



delivered by  correla

Demand Estimation Sub Committee

4.0 Modelling Approach Gas Year 2024/25

6 Mar 2024

Modelling Approach Gas Year 2024/25

OVERVIEW

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Demand Estimation Cycle



- An overview of the Demand Estimation process and output can be found [here](#)
- Annual modelling cycle of activities are represented in diagram opposite
- This presentation relates to the Modelling Approach phase of the Demand Model cycle

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	✓		✓			✓		✓		✓			

Background

- The process for determining the EUCs and Demand Models for the following Gas Year begins with the production of a Modelling Approach document
- The Modelling Approach document provides an overview of the EUC definitions and how the modelling shall be performed, from collecting daily gas consumption data from a sample of NDM supply points through to the industry consultation of the proposed gas demand profiles
- At December's DESC meeting, a draft of the document was shared. This reflected the previous year's approach, updated for the new dates
- DESC is asked to formally approve the document at its meeting in the first quarter of each year, ahead of the modelling process starting in the Spring

Objectives

- To provide a summary of the main sections of the Modelling Approach document, which sets out how the End User Categories (EUCs), Demand Models and Gas Demand Profiles shall be produced for Gas Year 2024/25
- To consider any changes / issues which relate specifically to this year's demand modelling process
- To review any comments that have been received on the draft Modelling Approach document since publication in December 2023
- To conclude discussions on the “Model Principles” phase by formally requesting DESC's approval of the Modelling Approach document

Vote
Required

Demand Estimation Changes

Modelling Approach 2024 is required ultimately to deliver a set of Gas Demand Profiles, for use in Gemini and UK Link for Gas Year 2024/25

- The Ad Hoc workplan items this year have not identified any issues or improvements required to the modelling system
 - No changes are proposed by the Demand Estimation Team

Modelling Approach Gas Year 2024/25

MODELLING APPROACH SUMMARY

End User Categories

EUC Band	AQ Range From: (KWh pa)	AQ Range To: (KWh pa)	Market Sector	Meter Type	Default ('Bucket')	WAR Bands W01 to W04	No. of Demand Models required
01	0	73,200	Domestic & Non-Domestic	PrePayment & Non-PrePayment	x	x	4
02	73,201	293,000			x	x	4
03	293,001	732,000	Non-Domestic	Non-PrePayment	✓	✓	5
04	732,001	2,196,000			✓	✓	5
05	2,196,001	5,860,000			✓	✓	5
06	5,860,001	14,650,000			✓	✓	5
07	14,650,001	29,300,000			✓	✓	5
08	29,300,001	58,600,000			✓	✓	5
09	58,600,001				✓	x	1

- There are no plans to amend the current EUC definitions (39 per LDZ) for Gas Year 2024/25

Daily Gas Consumption Data

- Analysis Period:
 - Daily Gas Consumption Data is a critical input to the Demand Modelling process and will be required for the period 25th March 2023 to 7th April 2024, with the main Analysis Period being **1st April 2023 to 31st March 2024**
- Sources:
 - Transporters and Shipper sampling will contribute towards NDM Sampling numbers
 - Class 3 data for Domestic Prepayment EUC to be used again
- Validation:
 - Appendix 2 of the Modelling Approach document sets out the proposed validation to be applied to the collated data prior to being used in demand modelling
 - Aim is to strike the balance of ensuring vast majority of data errors are removed yet maximising the number of sample points available for modelling

Daily Weather Data

- The Composite Weather Variables (CWVs) used in the modelling will be those derived using the new formula introduced in 2020 (including Solar Radiation) and optimised parameters
- There have been no changes to the weather stations used since the Seasonal Normal Review in 2020, details of which can be found in Section 11 of the NDM Algorithm booklet
- The EUC demand modelling for CWVs and Seasonal Normal Composite Weather Variables (SNCWVs) is based on the Seasonal Normal basis effective from 1st October 2020
- Note: This will be the fifth and final time these versions of the CWV and SNCWV will be used as next year's modelling will be based on the output from DESC's Seasonal Normal Review process later this year

High Level Modelling Principles - Bands

- Band 01 (0-73.2 MWh) and Band 02 (73.2 – 293 MWh) modelled as 4 separate models
 - Domestic Prepayment and Non-Prepayment
 - Non-Domestic Prepayment and Non-Prepayment
- Bands 03 and 04 WAR Bands now modelled separately
- Bands 07 and 08 Consumption Bands merged for modelling purposes
- Bands 05 to 08 WAR Bands (sample data) combined for Bands 06 to 08 WAR Band modelling purposes only
- Band 05 WAR Bands to be modelled separately
- Band 09 to use Band 08 Consumption Band model

High Level Modelling Principles - Rules

- Holiday Code Rules applied will be those revised as part of the 2021/22 Ad Hoc work plan and are set out in Appendix 5 of the Modelling Approach document
- Warm weather analysis in order to identify models which exhibit 'Summer Reductions' and / or 'Cut-Offs'
- Analysis performed to assess if 'Weekend and/or Holiday effects' are necessary
- 3-year model smoothing applied along with existing weightings for each individual year (i.e. 33:33:34) as agreed in [Autumn 2023](#) (DESC approved continued use of Model Smoothing),
 - Analysis years to be used for smoothing are covered on the Smoothing Analysis slide

Smoothing Analysis Periods

- The 2020/21 Analysis Period was not used for I&C models due to the impact of Covid-19 Lockdowns on consumption
 - This period is no longer needed for the 3-year smoothing
- The Class 3 data for Domestic Prepayment meters is now available for 3 full years
 - As agreed by DESC in 2022, we will no longer use the MOD451AV 2012/13 data
- The proposed Approach to Model Smoothing is shown on the right, with the same 3-years used for all EUCs

Suggested
Smoothing Analysis Periods

Analysis Year	All EUCs
2021/22	✓
2022/23	✓
2023/24	✓

Gas Demand Profiles

- The Annual Load Profile (ALP) formula remains unchanged
- The Daily Adjustment Factor (DAF) formula remains unchanged
- The Peak Load Factor (PLF) formula remains unchanged, including the methodology for deriving the estimate of peak day demand for Small NDM and Large NDM EUCs i.e. simulation across the full weather history (Gas Year 1960 onwards)

Fall Back Position:

In the event the NDM proposals derived from the analysis performed in 2024 are rejected by DESC, the underlying demand models from 2023 would be used - referred to as 'fall-back' proposals (UNC Section H)

DESC Approval

- No comments have been received following publication of the Draft Modelling Approach in December 2023
- No changes are proposed to the Modelling Approach for Gas Year 2024/25

- | | |
|---|------------------|
| <ul style="list-style-type: none">• Are DESC happy to approve the principles as set out in the Modelling Approach document? | Vote
Required |
|---|------------------|

Next Steps

6 March to 24 April 2024



Publish Modelling
Approach

Demand Estimation
Early March

Prepare Sample
Data and Modelling
Systems

Demand Estimation
1 – 31 March

Collect and Validate
Sample Data

Demand Estimation
10 – 18 April

Review Validated
Sample Counts

DESC
24 April