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Distributed Generation HV & EHV Workshop 9 July 2019

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11:00 - Welcome & Introduction (Steffan Jones)

Incentive on Connections Engagement Update (Hannah Sharratt) Engineering Recommendation G99 (Gill Williamson) Accelerated Loss of Mains Change Programme (Keith Evans) Heat Map Tool Demonstration (Gill Williamson) 12:45 to 13:15 – Lunch Post acceptance process (Tracey Taylor) Zero Carbon Plan (Brian Hoy) Flexible Services (Keith Evans) A&D Fees (Brian Hoy) Question & Answer Session (All) 14:45 - Wrap Up & Close (Mark Williamson)

Meet the Team - Presenters

Business Connections

Manager



Regulation

Energy Solutions Director

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Meet the Team



Joe Davis



Project Planner





Infrastructure Solutions Programme Manager

Victoria Brown



Bid Engineer



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Incentive on Connection Engagement (ICE) Update

Hannah Sharratt

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Ofgem introduced the 'Competition Tests' in DCPR5 to incentivise DNOs to encourage competition in connections. There were mixed results across the DNOs, and so Ofgem introduced ICE as part of RIIO ED1.

"The Incentive on Connections Engagement Incentive (ICE) drives Distribution Network Operators (DNOs) to provide good customer service to larger connection customers.

Under this incentive DNO's will need to provide evidence that they have engaged with connection stakeholders and responded to their needs."

Ofgem

The aim of this incentive is to replicate the effects of competition and drive DNO's to understand and meet the needs of larger connection customers. Where competition was deemed to be effective there was no need for this regulatory proxy.

Competition Tests for DNO's

																_
		ENWL	NPg North	NPg York	UKPN EPN	UKPN LPN	UKPN SPN	WPD S West	WPD S Wales	WPD E Mid	WPD W Mid	SSE Hydro	SSE South	SP Man	SP Dist	Total
	(i) LV work:	Passed Apr 2014	Not passed	Not passed	Not passed	Not passed	Not passed	Not passed	Not passed	Not passed	Not passed	Not applied	Not applied	Not passed	Passed Dec 2013	2
ustomer	(ii) HV work:	Passed May 2013	Passed Oct 2012	Passed Oct 2012	Not passed	Not passed	Not passed	Not passed	Passed Dec 2013	4						
mand C	(iii) HV and EHV work:	Passed May 2013	Not passed	Not passed	Passed Aug 2013	Passed Aug 2013	Passed Aug 2013	Not passed	Not passed	Passed Feb 2013	Passed Feb 2013	Not passed	Not passed	Not passed	Not passed	6
De	(iv) EHV work and above:	Passed Nov 2011	Not passed	Not passed	Passed Aug 2013	Passed Aug 2013	Passed Aug 2013	Not passed	Not passed	Passed Feb 2013	Passed Feb 2013	Not passed	Not passed	Not passed	Not passed	6
tio	(v) LV work:	Not passed	Not	Not	Not	Not	Not	Not	Not	Not	Not	Not	Not	Not passed	Not passed	0
l strbu	(vi) HV and EHV	Passed Nov 2011	Not passed	Not passed	Passed Oct 2012	Passed Oct 2012	Passed Oct 2012	Passed Feb 2014	Not passed	Not passed	Not passed	Not passed	Passed Apr 2014	Not passed	Not passed	0
8 %	(vii) LA work:	Passed May 2013	Not passed	Not passed	Passed Aug 2013	Not passed	Passed Aug 2013	Passed Feb 2013	Passed Feb 2013	Passed Feb 2013	Passed Feb 2013	Not applied	Not passed	Passed Dec 2013	Not passed	8
Unmeter(premise((viii) PFI work:	Passed Nov 2011	Not passed	Not passed	Passed Oct 2012	Passed Oct 2012	Passed Oct 2012	Passed Feb 2013	Passed Feb 2013	Passed Feb 2013	Passed Feb 2013	Not applied	Passed Apr 2014	Passed Dec 2013	Not passed	10
	(ix) Other work:	Not passed	Not passed	Not passed	Not passed	Not passed	Not passed	Not passed	Not passed	Not passed	Not passed	Not applied	Not passed	Not passed	Not passed	0
				1			1								1	
	LANDLOO		y	9	∎ y	1 9	1 9	y	9	1 9	I G	- 4	· /	u	i ()	
	Applied	3	1	1	5	4	5	2	2	4	4		2	2	9	40

- We passed seven of the nine market segments, including Distributed Generation for HV and EHV.
- Our engagement activities with our High Voltage & Extra High Voltage Generation stakeholders is a voluntary workplan and is not covered by ICE.
- Ofgem ICE Consultation Open to 22 July

ICE 2018-19 Workplan Performance



Improve our connection charging approach to make charging fair for our customers	✓ Listened to feedback on impact : small up-front charge introduced for EHV and HV customers.
Engage with Stakeholders on our transition to Distribution System Operator (DSO) Strategy	✓ Presented at HV/EHV Generation workshop (June 18) describing our DSO Strategy.
Review our connection offers and introduce a new offer pack in line with our Stakeholders needs.	✓ New connection offer pack released.
Improve visibility of our remaining available capacity.	✓ Heatmap Tool published.
Implement a new transmission-distribution interface process.	✓ New process published and implemented.
Host a DG Owner / Operator forum session for generators at 33/132kV.	✓ Owner / Operator forum hosted December 2018.
Target improved timescales to provide HV and EHV quotations within an average of 58 working days.	✓ Achieved 56 days for EHV and 38 days for HV.
➢Offer opportunities for Stakeholders to engage with us.	✓ 2 workshops, 8 surgeries, 1 webinar for DG Stakeholders.
Provide quarterly updates on our progress.	✓ Quarterly updates and newsletters issued and published.



Action	Progress
Communicate with our Stakeholders on Engineering Recommendation G99 requirements for the connection of Generation Equipment.	
Engage with Stakeholders on our transition to Distribution System Operator (DSO) Strategy.	
Continuously improve how we provide information and publish requirements for flexible services , such as Demand Side Response.	
Clearly communicate where flexible connection options are available.	
Provide briefings for stakeholders on the proposed changes to charges through Ofgem's significant code review.	
≻Review our interactivity processes in line with best practise identified through the Open Networks Project.	
≻Lead the national engagement with stakeholders on more consistent DNO connection charging approach to make charging fair for all of our customers.	



Action	Progress
Engage with our Stakeholders to improve outage communications, adopting the principles of the Solar Trade Association (STA) best practice guide and apply where appropriate.	
>Improve access and presentation of information on available thermal capacity and fault level on our network.	
Engage with stakeholders to review and improve the post acceptance process.	
Engage with our stakeholders on the impact of our new Network Management System.	
➤Target improved Time to Quote timescales (57 working days).	
Improve 3 rd party access to our Network Information on GIS.	
Improve communications on Transmission Constraints.	
Engage with Stakeholders to improve the ENWL 'Get Connected' website.	

Improving our Get Connected Website

- We have committed to : *Engage with Stakeholders to improve the ENWL 'Get Connected'* website.
 - Establish a working group for external users

Why?	How?	Who?	
 To enhance the user experience for our stakeholders and to ensure it satisfies our stakeholders needs 	 Identify areas for improvements Provide pointers on what works and what doesn't Test ideas and designs prior to publication 	 Current users (customers / prospective customers) Non-users If interested, please contact me at ice@enwl.co.uk 	
Provide feedback on curre website	ent Participate in gro (face to face o	oup sessions r webinar)	rovide feedback on improvements

- Undertake a comparison of other similar websites to identify potential improvements & test these ideas with the working group.
- Define improvements and implement where possible.

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Engineering Recommendation G99

Gill Williamson

Stay connected... F B O in www.enwl.co.uk EREC G99



G99:

Requirements for the connection of generation equipment in parallel with public distribution networks on or after 27 April 2019



Implemented 27 April 2019

• Update on experience to date

EREC G99 - Agenda



EREC G99 – Useful information





G98 & G99 are evolving, so please always check for and use the latest versions.

Latest versions from 16 June 2019 are:

G98 Issue 1 Amendment 4 and G99 Issue 1 Amendment 4

Changes include:

- Correction of typographical errors and defects in original drafting
- Responses to stakeholder feedback with definite implications

Further changes are expected including SAF and main documents

G99/NI has been amended to address relocating generators and ENWL will consider relocations in the meantime in advance of Ofgem approving a similar amendment to G99



Update on the ENA Type Test Database

ENA Type Test Register is available @ http://www.ena-eng.org/gen-ttr/

Product manufacturers upload data and documentation relating to their products

Manufacturers have been requested to resolve issues with most of the 370 entries

We will contact manufacturers directly about missing or incorrect information



•G99 describes scenarios which can comply with G59 after 27 April 2019
•Ofgem have agreed that DNO's can be reasonable around transitional compliance
•Please discuss you specific circumstances with us.

