Thank you for your patience

We will begin the presentation shortly…

This webinar is going to be recorded and uploaded to our website. The link to slides and recording will be circulated next week.

Please post any questions in the Q&A and will answer these at the end of the presentation

NGED Accelerating Your Grid Connection

15th September 2023

10:30-11:30

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Kester Jones
David Tuffery

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Agenda

- Background to DER connections in GB
- ENA 3-point plan update
- Transmission – Distribution (T-D) technical limits solution
- Expression of Interest
- Timeline and next steps
- Q&A

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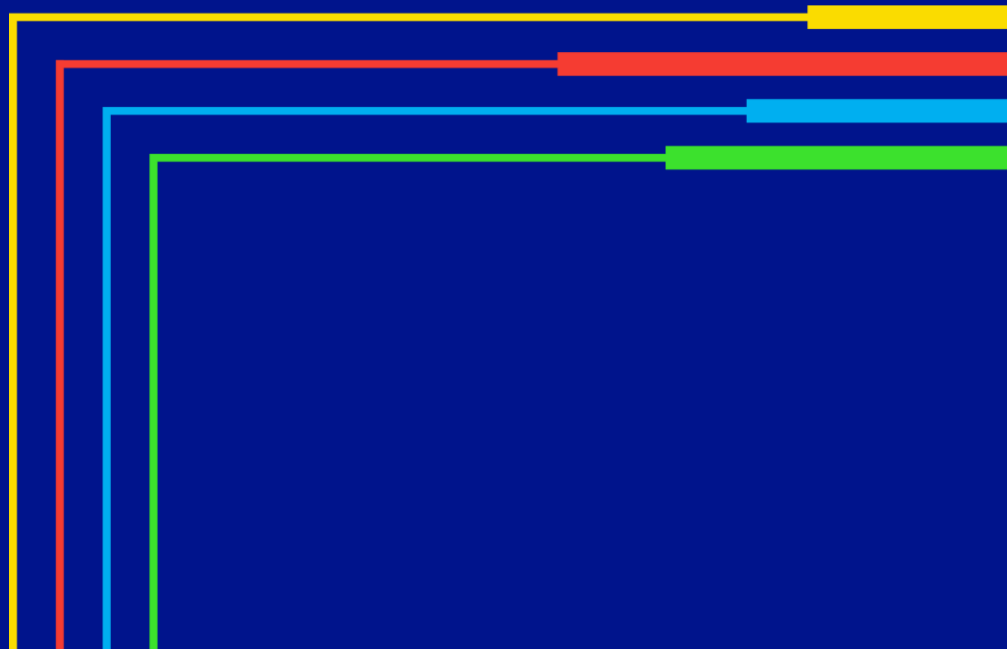
Background



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NGED’s Connections Landscape

