

Demand Estimation: Gas Year 2020/21 Update

February 2020

Dear Customers and Industry Colleagues,

Our Xoserve Demand Estimation team would like to share with you an update on the annual process of defining the End User Categories (EUCs) and associated Gas Demand Profiles for Gas Year 2020/21.

One of the key responsibilities of the Demand Estimation Sub Committee (DESC) and the Demand Estimation team here at Xoserve is to ensure EUCs and Gas Demand Profiles are loaded into the key industry systems – Gemini and UK Link - ahead of a new Gas Year (1st October to 30th September).

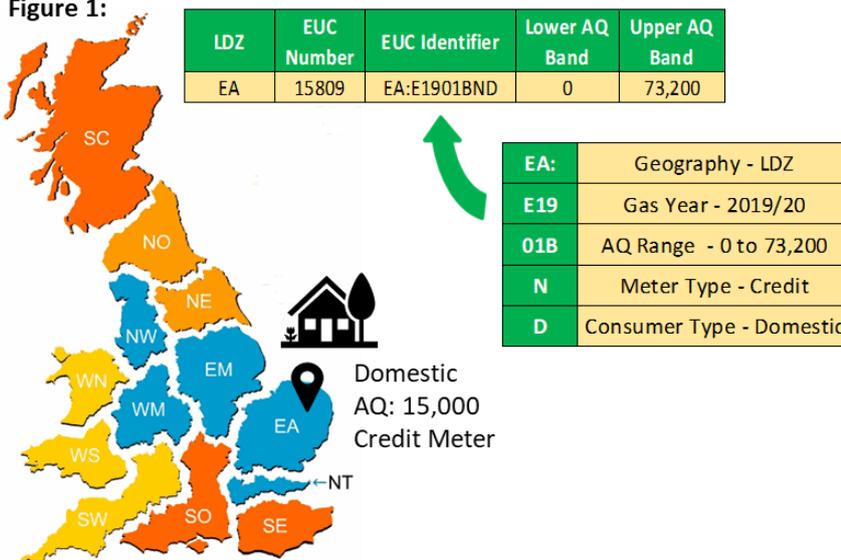
All of the obligations of DESC and the Xoserve Demand Estimation team are set out in [UNC Section H](#) and the [Demand Estimation Methodology](#).

What are End User Categories (EUCs) and why are they important?

As you would expect within a population of c.24 million Class 3 and 4 UK gas consumers, the characteristics of how gas is used varies for many reasons. The EUC helps the industry provide a means of grouping consumers by 'behaviour types' to accommodate these differences. Currently individual Supply Meter Points are assigned to EUCs based on a combination of their geography (LDZ), annual consumption (AQ), meter type (credit or prepayment), consumer type (domestic or non-domestic) and their winter consumption (winter:annual ratio).

Figure 1 provides an example of how to interpret the definition of an EUC from the current Gas Year 2019/20.

Figure 1:



Note:

In reality there will be more factors that could be considered when 'grouping consumers', however currently in line with Section H 1.2.2 obligations EUCs must be defined by data items as "maintained in the Supply Point Register" i.e. UK Link and so there is a limit to how much information can be used to describe different consumer groups.

Once defined an EUC can then be used as a reference to link to other parameters which are used in demand estimation processes such as daily Non-Daily Metered (NDM) Nominations and Allocation.