Likely to be permitted to connect in compliance with G59 after 27April 19	Likely to be required to comply with G99
•Delays in commissioning when main plant ordered before 17 May 2018	•PGM connected after 27 April 2019 with no DNO involvement
 Phased PPM installation begun under G59 	•Phased SPGM installation begun under G59

- •G99 requires Generators to notify the DNO before they replace a component of a PGM including protection
- •It may be necessary to comply with G99 so please discuss you specific circumstances with us.

(Likely to be able to) still comply G59	(Likely to) require compliance with G99
•Existing generators at a site where a	 New PGM at an existing generation
new G99 generator is installed	site
•Like for like replacement	 Change to an existing PGM which
 Replacement of a PGM component 	changes the Registered Capacity or
without changing Registered Capacity	requires the connection agreement to
•Replacing a G59 compliant PGM with a	be modified
relocated G59 compliant PGM of same	•Relocating a G59 compliant PGM to a
or lesser capacity	new site



We want to share our experience to date to enable us to work better together

BESS are exempt from some technical requirements

Generators are free to choose method of compliance

Please use the word version of the PGMD

Check detailed technical requirements

Please clearly signpost evidence using filenames, report section, figure and table numbers

EREC G99 – Obtaining further information



EREC G99 - References



Electricity North West Website

https://www.enwl.co.uk/get-connected/new-connection/generation-connection/engineering-recommendation-g99

ENA Website

http://www.energynetworks.org/electricity/engineering/distributed-generation/engineering-recommendation-g59.html

> DG Connection Guides

http://www.energynetworks.org/electricity/engineering/distributed-generation/dg-connection-guides.html

> Distribution Code DPC7

covers requirements for embedded generators including G99 http://www.dcode.org.uk/

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Accelerated Loss of Mains Change Programme

Keith Evans

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- EREC G59 requires GB generation owners to install loss of mains (LoM) protection at their generation sites.
- This is to ensure that distributed generation does not form an autonomous power island with the remaining local demand.
- Major damage could be done if isolated network re-joins the rest of the network, due to the potential for out of phase switching.
- The two most commons forms of LoM protection are:
 - rate of change of frequency (RoCoF) relays, and
 - vector shift (VS) relays.
- Older relays work on a vector shift principle, which is susceptible to nuisance tripping and new sites connected using G99 or recent sites under G59-3, are prohibited from using VS protection.
- To lower the cost of the reserve generation, National Grid and the ENA have stated that all sites will have to be converted from Vector Shift protection to Rate of Change of Frequency (RoCoF) by April 2022.



- **DC0079** is a national working group which has been established to modify historical loss of mains (LoM) protection settings to address network stability concerns.
- The first phase oversaw modified protection settings for all installations >5MW. This second phase is looking to modify the protection settings of all G59 generators fitted with LoM protection commissioned prior to February 2018.
- To comply with the latest requirements, it will be necessary to revise the LoM protection settings for all the existing embedded generation fleet to:
 - Ensure that where rate of change of frequency (**RoCoF**) protection relays are used, as part of Loss of Mains protection, the applied setting should be **1Hz/s with a definite time delay of 500ms**,
 - Ensure that vector shift protection technique should be removed where it is in use as Loss of Mains protection,
 - Remove LoM protection from all generation except synchronous and DFIG where a suitable RoCoF setting cannot be made without additional investment.

Implementation process

- NGESO and DNO/IDNOs have devised a programme for facilitating the change to LoM protection.
- Older forms of LoM protection will need to be changed by May 2022.
- Generator owners will be offered support to help them to make the change.
- As part of the Accelerated Loss of Mains (LoM) Change Programme, generator owners are eligible to apply for a financial contribution to help them get the necessary work done by entering their details into the new online portal which is expected to be live by Summer 2019.





Within ENWL there are about 1000 distribution generators that are required to make the changes.

Scope of works	Baseline approach	Revised approach where works are to be completed by a 'recognised contractor'	Potential Funding
Replacing an existing relay by a new relay	ENWL witness testing	Self certification	£4000 (plus VAT)
Disabling an existing relay	ENWL witness testing	Self certification	£1500 (plus VAT)*
Change the settings of an existing relay	Self certification with % of sites subject to a post event sample site visit	Self certification	£1500 (plus VAT)*

*£500 (plus VAT) for each additional protection device on site that requires either settings change or protection function deactivation up to a maximum of £2500 (plus VAT) per site.

The amount of sites that will require witnessed testing is currently unknown, as this is dependent on the work needed to make the changes, and the contractor chosen by the DG to carry out the works.



So far:

- A series of stakeholder events were held by ENA (Energy Networks Association) during April 2019 and a set of slides have been published on their website.
- Details published on ENWL website here
- Information in newsletters.
- Email address: <u>ALoMCP@enwl.co.uk</u>
- To follow on confirmation of 'go live' date:
- National press release.
- ENWL press release .
- Social media.

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Heat Map Tool Demonstration

Gill Williamson

Stay connected... F B in www.enwl.co.uk New Heat Map Tool launched 28th January 2019



Download here: <u>https://www.enwl.co.uk/get-connected/network-information/heatmap-tool/</u>

•Does not replace detailed assessments

Indication of constraints doesn't mean that we cant connect you

Heat Map Tool





Heat Map Tool – Tab 1) User Guide and Network Maps



Heat Map Tool –Tabs 2 & 3) 11kV & 6.6kV & 33kV Connections



User enters connection requirements:

- •Grid co-ordinates
- Required capacity
- Connection type
- i.e. Demand or generation

Results

- •Nearest Primaries/BSPs
- •Headroom
- •Can be accommodated? (RAG)

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11 kV & 6.6 kV Connections

The results given by this tool are based on high level approximations only. It should also be noted that the network formal application may differ from the results given by this tool. For further information on how to interfirst tab. since the last time the data was updated. As such, the outcome of a mied within this workbook please refer to the user guide embedded within the

Inputs Easting Enter Data Northing Enter Data Scheme Capacity (MW) Enter Data Connection Type Enter Data the controls to the left to find the nearest primary substations to your site. The results will be displayed in the table below. When the desired site capacity and connection type are entered an estimate of available headroom and connection feasibility will be displayed. The results are based on both local constraints and constraints at the associated BSP.

Resu	lts							
No	Distance (km)	Primany Substation	BSD Group	GSP Group	Primary Subst	ation Location	Headroom (MW)	Can be accommodated? (RAG)
NO	Distance (kiii)	Finally Substation	DSP Gloup	Gar Gloup	Easting	Northing	meauroom (www)	can be accommodated: (NAG)
1	0.34	TRINITY	FREDERICK RD	KEARSLEY	382649	398230	0.0	
2	0.63	BLACKFRIARS	FREDERICK RD	WHITEGATE	383030	399104	4.1	
3	0.66	CHAPEL WHARF	FREDERICK RD	KEARSLEY	383499	398634	8.3	
4	0.71	DEANSGATE	BLOOM ST	SOUTH MANCHESTER	383463	398149	6.6	
5	0.83	KNOTT MILL	BLOOM ST	SOUTH MANCHESTER	383136	397725		
6	1.12	BRIDGEWATER	BLOOM ST	SOUTH MANCHESTER	A			
7	1.22	CANNON ST	RED BANK			000000	5.1	
8	1.43	FREDERICK RD	FREDERICK RD		381697	399348	10.2	
9	1.48	DICKINSON ST	BLOOM ST	SOUTH MANCHESTER	384109	397722	0.0	
10	1.55	STRANGEWAYS	RED BANK	WHITEGATE	383780	399743	5.1	

Connection Types	
Demand Firm	The connection of load which is secure for a first circuit outage.
Demand N-0	The connection of load which can be actively constrained off under outage conditions
Generation Synchronous (LV)	Generation such as diesel or gas turbines connected to the HV network through step up transformers.
Generation Synchronous (HV)	Generation such as diesel or gas turbines connected to the HV network directly i.e. without step up transformers.
Generation Inverter Based	Generation technologies connected by inverters this typically includes solar and wind generators
Battery Energy Storage	Inverter connected battery energy storage schemes

