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Distributed Generation EHV / HV Workshop

19th June 2018

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Welcome
Mike Taylor – Head of Customer Engagement

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General Housekeeping

Please Sign In...

Facilities are out in the Foyer...

Mobiles and Electronic Devices to Silent Please...

No Planned Fire Alarms...

In the Event of an Alarm...

PLEASE FOLLOW STAFF OUT TO THE STREET AT THE FRONT OF THE BUILDING WHERE WE WILL GATHER TO THE LEFT OF THE MAIN ENTRANCE GATES

Your Feedback is Important...

Agenda

1st Session	
1:00pm	Welcome
1:05pm	DG in our Area – Steffan Jones
1:15pm	ICE 2018-19 Workplan – Lynn Smith
1:50pm	Assessment and Design Fees – Mike Doward
2:05pm	Statement of Works – Steffan Jones
2:15pm	Requirements for Generators – RFG / EU Code Steffan Jones
2:30pm	Coffee Break

2nd Session	
2:45pm	DNO-DSO Transition / Improve Visibility of remaining available capacity / Heat Maps / Pre-application – Cara Blockley and Gill Williamson
3:30pm	Panel Questions
3:50pm	Wrap up and Close

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DG in our area

Steffan Jones

Infrastructure Solutions Manager

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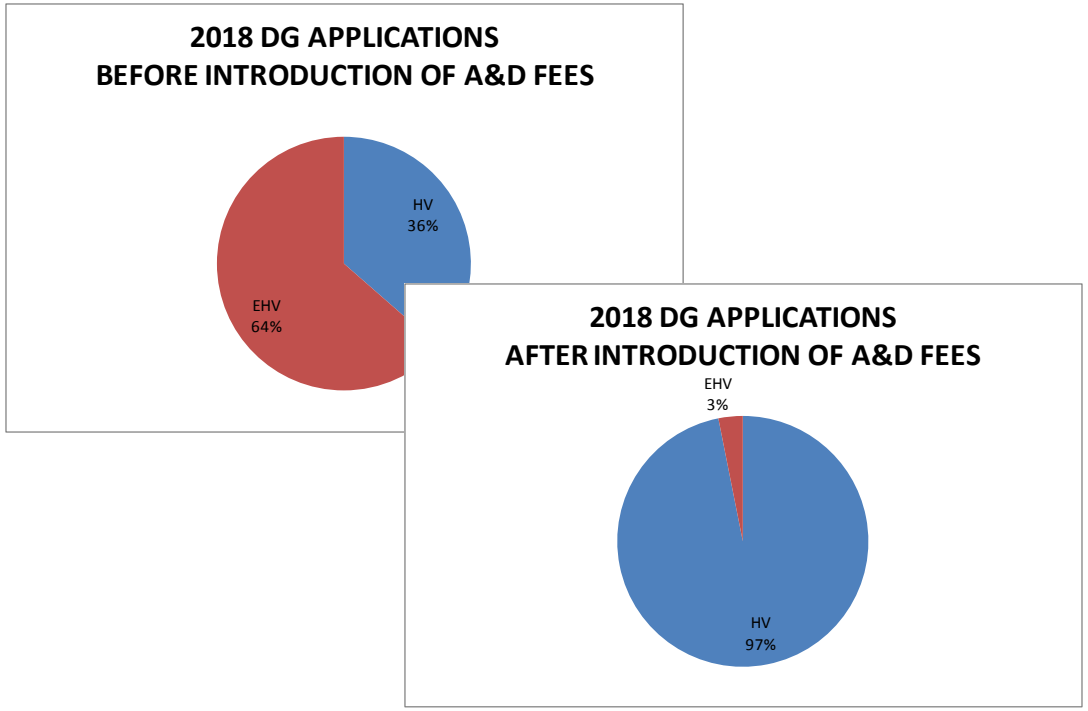
Brief update on DG in our area

- What's happened so far in the last 6 months....?
  - Approximately 315 DER (DG+ESS) Formal Quotations Issued (Down ~5% on Previous 6 months)
    - Approximately 69% where for connections at EHV (Down ~3% on Previous 6 months)
    - Equated to a total of approximately 5,812MW of Export Capacity (Down ~3% on Previous 6 months)
    - Included 156 offers for Energy Storage schemes (or ~50%) (Up 1% on Previous 6 months)

- KEY ISSUES
  - Introduction of Upfront Connection Charges / A&D Fees
  - Constraints on the Transmission Network Interface
  - Connection Challenges on the Distribution Network
  - Uncertainty in the DER orientated Markets



ICE 2018-19

DG HV / EHV Workplan

Lynn Smith

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Introductions

- New year, new ICE Manager. Michelle Snowden joins ENWL 23rd July 2018

- Get in touch with us via the website under our Incentive on Connections Engagement page or email us at ICE@enwl.co.uk

- Don’t forget to sign up to our distribution lists online to keep up to date with upcoming Events, Policy Changes, Health and Safety bulletins and to receive our quarterly newsletters.

Proposed 2018 – 2019 Workplan DG HV/EHV

Commitment	Action	Output/Key Performance Indicator (KPI)	Delivery date
Improve connection charging approach to make charging fair for our customers	Conduct an impact assessment and plan implementation of assessment and design fees.	Engage with stakeholders regarding our proposals	Q4
We will share our vision for the transition of Distribution Network Operators (DNO) to Distribution System Operators (DSO).	Engage with stakeholders on our transition to DSO strategy	Hold an engagement session with our stakeholders	Q4
We will review our EHV connection offers	We will review our connection offers and introduce a new offer pack in line with ours and stakeholder needs	Issue new connections offer pack	Q2
We will improve visibility of remaining available capacity	We will publish improved information on available thermal capacity & fault level	Publish online	Q2
Improve speed of response where transmission works required for a distribution connection	We will transition to a new transmission-distribution interface process, publish the new process on our website and publish transmission updates	We will communicate the new process to customers, transition to the new process and publish the process	Q4
Develop and continue DG owner/operators panel	Hold 1 x DG owner operator forum sessions for generators at 33/132kV	•Hold a DG owner operator panel session . • 80% of attendees surveyed rate the event as "useful" or "very useful"	Q3
Target improved Time To Quote timescales for EHV quotations	We aim to outperform the regulatory standard by providing quotes on average in 58 working days (compared to the guaranteed standard of 65 working days)	We will continue to work towards a 58 day average Time To Quote	Q4
Target improved Time to Quote timescales for HV quotations	We aim to outperform the regulatory standard by providing quotes on average in 58 working days (compared to the guaranteed standard of 65 working days)	We will continue to work towards a 58 day average Time To Quote	Q4
We will continue to offer opportunities for stakeholders to engage with us	Offer surgery session and webinars and a workshop covering a range of topics	• Offer 8 opportunities for stakeholders to engage covering a range of relevant topics • 80% of attendees surveyed rate event as 'useful' or 'very useful'	Q4
Continue to provide quarterly updates on progress of actions	We will publish quarterly updates on our actions and outputs	Quarterly newsletters distributed to registered stakeholders and published online	Q4

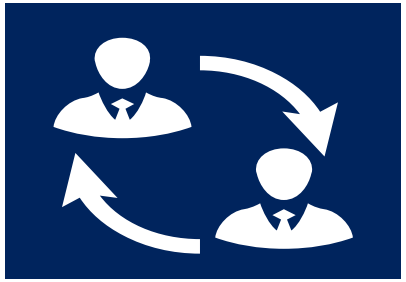
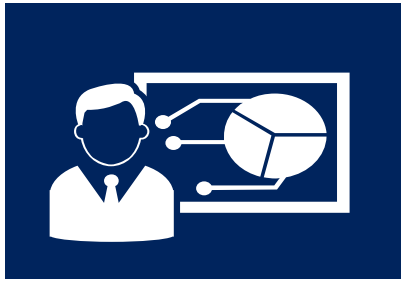
Sources of Feedback

feedback	Sponsors	Where?	Who?	Our commitment 2018/19
"I'd like a commitment of working with customers regardless of whatever process is used, more engagement essentially, don't leave us in a black hole"	4	Expert Stakeholder Panel	DG HV and EHV stakeholders	Improve information provision on transmission connection process.
"Better communication between yourselves and NGET thus improving SOW process	4	Workshops	DG HV stakeholders	Improve information provision and speed of response on transmission works required with a distribution connection.
Continuation of engagement. Event rates as "useful" or "very useful"				Develop and continue DG owner / operators
"As a consultant working with a number of developers I would however like to have more engagement at early stages of a project where we're tasked to look at system sizes etc"	1	Surveys	DG HV Stakeholder	Continue to host workshops and pre-application surgery sessions.

