Electricity Distribution

Customer Connections Steering Group

February 2024

nationalgrid

Connections reform update

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The Energy Landscape

Target to fully decarbonize the power sector by 2035, with demand expected to double by 2050.

Policy and regulation need to reflect increased connection requests and changes in the types of projects.

We have c.12GW of generation capacity already connected to our network.

We have seen an exponential increase in generation and industry-scale demand, including renewable generation, data centres, electrifying manufacturing and low-carbon tech.

Connection Queues

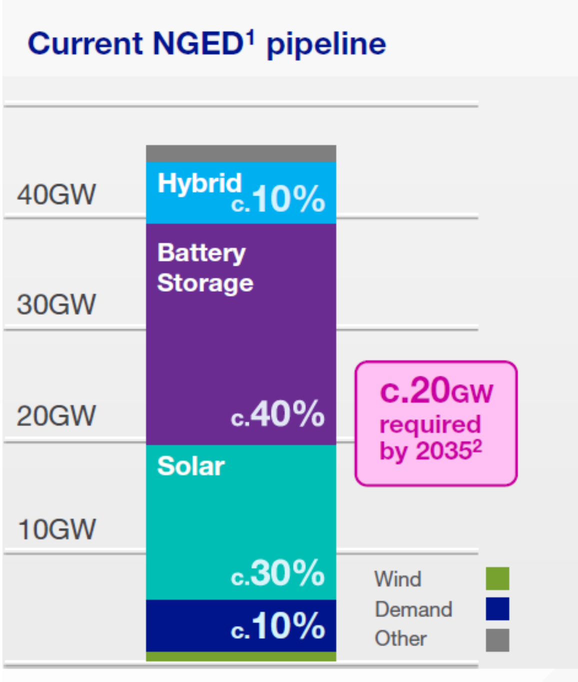
There are nearly 400GW of projects contracted to connect across National Grid’s UK networks.

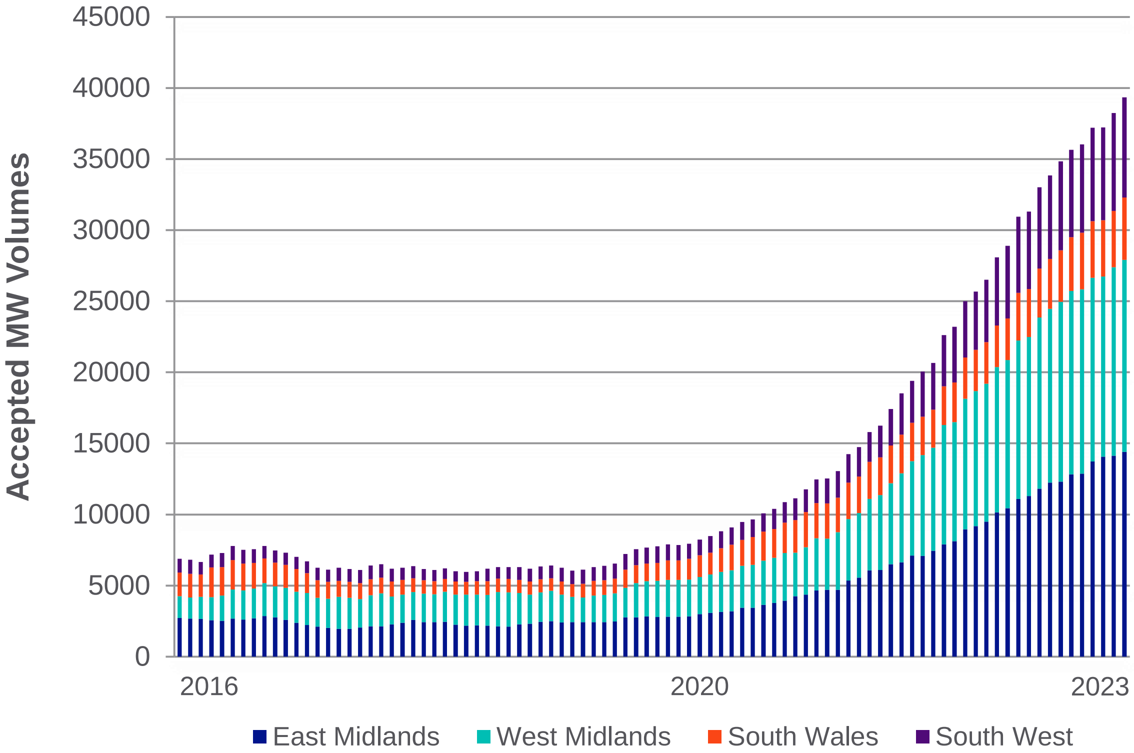
This is > 5x the amount needed to meet UK Government’s 2035 decarbonized electricity sector target.

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.

Our connections queue has grown exponentially over the last 3 years





1 NGED: National Grid Electricity Distribution

Connections Reform

Transmission

- 10GW of battery storage accelerated, by an average of 4 years.
- Queue Management proposal approved, with milestones being added retrospectively.
- ESO's reformed connection process to go-live in 2025, enabling 'first-ready, first connected'.

Connections Action Plan – Outlines 6 Key Actions

- Raising entry requirements
- Removing stalled projects
- Utilising existing network capacity
- Better allocating available network capacity
- Improving data and processes, sharpen obligations and incentives
- Develop longer term connections process models

At NGED:

Progress has continued against the ENA 3-Point Plan

1.3GW capacity now available due to removing 63 stalled projects.

Released 10GW capacity allowing 200 customers to accelerate their offers.

Forecasting 25% more volume connected to our network this year.

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

Reform the Distribution Pipeline

We know that 60% of all projects fail to materialise.