Heat Map Tool – Tabs 4 & 5) Primary & BSP Headroom Dat

Drimony Substation He	droom												
Primary Substation He	adroom				Primary Subst	tation Location	Demand Hea	adroom (MW)	Gener	ration Headroom N	I-0 -(MW)		-
Primary Substation	Voltage (kV)	BSP Group	GSP (Group	Easting	Northing	Firm	N-0	Inverter Based	Synchronous - LV	Synchronous - HV	Battery Storage Headroom N-0 -(MW)
ALBION ST	6.6	LOWER DARWEN	ROCH	DALE	367434	426087	0.0	13.7	0.0	0.0	0.0	0.0	
ALDERLEY	11	MOSS NOOK	SOUTH MA	NCHESTER	385044	379026	7.8	14.8	11.2	2.0	1.4	11.2	
ALSTON	11	PENRITH & SHAP	HARKER /	HUTTON	372125	546499	0.0	0.0	3.7	3.7	3.7	0.0	
AMBLESIDE	11	KENDAL (PARKSIDE RD)	HARKER /	HUTTON	337602	503506	7.5	16.7	0.0	0.0	0.0	0.0	
ANCOATS NORTH T11 & T12	6.6	RED BANK	WHIT	EGATE	385022	398830	0.0	1.2	32.2	6.9	5.0	1.2	
ANCOATS NORTH T14	6.6	RED BANK	WHIT	EGATE	385032	398840	0.0	5.1	20.0	20.0	16.0	5.1	
ANNIE PIT	11	STAINBURN & SIDDICK	HARKER /	HUTTON	300011	527810	2.4	6.9	0.0	0.0	0.0	0.0	
ANSDELL	6.6	LYTHAM	PENWORTHAM	WEST / STANAH	334416	428229	7.1	10.1	21.6	10.2	7.4	10.1	_
ARDWICK	6.6	STUART ST	STALYB	RIDGE	384753	397415	0.0	1.3	24.2	14.1	10.3	1.3	_
ARNSIDE	11	COLBORNE	HARKER /	HUTTON	346495	4/8180	9.7	13.4	0.0	0.0	0.0	0.0	
ASHTON (GOLBORNE)	6.6	GULBURNE	DENIMODITIANAE		35/050	400665	0.5	7.8	0.0	0.0	0.0	0.0	_
ASHTON ON MERSEY	6.6	SALE	CAPPU	AST / ROCHDALE	377188	392252	0.0	14.0	28.8	9.2	5.7	14.0	
ASHTON UNDER LYNE T11 & T12	6.6	HARTSHEAD-HEYPOD	STALVE	RIDGE	393275	399319	4.4	85	7.0	2.0	1.4	7.0	
ASHTON UNDER LYNE T13	6.6	INANISHEAD-HEIROD	STALTD		333213	333313	4.4	0.0	7.0	2.0	1.4	7.0	
ASHWOOD DALE	6.6												
ASKAM	11	i Celectr	hicitu										
ASKERTON CASTLE	11												
ASPATRIA	11												
ATHERTON TOWN CENTRE	11	 Bringing energy 	to your door										
ATHLETIC ST	6.6	í L											
AVENHAM	6.6	1											
BAGULEY	11	BSP Headroom	1										
BAMBER BRIDGE	11						BSP Coord	linates	Demand He	adroom (MW)	Generation He	adroom - N-0 -(MW)	
BARBARA ST	6.6	PCD	Vieltage (IAU)	a a a a a a a a a a a a a a a a a a a	CED Group								Battery Stora
BARROW	11		VOILUGE (KV)		use Group		Easting	Northing	Firm	Non Firm	Inverter Based	Synchronous	N 0 4
BARTON DOCK RD	6.6	10000	22		DEDBUDY								14-0 -(
BEDFORD	11	ADSWOOD	33		REDBURT		200100	200210	FF 6	72.0	150.1	54.4	N-0-1
BENCHILI	0.0	ALTRINCHAM	22		READSIEV		389188	388310	55.6	73.6	150.1	54.1	73
DENGINE			22	CA	REARSLEY		389188 380345 376380	388310 401831 389012	55.6 14.5 47.5	73.6 26.5	150.1 90.4 151.5	54.1 25.4 45.4	75
BENTHAM	11	ATHERTON	33	CA	RRINGTON		389188 380345 376380 366150	388310 401831 389012 402088	55.6 14.5 47.5 19.2	73.6 26.5 65.5 37.2	150.1 90.4 151.5 94.5	54.1 25.4 46.4 17.1	N-0 - 73 26 65
BENTHAM	11 11 55	ATHERTON	33	CA HARK	KEARSLEY KRINGTON KEARSLEY KER / HUTTON		389188 380345 376380 366150 319709	388310 401831 389012 402088 470489	55.6 14.5 47.5 19.2 39.4	73.6 26.5 65.5 37.2 79.4	150.1 90.4 151.5 94.5 80.2	54.1 25.4 46.4 17.1 14.5	N-0 -1 73 26 65 37 79
BENTHAM RISPHAM	11 11 6.6	ATHERTON BARROW BARTON	33 33 33	CA HARK CA	REARSLEY RRINGTON KEARSLEY KER / HUTTON		389188 380345 376380 366150 319709 376758	388310 401831 389012 402088 470489 397174	55.6 14.5 47.5 19.2 39.4 46.7	73.6 26.5 65.5 37.2 79.4 76.7	150.1 90.4 151.5 94.5 80.2 6.7	54.1 25.4 46.4 17.1 14.5 1.9	N-0 - 75 26 65 37 75 6
BENTHAM RISPHAM	11 11 55	ATHERTON BARROW BARTON BELFIELD	33 33 33 33 33	CA HARK CA R	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON ROCHDALE		389188 380345 376380 366150 319709 376758 391033	388310 401831 389012 402088 470489 397174 413945	55.6 14.5 47.5 19.2 39.4 46.7 55.3	73.6 26.5 65.5 37.2 79.4 76.7 74.9	150.1 90.4 151.5 94.5 80.2 6.7 54.7	54.1 25.4 46.4 17.1 14.5 1.9 12.9	N-0 - 73 26 65 37 79 6 54
BENTHAM BISPHAM	11 11 55	ATHERTON BARROW BARTON BELFIELD BISPHAM	33 33 33 33 33 33 33	CA HARK CA R PENWORTH	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON ROCHDALE HAM WEST / ST/	ANAH	389188 380345 376380 366150 319709 376758 391033 332328	388310 401831 389012 402088 470489 397174 413945 439711	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4	N-0 - 73 26 65 37 79 6 54 40
BENTHAM RISPHAM	11 11 5.5	ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN	33 33 33 33 33 33 33 33 33	CA HARK CA R PENWORTH PENWORTH	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON ROCHDALE HAM WEST / ST/ AM EAST / ROCH	ANAH HDALE	389188 380345 376380 366150 319709 376758 391033 332328 370584	388310 401831 389012 402088 470489 397174 413945 439711 429294	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9 60.0	73.6 26.5 65.5 79.4 76.7 74.9 51.9 77.6	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6	N-U - 7 2 6 3 7 7 6 5 5 5 4 4 7 7
BENTHAM Rispham	11 11 55	ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN BLACKPOOL	33 33 33 33 33 33 33 33 33 33	CA HARK CA R PENWORTH PENWORTH PENWORTH	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON ROCHDALE IAM WEST / ST/ IAM EAST / ROCI	ANAH HDALE ANAH	389188 380345 376380 366150 319709 376758 391033 332328 370584 330835	388310 401831 389012 402088 470489 397174 413945 439711 429294 435308	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6	150.1 90.4 94.5 94.5 80.2 6.7 54.7 40.6 84.4 84.4 36.9	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6 6.7	N-0 - 75 26 65 37 75 6 54 44 44 77 36
BENTHAM Rispham	11 11 55	I ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN BLACKPOOL BLOOM ST	33 33 33 33 33 33 33 33 33 33 33	CA HARK CA R PENWORTH PENWORTH PENWORTH SOUTH	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON GOCHDALE IAM WEST / ST/ IAM EAST / ROCI IAM WEST / ST/ I MANCHESTER	ANAH HDALE ANAH	389188 380345 376380 366150 319709 376758 391033 332328 370584 330835 384221	388310 401831 389012 402088 470489 397174 413945 439711 429294 435308 397717	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6 6.7 45.8	N-0 - 7: 24 6: 3: 7: 6 5 4 4 4 7: 7: 34 2. 11
BENTHAM RISPHAM	11 11 55	A ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN BLACKDURN BLACKDURN BLACKDURN BLACKDURN BLACKDURN	33 33 33 33 33 33 33 33 33 33 33 33 33	CA HARK CA R PENWORTH PENWORTH PENWORTH SOUTH	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON ROCHDALE IAM WEST / ST/ AM EAST / ROCH IAM WEST / ST/ H MANCHESTER KEARSLEY	ANAH HDALE ANAH	389188 380345 376380 366150 319709 376758 391033 332328 370584 330835 384221 372255	388310 401831 389012 402088 470489 397174 413945 439711 429294 435308 397717 410566	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0 18.3	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 84.4 36.9 160.0 10.7	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6 6.7 45.8 1.9	N-0 - 7: 22 6 3 3 7; 6 5: 44 4 7 7 3 1 1 1 1 1
BENTHAM RISPHAM	11 11 55	A ATHERTON BARROW BARRON BELFIELD BISPHAM BLACKBURN BLACKBURN BLACKPOOL BLOOM ST BOLTON BURNLEY	33 33 33 33 33 33 33 33 33 33 33 33 33	CA HARk CA CA PENWORTH PENWORTH PENWORTH SOUTH SOUTH R	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON ROCHDALE IAM WEST / ST/ AM EAST / ROCH IAM WEST / ST/ I MANCHESTER KEARSLEY ROCHDALE	ANAH HDALE ANAH	389188 380345 376380 366150 319709 376758 391033 332328 370584 330835 384221 372255 385569	388310 401831 389012 402088 470489 397174 413945 439711 429294 435308 397717 410566 434469	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0 18.3 58.1	73.6 26.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0 10.7 10.7	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6 6.7 45.8 1.9 1.9	N-D - 73 21 63 33 75 6 54 44 44 77 31 31 10 11 11
