



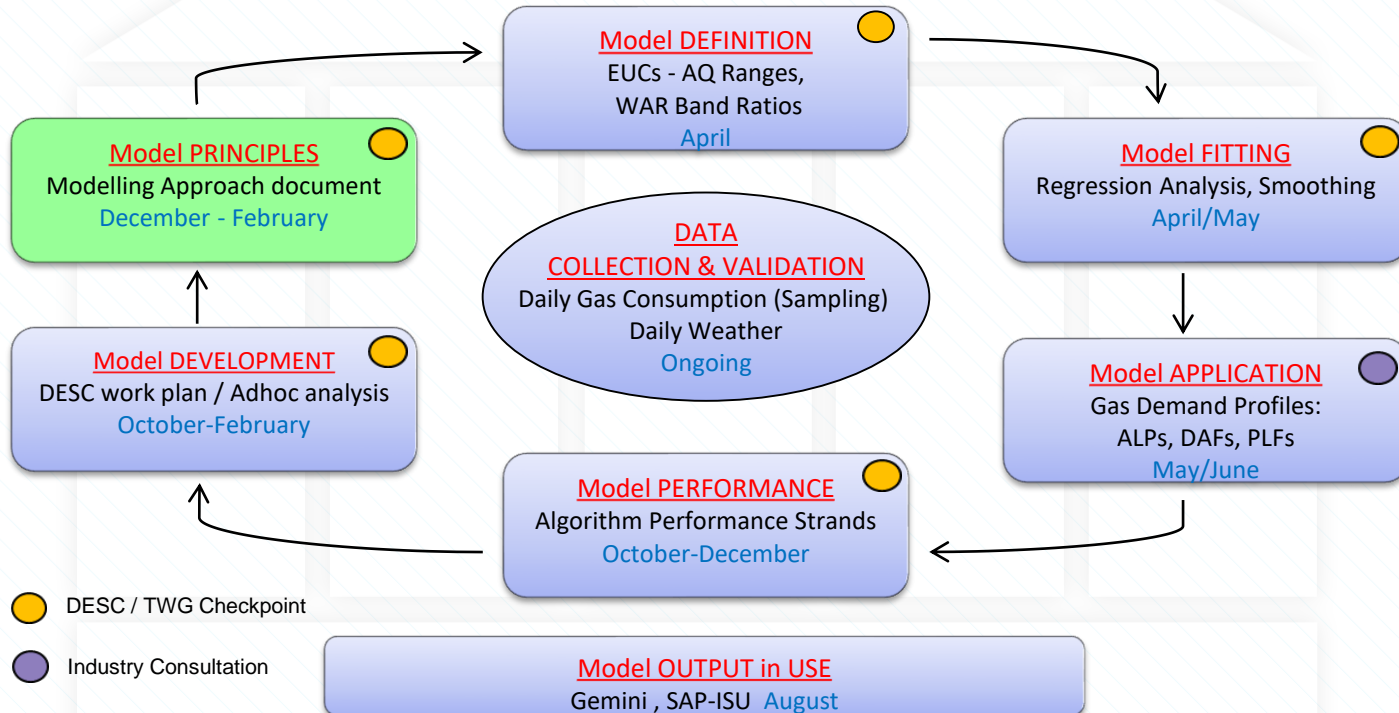
Demand Estimation Sub Committee

Approach to EUC Gas Demand Modelling 2021

7th December 2020

Overview – Demand Estimation

- An overview of the Demand Estimation process and output can be found [here](#)
- This presentation relates to the “Model Principles” phase of the Demand Model cycle



Objective

Gas Year 2019/20

Gas Year 2020/21

Gas Year 2021/22

- To commence first round discussions on the high-level principles within the Modelling Approach document, required for the EUC Definitions and Demand Models for Gas Year 2021/22
- To discuss any relevant topics which could influence the approach to next year's process, e.g. COVID-19 impacts
- To share high level view of next year's Demand Estimation timetable

Background – Modelling Principles

- 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 'version 0.1' of the document is shared, which essentially reflects the previous year's approach but updated to reflect the new dates
- DESC is asked to formally approve the document at its meeting in February each year, ahead of the modelling process starting in the Spring
- For the avoidance of doubt, current discussions on the future of the NDM Algorithm and any subsequent implementation actions are unlikely to have concluded in time to influence the profiles for Gas Year 2021/22

