Demand Estimation Sub Committee

2.0 Collection of Daily Gas Consumption Data for EUC Modelling

24 April 2024

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2.0 Collection of Daily Gas Consumption Data for EUC Modelling

OVERVIEW

Background

- The requirement to develop Demand Models and End User Categories relies upon certain key inputs, these are daily gas consumption data and daily weather data

- At this meeting, the focus is on the daily gas consumption data which this year covers the period 1 April 2023 to 31 March 2024. This period includes a full Easter holiday period as defined in the Holiday code rules in Appendix 5 of the Modelling Approach document

- The daily gas consumption data has been provided from the following sources:
  - Transporter-managed sample data sets
  - Third party (Shipper) provided sample data sets
  - Class 3 data for EUC 01BPD (Domestic Prepayment consumers)

- Validation is applied to the daily gas consumption data in order to minimise data errors and therefore enhance the accuracy of the subsequent EUC gas demand models

- The validation is set out in Appendix 2 in the Modelling Approach document here.

Demand Estimation Cycle

1. MODEL REVIEW:
Ad hoc Workplan
NDM Algorithm Performance

2. MODELLING APPROACH:
End User Category (EUC)
Demand Models
Gas Demand Profiles

3. INPUT:
Maintain Sample
Data Collection & Validation
Weather Stations / Data

DEMAND ESTIMATION
Gemini: NDM Nominations / Allocation
UK Link: AQ and SOQ Calculation / Read Estimation

4. MODELLING:
Latest Analysis Period
Review Results
Model Smoothing

6. INDUSTRY CONSULTATION:
DESC Review
NDM Algorithms Booklet
Industry Review
Core Systems Updated

5. GAS DEMAND PROFILES:
Annual Load Profile (ALP)
Daily Adjustment Factor (DAF)
Peak Load Factor (PLF)

- An overview of the Demand Estimation process and output can be found <u>here</u>

- Annual modelling cycle of activities are represented in diagram opposite

- This presentation relates to the "Input" phase of the Demand Model cycle

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CDSP / DESC Obligations and Timetable: October 2023 to September 2024

Milestone	UNC H Ref	2023			2024								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
DESC Membership confirmed	1.12	✔		✔									
NDM Sampling: Data Collection and Validation	1.6	✔						✔					
NDM Algorithm Performance for Gas Year 2022/23	1.8			✔								✔	
DESC Adhoc Workplan	1.7	✔		✔			✔				✔		
DESC Modelling Approach – EUCs and Demand Models	1.7			✔			✔						
Single Year EUC Demand Modelling	1.7								✔				
Model Smoothing and Draft Gas Demand Profiles	1.7									✔			
Industry Consultation	1.8									✔	✔		
Gas Demand Profiles finalised and Core systems updated	1.9											✔	
Seasonal Normal Review 2025	1.4	✔		✔			✔		✔		✔		

Objectives

The objective of today's meeting is for DESC to:

- Review the outcomes of the sample data collection and validation process

- Review the number of sample points available for this year's Analysis Period of 1 April 2023 to 31 March 2024

• Confirm the optimum data sets to be used to represent the demand models for each EUC (using LDZ aggregations where necessary)	Approval Required

• Confirm the Winter Annual Ratio (WAR) Thresholds for EUC Bands 3 and above	Approval Required

2.0 Collection of Daily Gas Consumption Data for EUC Modelling

SUMMARY OF DAILY GAS CONSUMPTION COLLECTION AND VALIDATION

Population Size - April 2024 NDM

- The table below highlights the current population size (Class 3 and 4 only) for each LDZ and EUC combination

- These values are used to calculate the Target Sample Size

EUC Band	Customer Type	LDZ													Total
		SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	
1	Dom Non Pre Pay	1,919,102	1,167,449	2,607,742	1,356,218	2,354,575	1,991,566	244,503	814,262	1,948,908	2,122,938	2,461,258	1,751,877	1,590,160	22,330,558
	I&C Non Pre Pay	41,090	27,221	66,430	38,189	54,306	46,084	7,413	20,988	41,728	61,550	57,492	40,839	40,460	543,790
	Dom PrePay	222,387	142,870	307,080	129,290	193,004	187,320	25,968	88,685	130,425	218,428	212,103	89,117	98,771	2,045,448
	I&C PrePay	181	141	479	221	310	291	45	169	212	610	514	135	208	3,516
2	Dom Non Pre Pay	3,247	1,673	4,282	2,572	4,524	3,283	250	948	3,585	7,695	10,064	2,987	2,097	47,207
	I&C Non Pre Pay	11,743	6,979	15,689	8,567	13,299	12,189	1,638	4,350	10,912	16,534	14,468	11,067	9,324	136,759
	Dom PrePay	122	82	189	113	127	144	7	73	105	203	161	62	49	1,437
	I&C PrePay	7	7	6	2	5	5	0	2	4	11	8	5	1	63
3	All	4,002	2,171	4,479	2,275	3,663	3,574	414	1,147	3,180	5,402	4,262	3,067	2,373	40,009
4	All	1,723	788	1,677	908	1,401	1,464	205	490	1,200	2,549	1,509	1,188	874	15,976
5	All	402	201	453	231	380	385	44	132	252	678	329	236	191	3,914
6	All	116	75	159	97	174	124	25	45	109	176	79	86	91	1,356
7	All	50	32	82	36	82	55	11	27	47	42	25	30	40	559
8	All	10	15	41	17	47	29	7	12	24	20	18	10	17	267
9	All	0	0	1	1	2	0	0	0	1	1	2	2	2	12
	Total	2,204,182	1,349,704	3,008,789	1,538,737	2,625,899	2,246,513	280,530	931,330	2,140,692	2,436,837	2,762,292	1,900,708	1,744,658	25,170,871