BENTHAM Bisdham	11 11 55	A ATHERTON BARROW BARROW BELFIELD BISPHAM BLACKBURN BLACKBURN BLACKBOL BLOM ST BOLTON BURNLEY BURY	33 33 33 33 33 33 33 33 33 33 33 33 33	CA HARR CA CA PENWORTH PENWORTH PENWORTH SOUTH SOUTH SOUTH B R R	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON KOCHDALE IAM WEST / ST/ AM EAST / ROCI IAM WEST / ST/ I MANCHESTER KEARSLEY REARSLEY	ANAH HDALE ANAH	389188 380345 376380 366150 319709 376758 391033 3323228 370584 330835 384221 372555 385569 380272	388310 401831 389012 402088 470489 397174 413945 439711 429294 435308 397717 410566 434469 411184	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0 18.3 58.1 23.9	73.6 26.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0 10.7 10.7	54.1 25.4 46.6 17.1 1.9 12.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9	N-0 - 7: 22 33 37 79 6 54 44 77 73 34 11 11 11 11
BENTHAM RISPHAM	11 11 66	A ATHERTON BARROW BARROW BELFIELD BISPHAM BLACKPOOL BLACKPOOL BURNLEY BURY BURY BURY	33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33	CA HARR CA R PENWORTH PENWORTH PENWORTH SOUTH SOUTH R R R S S S S S	KEARSJELY IRRINGTON KEARSLEY KEARSLEY KEARSLEY KOCHDALE IAM WEST / ST/ AM EAST / ROCH IAM WEST / ST/ I MANCHESTER KEARSLEY KEARSLEY ALYBRIDGE	ANAH HDALE ANAH	389188 380345 376380 366150 319709 376758 391033 332328 370584 330835 384221 37255 385569 380272 407769 407769	388310 401831 389012 402088 470489 397174 413945 439711 41945 439711 429294 435308 397717 410566 434469 411184 375476	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0 18.3 58.1 23.9 0.0	73.6 26.5 65.5 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3	150.1 90.4 151.5 94.5 80.2 6.7 40.6 84.4 36.9 160.0 10.7 10.7 10.7	54.1 25.4 46.4 17.1 14.5 1.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9	N-0 - 7: 24 66 33 7? 66 55 44 47 7: 33 10 10 11 11 11 11
BENTHAM RISPHAM	11 11 55	ATHERTON BARROW BARROW BELFIELD BISPHAM BLACKBURN BLACKDOL BLOOM ST BOLTON BURY BURY BURY CARUSE	33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33 33	CA HARR CA R PENWORTH PENWORTH PENWORTH PENWORTH SOUTH SOUTH R R S S T HARR	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON OCCHDALE IAM WEST / ST/ AM EAST / ROCI IAM WEST / ST/ IAM WE	ANAH HDALE ANAH	389188 380345 380345 376580 366150 319709 376758 391033 332328 370584 330835 384221 372255 385269 380272 407769 338655	388310 401831 389012 402088 470489 397174 413945 439711 429294 435308 397717 410566 434469 411184 375476 556583	55.6 14.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0 28.6 0.0 18.3 58.1 23.9 0.0 7.6	73.6 26.5 65.5 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0 10.7 10.7 6.7	54.1 25.4 46.4 17.1 14.5 1.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9 1.9	N-1 - 7: 2: 6: 3: 7: 5: 5: 5: 5: 5: 4: 4: 4: 4: 4: 4: 4: 4: 4: 4
BENTHAM RISPHAM	11 11 65	A ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKPOOL BLOM ST BOLTON BURNLEY BURY BURY CARLISLE CARRINGTON BSP	33 33	CA HARN CA R PENWORTH PENWORTH SOUTH SOUTH R R HARN HARN CA	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON ROCHDALE IAM WEST / STI IAM WEST / STI IAM WEST / STI IAM WEST / STI IAMCHESTER KEARSLEY ROCHDALE KEARSLEY ALYBRIDGE KER / HUTTON IRRINGTON	ANAH HDALE ANAH	389188 380345 376580 376580 366150 319709 376758 391033 332328 370584 330835 384221 372555 385569 3850272 407769 388655 373110	388310 401831 389012 402088 470489 397174 413945 439711 413945 439711 413945 439711 410566 434469 411184 434469 411184 375476 556583 393020	55.6 14.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0 18.3 58.1 23.9 0.0 7.6 21.6	73.6 26.5 65.5 79.4 76.7 74.9 71.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6	150.1 90.4 151.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0 10.7 10.7 10.7 10.7 6.7 0.0	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6 6.7 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 0.0	Net - 7: - 6: - 3: - 5: - 5: - 3: - 3: - 3: - 3: - 3: - 3: - 3: - 3: - 3: - 3: - 3: - 3: - 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 1: 11 </td
BENTHAM BISPHAM		ATHERTON ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN BLACKBURN BULACKBURN BULACKBURN BULACKBURN BULACKBURN BULATON CARLISLE CARINGTON BSP CASTLETON	33 33	CA HARN CA R PENWORTH PENWORTH PENWORTH SOUTT SOUTT SOUTT SOUTT ST ST ARR CA R R R R R R R R R R R R R R R R	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON IOCHDALE IAM WEST / STJ AM MEST / STJ AM WEST / STJ ALYBRIDGE KEARSLEY ALYBRIDGE KER / HUTTON IRRINGTON IOCHDALE	ANAH HDALE ANAH	389188 380345 376380 366150 366150 319709 376758 391033 332328 370584 330835 384221 37255 385569 380272 407769 338555 373110 388461	388310 401831 389012 402088 470489 997174 413945 439711 413945 435308 997177 410566 4334469 397717 410566 434469 375476 5556583 3993020 411290	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0 18.3 58.1 23.9 0.0 7.6 21.6 19.9	73.6 26.5 65.5 77.2 76.7 74.9 51.9 77.6 46.6 10.4 46.6 10.4 37.3 76.1 23.9 28.6 51.6 58.9	150.1 90.4 151.5 80.2 6.7 54.7 40.6 84.4 35.9 160.0 10.7 10.7 10.7 10.7 10.7 0.0 6.7 0.0	54.1 25.4 46.4 17.1 14.5 12.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 0.0 23.0	7 2 6 3 7 5 4 7 3 1 1 1 1 1 1 1 5
BENTHAM RISPHAM		A ATHERTON BARROW BARROW BELFIELD BISPHAM BLACKBURN BLACKPOOL BLOW ST BOLTON BURY BURY BURY CARLISLE CARRINGTON SSP CASTLETON CHADDERTON	33 33	CA HARI CA PENWORTH PENWORTH PENWORTH SOUT	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON ROCHDALE IAM WEST / ST/ M EAST / ROCH IAM WEST / ST/ IAM WES	ANAH HDALE ANAH	389188 380345 376380 376380 319709 376758 376758 391033 332328 370584 300835 384221 372255 385569 380272 407769 338655 373110 388461 389137	388310 401831 389012 402088 470489 397174 413945 439711 413945 439711 413945 439711 413956 434469 435565 434469 411586 555583 393020 411290 403821	55.6 14.5 47.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0 28.6 0.0 28.6 0.0 18.3 58.1 23.9 0.0 7.6 21.6 19.9 10.5	73.6 26.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 58.9 10.5	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0 10.7 10.7 10.7 10.7 9.7 6.7 9.3	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.7 0.0 23.0 17.8	7 7 6 6 3 3 7 4 7 5 5 5 5 5 5 5 5 5 5 5 5 5
BENTHAM RISPHAM	11 11 65	A ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKPOOL BLOOM ST BOLTON BURNLEY BURY BURY BURY CARLISLE CARRINGTON BSP CASTLETON CANDERTON DROYLSDEN	33 33	CA HARP CA PENWORTH PENWORTH PENWORTH SOUTT I R SOUTT I SOUTS I SOUTSOUTS I SOUTS SOUTS SOUTS SOUTS SOUTS SOUTS SOUTSO	KEARSLEY IRRINGTON KEARSLEY KER / HUTTON IRRINGTON NOCHDALE IAM WEST / STI AM EAST / ROCI IAM WEST / STI AU MANCHESTER KEARSLEY I MANCHESTER KEARSLEY ALYBRIDGE KER / HUTTON IRRINGTON NOCHDALE ALYBRIDGE	ANAH HDALE NAAH	389188 380345 376380 376380 319709 376758 391033 332328 370584 380835 384221 370584 385569 380272 407769 338655 373110 388656 388137 390140	388310 401831 389012 402088 470489 397174 413945 439711 429294 435701 429294 435708 397717 410566 4334469 397717 410566 434469 43149 411184 375476 555583 93020 411290 403821 403821	55.6 14.5 14.5 19.2 39.4 46.7 55.3 33.9 60.0 28.6 0.0 18.3 58.1 23.9 0.0 7.6 21.6 19.9 10.5 42.1	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 51.6 51.6 0.1	150.1 90.4 151.5 94.5 80.2 6.7 40.6 84.4 36.9 100.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7	54.1 25.4 46.4 17.1 14.5 19 12.9 7.4 36.6 6.7 45.8 1.9	K20 7 2 6 3 7 6 3 7 6 4 7 6 4 7 6 1 1 1 6 0 5 5 1 1 1 1 1 1 1 1 1 1