Sub-task 1: Spring Clean

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

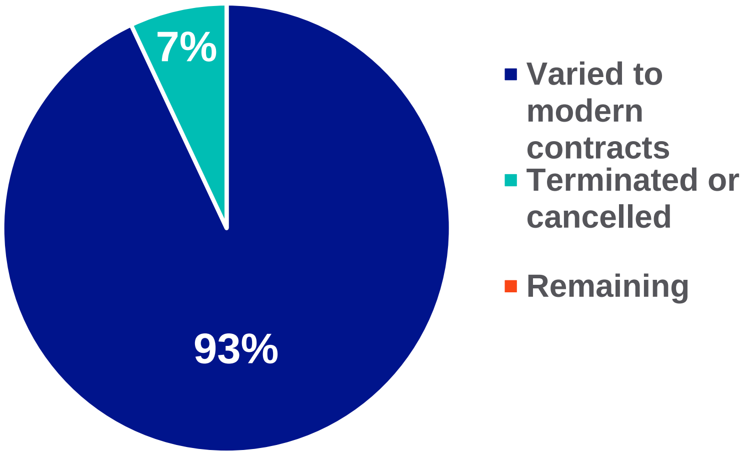
April 2023

- 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



Since April, NGED has now removed over 1.3GW of stalled projects from the connections queue

The total number of schemes removed (>1MW) since April is 63.

NGED's Actions:

- New team established to support with the progression of slow-moving schemes.
- Updated systems to support with customer engagement on progression milestones.
- Projecting an additional 5GW of stalled projects progressed into 'on-track' or removed from the queue, over the next 12 months.

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 evident 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.

Two case studies being explored, as NGED are keen to be an industry leader on this approach.

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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%

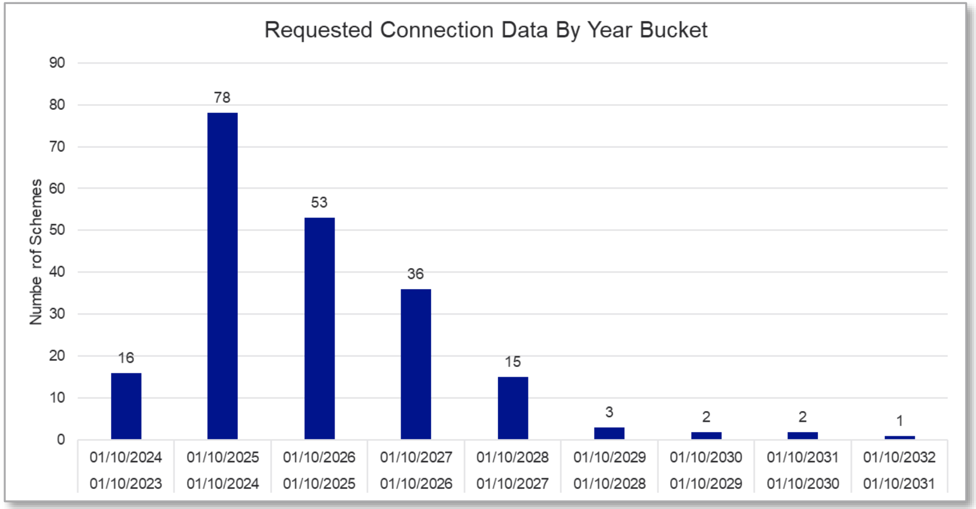
requested earlier connection but no curtailment

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**
- **Ongoing: Variations being sent to customers, and are subsequently being accepted.**

Technical Limits to Date

Phase 1a

- 65 variations sent, 24 signed and returned.
- 1,541 months saved across 24 accepted schemes (~ 64 months each).
- First customer connecting in March under the Technical Limits contract.

Phase 1b

- 22 schemes under Phase 1b GSPs.
- Total requested acceleration of 142 years (~6.5 years per scheme).
- Improvement on Phase 1a: Communication around curtailment, extending signing period to allow for review of additional data and reports.

The 3-step Action Plan to improve and accelerate connections

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Tactical Solution 1 – Access Rights

Applications to connect Electricity Storage from 30/09/2023 receive a connection offer to provide capacity <u>only</u> when the distribution system is intact

To date, over 435MW of capacity has been offered to BESS customers with Tactical Solution 1 Access Rights.

Tactical Solution 2 – Common EREC P2 Application

Curtailment of controllable Electricity Storage will be treated as Demand Side Response

To date, over 2.7GW of offers have been made, treating electricity storage import capacity as Demand Side Response.

Electricity Distribution

Charging for Connection Quotations

Kyle Smith

Connections Strategy Engineer

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NGED current stance on Quotation A&D Fees

Highlighted green are where DNO's currently charge A&D fees at the quotation stage.

Assesment and Design Fees Upfront	DNO 1	DNO 2	DNO 3	DNO 4	DNO 5	NGED
Single LV Service Demand Connection						
2 to 4 services single phase LV, no extension to LV network						
1-4 Premises, single phase LV, extension to the LV network required						
1 three phase LV service with whole current metering to a single Premises						
Other LV connection(s) with a total load up to 100kVA LV						
Other LV connection(s) with a total load greater than 100kVA and up to 250kVA LV not covered by the above						
Connection greater than 250kVA and up to 1MVA at LV						
Connection up to 250kVA at HV						
Connection greater than 250kVA and up to 1MVA at HV						
Connection greater than 1MVA and up to 3MVA at HV						
Connection greater than 3MVA and up to 10MVA at HV						
Connection up to 10MVA at EHV and at 132kV						
Connection greater than 10MVA and up to 50MVA						
Connection greater than 50MVA						
Generation						
Connection of a single Small Scale Embedded Generator						
Connection of other generation up to 20kVA not covered by the above at LV						
Connection of other generation greater than 20kVA and up to 50kVA at LV						
Connection of other generation greater than 50kVA at LV						
Connection of generation up to 250kVA at HV						
Connection of generation greater than 250kVA and up to 1MVA at HV						
Connection of generation greater than 1MVA at HV						
Connection of generation up to 10MVA at EHV and at 132kV						
Connection of generation greater than 10MVA and up to 50MVA at EHV and at 132kV						
Connection of generation greater than 50MVA						

NGED's Plan

Introduce a Letter of Authority, **Applications post 1st March 2024**

Demand & Generation – (Section 15 & 16)

Charge upfront for more quotations to align with industry.

