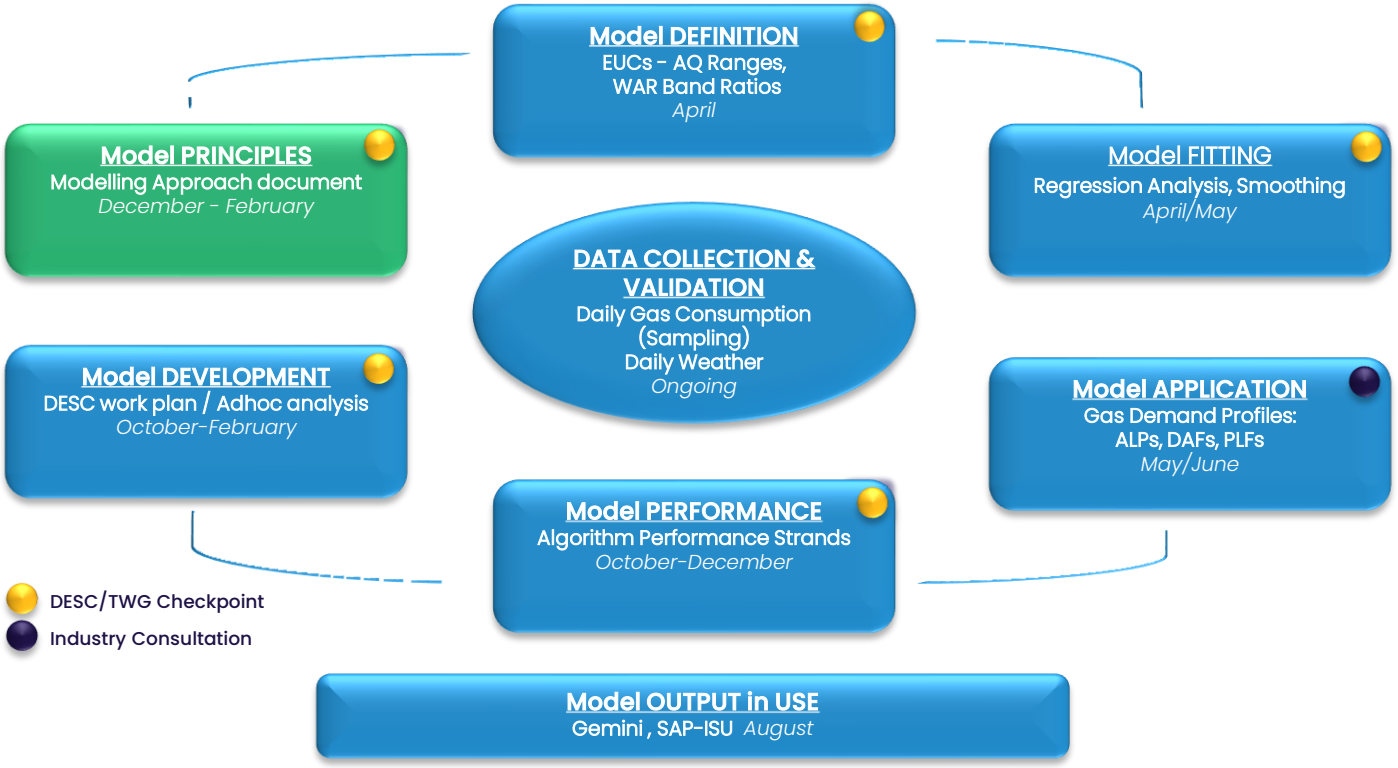
DESC – Approach to EUC Gas Demand Modelling 2022

14th December 2021

Provided by:

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 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 2022/23
- 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 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
- 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 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 not expected to have concluded in time to influence the profiles produced for Gas Year 2022/23. However, any 'quick wins' identified by the Workgroup will be included in the current approach if feasible

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 3.1)
- PPM Data availability (see separate slide pack – agenda item 3.2)

NDM Algorithm Performance Observations

Any recommendations as a result of the Algorithm Performance review (presented in separate slides) will be confirmed at the March 2022 DESC meeting.

