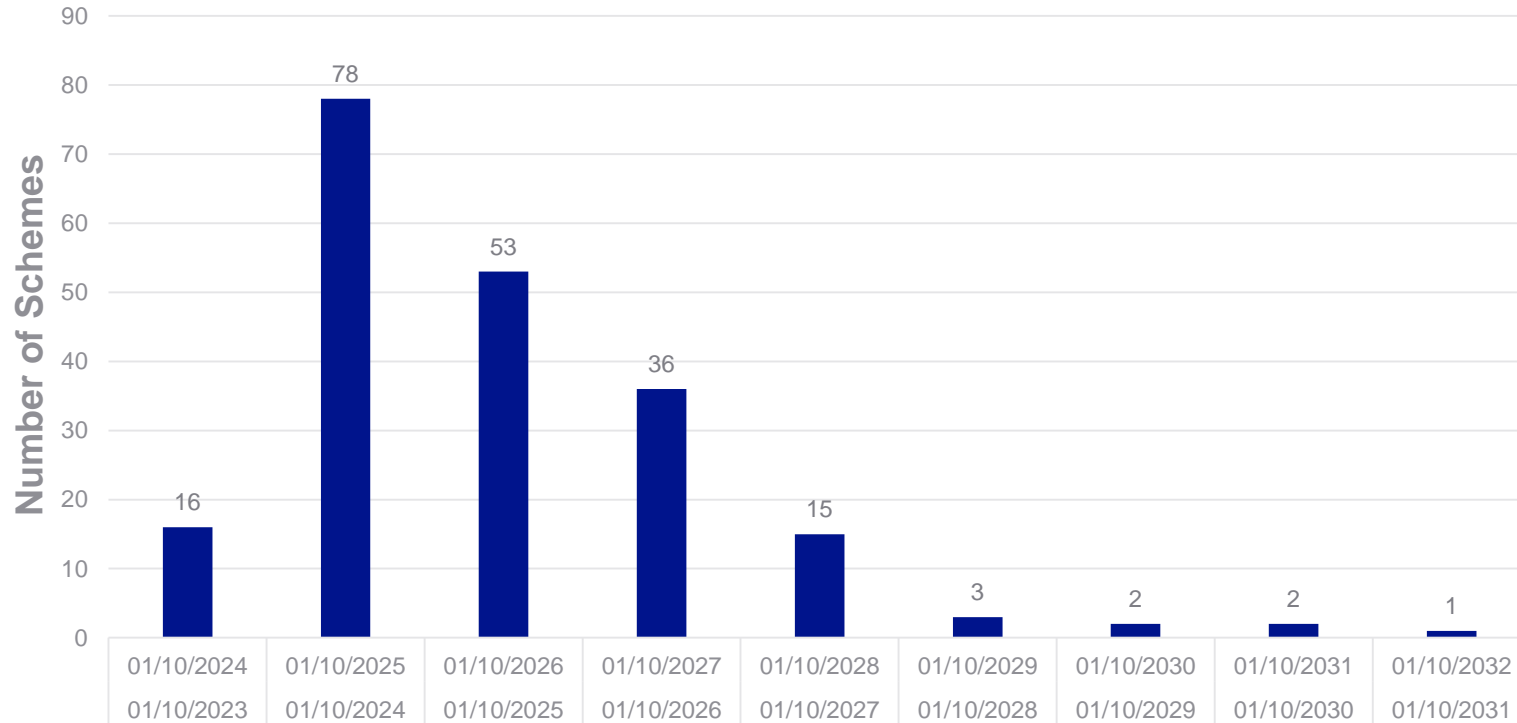
# Request in Connection Date Change

Distribution of how many years customers which to change their connection date



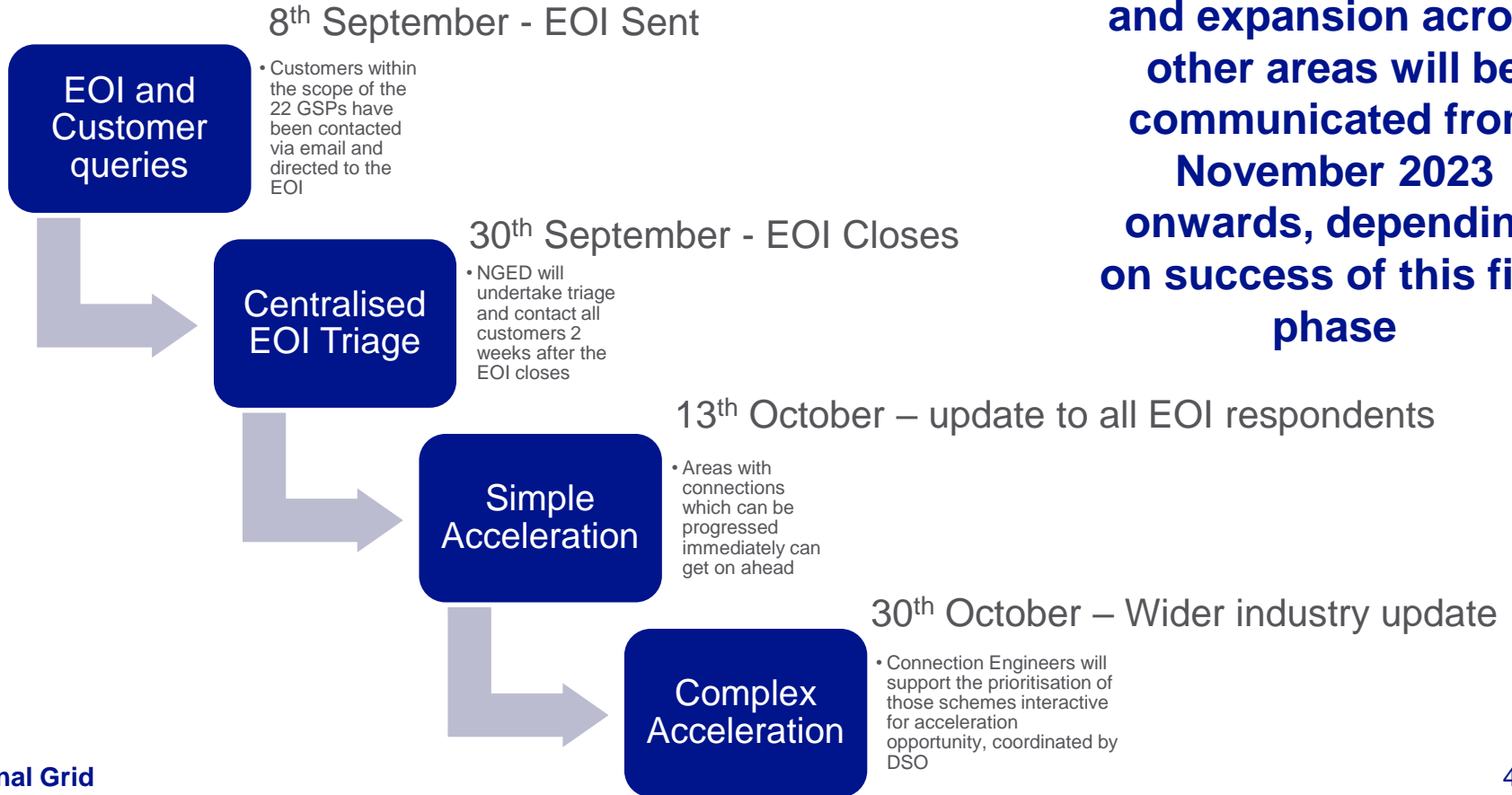
# Requested Year Distribution

Requested Connection Data By Year Bucket



# Next Steps Summary

**Further phases for beyond October 2024 and expansion across other areas will be communicated from November 2023 onwards, depending on success of this first phase**



# Electricity Storage Tactical Solutions

Steve Quinn  
DSO Policy Engineer

October 2023

nationalgrid



# The 3-step Action Plan to improve and accelerate connections

## ACTION 1

**Reforming the distribution network connection queue**

- **Spring clean.** Migrate pre 2017 offers to milestones contracts
- **First ready, first connected.** Prioritise 'shovel ready' connections

## ACTION 2

**Changing how Transmission and Distribution coordinate connections**

- **Clear & consistent boundaries.** Create technical boundaries.
- **Co-ordinating the queue.** Reallocate capacity.