Target Sample Size - April 2024 NDM

- The table below represents the ideal target number of sample supply points required for each LDZ/EUC demand model, in order to achieve a confidence level of 95% in subsequent modelling results

EUC Band	Customer Type	LDZ													Total
		SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	
1	Dom Non Pre Pay	385	385	385	385	385	385	384	385	385	385	385	385	385	5,004
	I&C Non Pre Pay	381	380	383	381	382	382	366	378	381	383	382	381	381	4,941
	Dom PrePay	384	384	385	384	384	384	379	383	384	384	384	383	384	4,986
	I&C PrePay	123	103	214	141	172	166	40	118	137	236	220	100	135	1,905
2	Dom Non Pre Pay	344	313	353	335	355	345	152	274	348	367	371	341	325	4,223
	I&C Non Pre Pay	373	365	376	368	374	373	312	354	372	376	375	372	370	4,760
	Dom PrePay	93	68	127	88	96	105	7	61	83	133	114	54	44	1,073
	I&C PrePay	7	7	6	2	5	5	0	2	4	11	8	5	1	63
3	All	351	327	355	329	348	348	200	288	344	359	353	342	331	4,275
4	All	315	259	313	271	302	305	134	216	292	335	307	291	267	3,607
5	All	197	132	208	145	191	193	40	98	153	246	178	147	128	2,056
6	All	89	63	113	78	120	94	24	40	85	121	66	70	74	1,037
7	All	44	30	68	33	68	48	11	25	42	38	24	28	36	495
8	All	10	14	37	16	42	27	7	12	23	19	17	10	16	250
9	All	0	0	1	1	2	0	0	0	1	1	2	2	2	12
	Total	3,096	2,830	3,324	2,957	3,226	3,160	2,056	2,634	3,034	3,394	3,186	2,911	2,879	38,687

Validation Rules Summary

- The tables below show the current rules used in the sample validation for a 12-month period

Small NDM: 0 to 2,196 MWh p.a.

EUC Bands	Missing Days		Consecutive Zeros		Spike Ratios	
	Summer	Winter	Summer	Winter	Summer	Winter
1	15 or more	15 or more	N/A	33 or more	15:01	08:01
02, 03 and 04	28 or more	28 or more	N/A	20 or more	10:01	05:01

Large NDM: >2,196 MWh p.a.

EUC Bands	Missing Days		Consecutive Zeros		Spike Ratios	
	Annual	Winter	Annual	Winter	Annual	Winter
05,06,07 and 08	40 or more	20 or more	N/A	20 or more	08:01	N/A

- The full set of validation rules are set out in Appendix 2 in the Modelling Approach document [here](#).

Validation Audit Trail

VALIDATION SUMMARY OF DAILY GAS CONSUMPTION DATA – Analysis Period 01/04/23 to 31/03/24	
START: MPRs with at least 300 'Daily Gas Consumption Data' records present within the analysis period	**58,186**
Exceeds Missing Read Tolerance	15,188
Missing Correction Factor	0
Exceeds Consecutive Zero Consumption Tolerance	5,546
AQ Ratio Failures	1,900
Winter vs Summer Consumption Ratio Tolerance (Band 09B sites)	1
Winter Annual Ratio (WAR) Outside of Tolerance	218
Twin Stream Site	0
Excluded MPRN (i.e. HyDeploy or FlexGen site)	0
Excessive Number of Records Infilled	356
Excessive Number of Consecutive Records Infilled	775
Multiple Data Providers	150
Exceeds Missing Read Tolerance Post Validation	1,685
CWV Intercept and R-Squared	1,793
Market Sector Code of D in I&C EUC	117
Winter Zero Consumption	17
Other (i.e. Scottish Independent LDZs; Schools)	498
TOTAL REMOVED	**28,244**
PASSED VALIDATION (Pre Capping and Stratification)	**29,942**
MPRs not required following Capping & Stratification	5,942
PASSED VALIDATION (Post Stratification)	**24,000**