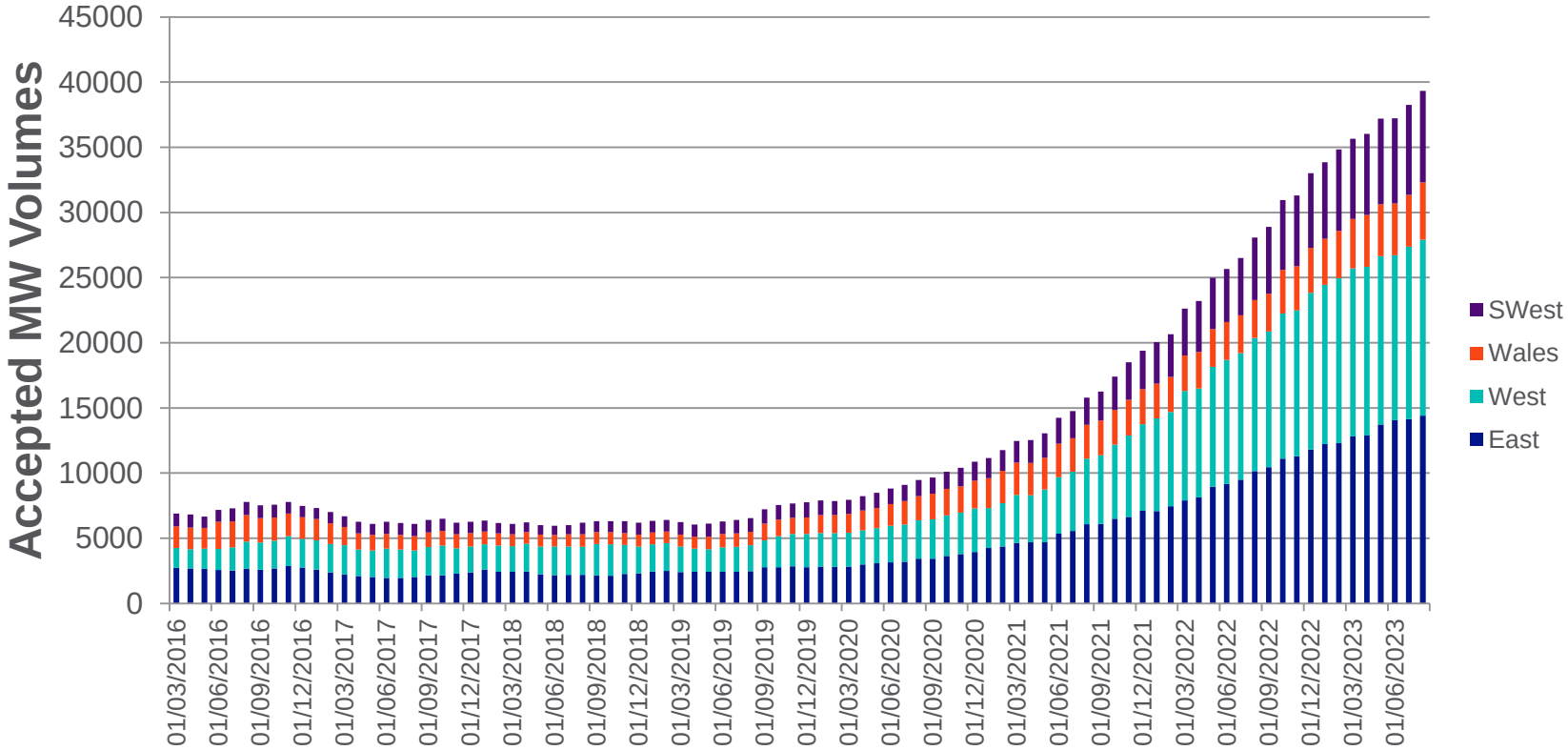
We have 9.8GW of Distributed Energy Resource (above 1MW) already connected to our network.

Our total accepted pipeline of connections trying to access the network is almost 40GW. NGED regionalisations of national forecasts expect this level of DER to be needed by 2040-2045.

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

Of these accepted connections, 10GW in our pipeline can connect without needing transmission reinforcement. And almost 9GW only needs transmission reinforcement.