BENTHAM RISPHAM	11 11 6.6	A ATHERTON BARROW BARROW BELFIELD BISPHAM BLACKBURN BLACKPOOL BLOOM ST BOLTON BURY BUXTON CARLISLE CARRINGTON BSP CASTLETON CHADDERTON DROV(SDEN EGREMONT	33 33	CA HARN CA PENWORTH PENWORTH PENWORTH SOUT SUT SUT SUT HARN CA R W W ST ST HARN	KEARGLEY KER/HUTTON KEARSLEY KER / HUTTON KERNINGTON KOCHDALE IAM WEST / STI- HAMCHEST / STI- STI- STI- STI- STI- STI- STI- STI-	ANAH HDALE ANAH	389188 389345 376380 376380 366150 319709 319709 30137 320328 370584 330385 384221 372255 38559 380272 407769 388461 389137 380140 30140 300140 301070	388310 401831 389012 402088 470489 397174 413945 439711 429294 435308 397717 410566 434469 411184 434469 411184 4118469 411189 411290 403821 393020	55.6 14.5 14.5 19.2 19.2 19.2 19.2 19.2 19.2 19.2 19.2	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 58.9 10.5 60.1 76.1	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 35.9 160.0 10.7 10.7 10.7 10.7 10.7 10.7 97.5	54.1 25.4 46.4 17.1 14.5 .9 12.9 7.4 36.6 .6.7 45.8 1.9 1.9 .19 </td <td>Ku 7 2 6 3 7 6 5 44 44 41 11 11 11 11 12 5 5 11 11 11 11 11 11 11 11 11 11 12 13 13 13 14 17</td>	Ku 7 2 6 3 7 6 5 44 44 41 11 11 11 11 12 5 5 11 11 11 11 11 11 11 11 11 11 12 13 13 13 14 17
BENTHAM BISPHAM	11 11 66	A ATHERTON BARROW BARTON BELFELD BISPHAM BLACKBURN BLACKPOOL BLOW ST BOLTON BURNLEY BURY BURY BURY CARLISLE CARRINGTON BSP CASTLETON CRAUSE CASTLETON DROYLSDEN EGREMONT FREDERICK RD	33 33	CA HARR CA PENWORTH PENWORTH PENWORTH PENWORTH SOUTH S	KEARGLEY KERSINGTON KEARSLEY (GR / HUTTON KOCHDALE IAM WEST / STA IAM WEST / STA	ANAH HOALE NAH	389188 380345 376380 366150 319709 376758 391033 332328 370584 330835 330835 330835 330835 330835 332528 385569 380272 407769 388655 373110 388559 373110 388559 37310 3755 3755 3755 3755 3755 3755 3755 375	388310 401831 389012 402088 470489 397174 413945 439711 413945 439711 429294 435308 397717 410566 435308 397717 410566 435469 555658 3993020 411290 411290 403821 398146 513074 398250	55.6 55.6 14.5 14.7 19.2 39.4 46.7 53.9 46.7 53.9 60.0 28.6 0.0 18.3 58.1 28.9 0.0 7.6 19.9 28.6 0.0 7.6 19.2 28.9 28.9 28.0 10.5 21.4 23.9 24.9 25.9	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 58.9 10.5 60.1 76.1 10.2	150.1 90.4 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0 10.7 10.7 10.7 54.7 97.5 6.7 97.5 6.7	54.1 25.4 46.4 17.1 14.5 1.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 58.7 1.9	K20 7 2 6 3 7 6 5 44 11 11 11 11 12 5 14 15 16 5 11 11 12 13 14 15 11 11 12 13 14 15 16 17 7 6
BENTHAM RISPHAM	11 11 56	ATHERTON ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN BLACKBURN BLACKBURN BURY BURY BURY BURY BURY BURY BURY BURY	33 33	CA HARN CA PENWORTH PENWORTH PENWORTH SOUTT SOUT S S HARN CA S T HARN S T HARN	KEARGLEY RRINGTON KEARGLEY (EF) HUTTON RRINGTON ROCHDALE (EF) HUTTON AM WEST / ST H MANCHESTER KEARGLEY AUYBRIDGE (CHDALE KEARGLEY AUYBRIDGE (CHDALE KEARGLEY RINGTON (COCHDALE KEARGLEY BOLD	ANAH HDALE ANAH	389188 380345 376380 366150 319709 376758 391033 332328 370584 330835 384221 372255 385569 380272 407769 380272 407769 388555 387225 385569 380272 407769 388651 388461 389137 390140 301070 381795 360607	388310 401831 402088 402088 470489 397174 413945 439711 429294 435308 439711 429294 435308 435308 397717 413945 435308 413945 435469 411290 411290 411290 411290 411290 403821 398146 513074 399250 399760	55.6 55.6 14.5 14.7 19.2 19.9 10.0 19.9 10.0 19.9 10.0 19.9 10.0 10.2 10.0	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 51.6 51.6 51.6 51.6 51.6 51.6 51	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0 10.7 10.7 10.7 10.7 10.7 10.7 6.7 98.3 10.7 97.5 6.7 0.0	54.1 25.4 46.4 17.1 14.5 1.9 1.29 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 0.0 23.0 1.7.8 1.9 0.0 0.0 0.0	No 7 2 6 6 3 7 4 7 3 1
BENTHAM RISPHAM	11 11 55	A ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN BLACKPOOL BLOM ST BOLTON BURY BURY BURY BURY CARLISLE CARRINGTON BSP CASTLETON CHADDERTON DROYLSDEN EGREMONT FREDERICK RD GOLBORNE GREENHILL	33 33	CA HARR CA PENWORTH PENWORTH PENWORTH SOUTT SOUTT SOUTT HARR CA CA R R M W ST T HARR CA CA SU SU SU SU SU SU SU SU SU SU SU SU SU	KEARGELY REINIGTON KEARSLEY (EF) HUITON RRINGTON RRINGTON ROCHDALE IAM WEST / STA MM EST / STA MM EST / STA MANCHESTER KEARSLEY ALYBRIDGE KEARSLEY ALYBRIDGE KE/ HUITON RRINGTON ROCHDALE KEARSLEY ALYBRIDGE KE/ HUITON KEARSLEY BOLD /HITEGATE	ANAH HDALE NANH	389188 389184 380345 376380 376788 391031 319709 376758 391033 332328 330835 384221 37255 38559 380559 380559 370104 38559 380655 373110 388461 389137 390140 301070 301795 366067 39262 -	388310 401831 40208 401831 40208 997174 413945 439711 429294 435308 997717 410566 435308 997717 410566 435408 997717 410566 435408 997717 410566 435408 435408 435408 411290 403821 398146 513074 397690 404755	55.6 14.5 47.5 19.2 39.4 46.7 55.3 39.9 60.0 28.6 0.0 7.6 21.6 19.9 0.0 7.6 21.6 19.5 42.1 62.1 3.7 3.1.3	73.6 26.5 65.5 37.2 79.4 76.7 74.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 58.9 10.5 60.1 76.1 10.2 18.7 31.3	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 88.4 36.9 160.0 10.7 10.7 10.7 10.7 98.3 10.7 97.5 6.7 0.0 38.5	$\begin{array}{c} 54.1 \\ 25.4 \\ 46.4 \\ 17.1 \\ 14.5 \\ 1.9 \\ 12.9 \\ 7.4 \\ 36.6 \\ 6.7 \\ 45.8 \\ 1.9$	100 100 100 100 100 100 100 100
BENTHAM BISPHAM		A ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKPOOL BLOOM ST BOLTON BURNLEY BURY BURY BURY BURY CARLISLE CARRINGTON BSP CASTLETON CARLISLE CARRINGTON BSP CASTLETON DROYLSDEN EGREMONT FREDERICK RD GOLBORNE GREENNILL HAZEL GROVE	33 33	CA HARP CA PENWORTH PENWORTH PENWORTH PENWORTH I PENWORTH I R SOUTH SOUT	KEARGLEY RRINGTON KEARSLEY (EK) / HUTTON RRINGTON IOCHDALE AM WEST / STI AM MEST / STI AM MEST / STI AM MEST / STI AM MEST / STI AM WEST / STI AM WEST / STI AM WEST / STI AM WEST / STI KEARSLEY ALYBRIDGE KEARSLEY ALYBRIDGE KEARSLEY HITEGATE BOLD HITEGATE BOLD HITEGATE BOLD HITEGATE BOLD	ANAH HDALE ANAH	389188 389184 380345 376380 366150 319709 319709 376758 391033 332328 370584 330835 384211 372255 385569 380272 407769 388555 373110 388461 389137 390140 301070 381795 3600607 393262 391313	388310 401831 402088 470489 397174 413945 439711 429294 435308 397717 425308 439711 425508 439469 410566 434469 410566 434469 411184 410565 555583 397777 403821 403821 518074 398146 518074	55.6 14.5 14.7 19.2 19.5 10.5	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 51.6 58.9 10.5 60.1 76.1 76.1 76.1 75.1 9 58.9 10.5 55.7	150.1 90.4 151.5 94.5 80.2 6.7 40.6 84.4 36.9 100.7 10.7 10.7 10.7 10.7 10.7 6.7 98.3 10.7 6.7 0.0 38.5 100.3	54.1 254 46.4 17.1 145 19 12.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 0.0 7.8 1.9 58.7 1.9 0.0 7.0 18.2	7 7 6 6 8 3 7 1 4 4 4 4 7 7 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1
BENTHAM RISPHAM	11 11 55	A ATHERTON A ATHERTON BARROW BARROW BARROW BLACKBURN BLACKPOOL BLOOM ST BOLTON BURY BUXTON BURY BUXTON CARLISLE CARRINGTON BSP CASTLETON CHADDERTON DROYLSDEN EGREMONT FREDERICK RD GOLBORNE GREENHILL HAZEL GROVE HARTSHEAD-HEYROD	33 33	CA HARN PENWORTH PENWORTH PENWORTH PENWORTH SOUTH SOUTH SOUTH SOUTH SOUTH SOUTH HARN CA R W W ST HARN HARN M W ST ST ST ST	KEARGEY RRINGTON KEARSLEY (EF) / HUTTON IRRINGTON IRRINGTON IRRINGTON IRRINGTON IRRINGTON IRRINGTON IAM WEST / STA I MANCHESTER KEARSLEY ALYBRIDGE KER / HUTTON RRINGTON IOCHDALE KEARSLEY ALYBRIDGE KER / HUTTON KEARSLEY BOLD IHITEGATE IREDBURY	ANAH HDALE NNAH	389188 380345 376380 366150 376758 391039 376758 391033 332328 370584 330835 384221 370584 330835 384221 330855 385569 383625 373110 388657 388657 390140 301070 381795 380607 393222	388310 401831 401831 389012 402028 470489 397174 413945 439711 429294 43506 439711 429294 435308 997717 411844 375476 555658 93020 411280 938146 513074 9397590 404755 3868775 3868742	55.6 14.5 14.5 19.2 19.2 19.2 19.2 19.2 19.2 19.2 19.2	73.6 26.5 65.5 77.2 79.4 76.7 74.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 51.6 51.6 58.9 10.5 60.1 76.1 10.2 18.7 31.3 55.7 8.4.4	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 35.9 160.0 10.7 10.7 10.7 10.7 10.7 56.9 98.3 10.7 97.5 6.7 0.0 38.5 100.3 6.7	$\begin{array}{c} 54.1 \\ 25.4 \\ 46.4 \\ 17.1 \\ 14.5 \\ 1.9 \\ 12.9 \\ 7.4 \\ 36.6 \\ 6.7 \\ 45.8 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 1.9 \\ 0.0 \\ 7.0 \\ 1.8.7 \\ 1.9 \\ 58.7 \\ 1.9 \\ 0.0 \\ 7.0 \\ 18.2 \\ 1.9 \\$	1000 1000 1000 1000 1000 1000 1000 100