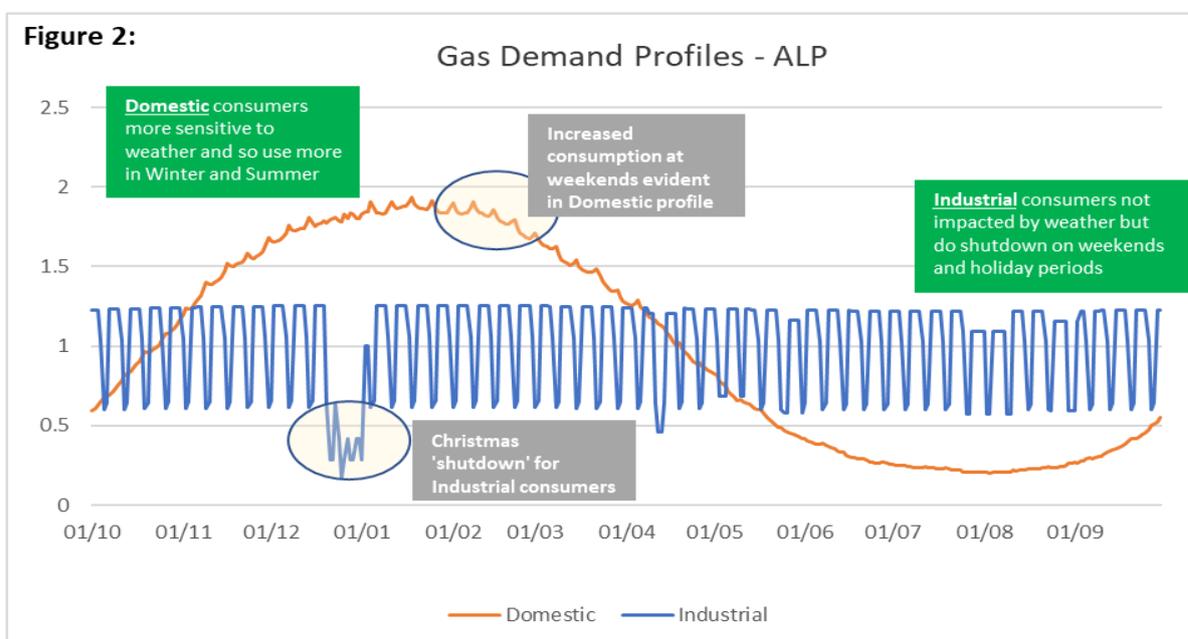
What are Gas Demand Profiles and why are they important?

In the absence of 'real time' information of the gas consumed daily by each of the c.24 million Class 3 and 4 Supply Meter Points it is necessary to support those industry processes which are required to estimate gas demand in various forms. Examples include:

- The daily estimation of NDM demand in forecast mode (Nominations) and after the day (Allocation) – part of the overall Demand Attribution suite of calculations in Gemini.
- The estimation of the expected peak usage on a day of a Supply Meter Point (SOQ) – calculated in UK Link to support transportation capacity calculations and to help Distribution Networks in their planning.
- The estimation of the expected annual consumption of a Supply Meter Points (AQ) assuming 'seasonal normal weather' – calculated in UK Link.

All of the above processes require Gas Demand Profiles and these are referred to as the Annual Load Profile (ALP), the Daily Adjustment Factor (DAF) and the Peak Load Factor (PLF).

- The ALP is a parameter which represents the typical gas consumption profile for an EUC – see Figure 2 below for an example of a 'Domestic' ALP and an 'Industrial' ALP.
- The DAF is a parameter which represents an EUC's sensitivity to weather, i.e. an estimation of how consumption is likely to move (+ or -) when 'actual' weather differs from 'normal' weather.
- The PLF is a parameter which compares typical demand for an EUC with the demand we'd expect to see in the event of extremely cold weather, such as the recent 'beast from the east'.



Key Point:

The more accurate the estimation of Class 3 and 4 Demand using the Gas Demand Profiles the less energy will need to be moved around after meter point reconciliation. This should also contribute to a reduction in the level and volatility of Unidentified Gas (UiG) that is directly related to 'Demand Modelling error'.

EUC Demand Models

The calculation of Gas Demand Profiles which are used for the population require a Demand Model.