- Note: MPRs may fail more than one category, therefore the total removed during validation may not match the sum of individual rejection reasons

Active Target – April 2024 NDM

- The table below shows the number of sites that passed validation for each EUC / LDZ

- Any EUC / LDZ combinations that have exceeded the target will be capped

EUC Band	Customer Type	LDZ													Total
		SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	
1	Dom Non Pre Pay	451	459	481	444	455	467	351	434	455	464	465	472	464	5,862
	I&C Non Pre Pay	527	447	669	426	464	371	49	436	387	379	430	349	366	5,300
	Dom PrePay	230	344	662	334	356	423	253	277	441	334	239	883	412	5,188
	I&C PrePay	0	2	0	3	0	0	0	0	1	0	0	0	0	6
2	Dom Non Pre Pay	33	40	47	30	35	47	11	13	38	59	46	43	34	476
	I&C Non Pre Pay	692	328	825	391	542	541	40	498	357	477	414	548	424	6,077
	Dom PrePay	0	0	0	0	0	0	0	0	0	1	0	0	0	1
	I&C PrePay	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	All	484	182	338	192	225	224	36	156	272	327	260	225	188	3,109
4	All	330	189	216	257	183	203	32	122	197	276	251	213	150	2,619
5	All	86	60	77	73	75	75	12	32	56	91	63	53	45	798
6	All	38	27	32	28	45	29	4	12	23	19	11	26	23	317
7	All	14	11	12	19	28	13	0	4	6	4	4	5	11	131
8	All	0	2	5	4	16	10	1	5	4	2	3	0	1	53
9	All	0	0	0	0	1	0	0	0	0	0	1	0	0	2
	Total	2,885	2,091	3,364	2,201	2,425	2,403	789	1,989	2,237	2,433	2,187	2,817	2,118	29,942

Target Numbers and Stratification

- In order to ensure the data used for modelling is as representative of the population as possible we apply a technique of stratification
- The following table shows the current stratification rules as set out in the Modelling Approach document here:

EUC Band	AQ Range	Customer Type	EUC	Stratification Bands
1	0 - 73.2 MWh	Domestic Non-Prepayment	01BND	0 - 10 MWh
				10 - 20 MWh
				20 - 30 MWh
				30 - 73.2 MWh
2	73.2 - 293 MWh	I&C Non-Prepayment	02BNI	73.2 - 140 MWh
				140 - 210 MWh
				210 - 293 MWh

- As mentioned in the Modelling Approach document, as and when stratification is possible in other EUC Bands, they will be added to the table. The sample numbers received this year meant we were also able to stratify Band 01BNI:

EUC Band	AQ Range	Customer Type	EUC	Stratification Bands
1	0 - 73.2 MWh	I&C Non-Prepayment	01BNI	0 - 10 MWh
				10 - 20 MWh
				20 - 30 MWh
				30 - 73.2 MWh

- To avoid removing validated supply points unnecessarily from the modelling process a 5% tolerance (+ or -) has been used when assessing the sub-band proportions for the population and sample data sets
- In addition, where the number of supply points drops below the minimum threshold of 30 for any given EUC demand model, stratification principles has not applied
- Where the validated Daily Gas Consumption Data for a EUC Band are over the ideal target numbers, Distribution Network sampling has been used primarily to retain continuity within the Gas Demand EUC Models and any additional data obtained from third parties has been randomly selected to avoid any shipper bias in the resulting Gas Demand Profiles

Post Stratification - April 2024 NDM

- This table shows the final numbers that will be passed to the modelling process following stratification and capping:

EUC Band	Customer Type	LDZ													Total
		SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	
1	Dom Non Pre Pay	364	384	385	378	386	385	345	383	385	357	385	385	382	**4,904**
	I&C Non Pre Pay	270	249	278	259	291	271	49	251	284	254	288	264	259	**3,267**
	Dom PrePay	230	344	385	334	356	384	253	277	384	334	239	383	384	**4,287**
	I&C PrePay	0	2	0	3	0	0	0	0	1	0	0	0	0	**6**
2	Dom Non Pre Pay	33	40	47	30	35	47	11	13	38	59	46	43	34	**476**
	I&C Non Pre Pay	373	314	380	342	375	372	40	324	301	359	339	372	348	**4,239**
	Dom PrePay	0	0	0	0	0	0	0	0	0	1	0	0	0	**1**
	I&C PrePay	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
3	All	351	182	338	192	225	224	36	124	272	327	260	225	188	**2,944**
4	All	315	189	216	257	183	203	32	105	185	276	251	213	150	**2,575**
5	All	86	60	77	73	75	75	12	32	56	91	63	53	45	**798**
6	All	38	27	32	28	45	29	4	12	23	19	11	26	23	**317**
7	All	14	11	12	19	28	13	0	4	6	4	4	5	11	**131**
8	All	0	2	5	4	16	10	1	5	4	2	3	0	1	**53**
9	All	0	0	0	0	1	0	0	0	0	0	1	0	0	**2**
	Total	**2,074**	**1,804**	**2,155**	**1,919**	**2,016**	**2,013**	**783**	**1,530**	**1,939**	**2,083**	**1,890**	**1,969**	**1,825**	**24,000**