Demand & Generation – (Section 15 & 16) **Applications post 1st April 2024**

Quotations connections greater than 250kVA at 11kV

Examples…

Examples

If a Customer requests a 500kVA connection fed via an LV MCCB or by a HV metered supply these would both be charged A&D fees upfront

If a customer would like a 260kVA supply at LV and this triggers HV reinforcement, this would be charged A&D fees upfront.

If a developer was to ask for 130 houses at 2kVA each (total of 260kVA) and the highest voltage of works is LV then this quotation would not be charged for upfront. However if the highest voltage of works was 11kV this would be charged for upfront.

Connection quotations which are to be charged upfront.

The charge has been designed on our A&D fees published within our Statement of Works and is based on time taken to produce and provide a quotation.

Assessment and Design Fees to be charged upfront	Charge which is to be sent at quotation stage
Demand - Connection greater than 250kVA and up to 1MVA at HV	**£1,134***
Demand - Connection greater than 1MVA and up to 3MVA at HV	**£1,553***
Demand - Connection greater than 3MVA and up to 10MVA at HV	**£2,766***
Generation – Connection greater than 250kVA and up to 1MVA at HV	**£2,124***
Generation – Connection greater than 1MVA at HV	**£3,011***

Connections larger than those listed above are already charged upfront for a quotation. This can be found within NGED's Statement of Methodology.

*** charges are indicative. Actual charges to be confirmed prior to 1st April, communicated to the business and updated in NGED's Statements of Methodology.**

Connection quotations which are to be charged upfront.

These charges will also apply to CiC quotations.

CiC Assessment and Design Fees to be charged upfront	Charge which is to be sent at quotation stage
Demand - Connection greater than 250kVA and up to 1MVA at HV	**£923***
Demand - Connection greater than 1MVA and up to 3MVA at HV	**£1,130***
Demand - Connection greater than 3MVA and up to 10MVA at HV	**£1,919***
Generation – Connection greater than 250kVA and up to 1MVA at HV	**£1,794***
Generation – Connection greater than 1MVA at HV	**£2,085***

Charges are less for CiC offers due to no downstream design from the PoC being required by NGED.

Connections larger than those listed above are already charged upfront for a quotation. This can be found within NGED's Statement of Methodology.

*** charges are indicative. Actual charges to be confirmed prior to 1st April, communicated to the business and updated in NGED's Statements of Methodology.**

Advantages and NGED offered services

Aligns more with other DNO's to allow customers to have the same experience when submitting applications

Reduction in applications requests due to less multiple / speculative applications

NGED have online self serve tools to aid customers prior to making an application. Such as capacity maps, data portals, budget estimate tools, ClearviewConnect and information provided following our recent curtailment consultation.

Provision of Curtailment information

Will Topping

Primary Network Design Engineer

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NGED and UK Power Networks agreed and outlined three overarching proposals for the consultation

DCP404 curtailment analysis

- Open data & standard industry tooling
- Enables detailed analysis of connections to confirm likely curtailment

Self-serve tooling for curtailment analysis

- Analysis across selectable variables
- Understand sensitivity of important factors such as queue position, technology load profiles, attrition

Enhanced DSO-led curtailment studies

- Relevant studies & reports, ~£5,000 - £10,000
- Bespoke, delivered to defined timescales
- 1-2-1 customer engagement to agree parameters

Release all open data listed above to enable customers to carry out their own detailed analysis or instruct a third party to do so on their behalf

A standardised curtailment report format is defined by Open Networks and DCP404 provides a consistent process across DNOs

DER connections will be able to assess their own curtailment risk using the following available (or soon to be available) datasets:

- Asset Ratings
- Historical Outage Data
- Load and generator details
- Standard technology specific profiles
- Historical HH power flow data across 132 kV circuits, 33kV circuits, grid and primaries Operational Curtailment per constraint
- Detailed of connected/accepted customers
- Description of assumptions
- LIFO stack per GSP/constraint
- Curtailment threshold per constraint

Self-Serve tooling could provide customers with standard scenario models

Studies output

- Estimated curtailment (kWh lost) due to distribution and or SGT/technical limit constraints
- Spreadsheet/Python based curtailment

Study assumptions

- Multiple/all network constraints are considered
- Seasonal ratings are considered
- Technology specific profiles are used

Inputs to the tool

Pre-populated by the DNO:

- Background power flow
- Sensitivities Factors
- Default Acceptances and inflight offers (can be varied by the user)
- Constraint seasonal ratings (can be varied by the user)

What's included

- Visibility of the constraints triggered and the curtailment per constraint
- Visibility of the time of the day/year curtailment is more likely to happen

Enhanced DSO-led curtailment studies would provide additional bespoke options for the scenarios

Studies output

- Estimated curtailment (kWh lost) due to distribution / SGT/technical limit constraints
- Load flow-based curtailment using network modelling software

Study assumptions

- All identified network constraints are included in the study & seasonal ratings considered.
- Technology specific profiles used.
- Site with non-firm access considered