Connection Volumes



Transmission Connection Challenge

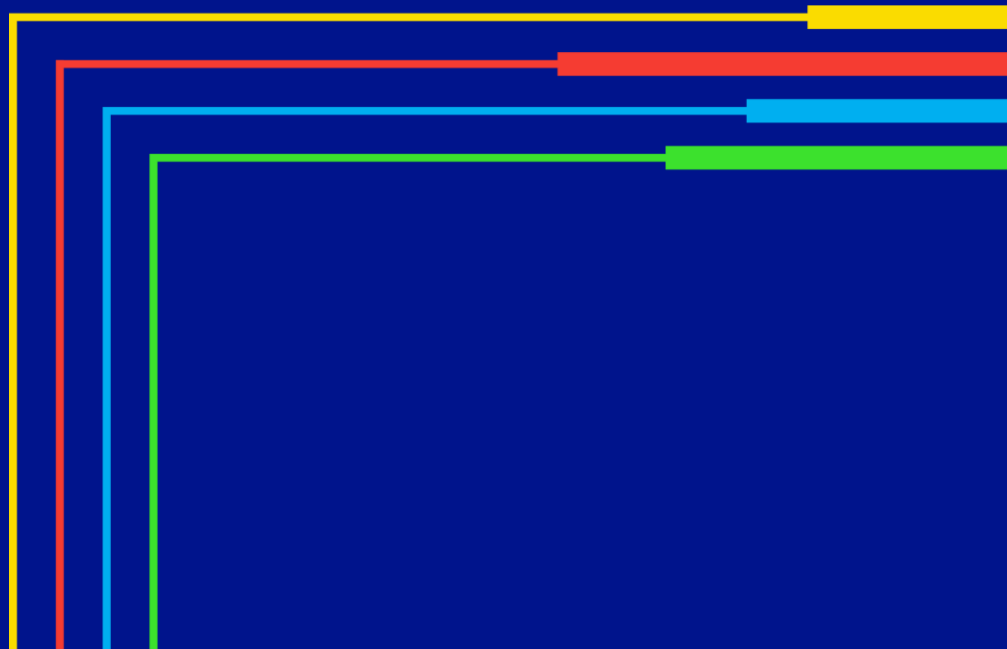
- Far more progress needs to be made to ensure we reach our target to decarbonise Britain’s electricity grid by 2035
- Over 306 GW of generation projects are currently seeking to connect to the electricity transmission system
- Transmission data shows that up to 70% of those projects may never be built
- Through the ENA Strategic Connections Group, we are making rapid changes to improve how customers connect to the grid at distribution level

Project Progression Volumes

The requirement for full Project Progression assessments have risen significantly in the last 2 years:

2

ENA 3-Point Plan



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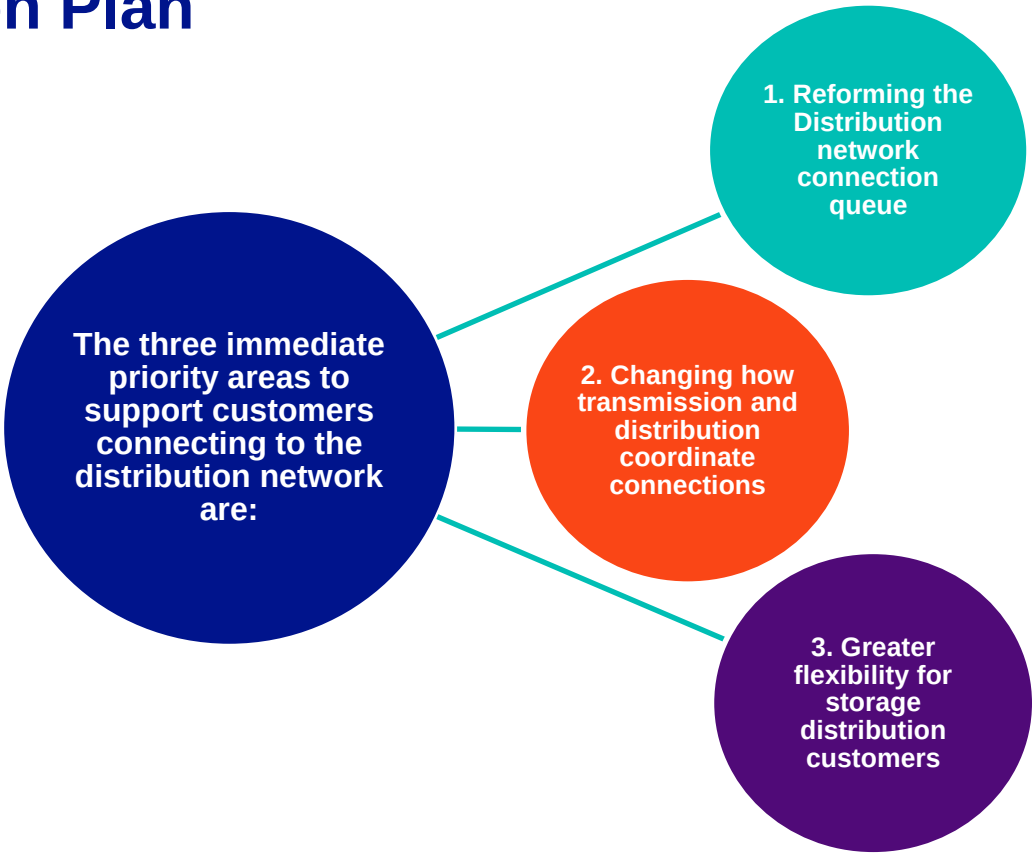
The ENA 3-Point Action Plan

The existing connections model was designed for old technology. Using the same model today is not fit for purpose.