Summary of Validated Data

- Validated sample counts post-stratification – numbers provided are supply points

EUC Bands: AQ Range Source data	2023/24 data		2022/23 data	
Band 1: 0 to 73.2 MWh pa Third party provided and Class 3 (Domestic Pre-Payment only)	**Domestic**	**4,904**	Domestic	4,541
	Non-Domestic	**3,267**	Non-Domestic	4,634
	Domestic Prepayment	**4,287**	Domestic Prepayment	3,863
	Non-Domestic Pre-payment	**6**	Non-Domestic Pre-payment	2
Band 2: 73.2 to 293 MWh pa Transporter-managed and Third party provided	**Domestic**	**476**	Domestic	359
	Non-Domestic	**4,239**	Non-Domestic	4,515
	Domestic Prepayment	**1**	Domestic Prepayment	1
	Non-Domestic Pre-payment	**0**	Non-Domestic Pre-payment	1
Bands 3 to 4: 293 to 2,196 MWh pa Transporter-managed and Third party provided	**5,519**		6,201	
Bands 5 to 9: > 2,196 MWh pa Transporter-managed and Third party provided	**1,301**		1,866	
TOTAL	**24,000**		25,983	

- Overall, this year there were fewer sample points available for modelling. Bands 5 to 9 have been particularly impacted which is likely to mean more modelling aggregations will be required

Data Collation Issues

During the phase of collating data from multiple sources, we encountered some issues that has meant the number of validated supply points reduced significantly:

- Late submissions

  - MOD654s Shippers (monthly & 6 monthly) need to submit their data by the 5th Business day in April. Anything received after this date will not be used as it would reduce the window for validation

- Spread across all EUCs

  - Third Party Submissions tend to be for the smaller EUCs (Bands 1 and 2), please ensure that the sample sent is reflective of your portfolio across all EUCs

- Incomplete Data Sets

  - Any site with less than 300 records for the Sample Period is automatically rejected and isn't loaded into the validation system, please try and send a complete dataset with actual consumption

- Pre-Payment Data

  - There has been some data received for Pre-Payment sites from eligible Shippers (as per rules defined by UNC MOD654s), although this is unlikely to meet the targets required

- Market Sector Code

  - During the validation process it was apparent that the Market Sector Code (MSC) held on UK Link is not always reliable

- A document highlighting common data errors can be found here.

Sample Data Selection & Aggregations

- At the DESC meeting on 1st March 2023, changes to how the sample data would be utilised for some of the EUC Bands in the Small and Large NDM sector were approved following analysis presented as part of the recent Ad hoc workplan

- These changes are:

  - Bands 03 and 04 WAR Bands to be modelled separately (were previously aggregated)
  - Bands 05 to 08 Sample Data will be aggregated for Bands 06 to 08 WAR Band modelling, (Band 05 WAR Bands to be modelled separately)
  - Band 09 Consumption (Bucket) Band to use Band 08 Consumption Band Model ALPs and DAFs

- When data aggregation is required, we first use sample data for any adjoining LDZ which shares weather data, then include adjoining LDZs as required until the minimum sample size is reached

2.0 Collection of Daily Gas Consumption Data for EUC Modelling

REVIEW OF SAMPLE DATASETS AVAILABLE FOR USE IN SMALL NDM MODELLING

Small NDM Population - AQ & Supply Point Count

- Small NDM is the main component of the overall NDM:

  - Band 1 (0-73.2 MWh pa) constitutes nearly 3/4 of overall NDM (on an AQ basis)

  - Bands 1 to 2 (0-293 MWh pa) constitutes nearly 4/5 of overall NDM

  - Bands 1 to 4 (0-2196 MWh pa) constitutes nearly 9/10 of overall NDM

- Large NDM is very much a minority component of overall NDM

EUC Bands: Range	% of Total NDM	
	Total AQ	Total SP Count
Band 1: 0 to 73.2 MWh pa	71.48%	99.02%
Bands 1 to 2: 0 to 293 MWh pa	77.95%	99.75%
Bands 1 to 4: 0 to 2,196 MWh pa	87.41%	99.98%
Bands 5 to 9: >2,196 MWh pa	12.59%	0.02%