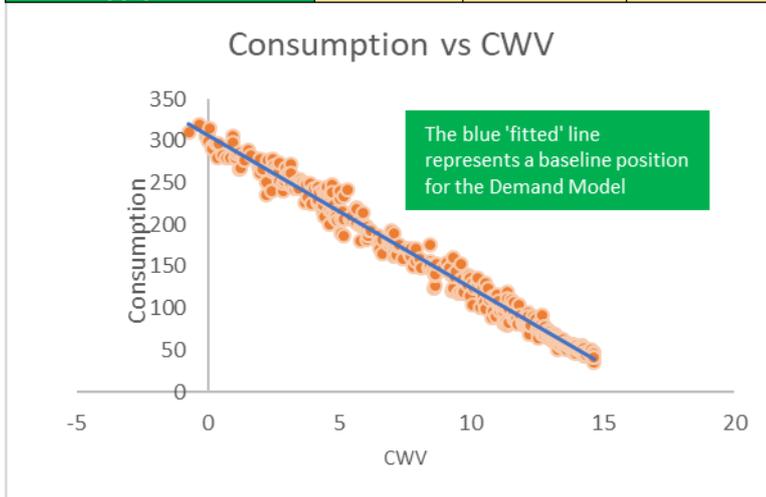
The purpose of a Demand Model is to try and represent the behaviours of the whole population. Key inputs to the model are i) daily gas consumption data from a subset of the population, which is achieved through sampling and ii) daily weather data i.e. the Composite Weather Variable (CWV).

The Demand Model is expressed as a mathematical formula and the basis for the current approach is to use a statistical technique called 'Linear Regression'. Figure 3 below provides an example of an EUC model, including the number of sample points collected for each of the last 3 years which were used to produce an overall 'smoothed' model to represent the population for this EUC.

Figure 3:

| LDZ | EUC Number | EUC Identifier | Lower AQ Band | Upper AQ Band | Population |
|-----|------------|----------------|---------------|---------------|------------|
| EA | 15809 | EA:E1901BND | 0 | 73,200 | c. 1.8m |

| Demand Model | Year 1 | Year 2 | Year 3 |
|----------------------------|--------|--------|--------|
| No. of Supply Meter Points | 233 | 204 | 309 |



Note:

The baseline position can be used to provide a good representation of how the population may behave when considering weather alone, however the demand model is further enhanced by incorporating non-weather-related factors which also influence changes in gas consumption behaviour, these include but are not limited to:

Weekends – e.g. Domestic consumption increases

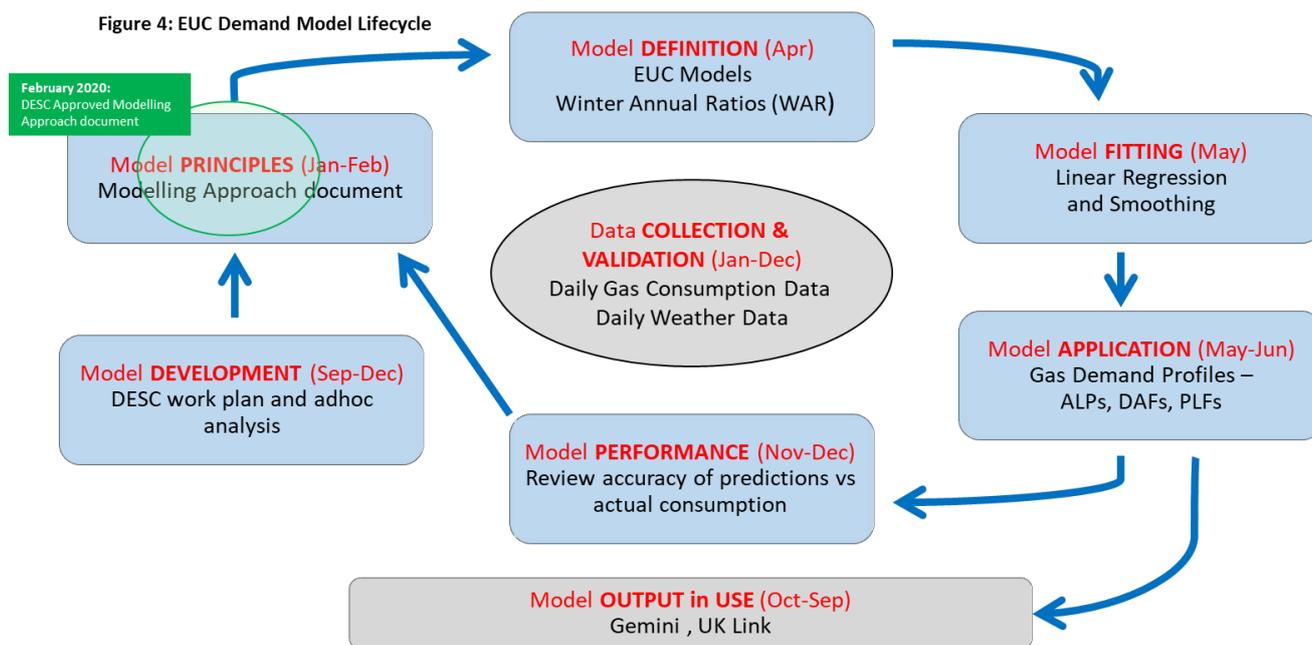
Holiday periods – e.g. Industrial consumption decreases

