



Demand Estimation Sub Committee

EUC Modelling Approach – Spring 2020

9th December 2019

Background – Demand Estimation

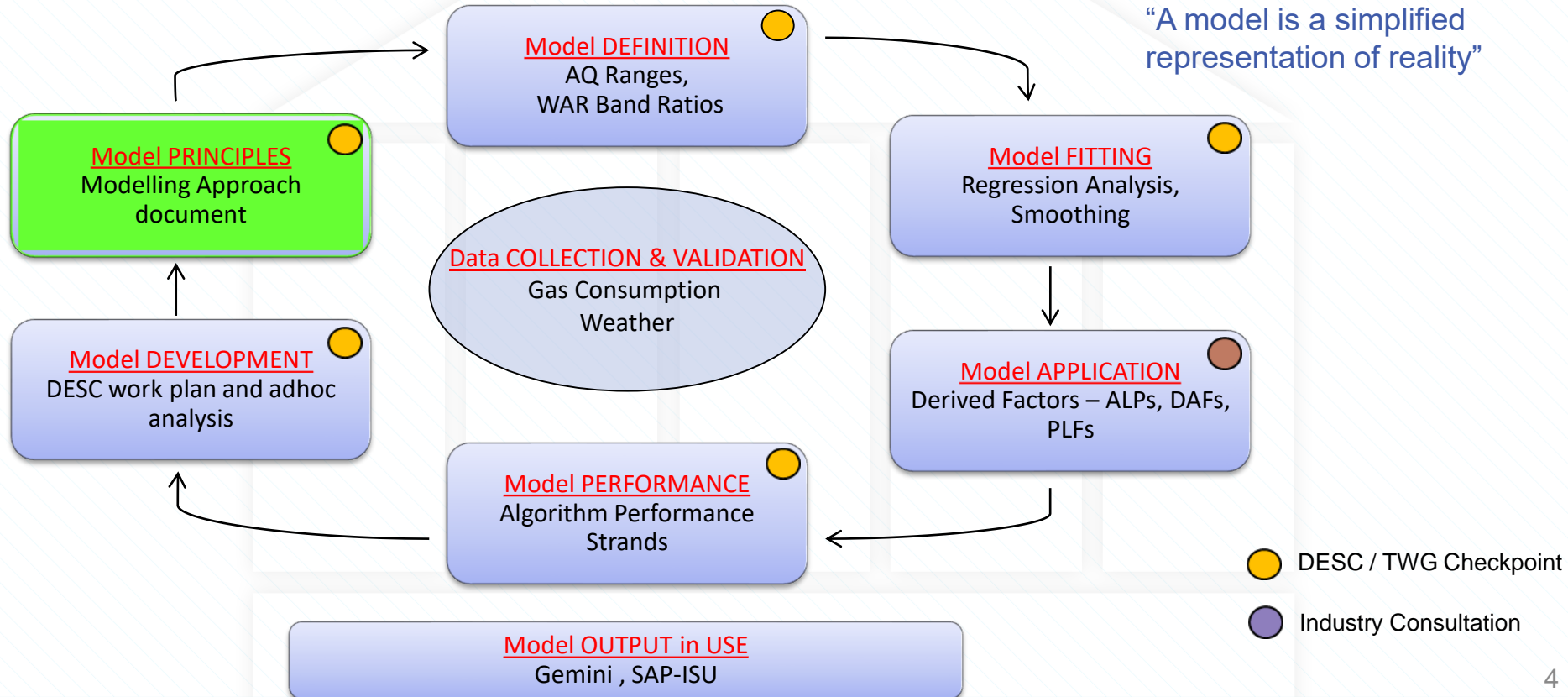
- Key industry processes require various types of gas demand estimation at NDM Supply Points. These processes include:
 - Determining Supply Point Capacity
 - Daily Nominations and Allocations i.e. NDM Supply Meter Point Demand Formula
 - Determining Annual Quantities (AQs)
- To achieve this estimation, each NDM Supply Point belongs to an End User Category (EUC)
- EUCs are used to categorise NDM Supply Points in an LDZ and are defined by reference to variables which are maintained in the Supply Point Register
- Each EUC requires an associated Demand Model which represents its gas usage characteristics e.g. weather sensitivity, consumption profile etc
- Demand Models are mathematical models which provides an estimate of gas demand for each EUC by reference to variables determined by DESC

Background – Demand Estimation cont.