BENTHAM RISPHAM	11 11 55	A ATHERTON BARROW BARTON BELFELD BISPHAM BLACKBURN BLACKPOOL BLOOM ST BOLTON BURNLEY BURY BURY BURY BURY BURY CARLISLE CARRINGTON BSP CASTLETON CRAUSE CASTLETON DROYLSDEN EGREMONT FREDERICK RD GOLBORNE GREENHILL HAZEL GROVE HARTSHED-HEYROD HUNCOAT	33 33	CA HARR CA PENWORTH PENWORTH PENWORTH PENWORTH SOUTH S	KEARGLEY RRINGTON KEARSLEY (KE) / LUTTON URCHDALE KEARSLEY MM WEST / STI MM WEST / STI MM WEST / STI MM WEST / STI MANCHESTER KEARSLEY URCHDALE KEARSLEY URCHDALE KEARSLEY URCHDALE KEARSLEY HITEGATE BOLD UNITEGATE BOLD UNITEGATE BOLD HITEGATE BOLD	ANAH HOALE NAH HOALE	389188 380345 376380 366150 319709 376758 391033 332328 370584 391033 332328 370584 370584 370584 370584 370584 370584 370584 370584 370584 370584 370584 370584 370584 370584 370584 370584 380272 38555 373110 389137 389137 389137 390140 301070 381795 360607 393262 391313 3972927	388310 401831 401831 401831 401831 402088 470489 397114 413945 439711 429294 439711 429294 410566 434469 411184 375476 555658 399020 939146 513074 403821 939250 399250 399250 399250 39994250 399943 431083	55.6 14.5 14.75 19.2 39.4 46.7 33.9 60.0 28.6 0.0 7.6 19.2 26.6 0.0 7.6 19.9 10.5 10.5 10.5 10.5 0.0 3.7 27.4 37.1	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 58.9 10.5 60.1 76.1 76.1 76.1 76.1 76.1 76.1 76.2 8.7 23.9 48.3 28.6 55.5 55.7 23.9 48.3 28.6 55.5 55.7 23.9 48.3 24.6 55.5 55.7 23.9 48.3 24.6 55.5 25.5 25.5 26.5 55.5 27.2 27.6 27.6 27.6 27.6 27.6 27.6 27.6	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0 10.7 10.7 10.7 10.7 10.7 6.7 98.3 10.7.5 6.7 0.0 38.5 100.3 86.7 31.5	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 58.7 1.9 0.0 7.0 18.2 1.9 5.7	7 7 6 6 8 8 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
BENTHAM BISDHAM		A ATHERTON A ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN BLACKPOOL BLOOM ST BOLTON BURY BURY BURY BURY BURY BURY BURY BURY	33 33	CA HARN HARN PENWORTH PENWORTH PENWORTH PENWORTH SOUTH SOUTH SOUTH HARN HARN HARN HARN HARN ST HARN HARN ST HARN ST ST	KEARGLEY RRINGTON KEARSLEY (EF) / HUTTON RRINGTON ROCHDALE (AM WEST / STA AM WEST / STA AL WERIOG (SCHDALE KEARSLEY AL WERIOG (SCHDALE KEARSLEY AL WERIOG (SCHDALE STA AL WERIOG (SCHDALE SCHDALE) (SCHDALE SCHDALE) (SCHDALE SCHDALE) (SCHDALE SCHDALE) (SCHDALE SCHDALE) (SCHDALE)	ANAH HDALE ANAH	389188 389145 3765380 3765380 366150 319709 319709 376758 391033 332328 370564 330835 384211 372255 385569 380272 407769 38655 373110 388461 380140 301070 381795 360607 393522 37997 397322 377997	388310 401831 402088 470489 397174 413945 439711 429294 435308 397717 413945 435707 413945 435707 413945 435008 397717 410566 434469 431084 393020 393020 393020 393024 403821 393647 513074 397690 404755 393647	55.6 14.5 14.7 19.2 19.9 10.5 19.9 10.5 19.9 10.5 19.9 10.5 19.9 10.5 10.2 19.9 10.5 10.2 11.2 19.9 10.5 10.2 11.2 19.9 10.5 11.2 19.9 10.5 11.2 19.9 10.5 11.2 11.2 19.9 10.5 11.2	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 58.9 10.5 16 58.9 10.5 16 58.9 10.2 18.7 76.1 8.7 28.6 55.7 28.6 55.7 28.6 55.7 20.7 20.7 20.7 20.7 20.7 20.7 20.7 20	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 38.9 160.0 10.7 10.7 10.7 10.7 10.7 10.7 6.7 0.0 122.6 98.3 10.7 6.7 0.0 38.5 10.0.3 6.7 10.0.3 6.7 10.0.3	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9 1.9 0.0 23.0 17.8 1.9 58.7 1.9 0.0 7.0 1.8.2 1.9 5.7 1.9	N-0 7 7 8 8 7 7 7 7 7 7 8 8 9 9 9 9 9 9 9 9
BENTHAM RISPHAM	11 11 55	ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN BLACKPOOL BLOM ST BOLTON BURY BURY BURY BURY BURY BURY CARINGTON 85P CARINGTON	33 33	CA HARR CA PENWORTH PENWORTH PENWORTH PENWORTH N SOUTH SOUTH SOUTH SOUTH ARR HARR HARR HARR M W ST HARR ST HARR ST ST	KEARSLEY RRINGTON KEARSLEY (EK) / HUTTON IRRINGTON IOCHDALE IAM WEST / ST AM EAST / ROCI IAM WEST / ST AIM / ST	ANAH HDALE HDALE HDALE	389188 380345 376380 366150 319709 376758 391033 332328 370584 330835 384221 3370584 330835 384221 3372255 385569 383655 373110 38841 380272 407769 338655 373110 389137 390140 3811795 380167 389137 390140 3811795 360607 393262 397322 397322 377397	388310 401831 401831 401831 401831 402088 4170489 397174 413945 439711 429294 435308 397717 410566 434469 411184 375476 555583 93020 9393020 93946 513074 404755 386877 39395647 404783	55.6 14.5 14.7 19.2 39.4 46.7 39.8 60.0 28.6 0.0 7.6 11.6 11.9 23.9 0.0 7.6 11.6 11.9 10.5 42.1 68.1 0.0 3.7 31.3 37.1 53.8 9.4	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 58.9 10.5 60.1 76.1 10.2 18.7 10.5 76.1 10.2 18.7 31.3 55.7 88.4 4 55.1 9 10.5 55.2 4 8.4 4 55.1 9 10.5 55.2 10.5 10.5 10.5 10.5 10.5 10.5 10.5 10.5	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 36.9 160.0 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 10.7 0.0 98.3 10.7 0.0 38.5 100.3 6.7 31.5 10.7 6.7	54.1 25.4 46.4 17.1 14.5 1.9 12.9 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 36.7 1.9 1.9 0.0 17.8 1.9 58.7 1.9 0.0 7.0 18.2 1.9 5.7 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9	
BENTHAM RISPHAM		ATHERTON ATHERTON BARROW BARTON BELFIELD BISPHAM BLACKBURN BLACKBURN BLACKBURN BUTON BURY BUTON BURY BURY BURY BURY BURY BURY BURY BURY	33 33	CA HARN PENWORTH PENWORTH PENWORTH PENWORTH SOUTT SOUTT SOUTT HARN ARN ST HARN B ST HARN ST HARN ST HARN	KEARGLEY RRINGTON KEARGLEY (EF) / HUTTON RRINGTON ROCHDALE (EF) / HUTTON RAM WEST / STA H MAYOLESTER KEARGLEY ROCHDALE KEARGLEY RRINGTON ROCHDALE KEARGLEY BOLD ALYBRIDGE KEARGLEY BOLD HITTEGATE ALYBRIDGE REDBURY ALYBRIDGE REDBURY ALYBRIDGE REDBURY ALYBRIDGE REDBURY ALYBRIDGE REDBURY ALYBRIDGE REDBURY ALYBRIDGE REDBURY ALYBRIDGE REDBURY ALYBRIDGE REDBURY ALYBRIDGE REDBURY ALYBRIDGE READING	ANAH HDALE ANAH	389188 389184 380345 376380 366150 319709 319709 376758 391033 332328 370584 330835 384211 372255 385569 380272 407769 38655 373110 388461 380143 301070 381795 360607 393262 391313 397232 377997 3975522 376355 351915 516915	388310 401831 401831 389012 402088 470489 397174 413945 439711 429294 43500 397174 413945 43570 397717 41156 43469 4375476 5556583 398146 513074 399250 397690 404783 995647 404783 491858	55.6 55.6 14.5 14.5 14.7 19.2 19.2 19.2 19.2 19.2 19.2 19.2 19.2 19.2 19.2 10.2	73.6 26.5 65.5 37.2 79.4 76.7 74.9 51.9 77.6 46.6 10.4 37.3 76.1 23.9 48.3 28.6 51.6 51.6 51.6 58.9 10.5 60.1 76.1 10.2 18.7 31.3 55.7 84.4 55.1 71.8 52.4 27.7	150.1 90.4 151.5 94.5 80.2 6.7 54.7 40.6 84.4 38.9 160.0 10.7 10.7 10.7 10.7 10.7 10.7 6.7 98.3 10.7 10.7 10.7 10.7 10.7 6.7 0.0 38.5 100.3 6.7 10.7 31.5 10.7 6.7 0.0	54.1 25.4 46.4 17.1 14.5 1.9 1.29 7.4 36.6 6.7 45.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 0.0 23.0 1.7.8 1.9 58.7 1.9 0.0 7.0 7.0 1.9 5.7 1.9 0.0	120 2 6 3 7 6 5 7 7 7 7 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 11 12 13 14 15 5 6 6 6 6 6 33 11 12 13 14 15 15 16 17 18 19 10 11 11 12 13