Proposed 2018-2019 Workplan DG LV

Commitment	Action	Output/Key Performance Indicator	Delivery Date
Improve connection charging approach to make charging fair for our customers	Conduct an impact assessment and plan implementation of assessment and design fees.	Engage with stakeholders regarding our proposals	Q4
We will share our vision for the transition of Distribution Network Operators (DNO) to Distribution System Operators (DSO).	Engage with stakeholders on our transition to DSO strategy	Hold an engagement session with our stakeholders	Q4
Target improved customer satisfaction.	Our aim is to target high levels of overall satisfaction	Customers surveyed rate their overall satisfaction at 85% (subject to statistically significant sample sizes)	Q4
Target improved Time To Quote for DG LV quotations	We aim to outperform the regulatory standard by providing quotes on average in 28 working days (compared to the guaranteed standard of 45 working days)	We will continue to work towards a 28 day average Time To Quote	Q4
We will engage with community energy stakeholders on our network information	We will engage with community energy stakeholders on our network information	•Hold an engagement session with community energy stakeholders. • 80% of stakeholders surveyed rate the session as "useful" or "very useful"	Q4
We will continue to offer opportunities for stakeholders to engage with us	We will facilitate a workshop specifically for our DG LV stakeholders	* Hold a workshop centred around DG LV topics. * 80% of attendees surveyed rate the event as 'useful' or "very useful"	Q4
We will continue to offer pre-application surgery sessions and webinars	Host connection surgeries for DG LV customers	* Offer a minimum of 3 x surgery sessions/webinars * 80% of attendees surveyed rate event as 'useful' or 'very useful'	Q4
Continue to provide quarterly updates on progress of actions	We will publish quarterly updates on our actions and outputs	Quarterly newsletters distributed to registered stakeholders and published online	Q4

Process

					
Agree draft ICE actions & measurable KPIs/outputs (Dec)	Allocate ‘owners’ (Dec/ Jan)	Test draft ideas with stakeholders (Jan)	Review & update respond to feedback (Feb)	Test updated ideas with stakeholders (Feb/ Mar)	Finalise Publish ‘non actions’ (Apr)

Internal engagement

External engagement

Act on feedback

Finalise & Issue

Feedback sheets

Thank you

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Connection Offer Expenses – our approach

Mike Doward – Connections Charging Manager

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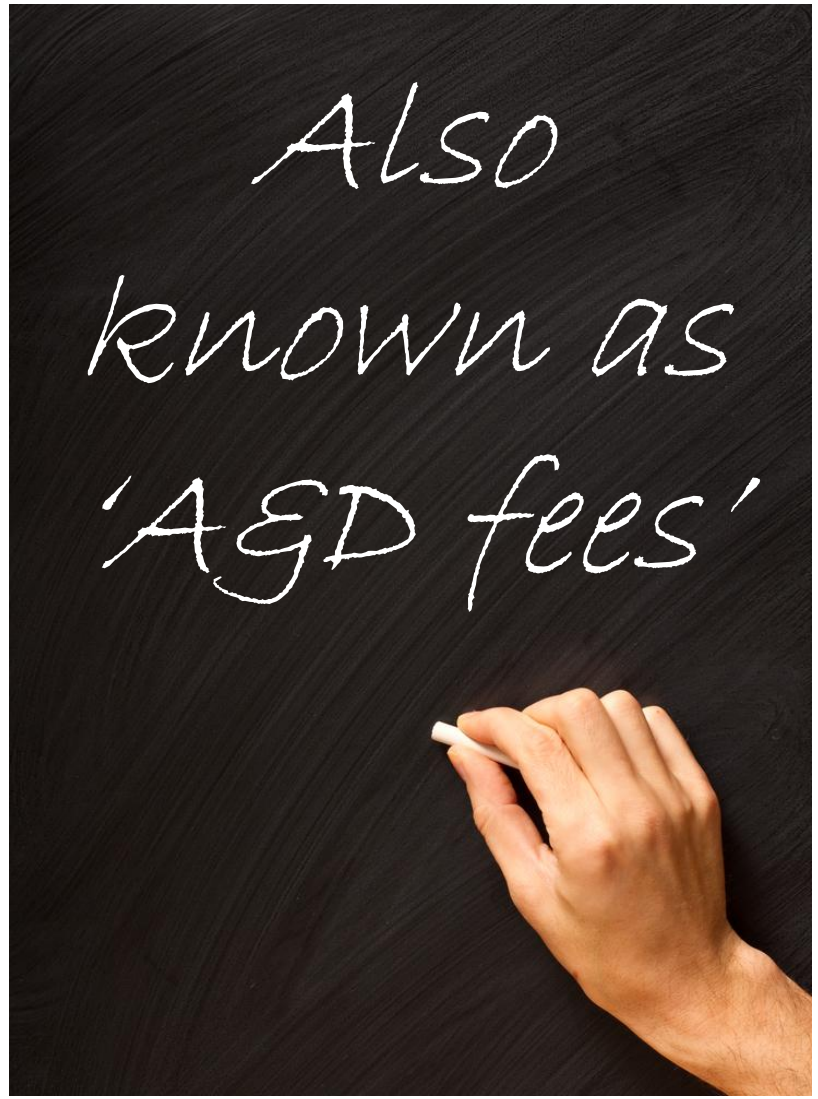
Connection Offer Expenses

BEIS introduced new regulations from April 2018

These allow DNOs to charge customers for their connection offer whether it is accepted or not

BEIS intention is to allow a fairer allocation of costs to customers



What do we propose to charge for?

What we won't be charging for
Budget Estimates
Minor connections (1-4)
Cancellations within cooling off period
Offers for diversions

What we will be charging for
EHV offers (demand and generation) from May 2018
LV and HV offers (demand and generation) but from a later date
Requotes including interactivity requotes
Cancellations (after cooling off period)
Gen+ initial assessments

These charges will be due whether the connection offer is accepted or not

Our charges

For EHV Connection Offers issued in ENWL area

Initial charge for any EHV Connection Offer:
£1,000

Residual charge on acceptance:
£20,200 for a full works offer

Residual charge on acceptance:
£15,800 for non contestable work only

How is our Connection Offer charge calculated?

- ✓ Includes cost of all Budget Estimates issued
- ✓ Includes the cost of all Gen+ initial assessments (less initial charge)
- ✓ Includes costs of all Connection Offers that are accepted
- ✓ Includes the costs of all Connection Offers that are not accepted

All costs associated with issuing Connection Offer are recovered through the Connection Offer charges: part recovered from initial £1,000 fee and rest on acceptance

Why do other DNO charges appear lower?

- ☐ Includes cost of all Budget Estimates issued
- ☐ Includes the cost of all Gen+ initial assessments
- ☑ Includes costs of all Connection Offers that are accepted
- ☐ Includes the costs of all Connection Offers that are not accepted

Only the cost of that Offer is included in the charge; other charges are included as an on-cost on the construction work and paid on acceptance

Summary

Four different options available to you for EHV offers

Budget Estimate	Gen +	Full Works Offer	POC Only offer
•No charge •Can't accept •No queue position	•Initial charge of £500 payable in advance •Further charge of £1,000 for full offer •Queue position retained	•Initial charge of £1,000 for Dual Offer •Balance of £20,200 if full works accepted •Balance of £15,800 if POC only accepted	•Initial charge of £1,000 for Connection Offer •Balance of £15,800 on acceptance

Applicable from 4 May 2018

The basic process

Customer Application	Connection Offer issued	Connection Offer validity period	Acceptance
Email informing customer is liable for payment for quote but with 10 working day cooling off period	Connection offer issued together with invoice for £1,000 with 30 day payment terms	Quote validity period normally 180 days but will end after 30 days if invoice not paid	Customer pays balance of Connection Offer Expenses if they accept as part of Acceptance Fee

Key actions for stakeholders

Make arrangements in advance so invoice can be paid quickly

Cancel quickly if you don’t want to incur costs

Late payment means your offer can’t be accepted

Late payment risks you having to pay in advance of getting your offer next time

Revised process if payments not made

Customer Application	Connection Offer invoice issued	Connection Offer issued	Acceptance
Email informing customer is liable for payment for quote but with 10 working day cooling off period	Connection offer invoice for £1,000 with 30 day payment terms issued	Connection offer only issued after payment received with validity period normally 180 days	Customer pays balance of Connection Offer Expenses if they accept as part of Acceptance Fee

Gen+ process

Customer Submission	Budget costs	Confirmation of viable options	Connection Offer issued	Connection Offer validity period
Customer submits up to six variations for same site eg different capacities and/or technologies together with **£500** payment	We provide budget costs for all six variants and an indication of the POC within 30 working days	You will have 7 days to confirm if any are viable and you want to progress through to a full offer using submission date as application date	Connection offer issued together with invoice for £1,000 with 30 day payment terms	Quote validity period normally 180 days but will end after 30 days if invoice not paid

Key actions for stakeholders for Gen+

Payment must be received with application

Please pay £600.00 (£500.00 plus VAT)

BACS payment preferred – Include “Your Company Name” and “Gen+ Application”

If information is missing it may cause a delay in the date your application has been deemed to have been received

QUESTIONS

&

DISCUSSION

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Your Feedback

- [ ] Would you prefer a low charge on quotation and higher on acceptance or a higher charge on quotation and lower overall A&D fees?
- [ ] Budget estimates currently are not charged for. If we charge for budget estimates the A&D fee will reduce. Which is your preferred option?
- [ ] Currently we have only implemented upfront A&D fees to EHV applications. When implemented to HV and LV applications do you have any other issues that you believe we need to consider?

Please take 10 minutes to discuss on your table.

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Statement of Works

Steffan Jones

Infrastructure Solutions Manager

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Process Development Overview

Traditional

- SoW submitted at a project level
- Allowed timing at project need
- Issues with queue management
- All costs relate to the applying project

Bulk

- SoW submitted at a GSP level
- Allows better queue management
- Potential efficiencies on cost apportionment between Developers

Appendix G

- Requires a Bulk / Catch Up Submission
- Allows DNO to manage queues to defined headroom
- Increased Administration
- Replaces SoW as Modification Application is first NGET intervention

T.I.A.

- Transmission Impact Assessment
- Future process likely to be based on Appendix G process

PRE FY17 | FY17 | FY19 | FUTURE ?