EUC Bands / Consumption Ranges for Small NDM (<2,196 MWh pa)

- The EUC Bands and Consumption Ranges are not prescribed in Uniform Network Code and are the responsibility of DESC to agree ahead of each Gas Year

- The following summarises what DESC agreed as part of approving this year's Modelling Approach document:

Consumption Range (kWh P.A.)		EUC Description	Consumer Type	No. of Models Required
From	To			
0	73,200	xx:Eyy01BND	Domestic	1
0	73,200	xx:Eyy01BPD	Prepayment Domestic	1
0	73,200	xx:Eyy01BNI	I&C	1
0	73,200	xx:Eyy01BPI	Prepayment I&C	1
73,201	293,000	xx:Eyy02BND	Domestic	1
73,201	293,000	xx:Eyy02BPD	Prepayment Domestic	1
73,201	293,000	xx:Eyy02BNI	I&C	1
73,201	293,000	xx:Eyy02BPI	Prepayment I&C	1

Consumption Range (kWh P.A.)		EUC Description					No. of Models Required
From	To	Bucket Band	WAR Band 1	WAR Band 2	WAR Band 3	WAR Band 4	
293,001	732,000	xx:Eyy03B	xx:Eyy03W01	xx:Eyy03W02	xx:Eyy03W03	xx:Eyy03W04	5
732,001	2,196,000	xx:Eyy04B	xx:Eyy04W01	xx:Eyy04W02	xx:Eyy04W03	xx:Eyy04W04	5

Small NDM Consumption Bands: Review of EUC Band 1

- The table below shows the proposed modelling runs based on the data available:

EUC Band	Customer Type	LDZ													Total
		SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	
1	Dom Non Pre Pay	364	384	385	378	386	385	345	383	385	357	385	385	382	**4,904**
	I&C Non Pre Pay	270	249	278	259	291	271	49	251	284	254	288	264	259	**3,267**
	Dom PrePay	230	344	385	334	356	384	253	277	384	334	239	383	384	**4,287**
	I&C PrePay	0	2	0	3	0	0	0	0	1	0	0	0	0	**6**

EUC Bands: AQ Range	Proposed Modelling Runs for 2023/24	Final Modelling Runs for 2022/23
Band 1 Non PPM Domestic: 0 to 73.2 MWh pa	**Individual LDZ analysis for all LDZs**	Individual LDZ analysis for all LDZs
Band 1 Non PPM I&C: 0 to 73.2 MWh pa	**Individual LDZ analysis for all LDZs**	Individual LDZ analysis for all LDZs
Band 1 PPM Domestic: 0 to 73.2 MWh pa	**Individual LDZ analysis for all LDZs**	Individual LDZ analysis for all LDZs
Band 1 PPM I&C: 0 to 73.2 MWh pa	**Sample size issues - No model viable**	Sample size issues - No model viable

Small NDM Consumption Bands: Review of EUC Band 2

- The table below shows the proposed modelling runs based on the data available
- Other grouping may be investigated and presented at DESC in May if appropriate

EUC Band	Customer Type	LDZ													Total
		SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	
2	Dom Non Pre Pay	33	40	47	30	35	47	11	13	38	59	46	43	34	**476**
	I&C Non Pre Pay	373	314	380	342	375	372	40	324	301	359	339	372	348	**4,239**
	Dom PrePay	0	0	0	0	0	0	0	0	0	1	0	0	0	**1**
	I&C PrePay	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**

EUC Bands: Range	Proposed Modelling Runs for 2023/24	Final Modelling Runs for 2022/23
Band 2 Non PPM Domestic: 73.2 to 293 MWh pa	**Individual LDZ analysis except WN (+NW) and WS (+SW)**	Individual LDZ analysis except EA(+NT), NO(+SC), NW(+NO), SC(+NO), SW(+SO+WS), WM (+EM), WN(+NW) and WS(+SW+SO)
Band 2 Non PPM I&C: 73.2 to 293 MWh pa	**Individual LDZ analysis for all LDZs**	Individual LDZ analysis for all LDZs
Band 2 PPM Domestic: 73.2 to 293 MWh pa	**Sample size issues - No model viable**	Sample size issues - No model viable
Band 2 PPM I&C: 73.2 to 293 MWh pa	**Sample size issues - No model viable**	Sample size issues - No model viable

Small NDM Consumption Bands: Review of Bands 3 & 4

- The table below shows the proposed modelling runs based on the data available:

