

# Seasonal Normal Review Update

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Wednesday 23<sup>rd</sup> October 2019

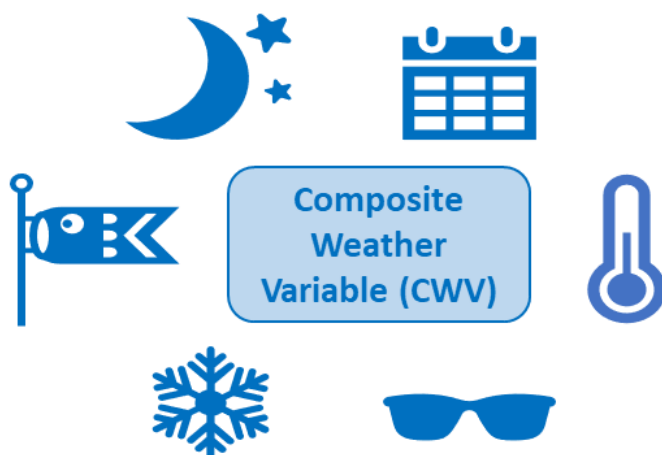
Dear Customers and Industry Colleagues,

The Xoserve Demand Estimation team would like to share with you an update on the progress of the Seasonal Normal Review, including the completion of a key industry milestone which has been achieved this month.

## What is the Seasonal Normal Review and why is it important?

The ability to estimate gas consumption is critical to a number of calculations within the industry. These can be at a daily level for use in Non-Daily Metered (NDM) allocation or at an annual level for use in Annual Quantity (AQ) calculations. They can even be at a theoretical level, for example when trying to estimate peak consumption during extreme cold weather events, for use in Supply Offtake Quantity (SOQ) calculations.

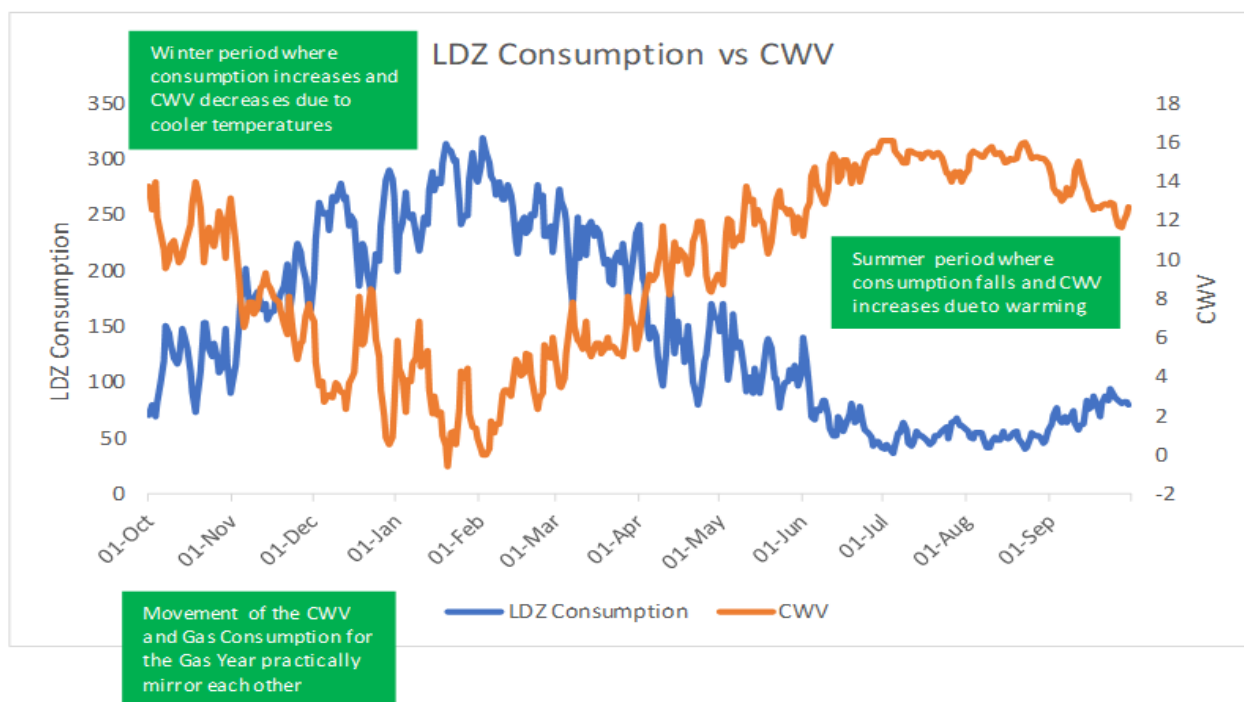
Every day consumption goes up or down and there will be many reasons why, some of which are complex and some are more predictable. Unsurprisingly gas consumption has a very strong correlation with weather and consequently, many years ago, the industry created its own unique weather data item which is designed to explain this key relationship. This data item is known as the Composite Weather Variable (CWV).