- For each Gas Year, DESC will develop or revise the definitions of the EUCs for the LDZ and the Demand Models for each EUC. The CDSP will then implement these decisions
- The annual 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 provides an overview of the EUC definitions and how the modelling shall be performed, which DESC is asked to formally approve at its meeting in February each year
- Prior to this, DESC's Technical Workgroup (TWG) are sent a draft of the document to review and comment on
- Section H of UNC and the NDM Demand Estimation Methodology document provides more detail of the Demand Estimation process

Development of EUCs and Demand Models

The purpose of the **EUC Demand Model** is to represent the behaviour and reactions of the **EUC Population**



Demand Modelling Framework

- DESC's obligation of producing a set of End User Categories and Demand Models for the next gas year have to be delivered within certain timescales:
 - The sample data collected for analysis must include the most recent Winter period (December to March), meaning the sample data collation and validation cannot start until **early April**
 - The Final EUCs and Demand Models must be approved and submitted to the Authority and loaded to CDSP's systems **by 15th August**
 - In between April and August is when the sample data validation results are reviewed, WAR Band ratios are set, single year models are developed and reviewed, model smoothing is applied, draft Derived Factors are produced and reviewed, followed by an industry consultation **commencing early June**
- The above explains why it is necessary to agree modelling principles and methodologies in February, as there is not time in the Spring/Summer to make fundamental modelling decisions and gain agreement from all DESC members

Objective

- The final objective of the “Model Principles” phase is to produce a Spring Approach document for the derivation of EUCs and Demand Models effective for Gas Year 2020/21, which is approved by DESC (Target: February 2020 meeting)
- Objective of today’s session is to formally launch the process for determining the EUCs and Demand Models for Gas Year 2020/21 by discussing the high level principles to be included in the draft of the Spring Approach document
- In addition we shall provide a high level view of the Demand Estimation timetable for the production of Demand Models for Gas Year 2020/21

Modelling Approach 2020 – Demand Estimation Changes

- Spring Approach 2020 is required ultimately to deliver a set of Derived Factors for use in Gemini and SAP-ISU for Gas Year 2020/21 and will be impacted this year by the following changes:
 - Change to Composite Weather Variable (CWV) formula to include Solar Radiation and freshly optimised parameters
 - Change to the Seasonal Normal basis (SNCWV)
 - Investigations currently being performed by **UIG Task Force** include a review of NDM demand models. Recommendations from this work, where possible, to be included in Spring Approach
 - CDSP will be using new platform/software for performing modelling process

Modelling Approach 2020 – End User Categories

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

- Based on the above 'EUC line-up' there would be 39 EUCs per LDZ

Modelling Approach 2020 – Demand Data

- For Spring 2020 analysis, daily consumption will be required for the period 25th March 2019 to 7th April 2020, with the main analysis period being 1st April 2019 to 31st March 2020
- CDSP will produce a revised view of the ideal sample size numbers based on the latest view of the population (it is likely only EUCs in higher bands will change) and include within the Modelling Approach 2020 document
- To support the modelling, the CDSP requires daily consumption data for all EUCs, particularly those new definitions e.g. Pre Payment Meter Points
- Reminder: MOD0654S (mandating the provision of NDM sample data) requires eligible Shippers (portfolio >25K) to provide daily NDM sample data from Shippers to the Central Data Service Provider (CDSP)
- It is proposed the Stratification approach, introduced in 2019, will continue for the sample data collected for EUCs in Bands 1 and 2