EUC Band	Customer Type	LDZ													Total
		SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	
3	**All**	351	182	338	192	225	224	36	124	272	327	260	225	188	**2,944**
4	**All**	315	189	216	257	183	203	32	105	185	276	251	213	150	**2,575**

EUC Bands: Range	Proposed Modelling Runs for 2023/24	Final Modelling Runs for 2022/23
Band 3: 293 to 732 MWh pa	**Individual LDZ analysis for all LDZs**	Individual LDZ analysis for all LDZs
Band 4: 732 to 2,196 MWh pa	**Individual LDZ analysis for all LDZs**	Individual LDZ analysis for all LDZs

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Winter: Annual Ratio (WAR) Band EUCs

- Higher AQ Bands, where meter points are monthly read, have a standard EUC plus 4 differential EUCs based on ratio of winter consumption to total annual consumption

- Sites with adequate read history are allocated automatically to a WAR Band based on system calculation during AQ review

- The WAR value of a supply point is defined as the actual consumption in the months December to March divided by the new supply point AQ

- Since the numerator is actual demand and the denominator is weather corrected annual consumption, WAR values change from year to year

- The limits defining WAR band EUCs are those applicable to the most recent winter (in this case winter 2023/24)

- When setting WAR Thresholds, DESC's approach is to aim for a 20%:30%:30%:20% split of sample numbers on a national basis

- There are practical limitations due to the actual distribution of WAR values of individual sample supply points in the consumption band

- WAR Thresholds will again be defined at 3 decimal points to make it easier to get closer to the target % splits

- For practical reasons we can only proceed to the modelling stage with one WAR Threshold per EUC band
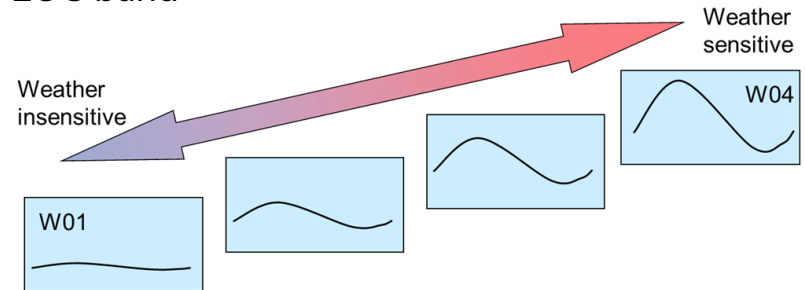
Small NDM WAR Bands: Review of Bands 3-4

- The table below shows the breakdown of Supply Points that passed validation for Bands 3 and 4 split by Winter Annual Ratio (WAR), if that number is below the minimum requirement of 30 it is highlighted in red

Band 3					
LDZ	0.000 - 0.413	0.414 - 0.485	0.486 - 0.575	0.576 - 1.000	Total
SC	35	117	158	41	351
NO	44	64	53	21	182
NW	66	103	94	75	338
NE	45	53	41	53	192
EM	38	64	63	60	225
WM	49	67	68	40	224
WN	8	8	12	8	36
WS	21	34	41	28	124
EA	49	81	76	66	272
NT	83	87	101	56	327
SE	61	76	66	57	260
SO	51	72	48	54	225
SW	36	59	54	39	188
Total	586	885	875	598	2944
%	19.9%	30.1%	29.7%	20.3%	100.0%
Target %	20.0%	30.0%	30.0%	20.0%	

Band 4					
LDZ	0.000 - 0.403	0.404 - 0.469	0.470 - 0.560	0.561 - 1.000	Total
SC	44	103	121	47	315
NO	30	63	58	38	189
NW	45	61	63	47	216
NE	45	69	65	78	257
EM	38	52	58	35	183
WM	47	55	56	45	203
WN	6	6	12	8	32
WS	25	37	23	20	105
EA	33	63	54	35	185
NT	74	65	82	55	276
SE	50	85	73	43	251
SO	45	67	62	39	213
SW	35	50	42	23	150
Total	517	776	769	513	2575
%	20.1%	30.1%	29.9%	19.9%	100.0%
Target %	20.0%	30.0%	30.0%	20.0%	

- Winter 23/24 (Dec 23 to Mar 24) was generally warmer than the equivalent period in 2022/23, so thresholds have decreased this year

Small NDM WAR Bands: Review of Bands 3-4

- The table below shows the proposed WAR Band groupings based on the data available
- Other grouping may be investigated and presented at DESC in May if appropriate

EUC Bands: Range	Proposed Modelling Runs for 2023/24	Final Modelling Runs for 2022/23
Band 3: 293 to 732 MWh pa	Individual LDZs for most except NO (+NE), WN (+NW) and WS (+SW)	Individual LDZs for most except NO (+NE), WN (+NW) and WS (+SW)
Band 4: 732 to 2196 MWh pa	Individual LDZs for most except WN (+NW) and WS (+SW)	Individual LDZs for most except SC (+NO), and WN (+NW)