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



1. Queue Management and Optimisation

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

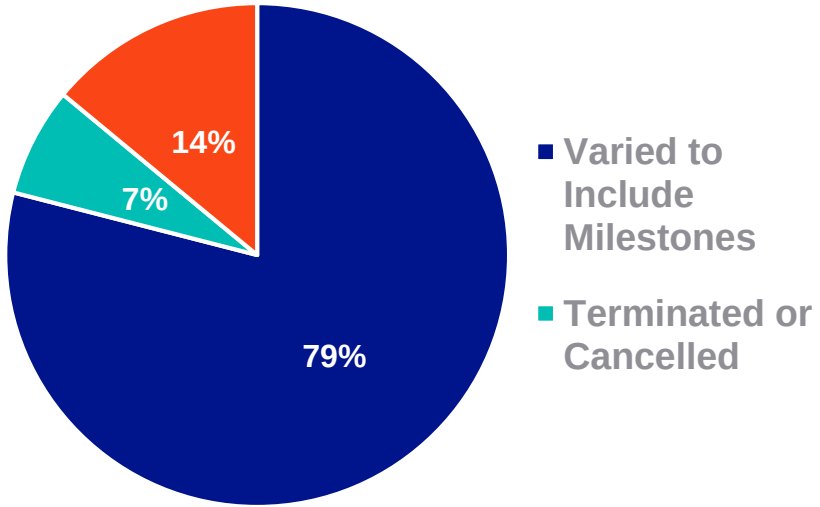
Sub-task 1: Spring Clean

- Removal of non-progressing schemes that accepted a Connection Offer prior to 2017.
- Connection Offers prior to 2017 did not include progression milestones.

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.

Progress against Sub-task 1



2. Changing how transmission and distribution coordinate connections

Sub-task 1: Clear and Consistent Boundaries

- Creating clearer, more consistent technical boundaries between Transmission & Distribution.
- Better management of the connection queue and accelerates smaller, more agile projects

Sub-task 2: Co-ordinating the queue

- Coordinated approach implemented for generation/exporting distributed energy resources (small scale generation and battery storage), that are still dependent on both transmission and distribution network capacity.
- Improves clarity of queue management and the ability of distribution network operators to manage connections within boundary limits agreed by the ESO.

3. Greater flexibility for storage distribution customers

The Challenge

- Battery Storage connection applications is exceeding future energy scenarios expectations.
- More than 56GW of battery storage is now contracted and queuing.

More than 14 Drax Power Stations

Between 200-500% more than the ESO forecast will be needed in 2030!

The Solution - Flex Capacity

- Battery storage operators will be offered standardised ‘non-firm’ connections that allow them to connect more quickly.
- That is, if a 10MW battery is connected to the grid, this non-firm ‘connect and manage’ approach will enable more of that capacity to be offered to other customers.
- Strategic updates to standards and codes required to leverage the benefits of battery energy storage systems for consumers.