## ACTION 3

**Greater flexibility for storage distribution customers**

- **Flex capacity.** Connect battery customers more quickly and improve the network's ability to manage capacity

# NGED's Connections Landscape: Electricity Storage

**We have 9.8GW of Distributed Energy Resource (above 1MW) already connected to our network, of which 0.5GW is Electricity Storage**

**Our total accepted pipeline of connections trying to access the network is almost 40GW, of which 18.5GW is Electricity Storage**

**Customers have seen an increase in connection timescales due to the scale of connection enquiries**

**Electricity Storage with accepted offers in NGED alone is several times that needed by ESO for frequency management purposes**

# Battery Storage Connections subgroup

DNOs have collaborated under the auspices of the Strategic Connections Group to develop **Tactical Solutions** for **Electricity Storage** with Ofgem's support.

We are now working on longer-term solutions including code change.

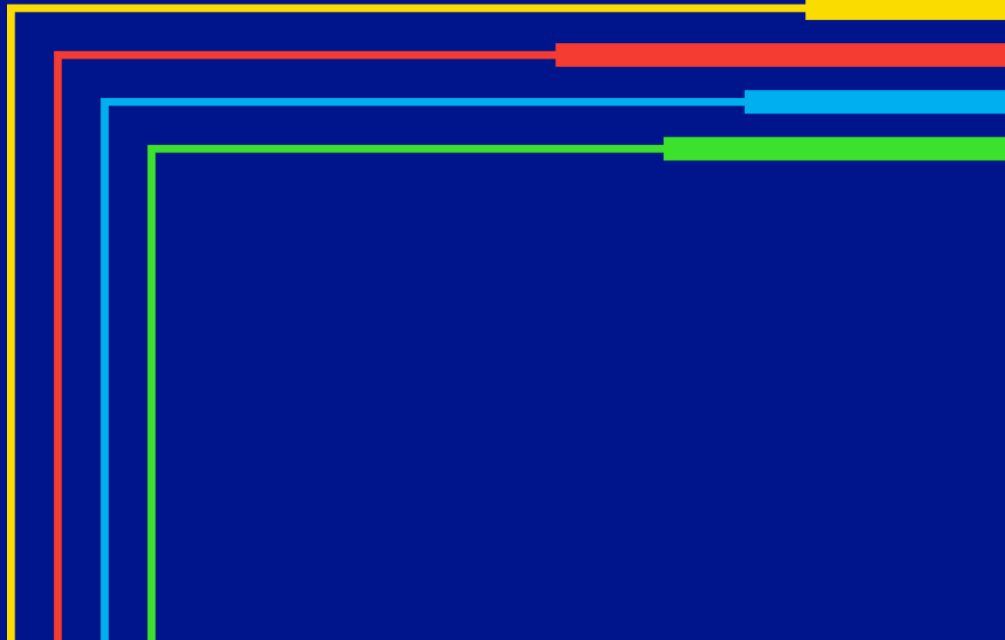


# 01

## Access Rights

Tactical Solution 1

national**grid**





# What is changing?

**Applications to connect Electricity Storage to NGED's network received from 30/09/2023 will receive a connection offer to provide capacity only when the distribution system is intact**

- When the local and upstream distribution network is intact, the Electricity Storage will be able to operate freely within its agreed supply capacity; however,
- During pre-arranged and fault distribution of the distribution network, the Electricity Storage may be curtailed or interrupted. There will not be a curtailment limit nor will compensation for such curtailment be paid.