Bespoke user-defined inputs

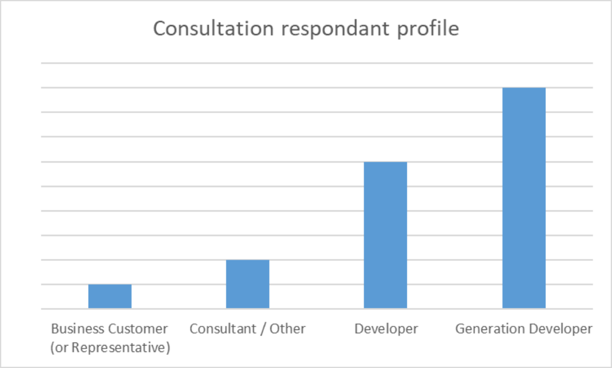
- Generation, BESS & demand load profiles
- Attrition assumptions & growth rates
- Consideration of customers' market intelligence
- Abnormal running arrangements
- Future network upgrades

What's included

- Detailed curtailment report & summary of modelling assumptions
- Impact of changing attrition and profile assumptions
- Visibility of constraints triggered and curtailment per constraint
- Visibility of the time of day/year curtailment is more likely to happen

Respondents to the consultation favoured direct access to datasets, but the service price point wasn't palatable to all customers

- **89%** of respondents **agreed with taking all three options forward** – only 1 generation developer and one consultant said they didn't want all three. This question was set ahead of all others, and subsequent answers suggest that this would be caveated
- **Providing data was most people's first choice**, followed by a paid-for service, followed by provision of a tool for self service. (This was ahead of the question on charging for the service)
- **78%** of respondents said that they **would use the data for pre-application analysis,** which should result in fewer applications to the pipeline
- **83% of respondents said they would carry out their own modelling** if the data was provided
- Whilst a service provision was the respondents second choice of the three, **only 55% were prepared to pay between £5,000 and £10,000 for it**



Transmission – Distribution (T-D) Technical Limits

Will Topping

Primary Network Design Engineer

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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 to accommodate time constraints

Flexible solutions on distribution networks (e.g. ANM) are not being used effectively

DNOs are required to seek permission from NESO ahead of connecting DER above 950 kW

“First come, first served” means distribution connections are behind large transmission connections, which may take years to connect

- Technical Limits are calculated on a per GSP basis and are recorded in the BCA we have with ESO
- Curtailment will be uncompensated and require DNOs to provide curtailment forecasts to customers
- This initiative is currently an interim solution until firm T works are completed
- Schemes are still liable for any firm works required and associated pass-through/one-off costs
- There is both an import and an export Technical Limit
    - The export Technical Limit is constant throughout the year
    - The import Technical Limit varies seasonally
- Large power stations cannot accelerate under Technical Limits. Small/Medium schemes with and without a BEGA can accelerate as both are managed through App G

How are the Export Technical Limits Calculated?

$$\boldsymbol{GSP\ Export\ Technical\ Limit}$$
$$= \sum_{Capacity\ scaling\ factors}^{Unrestricted\ Registered} - demand\ at\ defined\ cardinal\ points$$

- Four cardinal points are assessed to calculate the Technical Limit
- Existing GSP demand at NGET cardinal points
- Unrestricted (firm) capacity that has been through a Transmission Impact Assessment (e.g. App G/PP)
- Agreed generation/BESS scaling factors as per NGET SQSS assessments
- Highest calculated export Technical Limit used across entire year

NB:

- It doesn't replace existing Connection Asset Reverse Powerflow (CARPL) limits where we have them
- Technical Limits are reassessed on a yearly basis
- Recorded Bilateral Connection Agreements (BCA) Appendix F3

How are the Import Technical Limits Calculated?

$$\boldsymbol{GSP\ Import\ Technical\ Limit}$$
$$= Maximum\ observed\ demand\ at\ defined\ cardinal\ points + BESS\ Import^{*} + 1\ Year\ DFES\ Growth$$

- Maximum observed demand at defined cardinal points
- BESS import for unconnected Part 2 Appendix G BESS projects
- 1 year forecast DFES growth rates
- Import Technical Limits are also calculated against the 4 SQSS assessments

NB:

- ➢ Only to be utilised by BESS import
- ➢ Technical Limits are reassessed on a yearly basis
- ➢ Recorded Bilateral Connection Agreements (BCA) Appendix F3
- ➢ The Import Technical Limit **is seasonal**

* $(part\ 2\ not{-}connected)$

Cardinal Points assessed by NGET and NESO

Cardinal Points	Name	Meaning/method
1	**Winter**	December – February
2	**Access Period**	Between 1st March and 31st May (inclusive) and between 1st September and 30th November (inclusive).
3	**Summer Solar Min**	4am – 6am; between 1st June and 31st August (inclusive)
4	**Summer Solar Max**	10am – 4pm; June – between 1st June and 31st August (inclusive)

NGET/ESO scaling factors for cardinal point assessments

Fuel Type	Winter	Access Period	Summer (Solar Max)	Summer (Solar Min)
Solar PV	0	0.051	0.84	0.051
Waste/ CHP	0.88	0.88	0.85	0.85
Hydro	0.84	0.84	0	0
Wind	0.7	0.7	0.5	0.1
Other	0.65	0.65	0.3	0.3
BESS/ Energy Storage	-1	-1	1	1