Modelling Approach 2021 – Demand Estimation Changes

- Modelling Approach 2021 is required ultimately to deliver a set of Gas Demand Profiles for use in Gemini and SAP-ISU for Gas Year 2021/22 and could be impacted/improved this year by the following changes:
 - CDSP will be using new platform/software for performing the validation of the now multiple source submissions of daily gas consumption data
 - COVID-19 impacts to gas demand – covered later in the presentation
 - Holiday Factors / Model Smoothing Approach – both Adhoc work plan items to be completed - await recommendations from this work in February 2021

Gas Year 2019/20 NDM Algorithm Performance Observations

- The key observations from Strands 1, 2 and 3 of NDM Algorithm Performance to take forward into next year's Modelling Approach:
 - The implementation of a new CWV formula definition will improve the accuracy of the EUC Demand Models. This is supported by:
 - Strand 1: Improvements in R_2 results when comparing new CWV with Agg, NDM Demand
 - Strand 2: Reduction in Average UIG when simulating NDM Allocation using 2020 Demand Models and new weather (CWV and SNCVW)
 - Strand 3: During 'non-COVID' impacted periods (Oct'19 to Mar'20) and models (01BND) there is an improvement in the modelling error observed between actual and allocated
 - The new EUC Definitions introduced for Gas Year 2019/20 are facilitating more appropriate NDM allocation to take place and therefore should continue, however more education/accuracy needed to ensure the key data items on UK Link are accurate thus enabling the most appropriate EUC to be assigned
 - The Strand 3 results show that the 6 months of Gas Year 2019/20, that will also be used in next years EUC demand modelling (i.e. April to Sept 2020), will be, in some cases, much lower than 'normal' demand levels. As a result DESC may need to be flexible in how it approaches the analysis next year

Modelling Approach 2021: 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 req'd
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

- No plans to amend the current EUC Definitions (39 per LDZ) for Gas Year 2021/22
- To support more accurate NDM Allocation, focus is required by the industry on the key data items used in 'EUC assignment' e.g. Market Sector Code, Meter Mechanism and Payment Method, Monthly Read submissions for Winter Consumption

Modelling Approach 2021: Daily Gas Consumption Data

- Daily consumption data will be required for the period 25th March 2020 to 7th April 2021, with the main analysis period being 1st April 2020 to 31st March 2021
- Central Data Service Provider (CDSP) will produce a revised view of the ideal sample size numbers based on the latest view of the population and include within the Modelling Approach 2021 document
- To support the modelling, the CDSP requires daily consumption data for all EUCs, particularly the newer definitions e.g. Pre-payment supply points
- Eligible Shippers (portfolio >25K) are mandated to contribute to the NDM sampling by providing daily gas consumption data to the CDSP
- It is proposed the 'Stratification approach' (introduced in 2019), which attempts to match the composition of the NDM sample with the NDM population, will continue with data collected for EUCs in Bands 1 and 2

Modelling Approach 2021 – COVID-19 Impacts

- The analysis period for collection of daily gas consumption data will include a significant number of days which will have been impacted by the national and local restrictions as a result of COVID-19
- Results shared in the NDM Algorithm Performance Strands for Gas Year 2019/20 and likely demand changes during Gas Year 2020/21 means the analysis for some of the EUC demand models will be impacted
- The target profiles are for Gas Year 2021/22 and so we suggest DESC needs to remain flexible in how the modelling is handled next year
- Potential modelling options for next year
 - Continue 'as-is' if data looks ok , maybe removing certain data points (as we did this year)
 - Do not use the data collected for analysis period 20/21 if things look like they will return to normal in 21/22 and carry forward previous years models (20/21 sample data still needs to be validated and assessed before making any decisions)
 - Thoughts welcome on these and other options ?
- The position may be clearer when DESC are asked to conclude discussions on the 2021 Modelling Approach at its meeting towards the end of February