ENWL GSP's - 17 GSP's or 14 GSP Groups

Lakes

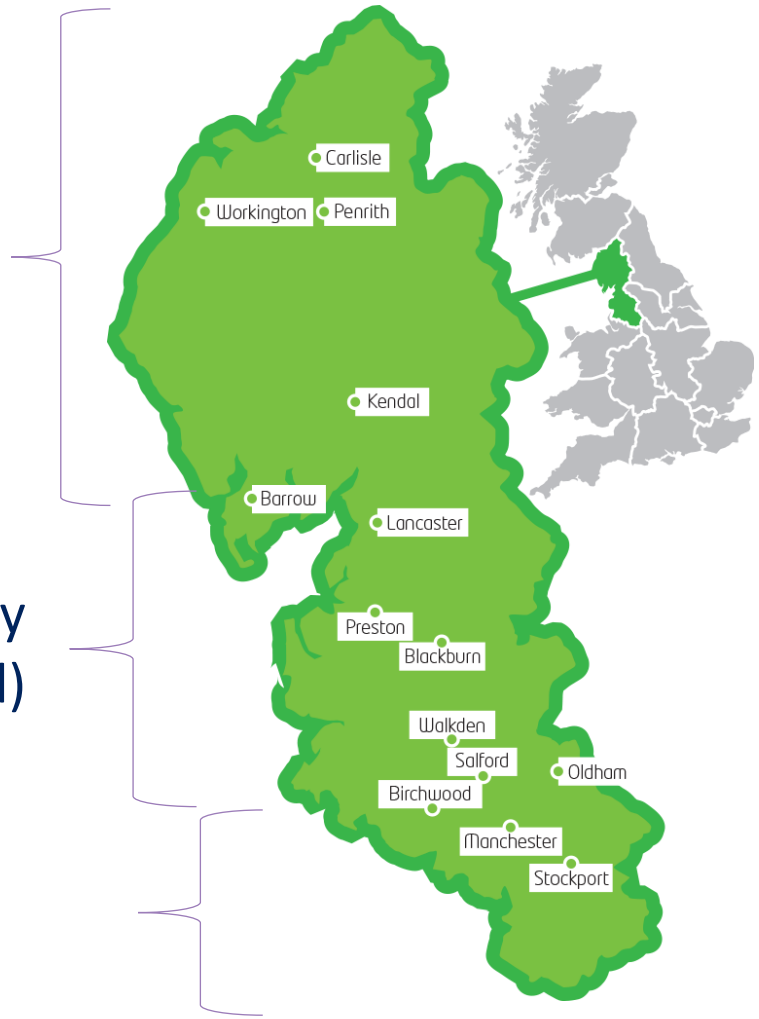
- 3 GSP's Harker, Hutton and Heysham (2 Groups)

Lancs & Central

- 8 GSP's Stanah, Penwortham (E&W), Rochdale, Padiham, Washway Farm, Kearsley and Kearsley Local. Also Bold (SP) (6 Groups + Bold)

South

- 6 GSP's Whitegate, Stalybridge, Carrington, South Manchester, Bredbury, Macclesfield Super Grid (6 Groups)



The Current ENWL Status of Play – June 2018

- Of the 14 ENW GSP Groups all have now had “Bulk” SoW applications submitted
- We have received responses on all of these SoW submittals
  - 5 responses indicated Transmission Constraint and required further submittal of Mod App’s
  - 9 returned clear (for the schemes included) and submittals to progress to Appendix G have been made
- All 14 GSP Groups are now in the process of transition to Appendix G
- 2 Mod Offers have been made requiring works
  - Harker – Hutton 4 x SGT replacements estimated completion 2022/23
  - Heysham 1 x New SGT estimated completion 2021
  - Both GSP’s have no material headroom remaining following these works
  - 3 Mod App’s were cleared no works following discussion with NGET but two have no material headroom
- A Total of 7 Appendix G conversion requests have been returned (5 via Mod App route)
  - To date only 2 have returned any Material Headroom for further connections

The Current ENWL Status of Play – June 2018

ENWL - NGET TRANSMISSION INTERFACE
STATEMENT OF WORKS STATUS SUMMARY

AT 18 JUNE 2018

	REGION	GSP	SoW RETURN	MOD APP RETURN	PLANNED WORKS DATE	APP G REQUEST	APP G RETURN	CONCENTED MW PART 1	CONCENTED MW PART 2	UNCONCENTED MW PART 3	UNCONCENTED MW PART 4	GSP STATUS MATERIAL HEADROOM	GSP STATUS ZERO HEADROOM DRIVER
1	NORTH	HARKER & HUTTON	MOD APP	WORKS	2022/23	YES	YES	720	98	0	554	0	FAULT LVL
2	NORTH	HEYSHAM	MOD APP	WORKS	2021	YES	YES	302	0	0	134	0	FAULT LVL
3	LANCS & CENTRAL	STANAH - PENWORTHAM WEST	CLEAR	N/A	N/A	YES	NO						
4	LANCS & CENTRAL	PENWORTHAM EAST - ROCHDALE	CLEAR	N/A	N/A	YES	NO						
5	LANCS & CENTRAL	ROCHDALE	CLEAR	N/A	N/A	YES	YES	123	137	0	0	50MW / 3kA	
6	LANCS & CENTRAL	PADIHAM	CLEAR	N/A	N/A	YES	NO						
7	LANCS & CENTRAL	WASHWAY FARM	CLEAR	N/A	N/A	YES	NO						
8	LANCS & CENTRAL	KEARSLEY & KEARSLEY LOCAL	MOD APP	CLEAR	N/A	YES	YES	57	237	0	0	0	FAULT LVL
9	LANCS & CENTRAL	BOLD (SPEN - RAINHILL)	MOD APP	NO	TBC	N/A SPEN	NO						
10	SOUTH	WHITEGATE	CLEAR	N/A	N/A	YES	YES	32	187	0	0	0	FAULT LVL
11	SOUTH	STALYBRIDGE	MOD APP	CLEAR	N/A	YES	YES	58	293	0	0	50MW / 0.78kA	
12	SOUTH	CARRINGTON	MOD APP	CLEAR	N/A	YES	YES	105	233	0	0	0	THERMAL
13	SOUTH	SOUTH MANCHESTER	CLEAR	N/A	N/A	YES	NO						
14	SOUTH	BREDBURY	CLEAR	N/A	N/A	YES	NO						
15	SOUTH	MACCLESFIELD SUPER GRID	CLEAR	N/A	N/A	YES	NO						

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EU Code Implementation

Steffan Jones

Infrastructure Solutions Manager

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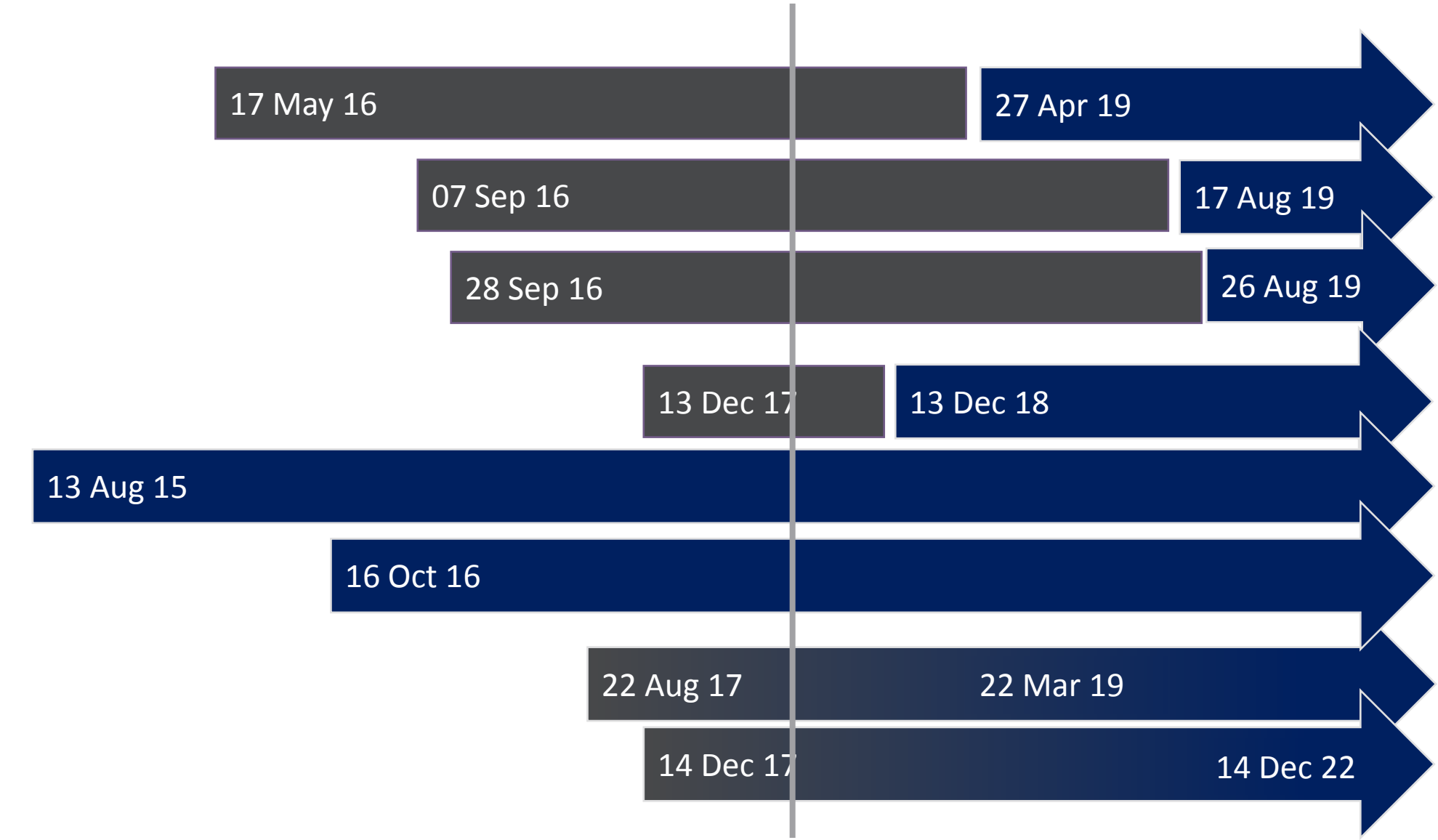
EU Network Codes Summary