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

Today we will deep dive into the Action 2 solutions

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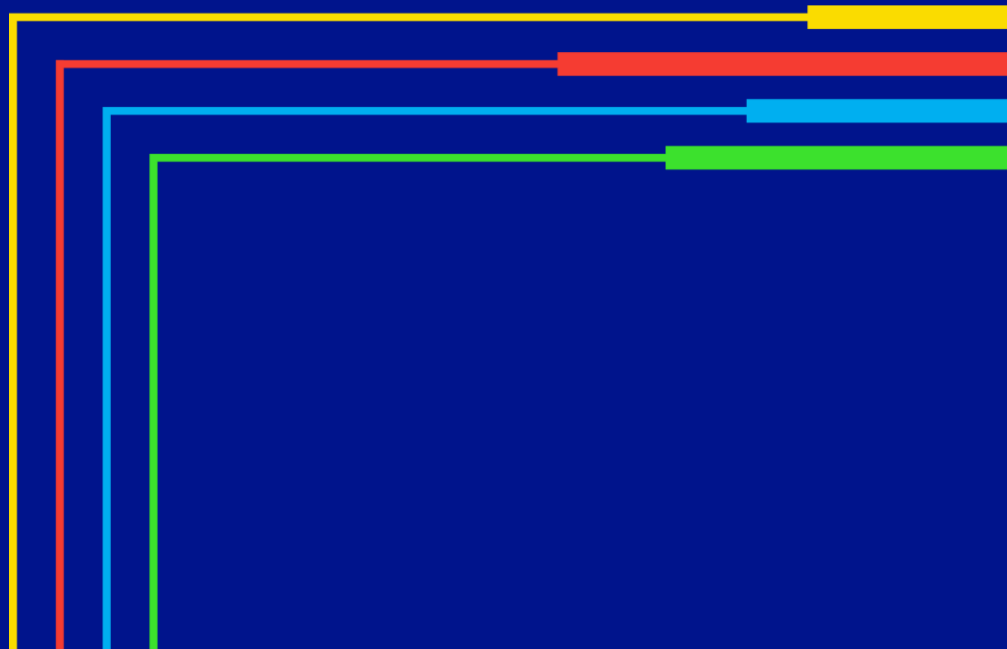
Transmission – Distribution (T-D) Technical Limits



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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 1st 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 been proposed but are still to be approved by the ESO:

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

Questions

Question	Answer
Are different types of embedded generation treated equally in this process?	Yes, assuming that they are progressing in line with industry milestones or are ready to connect and do not trigger additional works not covered by this solution.
Can this be applied to demand capacity as well as export capacity?	This only affects 1MW and above export connections. If your demand is locally netted off behind the meter, you are not subject to SoW process.
With tertiaries being contracted on most GSPs, will the technical limits being reduced when they connect?	For GSPs with current or future tertiaries the Technical Limits will be calculated taking account of the tertiary.
Will a detailed curtailment assessment be provided?	Yes, a curtailment report will be provided to a similar format to industry standard tooling
Who will calculate transmission curtailment given that some DNOs do not calculate curtailment which is caused by transmission assets?	Previously, transmission boundary limits were only know to the ESO, but through the T-D Technical Limits work, the DNOs now have known maximum flows to calculate curtailment across the transmission boundary curtailment

Questions

Question	Answer
Can this be offered on an enduring basis if there is a cost associated with reinforcement (i.e. new SGT/GT on single user sites)?	This solution is currently being offered on an interim basis and as such all works commensurate with the original connection offer will persist.
Is this only applicable to projects that have not already got an ANM connection offer?	No, this solution is also applicable to projects with a flexible connection offer at distribution level.
Will there be any additional costs projects will be subject to if taking part in this e.g. cost of additional equipment?	ANM platforms will be used to facilitate this solution, so additional costs may be incurred if ANM is not currently in the accepted offer.
How will projects that are waiting for Project Progression be handled?	These projects are still required to complete project progression, as the outcome of this process is still necessary. However, the outcome isn't a barrier to progress as part of the solutions described today.