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

- There are no plans to amend the current EUC definitions (39 per LDZ) for Gas Year 2022/23
- UNC Workgroup 754R are planning to review the appropriateness of the existing EUC definitions using Advanced Analytics

Daily Gas Consumption Data

- The Demand Estimation Team 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 2022 document
- To support the modelling, the Demand Estimation Team requires daily consumption data for all EUCs, particularly Pre-payment supply points
- Eligible Shippers (portfolio >25K) are mandated to contribute to the NDM sampling by providing daily gas consumption data to the Demand Estimation Team
- 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

Impacts of Holiday Code Review

Using current rules
13 Month Analysis Period due to Easter 2021 falling at the beginning of April

Daily consumption data 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

Should the holiday code review change the rules around Easter
12 Month Analysis period

Daily consumption data will be required for the period 25th March 2021 to 7th April 2022, with the main Analysis Period being 1st April 2021 to 31st March 2022

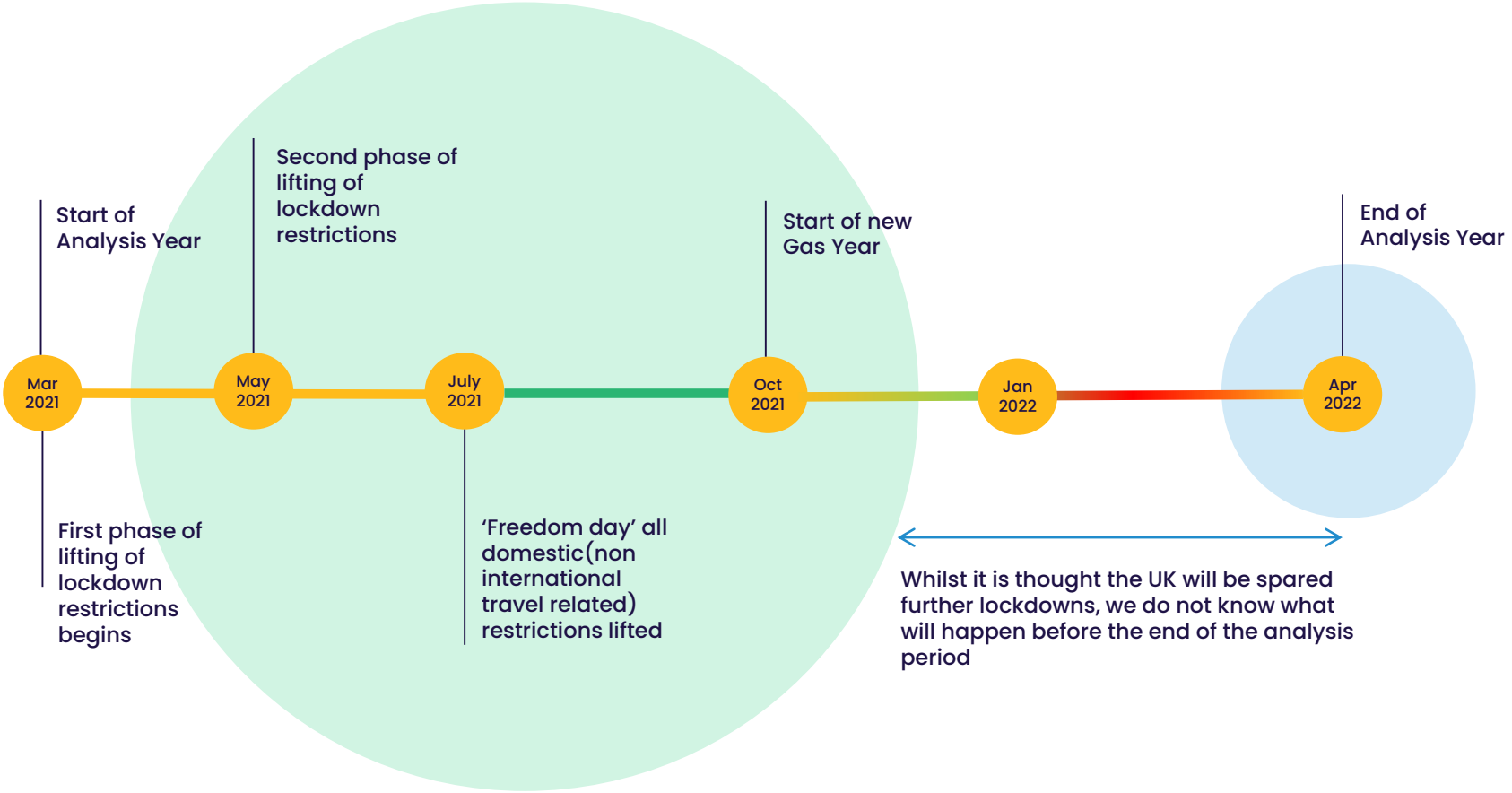
Weather Data

- 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 under review with any proposed changes to be presented to DESC in February with any proposed changes requiring approval by DESC in March
- 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 to Analysis Period Timeline



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

Thoughts on this and suggestions welcome.