The process for producing the latest EUC Demand Models which were used as the basis for the current 2019/20 Gas Demand Profiles is explained in much more detail in the “NDM Algorithms Booklet for 2019/20”. This document is available to UNC parties via the secure area on Xoserve’s external website [here](#). Navigate to “UK Link Docs (Secured)” and then Folder 18. NDM Profiling and Capacity Estimation Algorithms / ccyy-yy Gas Year / 4. NDM Algorithms Booklet

Modelling Approach – Milestone 1 for Gas Year 2020/21

The lifecycle of an EUC Demand Model ultimately begins with the production of a set of principles which define how the models should be created. In order to produce EUC Demand Models that provide a robust representation of the population, the establishment of a set of modelling principles is an important milestone.

Figure 4 below shows the cyclical nature of the EUC Demand Model lifecycle. The logical starting point being the establishment of modelling principles and the end point being the review of model performance. However, it is important that results from the performance review and recommendations feed into future iterations of model development and principles, hence the cyclical approach.



The modelling principles are set out in a document referred to as the 'Modelling Approach' which ultimately describes how DESC is going to meet its obligations of producing EUCs and Gas Demand Profiles for the new Gas Year, including detail such as:

- Confirmation of the data inputs needed (e.g. daily gas consumption)
- The fine detail of how the EUC Demand Modelling shall be performed (e.g. how holiday periods will be assessed, how demand changes at weekends will be calculated etc)
- The definition of how the Gas Demand Profiles shall be calculated including any changes
- The timetable for delivery and the approach to industry consultation

The 2020 version of the Modelling Approach document was recently approved by DESC at its meeting on 10th February and can be viewed [here](#). The main changes this year refer to the recent decisions made at DESC on the Seasonal Normal Review which will see the formula for the Composite Weather Variable (CWV) enhanced and the basis for Seasonal Normal weather (SNCWV) – read about this [here](#).

Timetable for Production of EUCs and Gas Demand Profiles for Gas Year 2020/21

The timetable and key checkpoints for this year's process can be viewed below:

| Milestone | Status | Date |
|---|-------------|---------------------------------|
| Modelling Approach Approved | Complete | 10 th February 2020 |
| Collection & Validation of Gas Consumption Data | In Progress | 17 th April 2020 |
| Review & Approval of EUC Modelling Runs | Pending | 27 th April 2020* |
| Review & Approval of EUC Modelling Results | Pending | 18 th May 2020* |
| Publication of Draft Gas Demand Profiles | Pending | 5 th June 2020 |
| Industry Consultation Complete | Pending | 22 nd July 2020* |
| Gas Demand Profiles updated in CDSP Systems | Pending | 14 th August 2020 |
| Gas Demand Profiles used for new Gas Year | Pending | 30 th September 2020 |

* DESC/TWG meeting dates

Discussions on this year's process will take place at DESC and its Technical Workgroup which is a forum open to all parties, although only DESC members can vote on certain matters.

The meeting schedule for 2020 is available on the Joint Office website [here](#). Please inform them if you wish to attend any of the meetings.

Next Steps

During March the final month of Daily Gas Consumption Data will be collected and in early April this data will be validated in readiness for EUC Demand Modelling. The results will be shared with DESC Technical Work Group (TWG) on 27th April

As the timetable progresses throughout the year further news updates will be provided by the Demand Estimation Team. We hope you find these useful.

Further Information

If you have any questions or comments on any aspect of the Seasonal Normal Review, please contact us at Xoserve.demand.estimate@xoserve.com

Kind regards

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