EUC Band	Consumption Range (kWh P.A.)		WAR Band 1	WAR Band 2	WAR band 3	WAR band 4
	From	To				
Band 3	293,001	732,000	0.000 - 0.413	0.414 - 0.485	0.486 - 0.575	0.576 - 1.000
Band 4	732,001	2,196,000	0.000 - 0.403	0.404 - 0.469	0.470 - 0.560	0.561 - 1.000

2.0 Collection of Daily Gas Consumption Data for EUC Modelling

REVIEW OF SAMPLE DATASETS AVAILABLE FOR USE IN LARGE NDM MODELLING

Large NDM Population - AQ & Supply Point Count

- Band 5: 2,196 to 5,860 MWh

- Band 6: 5,860 to 14,650 MWh

- Band 7: 14,650 to 29,300 MWh

- Band 8: 29,300 to 58,600 MWh

- Band 9: >58,600 MWh

(Contingency Band for sites which should be DM)

Note:
Underlying demand modelling can be done on basis of more broadly aggregated bands

Inline with the Modelling Approach document, bands 14,650 to 29,300 (Band 7) and 29,300 to 58,600 (Band 8) will be merged for modelling purposes

EUC Bands: Range	% of Total NDM	
	Total AQ	**Total SP Count**
Band 1: 0 to 73.2 MWh pa	71.48%	99.02%
Bands 1 to 2: 0 to 293 MWh pa	77.95%	99.75%
Bands 1 to 4: 0 to 2,196 MWh pa	87.41%	99.98%
Bands 5 to 9: >2,196 MWh pa	12.59%	0.02%

- Large NDM remains very much a minority component of overall NDM

- Bands 5 to 9 (>2,196 MWh pa) constitutes approx. 1/10 of overall NDM (on an AQ basis)

EUC Bands / Consumption Ranges for Large NDM (>2,196,000 MWh pa)

- The EUC Bands and Consumption Ranges are not prescribed in Uniform Network Code and are the responsibility of DESC to agree ahead of each Gas Year

- The following summarises what DESC agreed as part of approving this year's Modelling Approach document:

Consumption Range (kWh P.A.)		EUC Description					No. of Models Required
From	To	Bucket Band	WAR Band 1	WAR Band 2	WAR Band 3	WAR Band 4	
2,196,001	5,860,000	xx:Eyy05B	xx:Eyy05W01	xx:Eyy05W02	xx:Eyy05W03	xx:Eyy05W04	5
5,860,001	14,650,000	xx:Eyy06B	xx:Eyy06W01	xx:Eyy06W02	xx:Eyy06W03	xx:Eyy06W04	5
14,650,001	29,300,000	xx:Eyy07B	xx:Eyy07W01	xx:Eyy07W02	xx:Eyy07W03	xx:Eyy07W04	5
29,300,001	58,600,000	xx:Eyy08B	xx:Eyy08W01	xx:Eyy08W02	xx:Eyy08W03	xx:Eyy08W04	5
58,600,001		xx:Eyy09B					1

Large NDM Consumption Bands: Review of Bands 5-9

- The table below shows the proposed modelling runs based on the data available
- Other grouping may be investigated and presented at DESC in May if appropriate

EUC Band	Customer Type	LDZ													Total
		SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	
5	All	86	60	77	73	75	75	12	32	56	91	63	53	45	**798**
6	All	38	27	32	28	45	29	4	12	23	19	11	26	23	**317**
7	All	14	11	12	19	28	13	0	4	6	4	4	5	11	**131**
8	All	0	2	5	4	16	10	1	5	4	2	3	0	1	**53**

EUC Bands: Range	Proposed Modelling Runs for 2023/24	Final Modelling Runs for 2022/23
Band 5: 2,196 to 5,860 MWh pa	**Individual LDZ for most LDZs except WN (+NW)**	Individual LDZ for most LDZs except WN (+NW)
Band 6: 5,860 to 14,650 MWh pa	**Individual LDZ analysis except WN(+NW), WS(+SW), EA(+NT), NT(+SE), SE(+NT), SW(+WS)** Other areas with low sample counts will be run individually and then only grouped if necessary	Individual LDZ analysis except EA(+NT), WN(+NW), WS(+SW)
Band 7 and Band 8 (combined): 14,650 to 58,600 MWh pa	**Individual LDZ for EM, SC(+NO), NO(+NE) NW(+WN+WM), NE(+NO), WM(+NW) WN(+NW+WM)** **Southern LDZs all grouped**	2 LDZ Group (North / South Split)
Band 9: >58,600 MWh pa	**N/A – Band 7 and 8 data to be used**	N/A – Band 7 and 8 data to be used