* Winter scaling but Summer AM for Solar

Example Appendix F3 Technical Limits

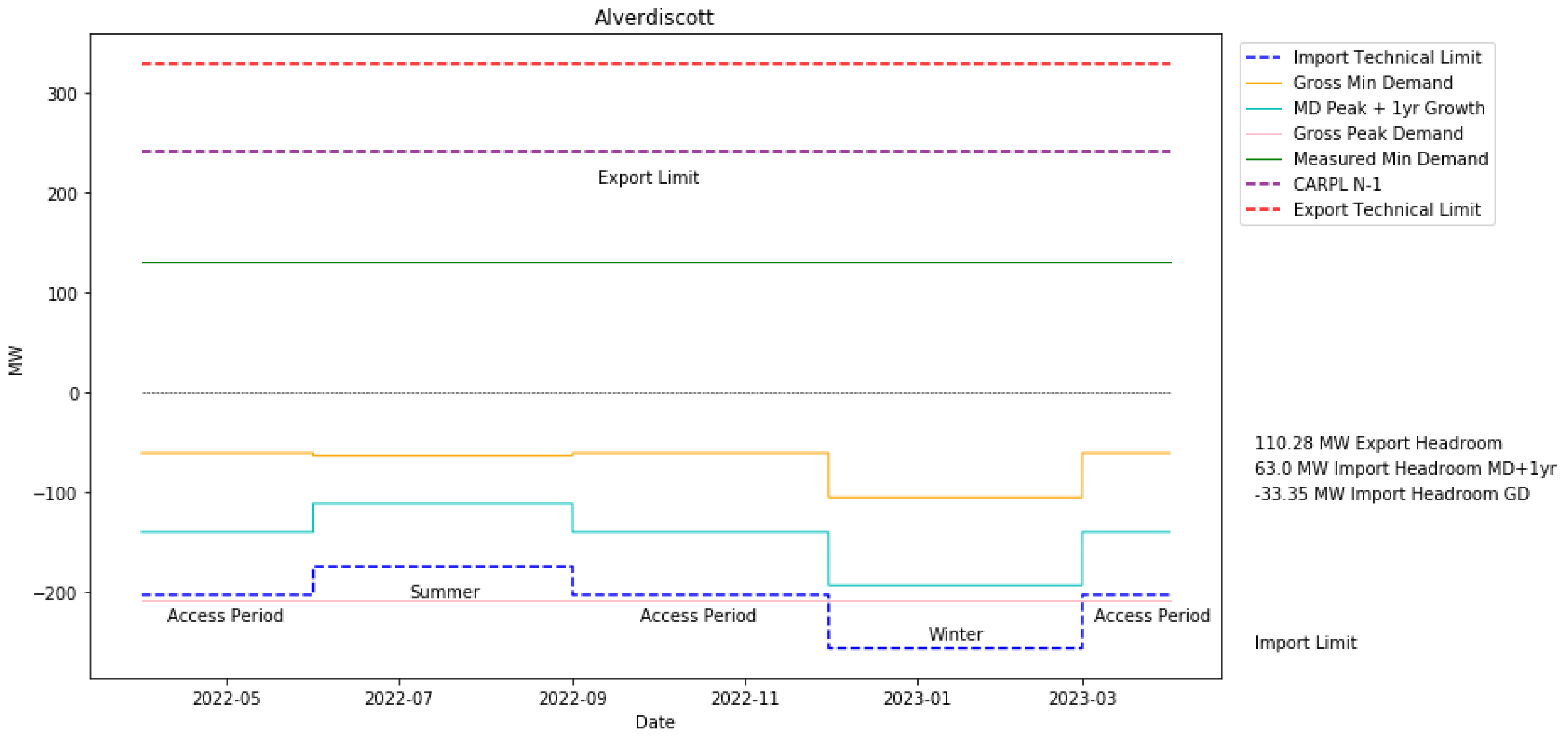
Appendix F3 – Schedule 6 – Grid Supply Point Technical Limits*
Current Grid Supply Point Technical Limits at Alverdiscott 132kV substation

	Winter (01 Dec – 28 Feb)	Access Period (01 Mar – 31 May and 01 Sep – 30 Nov)	Summer (Solar Max) (01 Jun – 31 Aug)	Summer (Solar Min) (01 Jun – 31 Aug)
Sum of Relevant Embedded Power Stations (MW)	516.4			
Demand, Date used (MW, DD/MM/YYYY, HH:MM:SS)	105.7, 23/12/2022, 05:30	61.4, 11/10/2022 03:30	65.4, 29/08/2022, 14:00	63.9, 08/08/2022, 04:30
Export Technical Limits (MW)**	-74.3	-14.2	329.2	34
Sum of Relevant Embedded Storage (MW)	63			
Demand, Date used (MW, DD/MM/YYYY, HH:MM:SS)	194, 16/01/2023, 18:00	140.6, 15/04/2022, 20:00	112, 24/08/2022, 10:30	93.2, 18/08/2022, 06:00
Import Technical Limits (MW)***	-257.0	-203.6	-175.0	-156.2

* A positive number represents an export of power at the Connection Site whilst a negative number represents an import of power at the Connection Site.
** For clarity the largest of the 4 calculated export limits will be the limit that is applicable at all times.
*** Note that the Import Technical Limit may only be applied to energy storage projects connecting using the GSP Technical Limits