Markets	Capacity Allocation & Congestion Management (CACM)	Forward Capacity Allocation	Balancing
System Operation	Transmission System Operation Guideline (TSOG)	Emergency & Restoration	
Grid Connection	**Requirements for Generators (RfG)**	High Voltage Direct Current (HVDC)	Demand Connection (DCC)

EU Network Codes Timeline



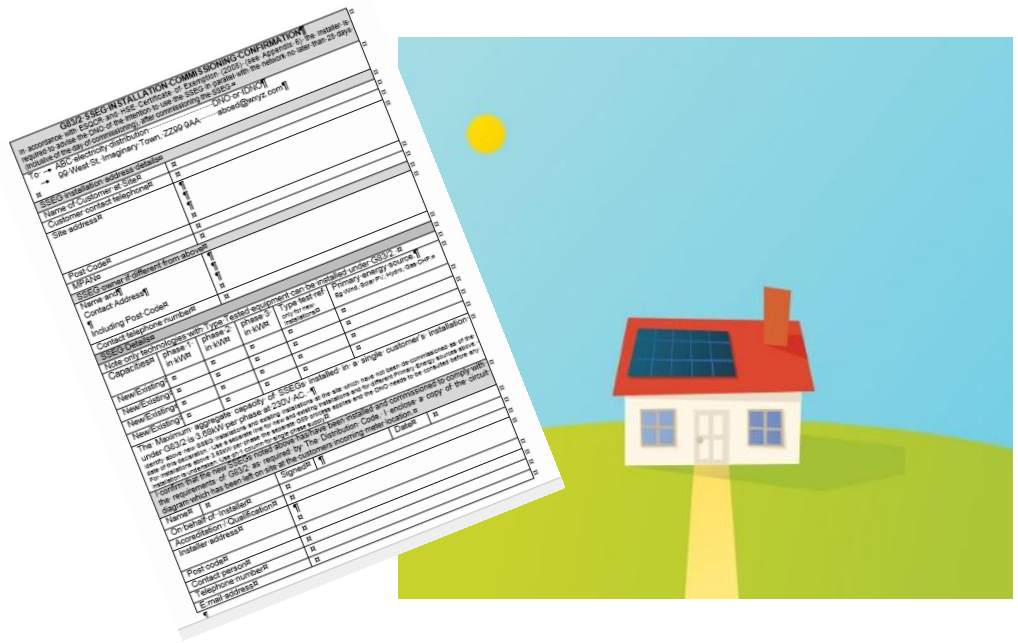
Requirements for Generators (RfG) Summary

- Requirements for Generators (RfG) became a legal entity May 2017
- Applies to generation commissioned after 27th April 2019
- ENA EREC G98 & G99 drafted to incorporate GB requirements of the RfG
  - G98 covers microgeneration <16A/phase
  - G99 covers generation >16A/phase
- Responsibilities on network operators and on generation owners (Generators in GB parlance)
- Contents:
  - Technical Requirements
  - Operational Notification Procedure for Connection
  - Compliance
  - Derogations
- ENA arranged Workshops and Briefing Sessions in April and May this year

Existing GB Documents

Existing national requirements (Grid Code, Distribution Code, EREC G59 & G83) are baseline (ie form the basis for the new text)

- Distribution Code – mainly DPC 7 – Requirements for Embedded Generators and the Data Registration Code (DDRC)
- EREC G83
- EREC G59
- Common Application Form
- DG Guides
- The Guide to the Distribution Code



New GB Documents

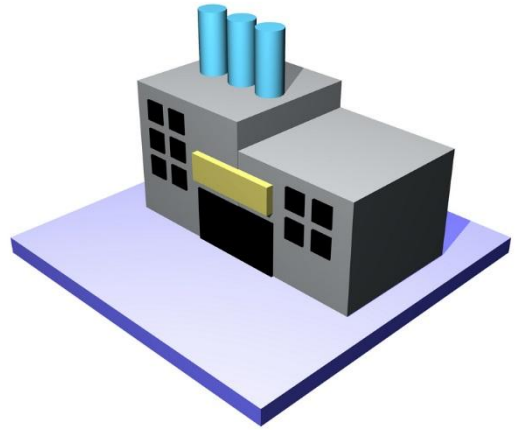
- Distribution Code –
  - DPC7 substantially amended (ie relevant requirements only now in G99)
  - Distribution Data Registration Code – but implemented via the DNOs' common application forms
- EREC G98 Type Tested < 16A/phase
- EREC G99
- Revised Common Application Form
- Revised DG Guides

- You can connect G99 compliant plant in advance of 27 April 2019 as it will also comply with G59

Generation connecting to the Distribution Network

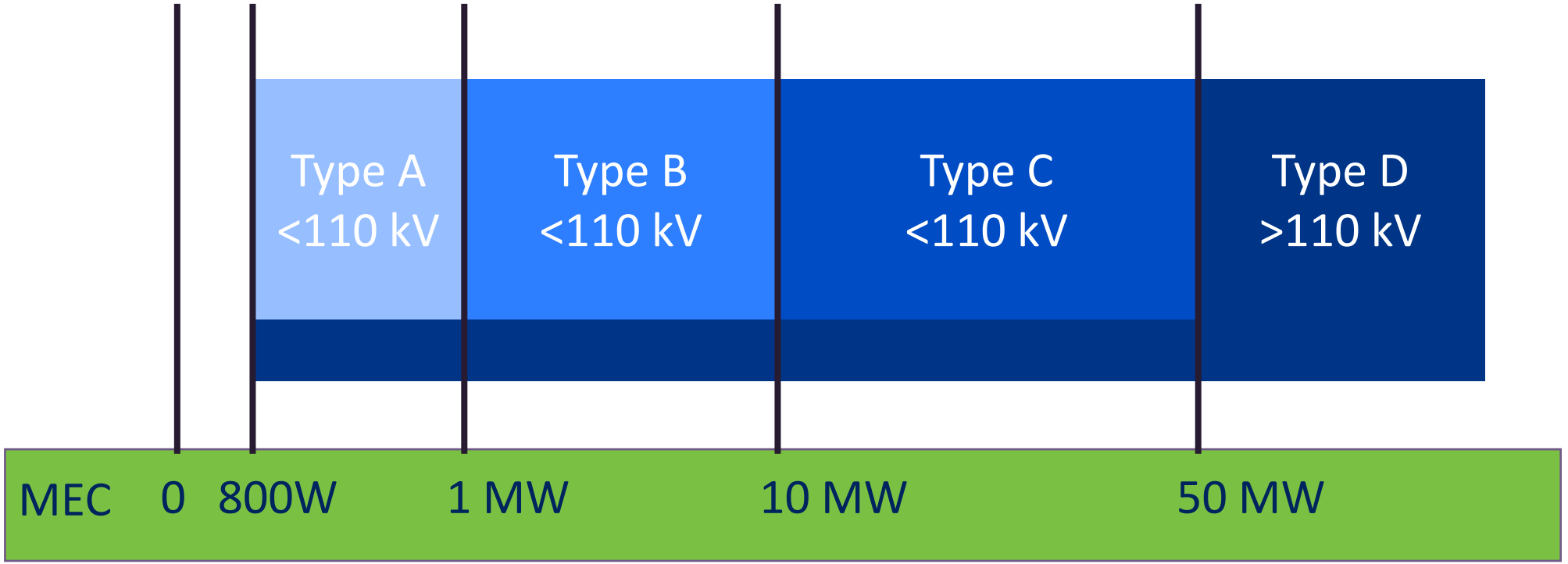
except:

- Storage G59 / G83 Requirements still apply
- Generating modules < 800 W
- Emerging Technologies (applications / Ofgem Decision 2017)

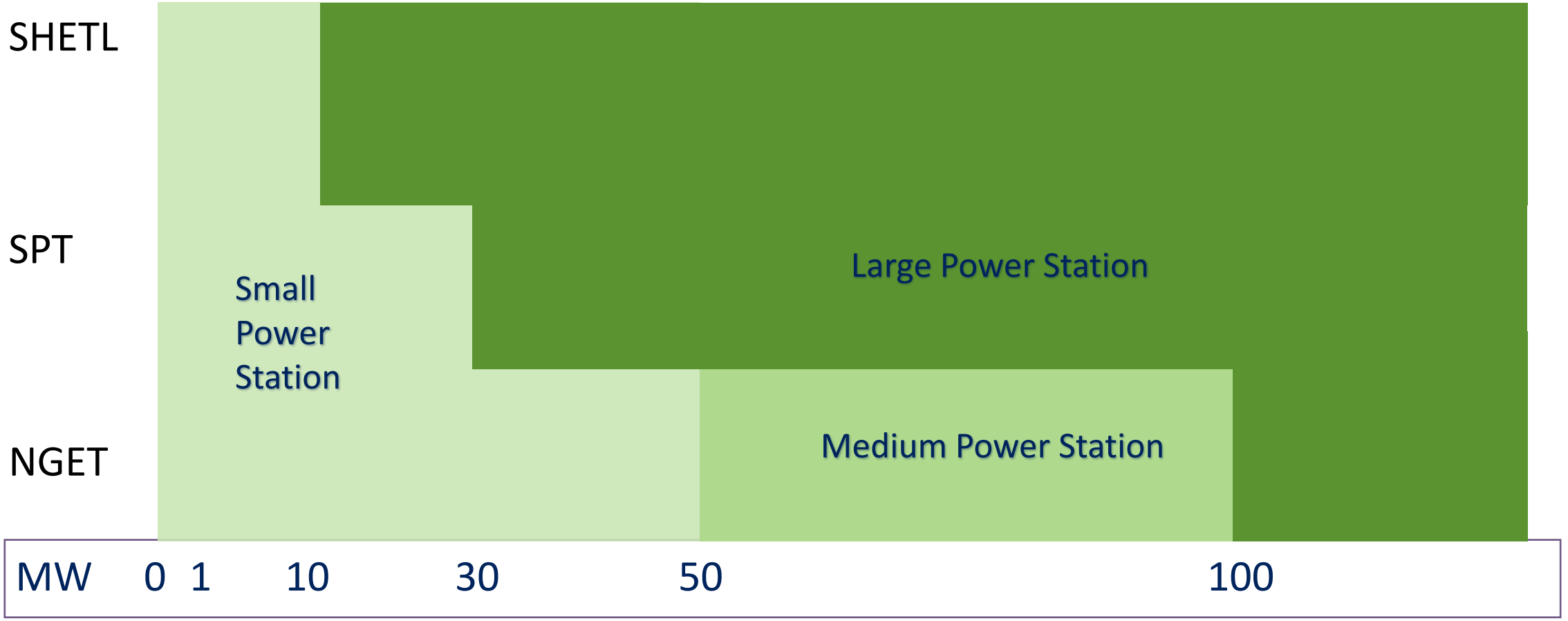


Generation connecting at Transmission Voltage (275 kV or 400 kV in England and Wales, also 132 kV in Scotland) - Grid Code applies (new European Connection Code sections)