The CWV is calculated every day in our UK Link systems and is a single value for each Local Distribution Zone (LDZ). The calculation involves many inputs and factors, including temperature, day/night weightings, wind speed, seasonal effects, cold weather upturns, summer cut-offs.

Where weather data is required, a defined industry agreed weather station is used as the source.

To fully appreciate the CWV and its relationship to gas consumption it is useful to display both together.



The CWV represents the view of ACTUAL weather for a day and in order to appreciate how this compares to expectations you require a data item which represents a view of NORMAL weather. This data item is known as the Seasonal Normal Composite Weather Variable (SNCWV).

The guidelines and detail around the CWV and SNCWV is explained in more detail in [Section H of the Uniform Network Code](#) and in its supporting UNC related document, the [Demand Estimation Methodology](#). Section H describes the requirement to review the appropriateness of both the CWV and SNCWV at “appropriate frequencies”. This is deemed to be at a minimum of at least every five years.

**The “Seasonal Normal Review” is therefore an assessment of the ongoing suitability of the CWV and SNCWV to represent latest gas consumption behaviours and levels.**

The two main milestones from this work are to:

- 1) Review and potentially revise the CWV formula and associated parameters (H 1.4.3)
- 2) Review and potentially revise the SNCWV basis (H 1.5.3)

The reviews are performed by the Demand Estimation Sub Committee (DESC) which is an industry forum overseen by the Joint Office, comprising Gas Shippers and Transporters and is supported by the Demand Estimation team here at Xoserve.

## Seasonal Normal Review 2020

The last review was performed in 2014 and the revisions to the CWV formula parameters and SNCWV took effect from 1<sup>st</sup> October 2015 and remain in place today. The current review has been taking place at DESC during 2019. Conclusions from this process are due at the end of 2019 in order that the values are known ahead of the Demand Estimation modelling process which starts in early 2020. Any new definitions of CWV and SNCWV would take effect from the start of the next Gas Year – 1<sup>st</sup> October 2020.

### Milestone 1: CWV Formula Review and Revision (H 1.4.3)

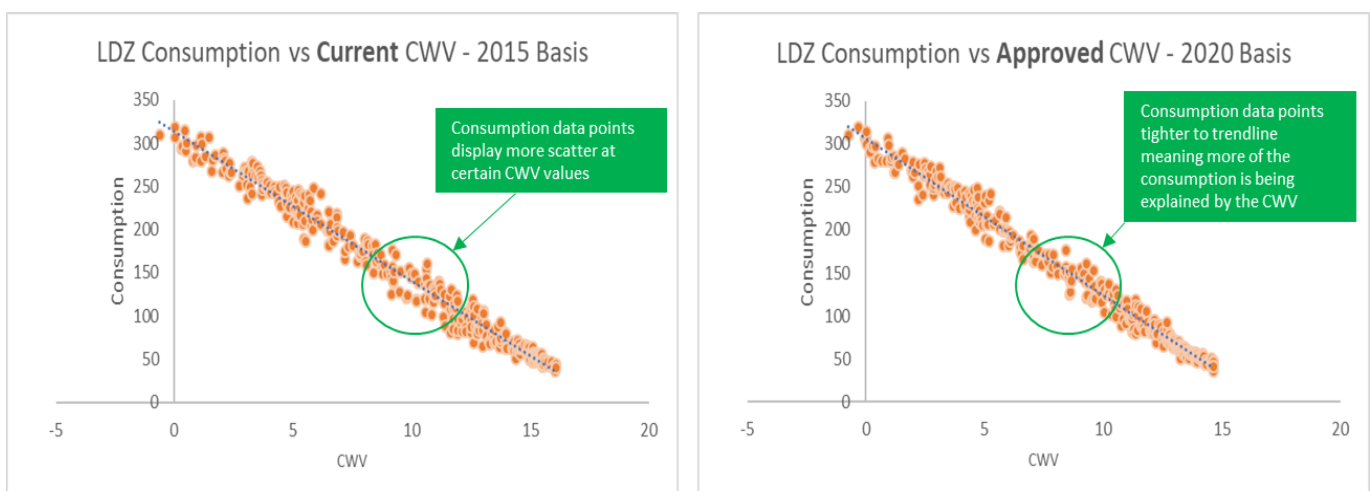
The current CWV formula uses Temperature and Wind Speed as its main source of weather data and this provides a very good basis for explaining many of the changes in observed gas consumption, however during its review this year DESC wanted to consider the use of additional weather data to see whether the CWV formula could be improved further, particularly over the traditionally difficult to predict 'shoulder months' (central heating switch on/off October/April).