# What is not changing?

- The impact of transmission constraints on network access for distribution-connected Electricity Storage is not affected by this change. Wider industry discussions are still ongoing on this topic.
- Customers won't see a change in the application process.
- Where network constraints trigger reinforcement or significant extension assets, we may also offer a Curtailable Connection or Flexible Connection. These may include curtailment or interruption when the distribution network is intact.

# Which customers does this apply to?

This change applies to all connection applications and applications to modify existing connections for premises where:

1. the application is received on or after 30 September 2023;
2. the primary purpose of the import capacity of the premises is wholly or mainly electricity storage; and
3. the customer is not:
  1. a domestic or non-domestic customer that is billed on an aggregated and non-site-specific basis or who is metered directly using a whole current meter; or
  2. an Unmetered Supply customer.



# How will this help?

**This Tactical Solution reduces the risk of having to create additional network capacity that is likely to be very lightly utilised.**

Together with the other Tactical Solutions, this change will unlock “latent” capacity when the system is intact for use by Electricity Storage customers, so reducing network congestion.

This will benefit both:

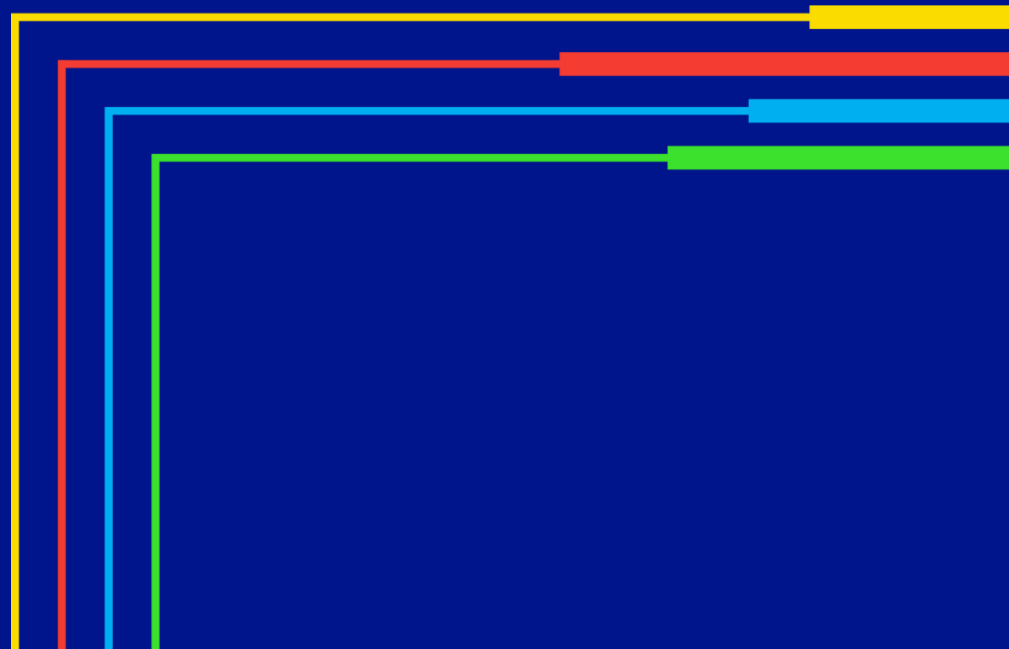
- Electricity Storage customers, by facilitating quicker and simpler connections; and
- Demand customers, by reserving capacity for low-carbon technologies including electric vehicle charging and heat pumps.

# 02

## EREC P2/8 Assessment

Tactical Solution 2

nationalgrid

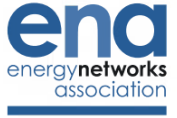


# Tactical Solution 2: EREC P2/8 Assessment

## Common guidance on interpretation of existing requirements of EREC P2/8 (Security of Supply) and EREP 130/4 when assessing Electricity Storage

- Curtailment of controllable Electricity Storage will be treated as Demand Side Response, with Cost-Benefit Analysis if Electricity Storage increases a group's Class of Supply
- Diversity factors to be applied to non-controllable Electricity Storage when determining Group Demand