Background Primary & BSP Headroom DataBasis of the previous tools

•Considers:

- •Network thermal capacity
- •Fault levels
- •Existing demand and generation
- Accepted demand and generation

Heat Map Tool – Tab 6) Transmission Capacity



Bringing energy to your do	or								
GSP / Site	Capacity o	f Connected & Co	ontracted Connec	tions (MW)	Materiality Headroom	Materiality Status	Capacity in Project Progression /	Total Capacity of Connections	Transmission FL Headroom
	Part 1	Part 2	Part 3	Part 4	(1010) (1111)	otatas	Application	(MW)	(kA)
Rainhill / Bold (Golborne)*	25.1	50.0	0.0	0.0	0	В	N/A	75.1	0
Bredbury	10.1	86.3	0.0	0.0	50	Α	N/A	146.4	3
Carrington	105.0	233.0	0.0	0.0	0	В	N/A	338.0	3
Harker	671.0	123.7	0.0	143.9	0	С	143.9	938.6	0
Hutton	49.0	10.4	0.0	104.5	0	С	104.5	163.9	0
Heysham	302.0	0.0	0.0	133.6	0	С	133.6	435.6	0
Kearsley & Kearsley local	57.4	237.5	0.0	0.0	0	В	N/A	294.9	0
Kirkby	6.0	115.9	0.0	0.0	0	В	N/A	121.9	3
Macclesfield	27.9	20.0	0.0	0.0	50	A	N/A	97.9	3
Padiham	35.5	139.9	0.0	0.0	50	A	N/A	225.4	0.98
Pen East Roch / Pen West	189.6	709.1	0.0	0.0	0	В	N/A	898.7	3
Rochdale Main Part	204.7	158.2	0.0	0.0	50	A	N/A	362.9	3
South Manchester	22.2	109.9	0.0	0.0	50	A	N/A	182.1	0.5
Stalybridge	58.0	293.0	0.0	0.0	50	A	N/A	401.0	0.78
Stannah	195.9	59.5	0.0	0.0	0	В	N/A	255.4	0.64
Washway Farm	14.2	131.2	0.0	0.0	0	В	N/A	145.4	3
Whitegate	32.0	187.0	0.0	0.0	0	В	N/A	236.9	0

Appendix G SummaryLists all ENWL GSPs

Indicates:-

- •Existing generation connections
- Constrained generation connections
- •Future generation connections
- Thermal headroom
- •Fault level headroom

The new heat map tool provides:-

Better quality information

Improved accuracy

Monthly refresh rate

Heat Map Tool – Generation Connection Demonstration



Generation at Godley, Hyde

顱



Heat Map Tool – Demand Connection Demonstration



Demand for Manchester Pride



Post Acceptance Process

Tracey Taylor

Celectricity

Bringing energy to your door

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Stay connected... F B C in www.enwl.co.uk Objective



Enhance your Customer Journey

Improve G99 Process

Identify Guidance required

Customer Journey



Post Acceptance Guidance (G59)

- What would assist you through the process?
 - Guidance which areas/what format?
 - Process flows?
 - Communication how?
 - Anything else???