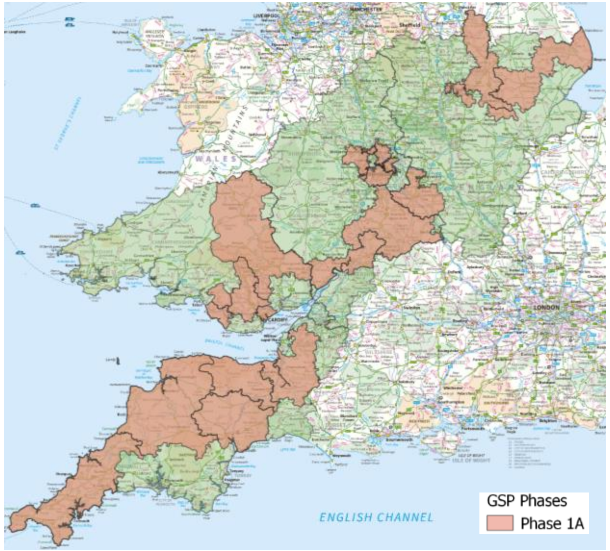
Example Technical Limit

Based on previous slide Appendix F Technical Limit Data



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		

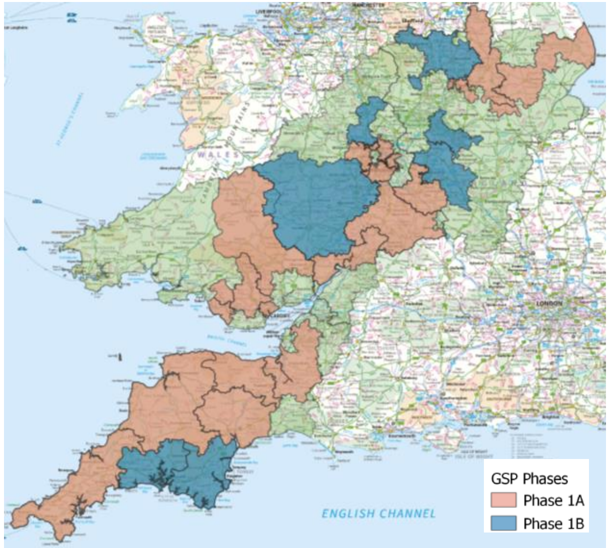


Requirements for inclusion in Phase 1a:

- 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

Phase 1b GSPs are still to be approved by NESO

South Wales	West Midlands	East Midlands	South West
	Bishops Wood 132kV	Chesterfield 132kV	Abham 132kV
	Bushbury 132kV	Coventry 132KV	Landulph 132kV
		Enderby 132kV	Seabank 132kV



Requirements for Phase 1b:

- 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

Infrastructure and more complex sites will be in future phases

Curtailment Reports for Import & Export include LIFO stack overview, annual curtailment value and heatmap

T/D Boundary Export Curtailment Assessment Report

ANM Zone	Penn GSP
Enquiry Number	9999999
Site Name	ABC Solar Farm
Fuel Type	Solar
Capacity	20MW
LIFO Position	11

Export LIFO Stack ahead of site

ANM Capacity	MW	Number of Connections
Wind	100	4
Solar	12	3
Battery	60	2
Other	10	1

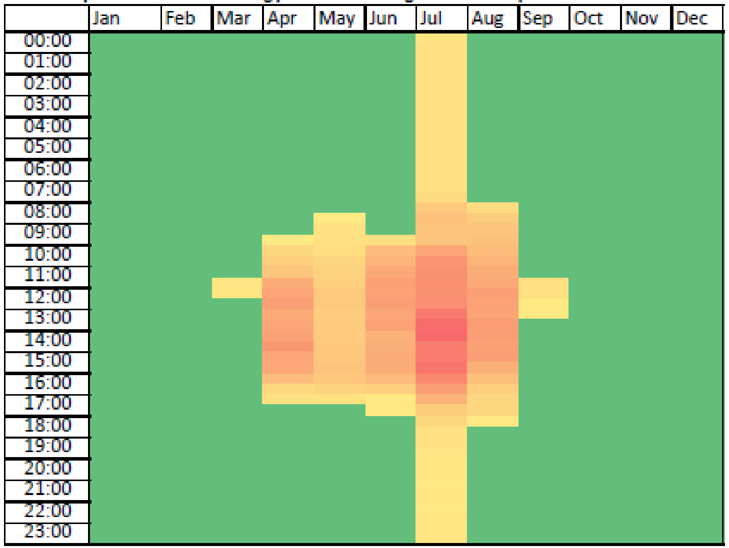
Curtailment Summary

Estimated Output (MWh)	53839
Uncurtailed Output (MWh)	63427
ANM Curtailment	15.12%

Constraint Considered

Penn GSP export Technical Limit

Contour plot of curtailed energy over an average 12-month period



For the avoidance of doubt, NGED does not guarantee any level of duration or frequency of curtailment or constraints and this report does not replace the Curtailment Limit detailed within the Connection Offer. The Customer is strongly encouraged to conduct their own assessment of the potential curtailments / constraints and risk associated with an alternative connection. This has been calculated using the assumption that all connections in the queue ahead of the customer connection are connected.

Proposed Supporting Data

Date time	GSP Load	Technical Limit	Wind	Solar	Battery	Other
2022-04-01 00:30:00	98.57	173.9	0.38	0	1	1
2022-04-01 01:00:00	97.73	173.9	0.42	0	1	1
2022-04-01 01:30:00	97.57	173.9	0.4	0	1	1
2022-04-01 02:00:00	100.27	173.9	0.42	0	1	1
2022-04-01 02:30:00	100.37	173.9	0.43	0	1	1
2022-04-01 03:00:00	98.95	173.9	0.44	0	1	1
2022-04-01 03:30:00	98.44	173.9	0.45	0	1	1
2022-04-01 04:00:00	97.68	173.9	0.41	0	1	1
2022-04-01 04:30:00	97.01	173.9	0.4	0	1	1
2022-04-01 05:00:00	96.4	173.9	0.37	0	1	1
2022-04-01 05:30:00	96.87	173.9	0.4	0	1	1
2022-04-01 06:00:00	98.86	173.9	0.38	0	1	1
2022-04-01 06:30:00	103.91	173.9	0.38	0	1	1
2022-04-01 07:00:00	107.41	173.9	0.36	0	1	1
2022-04-01 07:30:00	113.55	173.9	0.37	0.03	1	1
2022-04-01 08:00:00	118.41	173.9	0.39	0.07	1	1
2022-04-01 08:30:00	117.38	173.9	0.35	0.18	1	1
2022-04-01 09:00:00	113.02	173.9	0.37	0.32	1	1

Non-ANM Connections

Capacity MW	Technology Type
30.612	Solar
77.895	Wind
0.999	Wind
13.16	Wind
165	Wind

LIFO Stack

Position	Capacity MW	Technology Type
1	10	Wind
2	50	Other
3	28.7	Wind
4	49.9	Solar
5	28.7	Wind
6	12	Wind
7	54	Wind
8	22	Wind
9	3.45	Battery