PRODUCED BY THE OPERATIONS DIRECTORATE OF ENERGY NETWORKS ASSOCIATION



Engineering Recommendation P2  
Issue 8 2023

Security of Supply

[ENA EREC P2 Issue 8 \(dcode.org.uk\)](https://www.dcode.org.uk/ena-erec-p2-issue-8)

# Next steps: DCode Modification

## NGED has raised a Distribution Code modification to assess how EREC P2 (Security of Supply) and EREP 130 should be applied to Electricity Storage

- Proposal to not count Electricity Storage import towards Group Demand
- Working group recently convened with Distribution Code Review Panel approval
- Modification reference DCRP/MP/23/04, updates available at [Distribution Code Modifications - 2023 \(dcode.org.uk\)](https://www.dcode.org.uk)

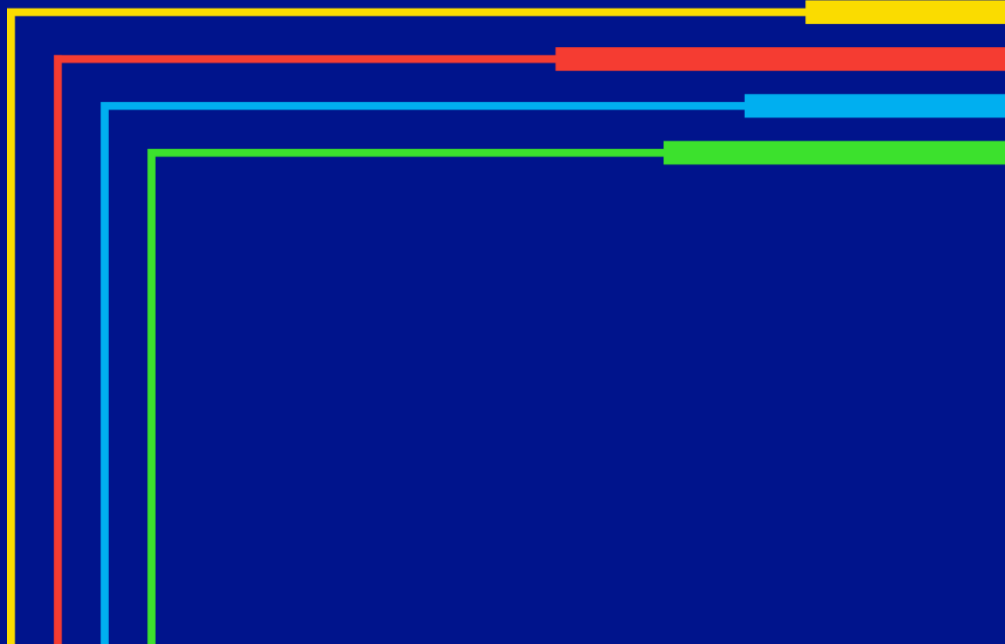


# 03

## Capacity for Connect & Notify LCTs

Tactical Solution 3

national**grid**





# Tactical Solution 3: Capacity for Connect & Notify LCTs

**To enable the electrification of heat and transport, we need to provide the right capacity, in the right place, at the right time**

- Our Connect & Notify processes are helping domestic and other small customer decarbonise by connecting many heat pumps, EV chargers and rooftop PV without an application
- We use forecasts to plan capacity for Connect & Notify Low-Carbon Technologies
- Tactical Solution 3 reserves existing and planned capacity for Connect & Notify LCTs when assessing larger connection applications
- Forecast LCT growth will be included in load sets when assessing the impact of connection applications on our network

**Electricity  
Distribution**

## **Feedback and Summary**

**Kester Jones**  
Head of Connections

**nationalgrid**



# Close and thank you

## Summary

### Feedback

- Any feedback on today's topics



## What would you like to see next time?

- Is there a topic you would like to be discussed in our next CCSG?

## Other events

### Events

- Connections annual hybrid workshop – Wednesday 15<sup>th</sup> November 2023  
(in-person @ Villa Park, Birmingham and virtual)

[Follow National Grid on LinkedIn for updates](#)