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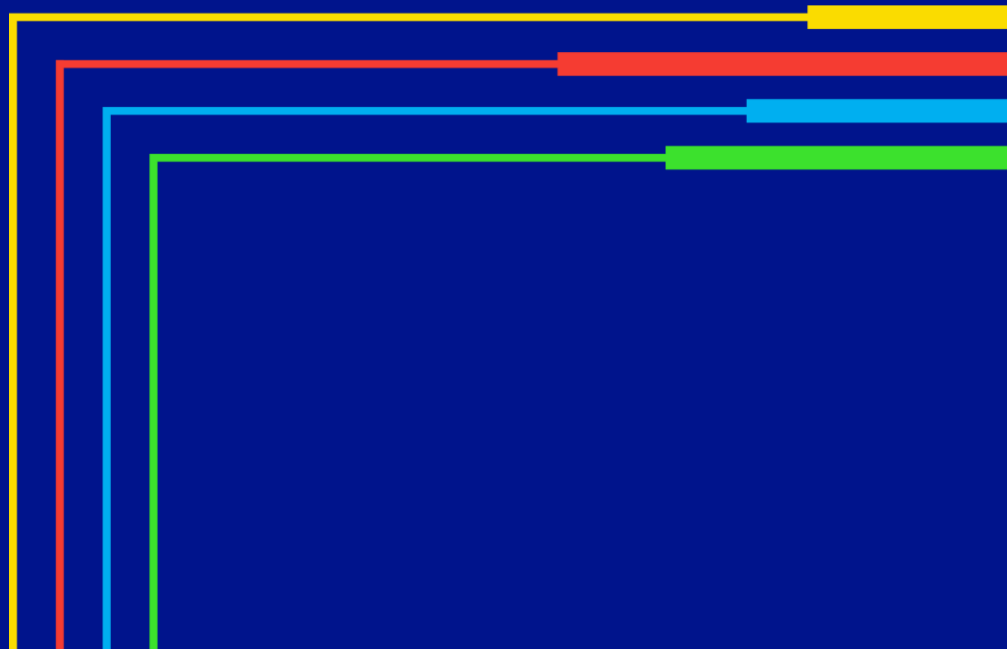
Expression of Interest (EOI)



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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
- Purpose of EOI:
  - To understand which customers would like to accelerate their connection date on a non-firm basis
  - Will help NGED understand the short-term need for acceleration
  - Informing future phases for other GSPs as they become applicable
- EOI will close on the 30th September
- First tranche will focus on customers looking to connect by end of September 2024
- We welcome an update on preferred energisation of all projects as this will help inform future tranches
- EOI link included in the emails sent out over the last week

EOI 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

- We will track the volumes throughout September to understand anticipated volumes
- An update and next steps will be provided to all those who have completed the EOI within two weeks after it closes
- Any questions please contact: nged.sow@nationalgrid.co.uk

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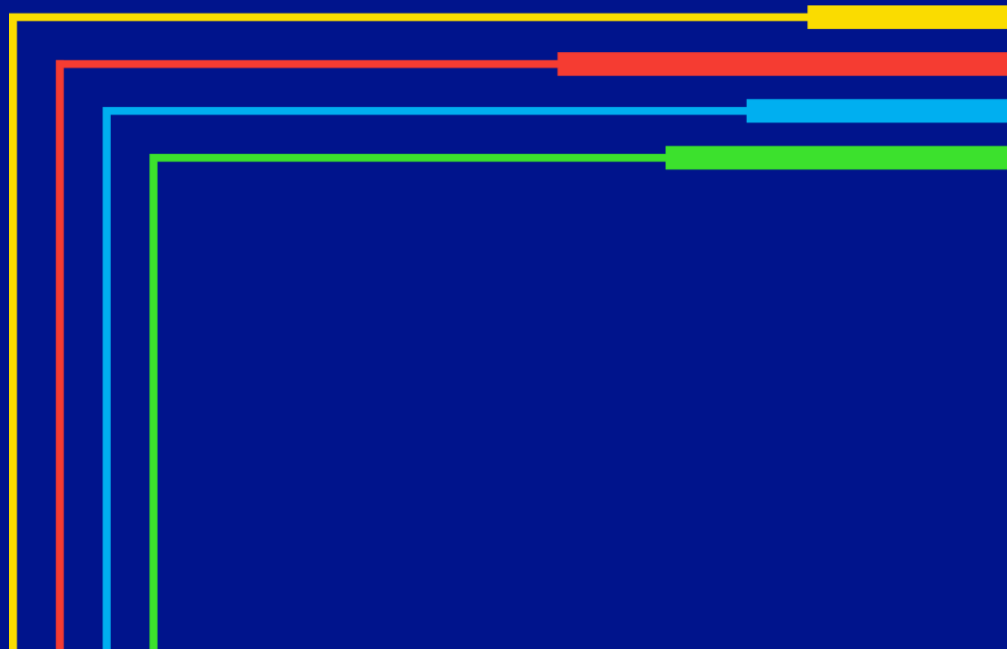
Next Steps



