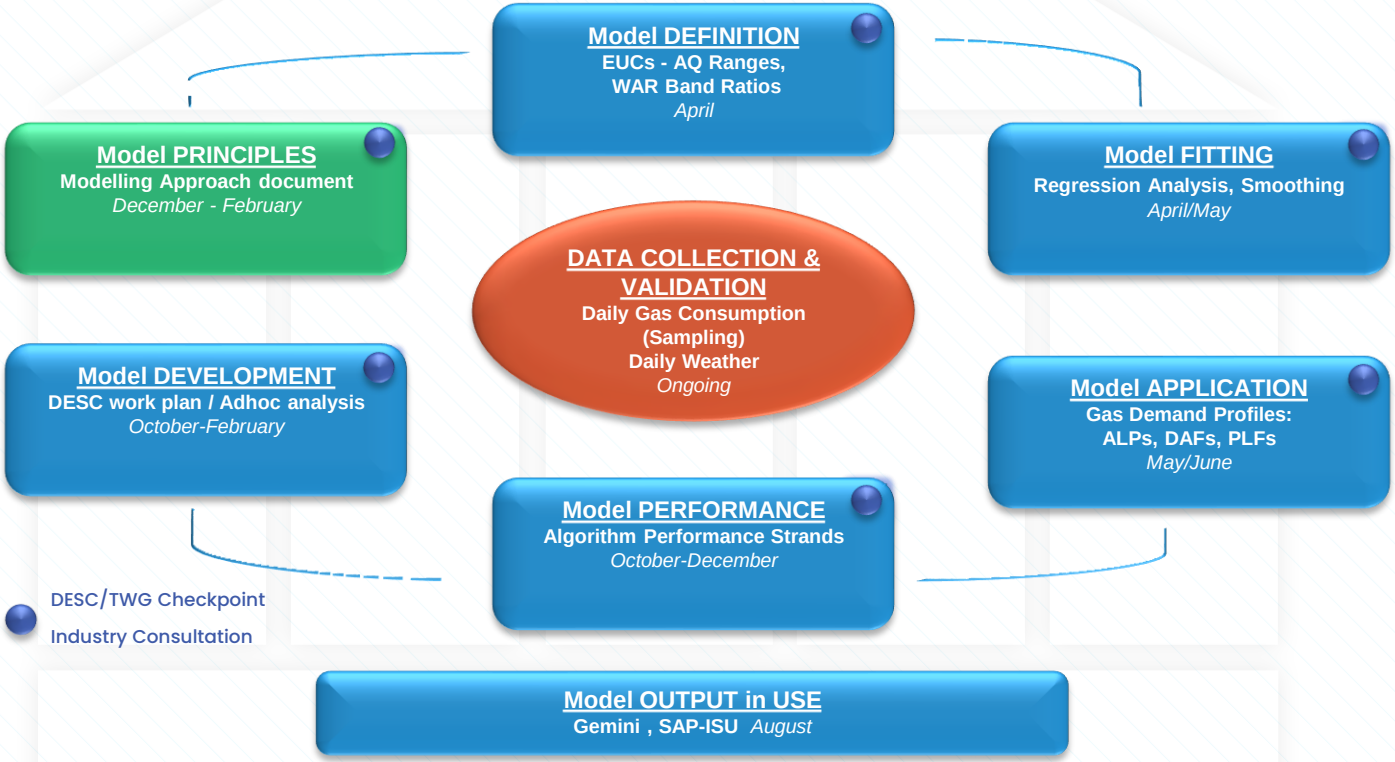
DESC -
Approach to EUC Gas Demand Modelling 2022

March 2022

Demand Estimation: Background

- 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

- 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 2022/23
- 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 document since publication in December 2021
- To conclude discussions on the "Model Principles" phase by formally requesting DESC's approval of the Modelling Approach document

Background – Modelling Approach

- 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
- Following December's DESC meeting a draft of the document was shared, which essentially reflected the previous year's approach but updated to reflect 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
- For the avoidance of doubt, current discussions at UNC Workgroup 0754R ("Investigate Advanced Analytic Options to improve NDM Demand Modelling") are due to finish in November and therefore will not influence the profiles produced for Gas Year 2022/23

Demand Estimation Changes

Modelling Approach 2022 is required ultimately to deliver a set of Gas Demand Profiles for use in Gemini and UK Link for Gas Year 2022/23 and could be impacted/improved this year by the following:

- COVID-19 impacts to gas demand, covered in later slides
- Holiday Code Review (see separate slide pack – agenda item 2.1)
- Prepayment EUC Focus (see separate slide pack – agenda item 2.2)

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 2022/23

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 22nd February 2021 to 7th April 2022, with the main analysis period being **1st March 2021 to 31st March 2022**
  - This is a 13 month period due to the Easter Holiday Period in 2021 starting at the end of March
- Sources:
  - As usual, Transporters and CDSP sampling will contribute towards the target numbers
  - In addition, consumption data will be required from eligible Shippers (portfolio >25K) who are now mandated to contribute to the NDM sampling
  - Class 3 data for Domestic Prepayment EUC also likely to be used pending DESC decision under agenda item 2.2
- Validation:
  - Appendix 2 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 with 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

High Level Modelling Principles

- 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 3 and 4 WAR bands merged for modelling purposes only
- Bands 7 and 8 consumption and WAR bands merged for modelling purposes only
- Holiday Code Rules applied will reflect decisions made by DESC under agenda item 2.1
- 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 2020 (DESC approved continued use of Model Smoothing)
- Analysis years to be used for smoothing are covered on the COVID-19 impact slides