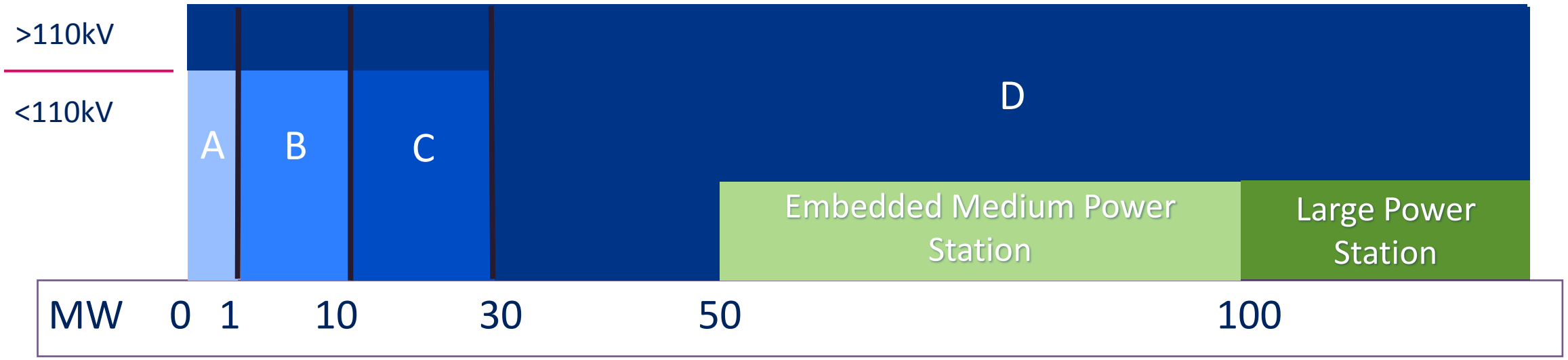
RfG Types (GB)


Type A
<110 kV
Type B
<110 kV
Type C
<110 kV
Type D
>110 kV
MEC
0
800W
1 MW
10 MW
50 MW

GB Small, Medium, Large

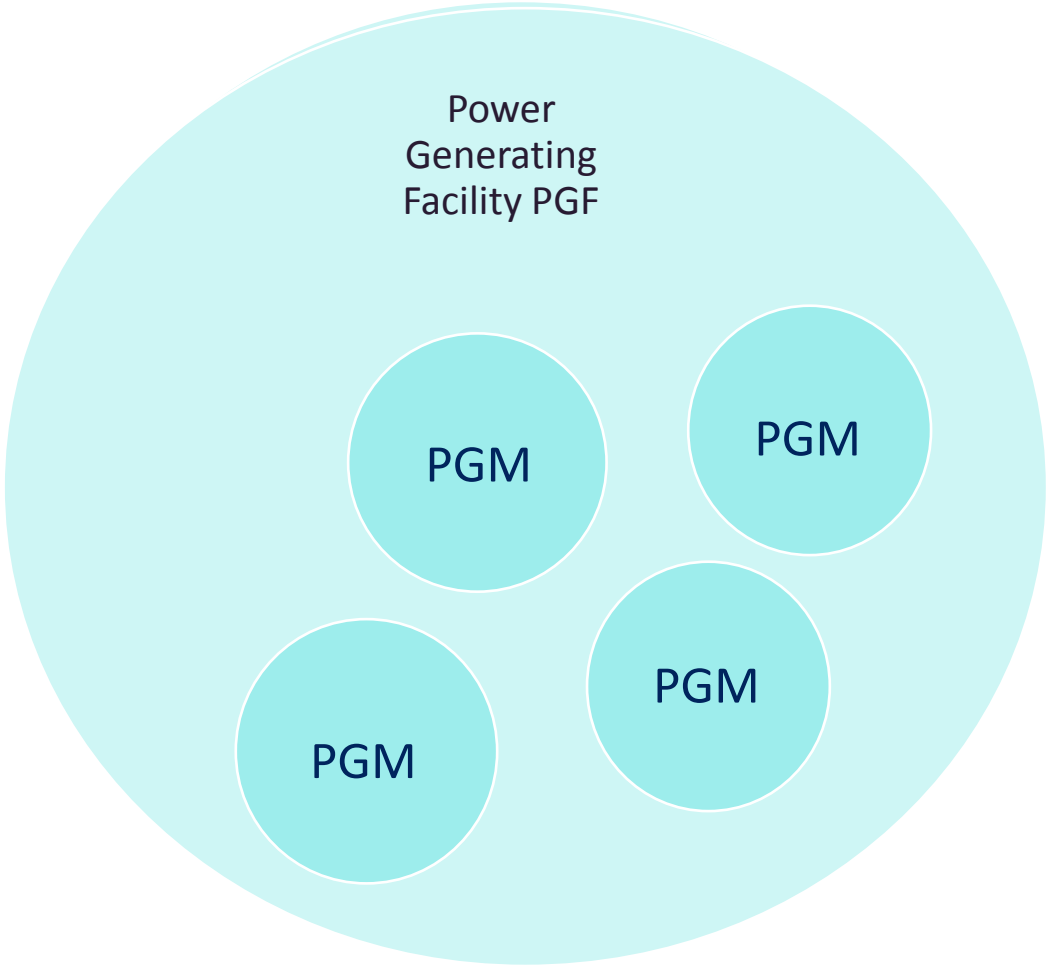


NGET (England & Wales) G98 & G99

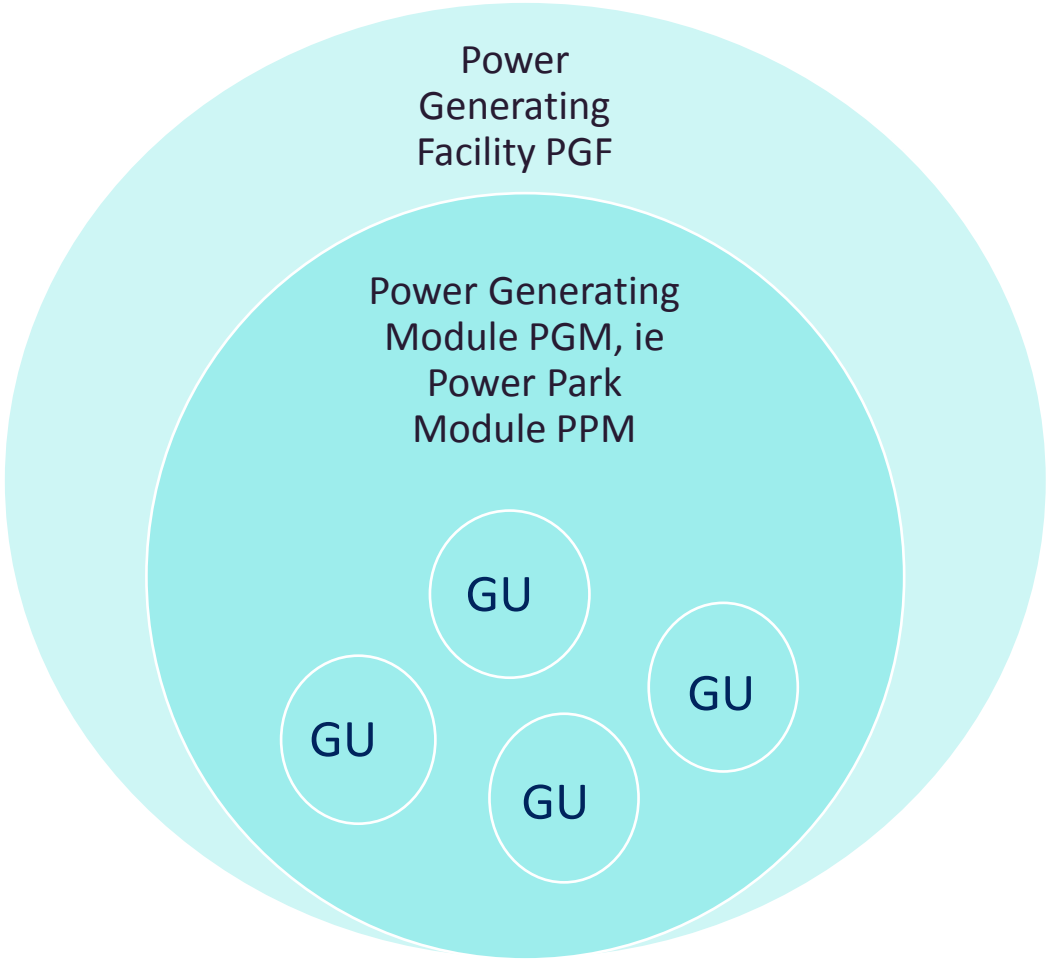


Power Generating Units & Power Generating Modules

- Principle terminology in RfG – GU, PGM, PGF – differences between Synchronous and Asynchronous

