

GAS INDUSTRY REVIEW OF SEASONAL NORMAL WEATHER

What is the Seasonal Normal Weather Review?

Xoserve, as the Central Data Services Provider (CDSP) to the gas industry, is responsible for co-ordinating activities which support the estimation of gas demand across a number of critical processes.

A crucial input to demand estimation is a unique weather data item to the gas industry, maintained by the CDSP to provide a robust relationship to demand, called the “Composite Weather Variable” (CWV). The CWV formula uses a combination of weather parameters (such as temperature, wind speed and solar radiation) and other factors to help ‘explain’ the variation in observed demand levels (see Fig.1). The CWV is calculated in two modes, ‘Actual’ and ‘Seasonal Normal’.

Every five years, the CDSP along with the Demand Estimation Sub Committee (DESC) – a forum comprised of Shippers and Distribution Networks – review the effectiveness of the CWV formula and the benchmark used to represent Seasonal Normal weather (SNCWV).

This review is performed for each of the 13 Local Distribution Zones (LDZs) and associated weather stations, which represent defined geographical areas across the UK.

The SNCWV is used to establish a position of Seasonal Normal Demand (SND) from which weather correction can apply when forecasting actual demand.

To support accurate demand estimation, it is important to gas industry participants that the benchmark used for Seasonal Normal Demand (SND) is robust and reflective of typical weather (shape and level) for the period it represents (see Fig.2).

One of the options open to the CDSP and DESC in the Uniform Network Code (UNC), when reviewing and calculating Seasonal Normal weather for the next 5 years, is to reference a Climate Change Methodology (CCM) developed by a meteorological services provider. Utilising a CCM provides the industry with access to the required expertise and latest climate modelling techniques and thinking. The methodology can then be used to provide climate projections for the required period, which in this case is 2025 to 2030.

In preparation for the latest Seasonal Normal Review DESC approved the procurement of an updated CCM, represented by a set of [technical requirements](#) that a reputable meteorological services provider should meet.

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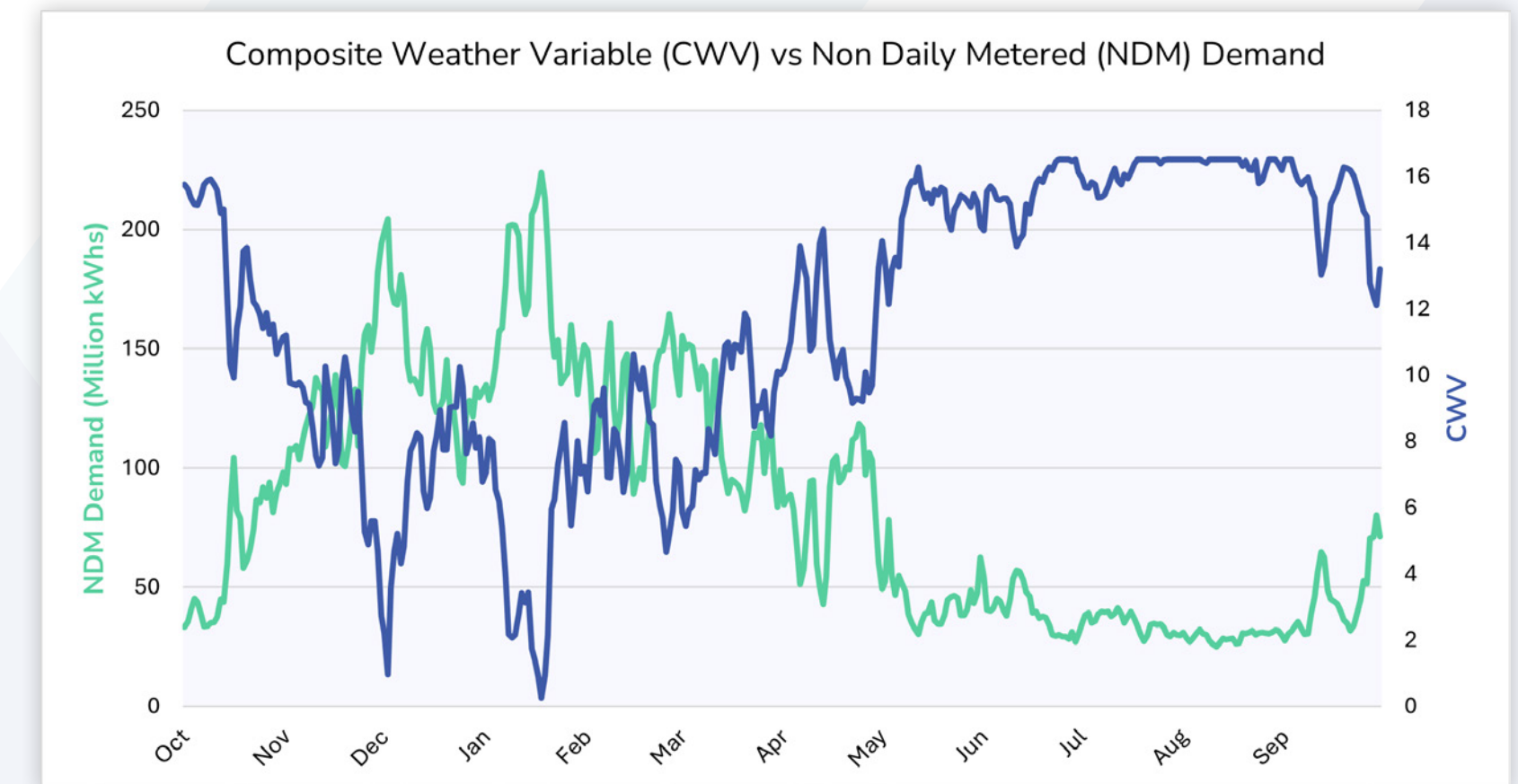