- All accepted not yet connected sites, not subject to ANM provided
  - ➢ These are to be considered "ahead" of the LIFO stack
- LIFO stack provided with relative position
  - ➢ Based on application date
  - ➢ Energisation date will not impact this order

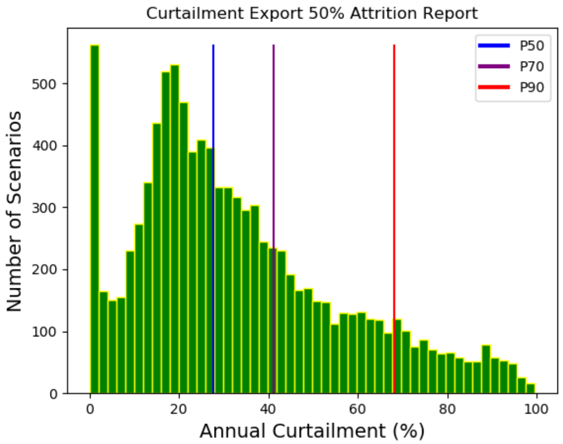
NGED is also proposing Monte Carlo Curtailment Reports

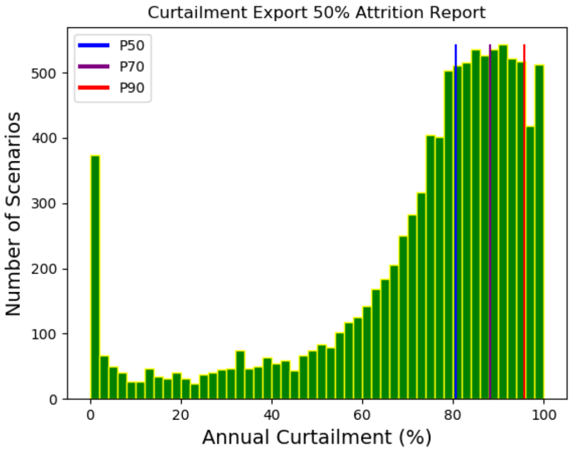
Participation: Percentage of accepted sites ahead of this connection considered to connect

Scenarios: The curtailment for this application is calculated for 2000 scenarios, with different combinations of the accepted sites ahead switched in for each one

Percentile: The level of curtailment for the 50th, 70th or 90th percentile of all scenarios I.e. of the 2000 scenarios, for P50, the curtailment result for 1000 scenarios is below the line shown

These graphs show the level of curtailment for this connection for 3 levels of participation. Each considers 2000 scenarios to assess the impact on the estimated curtailment based on the participation. 3 percentile lines are shown to indicate the highest curtailment when 50, 70 or 90 percent of the scenarios are considered.





clearviewconnect

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Clearviewconnect will show all data for curtailment on the Connected Data Portal

clearviewconnect

The clearview report provides a comprehensive view of capacity headroom at all our license area Grid Supply Points (GSPs). This information may be useful for prospective developers to identify the GSPs at which they could have the earliest chance and lowest cost of accessing a generation connection.

For customers with schemes already in the pipeline at a specific GSP, additional functionality allows visibility of their position towards achieving firm capacity and any curtailment associated for non-firm connections due to transmission constraints only. This information may be useful for decision support when assessing a number of schemes within a portfolio. It is not possible to view this for schemes other than your own, and whilst customers can see their own position, the rest of the pipeline remains anonymous.

Please see disclaimers for appropriate use and liability associated with this report.

All | East Midlands | West Midlands | South Wales | South West

- Aberthaw
- Abham
- Alverdiscott
- Axminster
- Berkswell
- Bicker Fen
- Bishops Wood
- Bridgwater
- Bushbury
- Bustleholm
- Lea Marston (East Midlands)
- Lea Marston (West Midlands)
- Melksham
- Nechells East
- Ocker Hill
- Oldbury
- Pembroke
- Penn
- Port Ham
- Pyle

GSP Overview

Connected Capacity to date (MW)	177.83
Developer Capacity Available (MW)	0
TD Boundary Capacity Notes	PHASE1B
Transmission Reinforcement Expected Completion Date	December 2036
Connection Asset Reverse Power Limits (MVA)	-
GSP Technical Export Limit*	180.36
GSP Technical Import Limit Winter*	-382.67
GSP Technical Import Limit Summer*	-325.35
GSP Technical Import Limit Access Period*	-368.46

Clearviewconnect will show all data for curtailment on the Connected Data Portal

List of Schemes and rolling MW export capacity currently being developed in pipeline order

Use your reference number to see where you are currently in the pipeline:

1234567 | **Search**

Generator Type	Export Capacity (MW)	Position	Cumulative Export Capacity (MW)	Non Firm Transmission Curtailment (Worst Case) (%)	Non Firm Transmission Curtailment (Diversified) (%)
Photovoltaic	16	1	16	-	-
Photovoltaic	1.82	2	17.82	-	-
Stored Energy - Storage - Electrochemical Classic Batteries - Lithium Ion (Li-ion)	49.5	3	67.32	Pending	Pending
Fossil (Gas) - Gas turbine (OCGT)	25.3	4	92.62		
Photovoltaic	2	5	94.62		
Photovoltaic	5.6	6	100.22		

Data descriptions

Connected Capacity to date

Developer Capacity Available

TD Boundary Capacity Notes

Transmission Reinforcement Expected Completion Date

Connection Asset Reverse Power Limits

Provides the maximum reverse power flow limit through the transmission-distribution boundary transformers that National Grid Electricity Distribution must not exceed beneath, which is achieved via a control scheme (active network management). The result of this active network management system is that customers' generation may be curtailed to control power flow in the reverse direction through these transformers.