Modelling Approach 2020 – 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 will generally be the same, other than Yeovilton will now be used for LDZ SW and Durham will be used for the Solar Radiation data for LDZ NO
- The EUC demand modelling to use the CWVs and SNCWVs based on the parameters and Seasonal Normal basis effective from 1st October '20

Modelling Approach 2020 – Principles

- Band 01 continues to be modelled as 0 to 73.2 MWh but with 4 separate demand models i.e.
 - Domestic Non-Prepayment / Prepayment (2) and
 - Non-Domestic Non-Prepayment / Prepayment (2)
- Band 7 & 8 consumption and WAR bands to be merged for modelling purposes only, as per DESC decision in Spring 2014
- Holiday code rules to be the same as used in Spring '19, which for the Christmas and New Year holiday period will be those agreed by DESC in November 2011
- 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)

Modelling Approach 2020 – Derived Factors

- 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
- Fall-back position:
 - In the event the NDM proposals derived from the Spring 2020 analysis are rejected by DESC, the underlying demand models from Spring 2019 would be used - referred to as 'fall-back' proposals (UNC Section H) – but re-stated on the new weather basis

Modelling Approach 2020 – Reporting Output

- NDM Algorithms Booklet summarising the process followed, to be produced
- Parameters for all smoothed models to be published in an Appendix to the 2020 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 2018/19
- 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 / 2020-21 Gas Year

Spring Approach 2020 – 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 Spring 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

Demand Estimation Timetable 2020

High Level View of Demand Estimation Timetable 2020 - Key Checkpoints

| PHASE | JAN'20 | FEB'20 | MAR'20 | APR'20 | MAY'20 | JUN'20 | JUL'20 | AUG'20 | SEP'20 | OCT'20 | NOV'20 | DEC'20 |
|--|--------|----------|--------|----------|----------|--------|---------|----------|----------|--------|---------|---------|
| 1. MODEL PRINCIPLES | | | | | | | | | | | | |
| Modelling Approach 2020 Approved (DESC) | | 10th Feb | | | | | | | | | | |
| 2. Data COLLECTION & VALIDATION | | | | | | | | | | | | |
| Sample data validated (CDSP) | | | | 15th Apr | | | | | | | | |
| 3. MODEL DEFINITION | | | | | | | | | | | | |
| Agree Data Aggregations / WAR Band Limits (TWG) | | | | 27th Apr | | | | | | | | |
| 4. MODEL FITTING | | | | | | | | | | | | |
| Small & Large NDM Single Year modelling review (TWG) | | | | | 18th May | | | | | | | |
| 5. MODEL APPLICATION | | | | | | | | | | | | |
| Publication of Draft Derived Factors (CDSP) | | | | | | | | | | | | |
| Derived Factors Approved for wider industry (TWG/DESC) | | | | | | | 5th Jun | | | | | |
| Final Approval of Derived Factors (DESC) | | | | | | | | 8th Jul | | | | |
| | | | | | | | | | 22nd Jul | | | |
| 6. MODEL OUTPUT IN USE | | | | | | | | | | | | |
| SAP-ISU and Gemini updated (CDSP) | | | | | | | | | 15th Aug | | | |
| 7. MODEL DEVELOPMENT | | | | | | | | | | | | |
| Adhoc Work-plan approved (DESC) | | | | | | | | 22nd Jul | | | 5th Oct | |
| 8. MODEL PERFORMANCE | | | | | | | | | | | | |
| Strands 1 to 3 reviewed (DESC) | | | | | | | | | | | | 7th Dec |

Modelling Approach 2020 – TWG/DESC Review

- The first draft of the Modelling Approach document for the 2020 analysis will be available early next year
- Xoserve will invite TWG representatives and other interested parties to review and comment on the document. Please submit any queries or comments via email to our box account:

Xoserve.demand.estimation@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 10th February 2020