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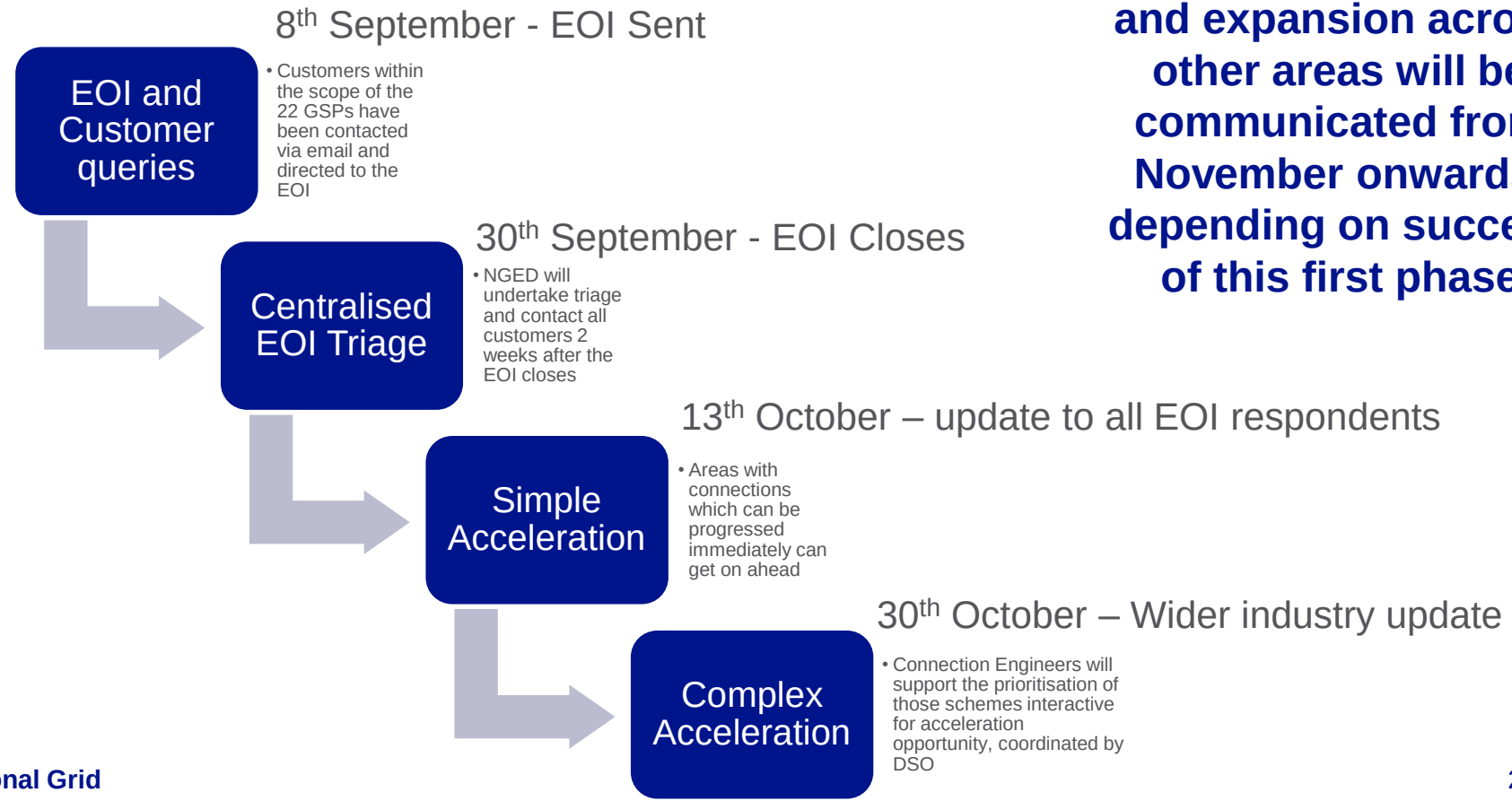
Next Steps Summary

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



Q&A

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