Technical Limits

For GSPs that have been assessed for Technical Limits (currently in progress for Phase 1A and Phase 1B GSPs), export and import limits are provided to NGED:

Technical Export Limits

Technical Import Limits

Next steps and questions

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We are looking to progress future Technical Limit phases, and the way in which we provide curtailment data for analysis

Future Technical Limit Phases

- Phase 1A and 1B rollout focussed on the majority of NGED Connection (single user) GSPs as deemed 'quick-wins'
- Plan is to rollout Technical Limits at all NGED GSPs
- Next phases will focus on rolling out to:
  - Remaining Connection GSPs (e.g. Swansea North and Seabank)
  - Shared/Infrastructure GSPs
- Still discussing date at working-group level for next phases, but will likely be April 2024 onwards due to volume of work from 2-step offers

Provision of data for curtailment analysis

1. **Technical Limits**
   - Phase 1a input data being prepared for sharing
   - Phase 1b & 2 to receive input data with a curtailment report

   Clarification to be sought where curtailment is estimated to be >70% ahead of issuing offer

2. **Full publication of data**
   - Availability of data being assessed and collated

   Clarification of what data can be published being sought

We want to understand whether are proposals are aligned to our customers' needs

Would you use the proposed data to carry out your own curtailment analysis?	• For Technical Limits • For any ANM connection
Is a worst-case curtailment report from NGED useful?	• For Technical Limits • For any ANM connection
Would Monte Carlo curtailment report be useful?	
Would you request a configurable curtailment report from NGED for £5,000 - £10,000?	

Director update

Jocelyn McConnachie
Director of Customer Excellence

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Structure

- **ED President** – Cordi O'Hara
  - Executive Advisor – Josh Cocker
  - **Director of Safety, Health & Environment** – Yasharn Smith
    - Safety Manager – Paul Woodward
    - Occupational Health Manager – Rebecca Williams
    - Company Environment Manager – Jill Russell
  - **Director of Distribution System Operator** – Ben Godfrey
    - Head of Commercial & Operability – Matt Watson
    - Head of Modelling & Analysis – Dave Tuffrey
    - Head of System Planning – Oli Spink
    - Head of DSO Strategy and Stakeholder Engagement – Hayley Burden
  - **Director of Asset Management & Ops Support** – Philippa Slater
    - Head of Engineering Policy – Carl Ketley-Lowe
    - Head of Winter Preparedness – Gwyn Jones
    - Head of Development – Roger Hey
    - Head of Operations Support – Ian Smith
    - Head of Control Centre – Robert Ballentine
  - **Director of Field Operations** – Graham Halladay
    - Major Projects Director – Susan Steggles-Cole
    - Efficiency Delivery Director – Andy Pickering
    - Head of Network Design – Christian Hjelm
    - Operations Director (West Midlands) – Emma Ford
    - Operations Director (South Wales) – Sean Sullivan
    - Operations Director (East Midlands) – Simon Pett
    - Operations Director (South West) – Steve Cross
  - **Director of Customer Excellence** – Jocelyn McConnachie
    - Contact Centre Manager – Chris Griffiths
    - Head of Connections – Kester Jones
  - **Director of Regulation** – Paul Branston
    - National Systems Manager – Tracey Pitcher
    - Regulatory Compliance Manager – Vanessa Buxton
    - Income Manager – Simon Yeo
  - General Counsel – Tanya Sharma
    - Director of Corporate Affairs – Chris Hayton
    - Chief Financial Officer – Darren Pettifer
    - Chief Information & Digital Officer – Shak Butt
    - Chief People Officer – Claudia Nicoll
    - Director of Transformation – Natalie Humphries - New

National Grid Electricity Distribution: overview

The UK's largest distribution network operator

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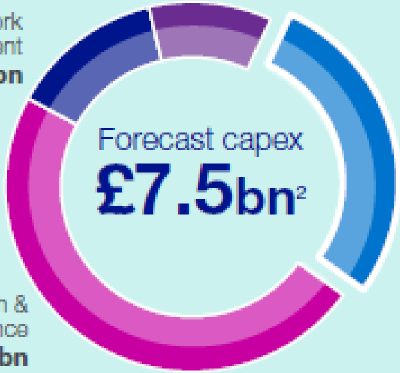
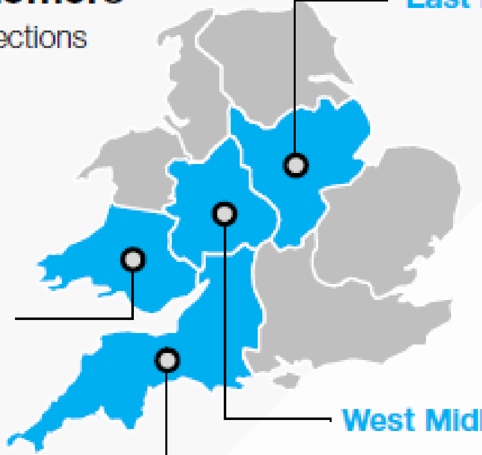
RIIO-ED2[1] capital investment



~25m customers

~8m meter connections



1. Price control from 1 April 2023 to 31 March 2028
2. Nominal capital expenditure, including capex funded by contributions and uncertainty mechanisms

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Distribution connections: overview

Exponential increase in larger connection requests

- Enacting reform to connect 'shovel ready' projects

Steady rise in domestic demand connections

- Understanding consumer adoption of new technologies

The distribution grid is not full

- We're connecting everyday

What are your expectations?

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

Explicit expectations – the “musts”

Implicit expectations – basic assumptions or what you have heard or past experiences

Interpersonal expectations – your interactions with us

Digital expectations – What channels do you expect

Dynamic expectations – Changes over time

Electricity Distribution

Feedback and Summary

Kester Jones
Head of Connections

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Close and thank you

Summary

Feedback
- comments

What would you like to see next time?

- A topic that we (CCSG) need to discuss?

Other events

Wednesday 19th June 2024	Hold the date for next CCSG
Wednesday 16th October 2024	Hold the date for CCSG

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