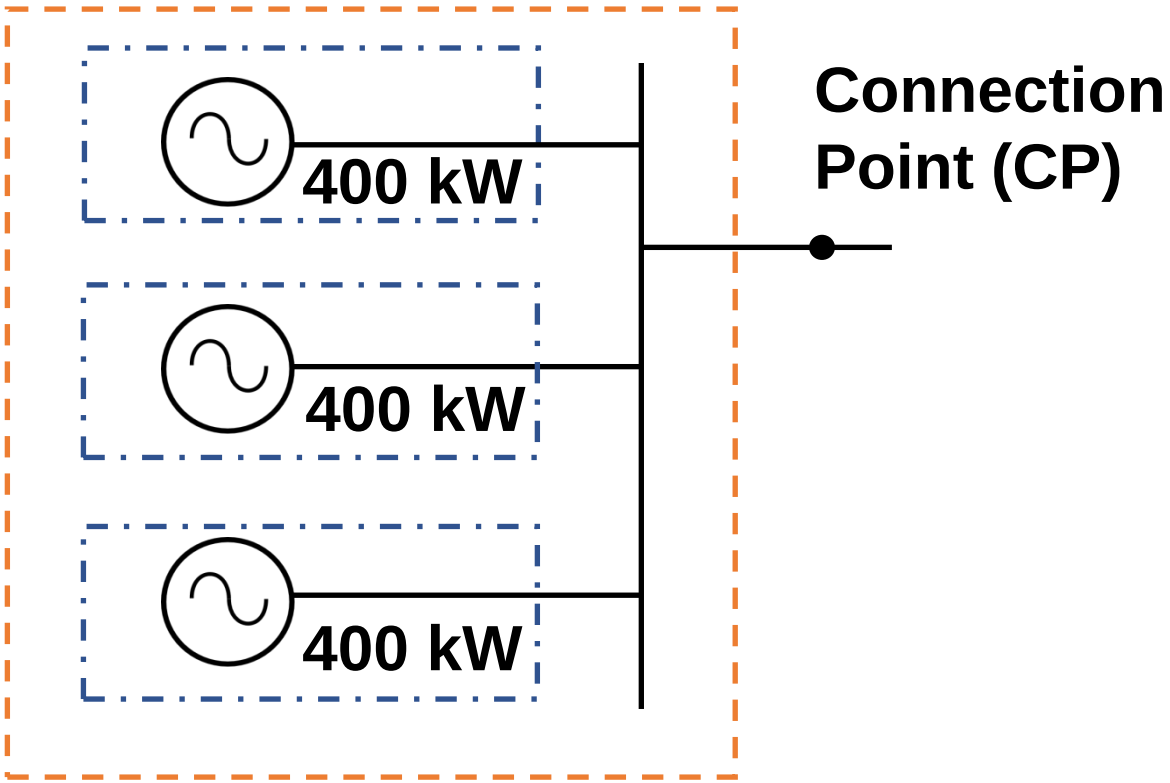


SYNCHRONOUS SCHEME



ASYNCHRONOUS SCHEME

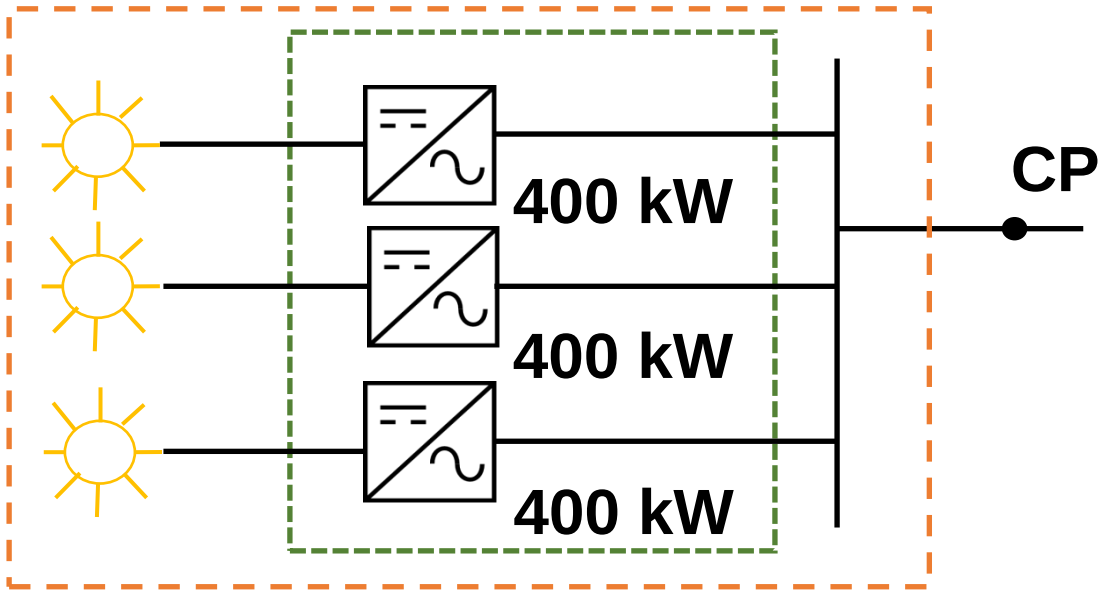
3 x 400 kW Type A Synchronous PGMs = 1.2 MW PGF



Power Generating Module (PGM) / Synchronous Power Generating Module

Power Generating Facility (PGF)

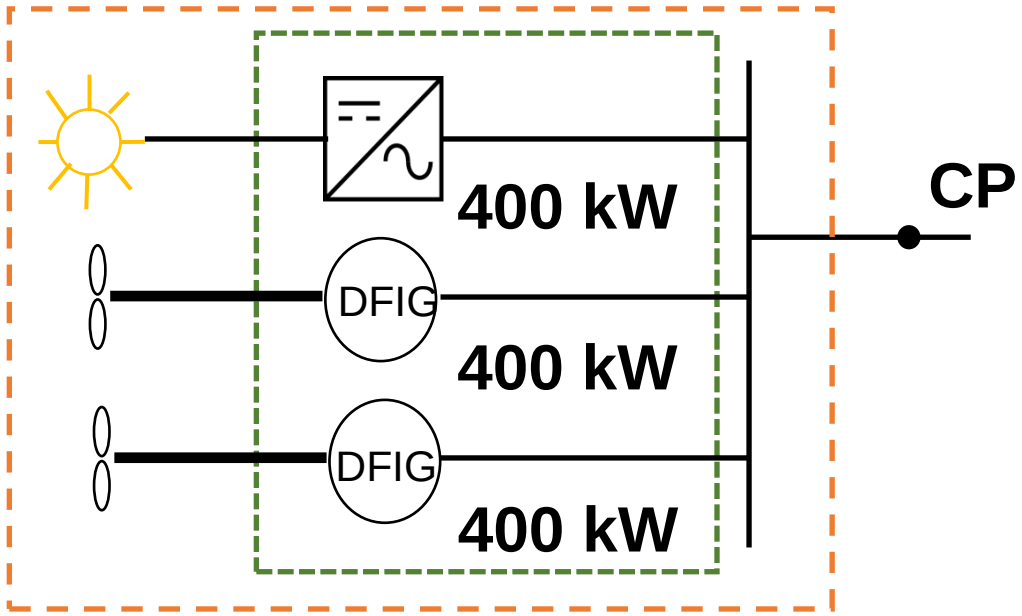
3 x 400 kW Inverter connected GUs = 1.2 MW Type B PPM = 1.2 MW PGF



Power Generating Module (PGM) / Power Park Module (PPM)

Power Generating Facility (PGF)

1 x 400 kW Inverter connected plus 2 x 400 kW Asynchronous GU = 1.2 MW Type B PPM = 1.2 MW PGF



Power Generating Module (PGM) / Power Park Module (PPM)

Power Generating Facility (PGF)

Coffee Break

Transition to a Distribution System Operator

Cara Blockley,

Central services manager

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From DNO to DSO

Old Distribution Network Operator model

Lower numbers of connections

Relatively easy to connect/ more demand

Limited customer engagement

Reactive management

Network sized to cope with peak winter demand

Very little renewable generation

“Fit and forget”