Modelling Approach 2021: Weather Data

- The Composite Weather Variables (CWVs) used in the modelling will be those derived using the new formula (i.e. including Solar Radiation) and optimised parameters
- The Weather Stations used will reflect the recent changes following the implementation of the Seasonal Normal Review, namely, Yeovilton is now used for LDZ 'SW' and Durham is used for the Solar Radiation data for LDZ 'NO'
- Details of all Weather Stations can be found in Section 11 of the NDM Algorithms Booklet
- The EUC demand modelling to use the CWVs and SNCWVs based on the parameters and Seasonal Normal basis effective from 1st October 2020

Modelling Approach 2021: Principles

- Band 01 modelled as 0 to 73.2 MWh but with 4 separate demand models i.e.
 - Domestic Non-Prepayment / Prepayment (2)
 - Non-Domestic Non-Prepayment / Prepayment (2)
- Bands 3 & 4 WAR bands and Bands 7 & 8 Consumption and WAR bands merged for modelling purposes only
- Holiday code rules to be the same as used in 2020**
- Warm weather analysis in order to identify those 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 2018 (DESC approved continued use of Model Smoothing) **

*** Pending results from Adhoc Workplan Items – ‘Review of Holiday code rules’ and ‘Review of Model Smoothing Approach’, both due to be delivered at next DESC in February*

Modelling Approach 2021: 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 2021 are rejected by DESC, the underlying demand models from 2020 would be used - referred to as 'fall-back' proposals (UNC Section H)

Modelling Approach 2021: Reporting Output

- NDM Algorithms Booklet summarising the end to end modelling process will be produced
- Parameters for all smoothed models to be published in an Appendix to the 2021 NDM Algorithms Booklet. All other model parameters to be provided in electronic form
- The performance evaluation summary (Section 12) to reflect the review of Algorithm Performance (Strands 1 to 3) for Gas Year 2019/20
- The location of all supporting documents and files to be published on Xoserve's secure SharePoint site (UK Link Documentation):
 - 18.NDM Profiling and Capacity Estimation Algorithms / 2021-22 Gas Year

Modelling Approach 2021: Interaction and Timetable

- The modelling approach will include regular checkpoints for TWG and DESC to review and approve
- Please review decision / interactions timetable (Appendix 2 of Modelling Approach document) which provides summary of the anticipated DESC / TWG involvement during the modelling cycle
- To ensure that the correspondence during the modelling period (April to July) between Xoserve and the TWG remains productive, please ensure the TWG representative within your organisation (as displayed on the master list on the Joint Office website) is still the most appropriate contact

Modelling Approach 2021: Timetable

High Level View of Demand Estimation Timetable 2021 - Key Checkpoints

PHASE	JAN'21	FEB'21	MAR'21	APR'21	MAY'21	JUN'21	JUL'21	AUG'21	SEP'21	OCT'21	NOV'21	DEC'21
1. MODEL PRINCIPLES												
Modelling Approach 2021 Approved (DESC)		24-Feb										
2. Data COLLECTION & VALIDATION												
Daily Gas Consumption Data validated (CDSP)				15-Apr								
3. MODEL DEFINITION												
Agree Data Aggregations / WAR Band Limits (TWG)				28-Apr								
4. MODEL FITTING												
Gas Demand EUC Modelling review (TWG)					24-May							
5. MODEL APPLICATION												
Publication of Draft Gas Demand Profiles (CDSP)						04-Jun						
Gas Demand Profiles Approved for wider industry (TWG/DESC)							07-Jul					
Final Approval of Gas Demand Profiles (DESC)							21-Jul					
6. MODEL OUTPUT IN USE												
SAP-ISU and Gemini updated (CDSP)								15-Aug				
7. MODEL DEVELOPMENT												
Adhoc Work-plan approved (DESC)							21-Jul			06-Oct		
8. MODEL PERFORMANCE												
NDM algorithm Performance - Strands 1 to 3 reviewed (DESC)												14-Dec

Modelling Approach 2021: TWG/DESC Review

- The first 'change marked' draft of the Modelling Approach document for the 2021 analysis will be available in December and Xoserve invite TWG representatives and other interested parties to review and comment on the document
- In addition we welcome any thoughts on COVID-19 impacts and how this may impact the Demand Modelling approach in 2021
- Please submit any queries or comments via email to our box account:

Xoserve.demand.estimate@xoserve.com
- In order to meet the Demand Modelling timetable, DESC will be asked to provide final approval of the Modelling Approach document at the DESC meeting on 24th February 2021