Fig. 1

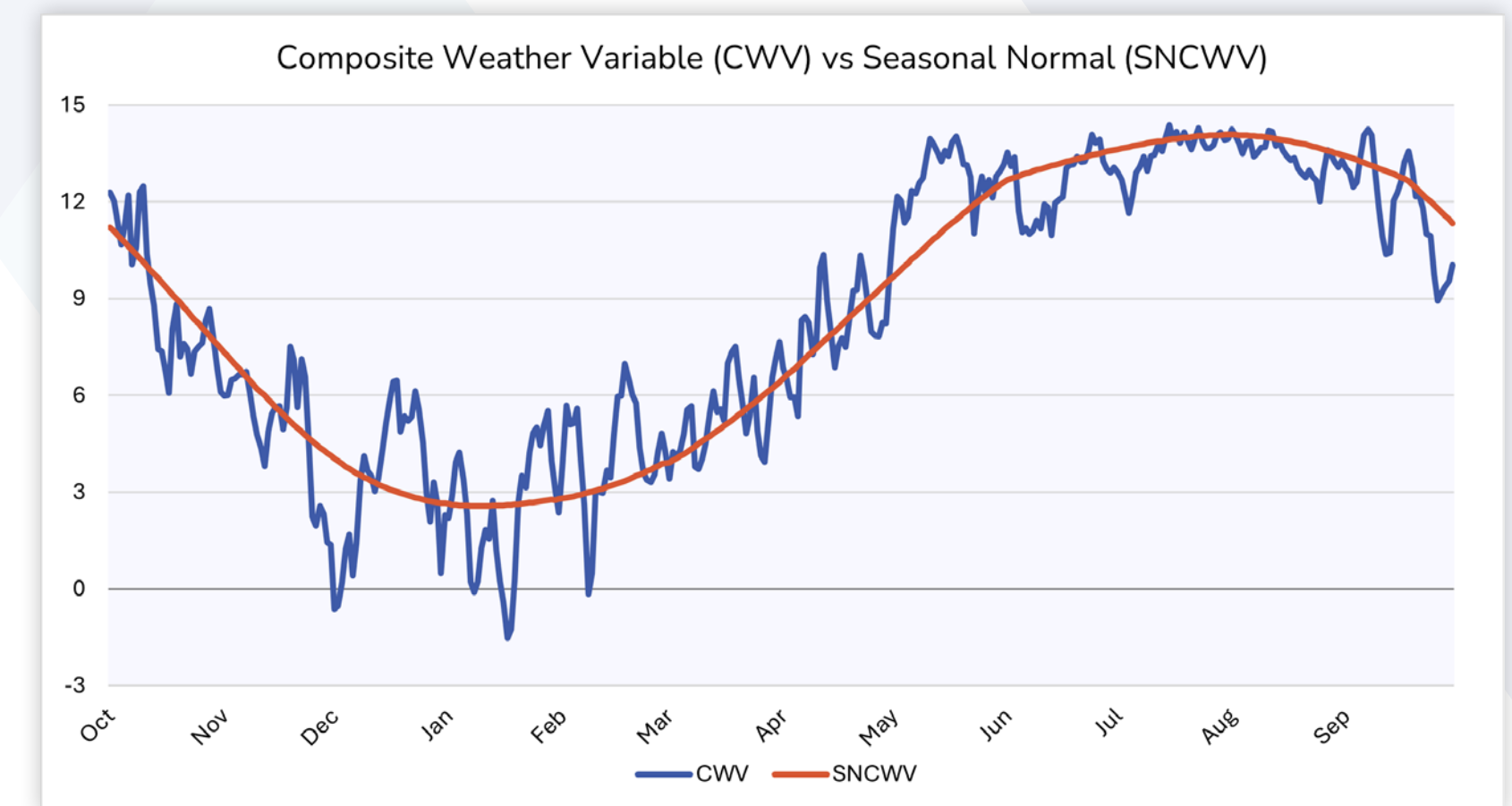


Fig. 2

How did the Met Office support the latest Seasonal Normal Weather Review?

As the CDSP's chosen Climate Change Methodology (CCM) Service Provider, the Met Office confirmed their updated CCM would be using output from the 'UKCP18' project to deliver DESC's requirements.

UKCP18, released in November 2018, is a set of climate model projections produced by the Met Office. Building on the success of UK Climate Projections 2009 (UKCP09), the UK Climate Projections 2018 delivers a major upgrade to the range of UK climate projection tools designed to help decision-makers assess their risk exposure to climate.

The UKCP18 project uses cutting-edge climate science to provide updated observations and climate change projections out to 2100 in the UK and globally. The project builds upon UKCP09 to provide the most up-to-date assessment of how the climate of the UK may change over the 21st century.

UKCP18 updates the probabilistic projections over land and provides a set of high-resolution spatially coherent future climate projections for the globe at 60km scale and for the UK at 12 km scale. The 12km climate model has been further downscaled to 2.2km scale - a level previously only used for short-term weather forecasts, allowing realistic simulation of high impact events such as localised heavy rainfall in summer.

How has UKCP18 been used in the Climate Change Methodology (CCM)?

The UKCP18 Probabilistic Projections are used as the basis for the future projections and climate change increments in the updated CCM. The UKCP18 Probabilistic Projections replace the QUMP perturbed-parameter ensemble (which was used in UKCP02 and UKCP09) and CMIP5 multi-model ensemble used in the previous CCM.