New Distribution System Operator model

Energy flows in multiple directions

Huge increase in number of renewable connections

Increasingly complex to manage supply and demand

Need to build relationships, and facilitate competition and innovation

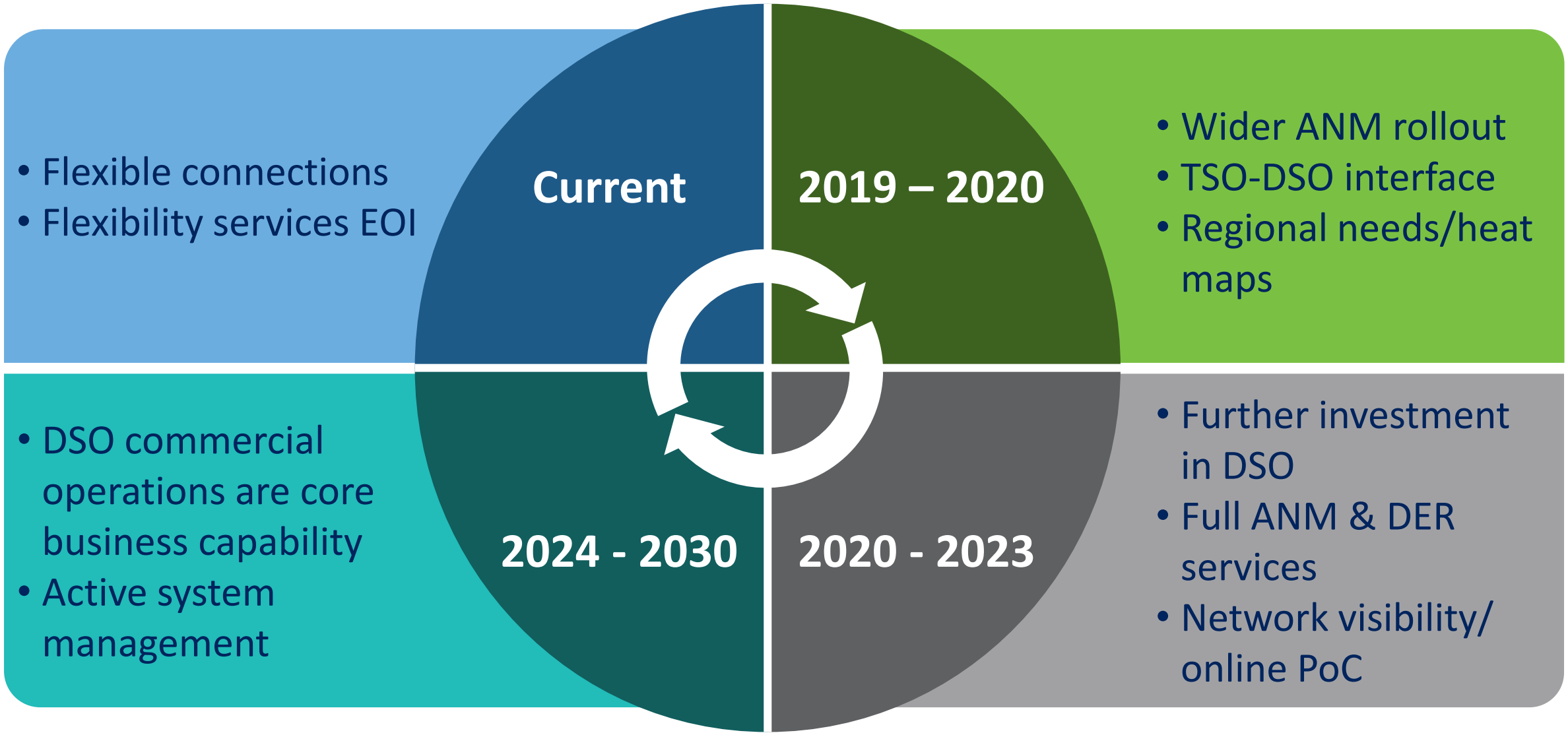
Much higher use of electricity for electric vehicles and heat

Electricity distributors will need to play a more sophisticated role

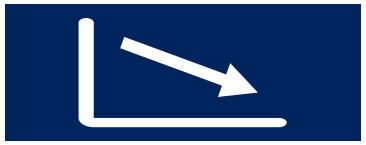
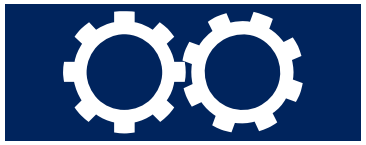
Our guiding principles

Neutral, but not silent	Network automation	Collaboration	No regrets	Everyone's included	Affordable and efficient
We want to be a trusted source of information while remaining commercially neutral	We will provide sophisticated, automated network services	We will work with North West stakeholders and collaborate with them to develop local and regional solutions	We will work with stakeholders and customers to plan in a sensible, informed way for the development of flexible markets in our region	We are committed to ensuring that the poorest in society are not disadvantaged by energy sector developments	We will continue to focus on value for money and on making efficient investment decisions

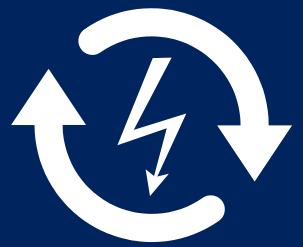
DSO transition



What we've already delivered

	Improved data quality and network connectivity	Cleansed network data – reliable network model is key foundation for DSO services
	Better use of network analysis tools	Better understanding of load flow and fault levels
	Flexible connections	Developers benefit with quick, affordable connections
	Control room data integration with customer service	New interface ensures that we're better able to manage impact of network events on customers
	Improved network automation	Automatic Restoration System has significantly improved customer impact of faults on high voltage network
	Enabled Respond	Active fault level management that avoids traditional network reinforcement
	Smart meter integration	Will give better visibility of the performance of the whole system and enhance the decision-making capacity of network operators.

What we are currently working on

				
Active network management (ANM)	Transmission operator interface balancing	Looking ahead capability	Forecasting	Contract management and curtailment index
				
Distributed energy resource management	Capacity mapping	Industry data flows	Automated point of connection	Sentinel integration

Heat Map Update

Gillian Williamson

Strategic Planning

Stay connected...

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Heat Map Update

Delivering on our promises:

Update on our progress regards our commitment:

Commitment	Action
We will improve visibility of remaining available capacity.	We will publish improved information on available thermal capacity & fault level

- We have **started development of improved heat maps**
- Expect them to be available in **Autumn 2018**

Heat Map Update

Improved Heat Map Objectives:

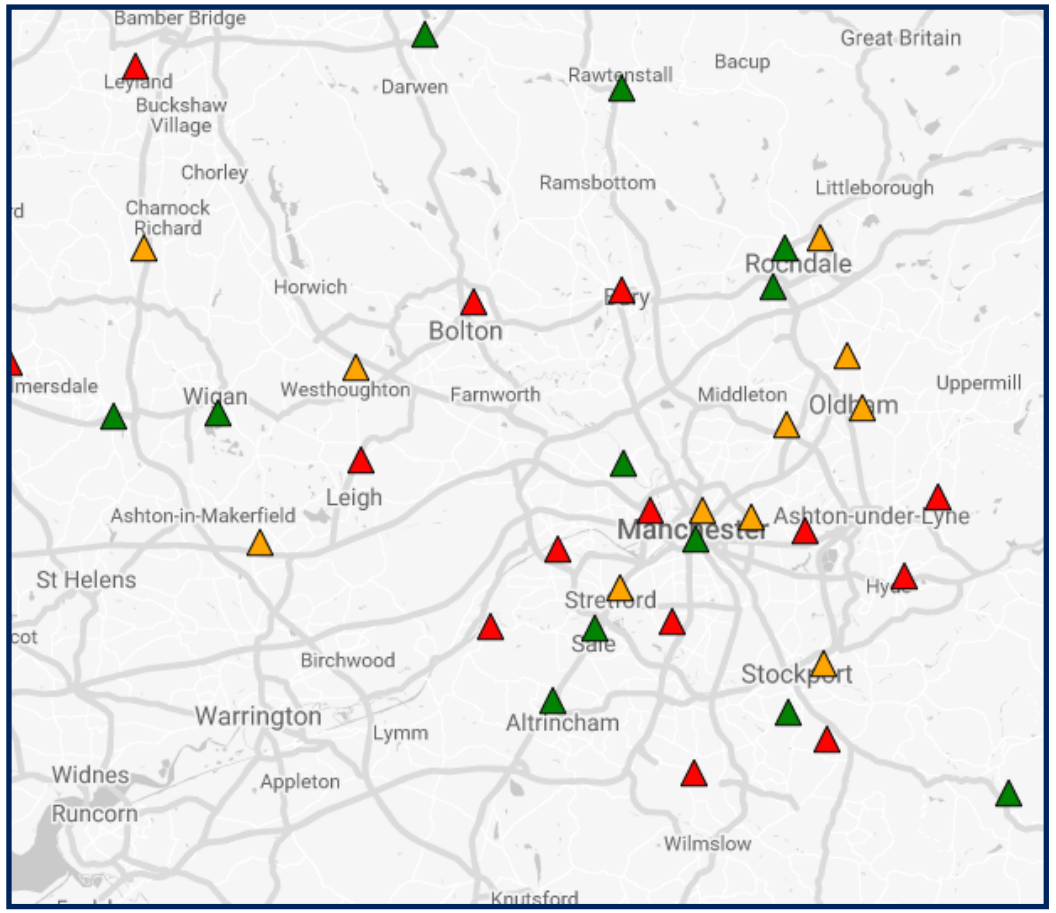
Map the ease of connection of large generators and demands

- Improve customer experience and utility
- Geographical indication of the ability to connect
- Improve access to network information
- Provide more up to date information
- Provide better information to support and inform customers' own planning and design
- Provide detailed network information to improve customer understanding of network issues so that you can deduce the suitability of alternative connection approaches

Heat Map Update

Example of Heat Map:

- Pinpoint locations
- Grid supply, 132/33kV & 33kV/HV substations
- **Colour coded** to guide customers to areas where connections can be made without significant reinforcement
- Summary of **detailed information**
- Indication of **transmission** network **constraints**