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)

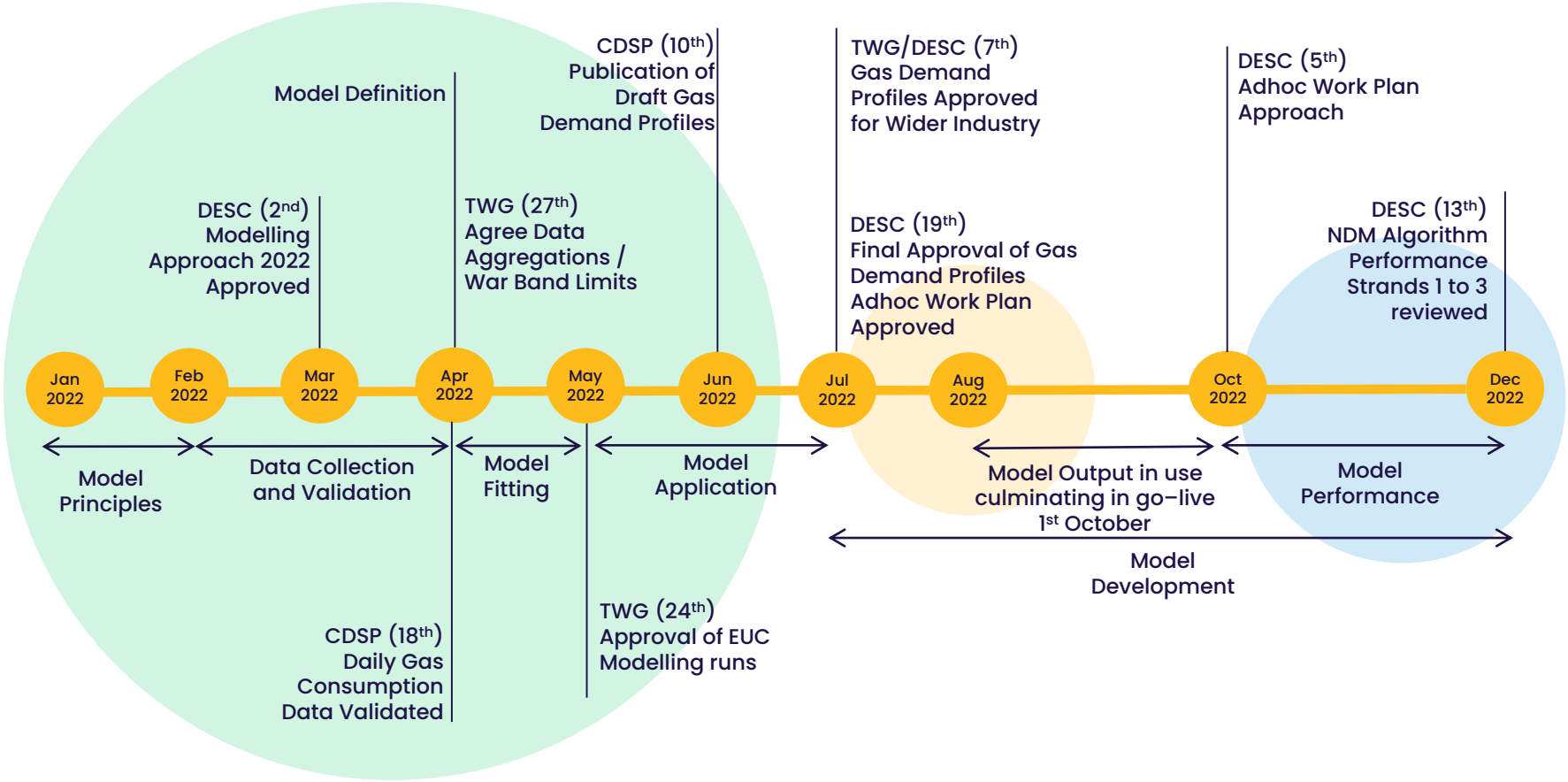
Reporting Output

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 / 2022-23 Gas Year

- 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 2022 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 2020/21

Demand Estimation 2022 Timetable



Thank you