The UKCP18 Probabilistic Projections are based on runs from both an updated perturbed-parameter ensemble and the CMIP5 multimodel ensemble, combined through an updated version of the Bayesian statistical framework used in UKCP09. The UKCP18 Probabilistic Projections have the added benefit that any biases between the various climate models and the observations have already been adjusted during the combination process, removing the need for further processing. This makes the UKCP18 Probabilistic Projections an ideal replacement for the datasets used in the previous CCM.



“ The UKCP18 project uses cutting-edge climate science to provide updated observations and climate change projections



How was Climate Change Methodology used to derive Seasonal Normal CWVs for 2025?

Xoserve, along with representatives from DESC, worked closely with the Met Office during the development phase to ensure the CCM output met the requirements for the Seasonal Normal Weather review, thereby ensuring revised SNCWV values could be calculated for the period 2025 to 2030.

Once development was complete, a draft CCM report along with a set of adjusted histories (reflecting a baseline period of 2021/22) and projections for each weather variable was provided.

Xoserve then carried out validation and verification activities to ensure the output:

- was complete and logical e.g. comparing trend within adjusted histories to projections (see Fig.3)
- could be used in downstream calculations and
- was understood and could be explained ahead of sharing with the wider industry.

Once the output delivered by the Met Office had been signed off to the satisfaction of DESC, an approach to utilising the climate change projections in the calculation of a new set of SNCWV values for each Local Distribution Zone (LDZ) was approved. See Fig.4 for an example of how the updated Seasonal Normal weather compares to actual weather, depicted by a monthly profile over recent Gas Years.

The collaboration of Xoserve, who understand the intricacies of weather to gas demand relationships, and the Met Office, who understand the probable impacts of climate change on future weather, mean the values derived from this latest Seasonal Normal Weather review have been based on secure foundations and principles using the latest climatological science.