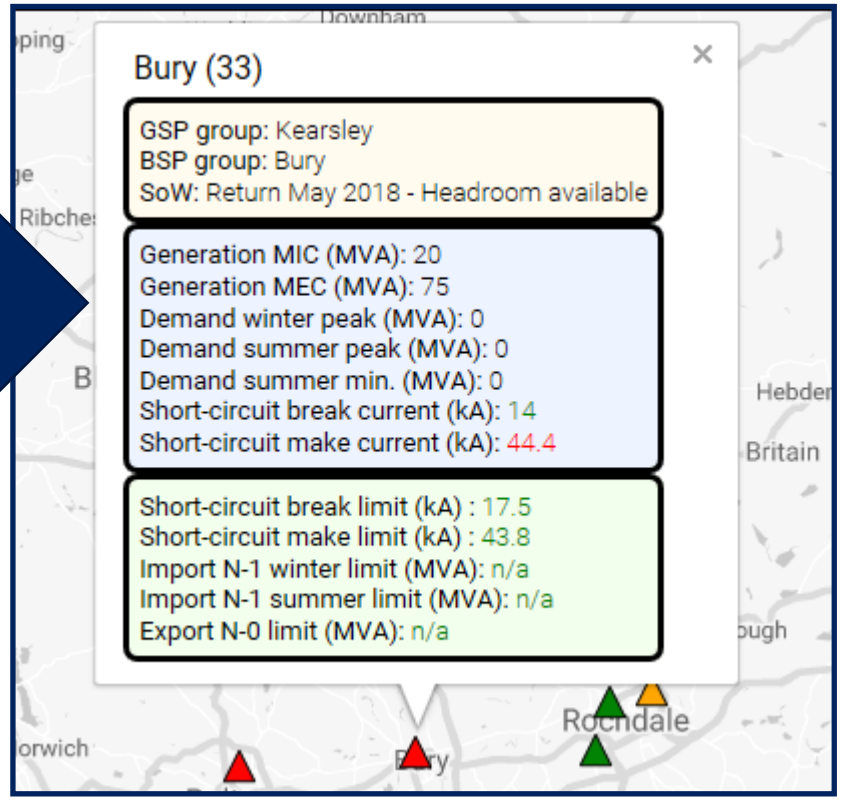


Development graphic

Heat Map Update

Data summary

- Demand (max & min) vs thermal ratings
- Connected generation vs reverse power capability
- Fault levels vs fault level limitations



Development graphic

- Network will be consistent with the Long Term Development Statement, supplemented with quantities of accepted generation connections
- Data will be regularly updated
- We will have the opportunity to extend the data in the future, e.g. Voltage issues or network reliability indices

Heat Map Update

Data summary

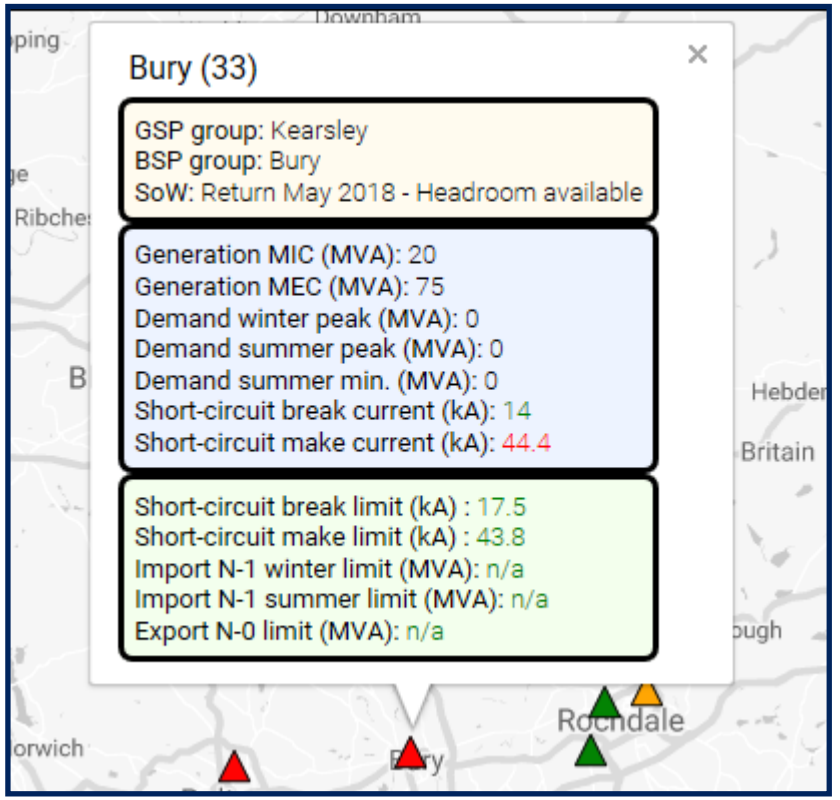
Permits consideration of thermal & fault level headroom

Connections are still feasible where there is no thermal or fault level headroom, but they may;

- **require network reinforcement**

or

- **an alternative connection arrangement, such as temporary reduction in network access**

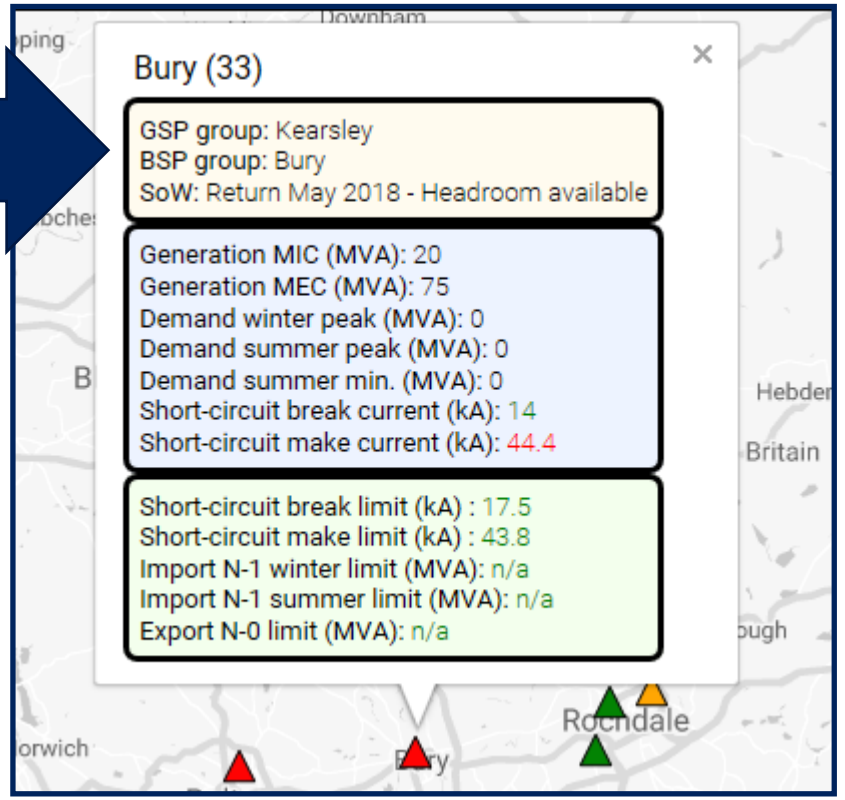


Development graphic

Heat Map Update

Statement of Works

Heat map information will include information on National Grid's Statement of Works



Development graphic

Statement of Works summarise the results of National Grid's assessments of the impact of Distributed generation on the transmission system.

Generators ≥ 1MW

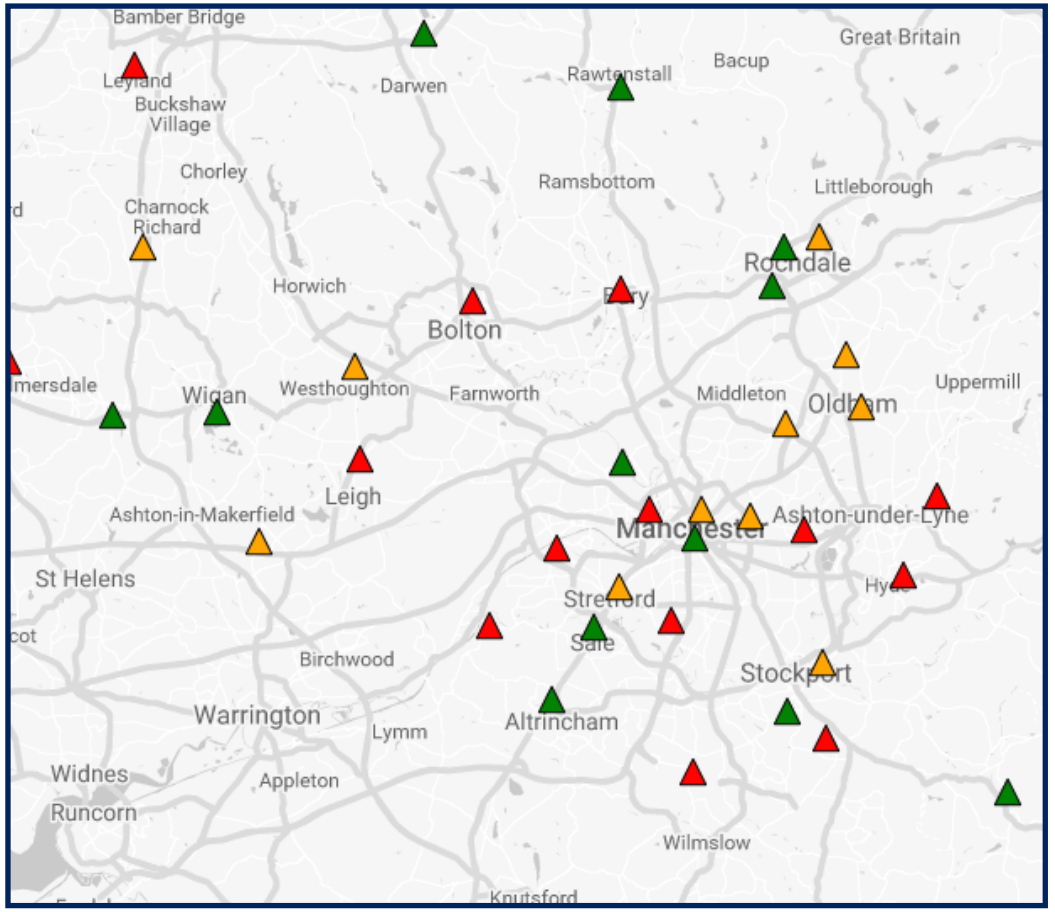
Some statements of works have highlighted the need for reinforcement of the transmission network before more distributed generation is connected.

There may be significant costs and delays to customers who initiate transmission network reinforcement works.

Heat Map Update

We would appreciate your thoughts .....

Questions?



Development graphic

Panel Questions

Wrap up and Close
Brian Hoy

electricity north west
Bringing energy to your door