Table Discussions – 15 Minutes

1) Do you now know what is expected of you?

2) What information and guidance would you like?

3) How do you want us to communicate with you?

Zero Carbon Plan

Brian Hoy

Stay connected... F B O in www.enwl.co.uk

Pelectricity

Bringing energy to your door

青川市大公長

Electricity North West and decarbonisation

- £12bn of electricity infrastructure in the region
- Focused on delivering an affordable, environmentally sustainable and reliable network
- We invest more than £1m per day in the region's electricity infrastructure
- Uniquely placed to lead decarbonisation











Regional Decarbonisation





Electricity distribution has changed

What used to be relatively simple...



- Electricity historically a centralised model that changed little
- Now more complicated and multidirectional
- Encouraging and enabling low carbon technologies to connect
- Electricity demand set to double by 2050
- All customers need cleaner, greener energy to enable and enhance 21st century living



 Electricity North West plays a crucial part in leading and enabling decarbonisation across the North West

✓ Supports the region's ambitions

Launched at:

- ✓ Climate Change Emergency Event in Lancaster
- Sustainability panel
- Greater Manchester Green Summit
- Cumbria Stakeholder Advisory Workshop in Kendal

What are we doing?



Engagement



Cross-sector collaboration Best practice sharing Influencing policy Creating cultural change

Electricity North West's Sustainability and CEO Panels Talk to us helen.boyle@enwl.co.uk www.enwl.co.uk/zerocarbon



Pelectricity

Bringing energy to your door

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Flexible Services

Could you reduce demand or increase generation when instructed in return for payment?

Keith Evans

Stay connected... F B O in www.enwl.co.uk

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As the region's distribution network operator, it's our responsibility to plan for the future and seek out smarter, more flexible solutions to meet future demand for electricity. We are utilising a number of innovative techniques to ensure we can continue to deliver an affordable, reliable and sustainable electricity supply for all our customers.

Flexible services is one such technique

Distributed Energy Resources (DERs) are companies or individual customers capable of adjusting how much they consume or generate electricity. These adjustments can support the local distribution network due to high electricity demand or when the network is operating abnormally, and DERs receive payment from Electricity North West in return. These DERs can be generators, consumers, and electricity storage connected to our networks that can increase exports (generate more) or reduce imports (consume less) when instructed and receive payment in return.

We are looking to use this flexibility to support how we operate our local networks, as an alternative to traditional approaches. The aim is to reduce the cost for electricity distribution networks in customer energy bills while ensuring that our network remains resilient, reliable and meets our customers' needs.





RESTORE - Provide an immediate response following an unplanned network event



SUSTAIN - Flex your supply up or down at peak times to help manage network constraints



CONTINUOUS - Fulfil a continuous capacity requirement

Service Characteristics	RESTORE	SUSTAIN	CONTINUOUS		
When to Act	Post fault	Pre fault	Pre fault		
Trigger	Network abnormality	Asset loading	Constant		
Certainty of Utilisation	Uncertain	Uncertain	Certain		
Risk to network assets	High	Med	Low		
Frequency of use	Low	Med	High		

Understanding our Requirements



Network location	_		Total flexible							
	Type of response	Voltage of connection	service requirement 2018/19 (MW)	Months	Earliest start date	Latest end date	Times	Days	Utilisation rate	
Alston	Restore	LV or HV	0.5	Nov - Mar	Nov-18	Mar-19	06:30 to 21:30	All week	Up to 40 hrs pa	
Blackfriars	Restore	LV or HV	0.5	Jan - Feb	Jan-19	Feb-19	16:30 to 21:30	Weekdays	Up to 40 hrs pa	
Coniston	Restore	LV or HV	1.0	Nov - Mar	Nov-18	Mar-19	All day	All week	Up to 40 hrs pa	
East Manchester	Sustain	LV or HV	3.9	Nov- Mar	Nov-20	Mar-21	06:00-22:00	All week	Up to 450 hrs pa	
Easton	Restore	LV or HV	2.0	Apr - Mar	Nov-18	Mar-19	All day	All week	Up to 40 hrs pa	
Stuart Street	Sustain	HV or 33kV	9.5	Nov - Feb	Nov-18	Mar-19	06:30 to 21:30	06:30 to 21:30 Weekdays		
South Manchester Enterprise Zone	Continuous	HV or 33kV	7.5	All	Nov-20	Mar-23	All day	All week	Up to 8760 hrs pa	

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We have recently begun to publish our **forecasted** flexibility requirements on our website.

These are sites that we have identified as being constrained within the next **five years**, and that may be addressed by flexible services.

Please note that these are **not guaranteed** and are subject to future capacity reviews.

We are currently undertaking our annual review of the network in order to identify any further sites where flexible services may be required. The result of this review will be published in Autumn 2019.

To receive notifications of new flexible service requirements, please sign up to our distribution list at <u>www.enwl.co.uk/flexible-services</u>.

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We are now regularly publishing our requirements for flexible services via Requests for Proposals (RfPs), and are looking to make this process as easy as possible to engage with.

Recent additions to our website include:

- Glossary of terms
- FAQ's
- Terms & Conditions
- Feedback form
- Understanding our requirements document



All feedback is welcome, you can either email us directly at <u>flexible.contracts@enwl.co.uk</u> or complete the new feedback form on the website.

Pelectricity

Bringing energy to your door

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Connection Offer Expenses -Update

Brian Hoy

Stay connected... F B O in www.enwl.co.uk

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 gen) from May 18

HV generation offers over 1MVA from Jan 2019

LV and other HV offers (demand and generation) possibly in future but no immediate plans to

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





Four different options available to you for EHV offers and HV generation over 1MVA 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 based on type of acceptance: £20,200 for EHV full works £15,800 for EHV POC only £5,870 for HV gen full works £4,500 for HV gen POC only 	 Initial charge of £1,000 for connection Offer Balance based on type of acceptance: £15,800 for EHV POC only £4,500 for HV gen POC only

EHV applicable from 4 May 2018 HV Generation greater 1MVA applicable from 1 January 2019

Factors that have influenced the different DNO approaches



- There are a number of different factors that DNOs have taken into account in considering their approach to A&D fees
- Each has evaluated these differently in developing their initial approaches
- This has resulted in different approaches applied to different market segments:
 - No charge
 - Some charge
 - Full charge

Current status of DNO A&D charges

DEMAND	ENWL	NPg	SPEN	SSEN	UKPN	WPD	DG	ENWL	NPg	SPEN	SSEN	UKPN	WPD
	No	Full	No	No	No	No		No	Full	No	No	No	No
Demand LV work	charge	charge	charge	charge	charge	charge	DG LV work	charge	charge	charge	charge	charge	charge
	No	Full	No	Some	No	No		Some	Full	Full	Some	Some	No
Demand HV work	charge	charge	charge	charge *	charge	charge	DG HV work	charge *	charge	charge	charge	charge	charge
	Some	Full	Full	Some	No	Full		Some	Full	Full	Some	Some	Full
Demand EHV work	charge	charge	charge *	charge	charge	charge	DG EHV work	charge	charge	charge	charge	charge	charge

* Denotes not all categories charged for

The tables above show where DNOs currently have implemented charges associated with the issue of Connection Offers

- 'Full charge' indicates that the estimated cost of the connection offer is charged to all applicants that receive an offer
- 'Some charge' indicates that there is a partial charge to all applicants that receive an offer; applicants that accept then pay an additional charge on acceptance
 - Note the proportion recovered varies between DNOs
- 'No charge' indicates all the A&D costs are recovered from accepted projects, typically through on-cost recovery



Should we change our approach?



- We are seeking to recover our costs and there are different ways we can do this
- Our initial approach was to have a relatively low charge for the quote which results in a large charge for the small number of acceptances
- We could increase the charge for the quote which would reduce the charge on acceptance
- Different approaches have different impacts on different stakeholders but we are interested in whether there is an overall preference in the light of experience
- Graphs show illustrative values