This approach, alongside rigorous challenge and examination of the output by key industry stakeholders, should provide the gas industry with a robust set of values for the next five-year cycle (effective from 1 October 2025).

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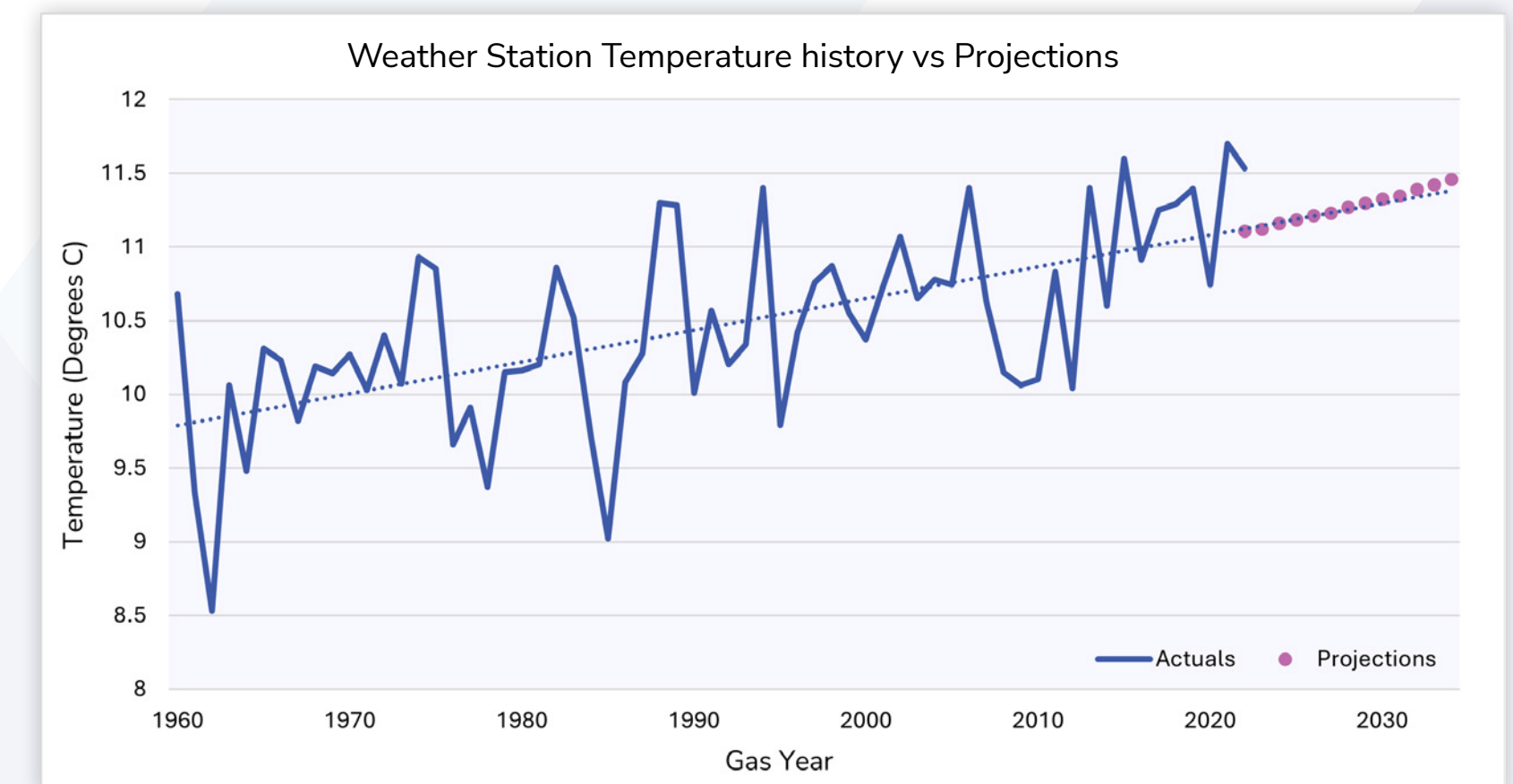