#### CWV Formula Review Part (a)

DESC focussed on the use of Solar Radiation and found that by incorporating this in the formula the performance of the CWV was improved overall and markedly during the shoulder months. The measure of sunlight hours was used to identify those days where the temperatures may be the same but consumption is lower on bright days and higher on dull days.

As a result of this analysis, at its meeting on 22<sup>nd</sup> July, DESC **approved a change** to the CWV formula to include an additional 'term' associated with Solar Radiation. In addition, it recommended that an additional term relating to Precipitation (Rain and Snow) was included in the formula. Although Precipitation will not be used as part of this year's review, it allows further analysis to be done to consider if this weather variable could further improve performance.

Below is a comparison of the current CWV formula and the approved CWV formula, both matched to gas consumption. You can see the approved CWV has less 'scatter' and is closer to the trendline. These small improvements can all help improve the accuracy of demand modelling.



## CWV Formula Review Part (b)

Once the definition of the CWV formula is known a process called 'Optimisation' is carried out.

As referred to earlier, the CWV formula has many component parts and it is important they all work together to calculate a CWV value which seeks the optimum performance i.e. the consumption for the day is explained by the CWV.

A statistical measure for assessing the relationship between the optimised CWV and consumption is used known as "R-squared" and is measured on a scale of 1-100, where a measure of 100 effectively means that the consumption is being explained by the CWV.

DESC has recently concluded the optimisation process and **approved** a set of optimum parameters to be used in the revised CWV formula.

Below is a summary of the results approved by DESC for each LDZ, all of which showed an overall improvement when compared to the current CWV formula and optimised parameters.

LDZ	EA	EM	NE	NO	NT	NW	SC	SE	SO	SW	WM	WN	WS
R-Squared	99.23	99.34	98.83	98.93	99.43	99.13	99.03	99.29	99.34	99.08	99.40	98.59	98.62

At its meeting on 7<sup>th</sup> October, DESC formally approved the completion of Milestone 1 allowing focus to turn to Milestone 2.

More detailed results from this milestone, including the revised CWV formula and optimised parameter coefficients can be seen [here](#). The Demand Estimation team would like to thank British Gas DESC member Jason Blackmore for his contributions during this milestone.

Milestone	Status	Date
CWV Formula Review and Revision	Complete	7 <sup>th</sup> October 2019

## Next Steps - Milestone 2: SNCWV Basis Review and Revision (H.1.5.3)

The requirement for the industry to define a view of NORMAL weather (SNCWV) is important for a number of key industry processes and calculations where 'weather correction' is necessary.

For example, when estimating consumption for the NDM population each day in Nominations and Allocation the calculations include a 'weather correction' aspect which requires a view of ACTUAL weather (CWV) in order to compare to the expected NORMAL weather (SNCWV).

The SNCWV also plays a key part in the calculation of a Supply Point's Annual Quantity (AQ). The AQ represents the annual consumption for a Supply Point assuming NORMAL weather. This provides the industry with a degree of certainty and means despite the weather experienced from one winter to the next the values of AQ, which are a key input to a number of processes, remain stable.

DESC are due to complete its SNCWV review by the end of the year and will discuss the topic at meetings during November and December. Further communication will be issued once there is news available.

Milestone	Status	Date
SNCWV Basis Review and Revision	In Progress	Expected: 9 <sup>th</sup> December 2019

## 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](mailto:Xoserve.demand.estimate@xoserve.com)

Kind regards

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