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Large NDM WAR Bands: Review of WAR Bands 5-8

- The table below shows the breakdown of Supply Points that passed validation for Bands 5 to 8 split by Winter Annual Ratio (WAR), if that number is below the minimum requirement of 30 it is highlighted in red

Band 5						Bands 6 - 8					
LDZ	0.000 - 0.346	0.347 - 0.427	0.428 - 0.498	0.499 - 1.000	Total	LDZ	0.000 - 0.320	0.321 - 0.400	0.401 - 0.486	0.487 - 1.000	Total
SC	12	23	36	15	86	SC	27	30	57	24	138
NO	14	14	23	9	60	NO	25	29	31	15	100
NW	21	21	16	19	77	NW	26	46	25	29	126
NE	15	22	17	19	73	NE	27	40	30	27	124
EM	18	18	20	19	75	EM	44	60	29	31	164
WM	21	25	16	13	75	WM	36	35	31	25	127
WN	1	1	6	4	12	WN	2	3	8	4	17
WS	10	15	4	3	32	WS	15	19	11	8	53
EA	12	14	17	13	56	EA	20	25	26	18	89
NT	4	30	46	11	91	NT	6	29	61	20	116
SE	12	23	19	9	63	SE	11	19	38	13	81
SO	10	17	12	14	53	SO	9	26	26	23	84
SW	10	16	8	11	45	SW	13	28	17	22	80
Total	160	239	240	159	798	Total	261	389	390	259	1299
%	20.1%	29.9%	30.1%	19.9%	100.0%	%	20.1%	29.9%	30.0%	19.9%	100.0%
Target %	20.0%	30.0%	30.0%	20.0%		Target %	20.0%	30.0%	30.0%	20.0%	

- Winter 23/24 (Dec 23 to Mar 24) was generally warmer than the equivalent period in 2022/23, so thresholds have decreased this year

Large NDM WAR Bands: Review of WAR Bands 5-8

- The table below shows the proposed WAR Band groupings based on the data available
- Other grouping may be investigated and presented at DESC in May if appropriate

EUC Bands: Range	Proposed Modelling Runs for 2023/24	Final Modelling Runs for 2022/23
Band 5: 2,196 to 5,860 MWh pa	**EM and WM Combined, all others LDZs in groups of 3**	SC at Individual LDZ, Others in groups of 2 (for 7 LDZs) or 3 (for 5 LDZs) LDZs
Band 6: 5,860 to 14,650 MWh pa	**Individual LDZ s except NO(+NE), NE(+NO), WN(+NW), WS(+SW), EA(+NT), NT(+EA), SE(+SO), SO(+SE), SW(+WS)**	Combined for Modelling purposes: Individual LDZs (for 5 LDZs) or groups of 2 LDZs (for 2 LDZs) or groups of 3 LDZs (for 6 LDZs)
Band 7 and Band 8 (combined): 14,650 to 58,600 MWh pa		
Band 9: >58,600 MWh pa	N/A – No WAR Bands	

EUC Band	Consumption Range (kWh P.A.)		WAR Band 1	WAR Band 2	WAR Band 3	WAR Band 4
	From	**To**				
Band 5	**2,196,001**	**5,860,000**	0.000 - 0.346	0.347 - 0.427	0.428 - 0.498	0.499 - 1.000
Band 6	**5,860,001**	**14,650,000**	0.000 - 0.320	0.321 - 0.400	0.401 - 0.486	0.487 - 1.000
Band 7	**14,650,001**	**29,300,000**				
Band 8	**29,300,001**	**58,600,000**				
Band 9	**58,600,001**		N/A – No WAR Bands			

2.0 Collection of Daily Gas Consumption Data for EUC Modelling

CONCLUSION & NEXT STEPS

Conclusions and DESC Approval

Objectives Recap:

- Review the outcomes of the sample data collection and validation process

  – **Complete**

- Review the number of sample points available for this year's Analysis Period of 1 April 2023 to 31 March 2024

  – **Complete**

Approvals:

- Are DESC happy with the proposed aggregations for Demand Modelling?

- Do DESC agree with the Winter Annual Ratio (WAR) threshold for EUC Bands 3 and above?

Next Steps

April to June 2024

01) Demand Estimation Team to commence EUC demand modelling based on today's decisions
24/04/2024

02) Demand Estimation Team to share EUC demand modelling results for DESC to review

wc 13/05/2024

03) DESC meeting where EUC demand modelling results will be presented and discussed

22/05/2024

04) Demand Estimation Team to prepare draft profiles for Gas Year 2024/25

23/05/2024 to 07/06/2024