Fig. 3

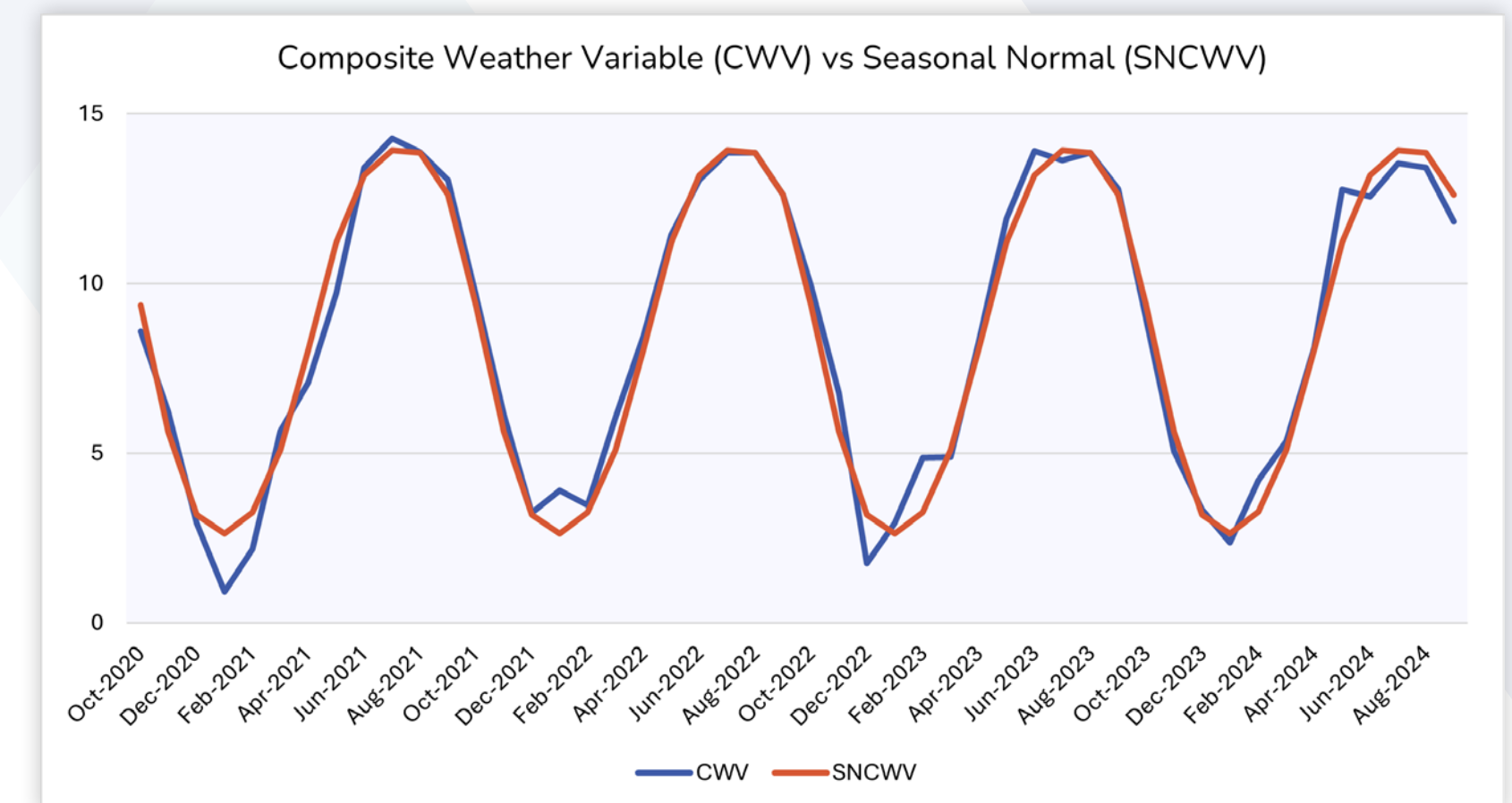


Fig. 4

Seasonal Normal WEATHER REVIEW

2025

Established on the 1st May 2005 and celebrating its 20th anniversary, Xoserve is the Central Data Services Provider, a not-for-profit organisation at the heart of Britain's gas industry.

While maintaining its focus on efficient day-to-day operations, Xoserve is investing in its systems and expertise to support its customers and the wider energy industry through any changes required to meet the UK's emission targets with minimal disruption to consumers.

For more information on the Seasonal Normal Weather Review please contact xoserve.demand.estimate@xoserve.co.uk.



As the national meteorological service for the UK, the Met Office provides critical weather services that help the public, businesses and policymakers make better decisions and stay safe and thrive.

For more information please contact energy@metoffice.gov.uk.