COVID-19 Impacts

- For the second year running, the Analysis Period will include a significant number of days which will have been impacted by the national and local restrictions as a result of COVID-19
- The impact is likely to be greatly reduced compared to 2020/21 as there have been no full lockdowns during the Analysis Period up to now
- For the 2021/22 Gas Year it was decided by DESC that only EUC "01BND" would use data from Analysis Period 2020/21
- As it stands our recommendation is to include the data collected for the Analysis Period 21/22. However the approach can be flexible pending external decisions made during the remaining months of the Analysis Period and the subsequent results shared with DESC in April and May
- The proposed approach to Model Smoothing is shown on the right, picking up the latest Analysis Period for all EUCs, and the two latest used Analysis Periods for Smoothing

Suggested Smoothing Analysis Periods

Analysis Year	01BND	Other EUCs
2018/19		✓
2019/20	✓	✓
2020/21	✓	
2021/22	✓	✓

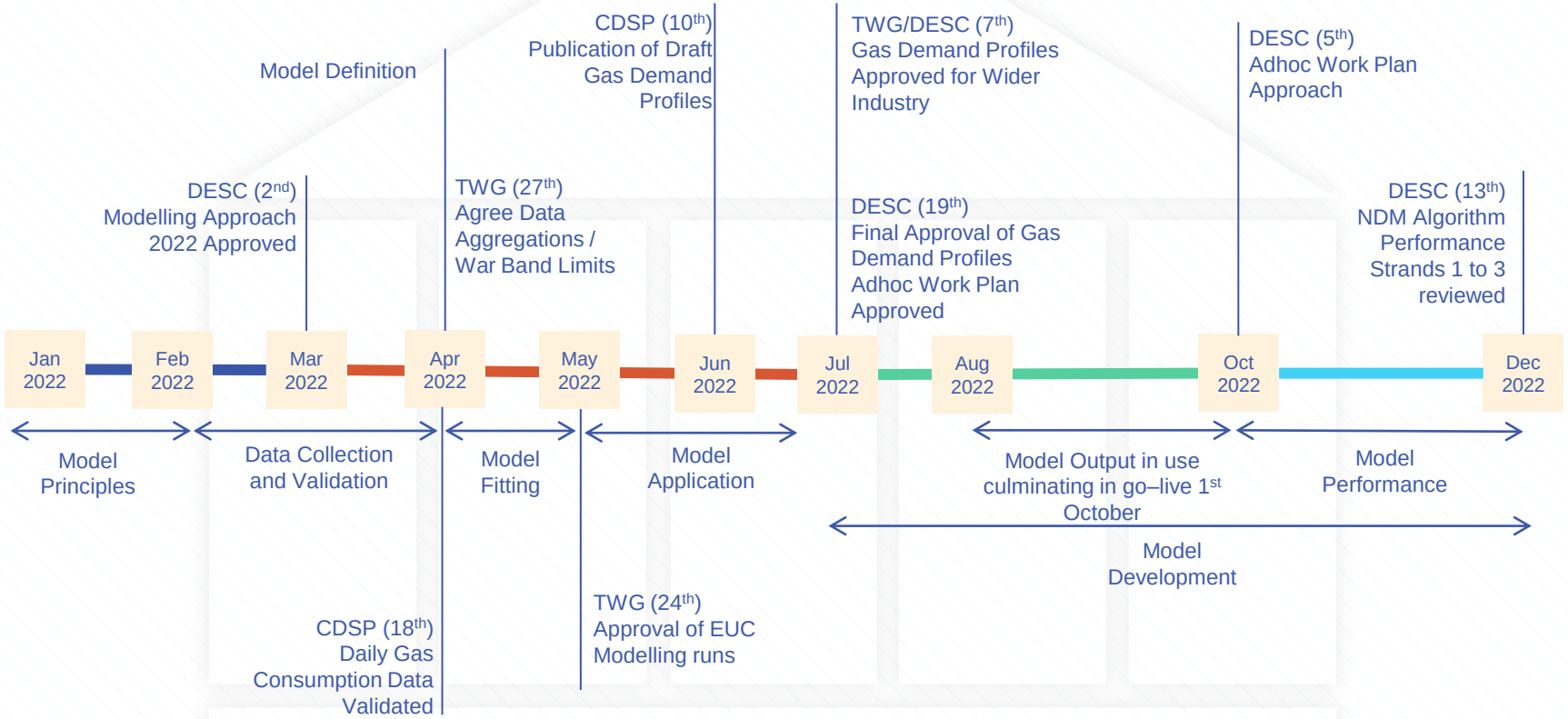
Gas Demand Profiles

- 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)

<u>Fall-back position:</u>

In the event the NDM proposals derived from the analysis performed in 2022 are rejected by DESC, the underlying demand models from 2021 would be used - referred to as ‘fall-back’ proposals (UNC Section H)

Demand Estimation 2022 Demand Modelling Timetable



Modelling Approach 2021: DESC Decision

- The first ‘change marked’ draft of the Modelling Approach document for the 2022 analysis was published in December and Demand Estimation invited DESC Members and TWG representatives to review and comment on the document
- At the point of publishing there have been no comments received on the proposed approach
- The next phase of work is to make preparations for collecting the Daily Gas Consumption Data and for implementing the new EUC Gas Demand Modelling system
- Are DESC happy to approve the principles as set out in the Modelling Approach 2022 document, the final version of which will include the decisions already made in this meeting?
  - DESC Members to vote