



**Demand Estimation Sub Committee
(DESC)**

**Climate Change Methodology
Technical Requirements v1.0**

**Demand Estimation Team
February 2023**

Introduction

This document represents the final version of the Demand Estimation Sub-Committee's ("DESC") Technical Requirements which will be used as the central reference point before entering the procurement phase for the Climate Change Methodology. This document is intended to be as clear and detailed as possible to ensure the final Methodology is likely to be accepted by DESC.

Objective

This assignment supports the next review of the current gas industry Seasonal Normal value of the Composite Weather Variable (CWV) definition. This takes the form of a single view of average weather which applies for around 5 years until the next review.

The aim is to provide an updated assessment of the impacts of climate change on GB weather, as assessed by a meteorological expert. The current Climate Change Methodology assessment was completed in 2013 by the Met Office. It is important that the assignment maintains peaks and troughs in GB weather where appropriate, as the outputs will be used in prediction of both average and extreme demand.

As the weather data items interact with one another within the current CWV definition, it is also important that the predicted values maintain an appropriate correlation with one another and that individual values of a single data item are appropriately correlated 'within' days and across consecutive days.

Development of Climate Change Methodology

- The Service Provider will be required to develop a "Climate Change Methodology" ("the Methodology") as described in Uniform Network Code (Section H1.4.8 and Transition Document IIC 11.5.5). This Methodology can be applied to adjust historical weather data to take into account climate change trends.
- The Service Provider must deliver a written Methodology to describe the approach that will be applied to determine the future and historical impacts of climate change trends on GB weather. The Methodology must include a description of the data sources for the calculation and formula/method to be applied in the calculation. The Methodology should be applicable and practicable for all weather stations listed in Appendix 1. The start point for the calculations must be the hourly weather history used by the Gas Industry.
- The Service Provider must provide documentary evidence to support the chosen methodology, including details of any other potential approaches which have been considered but disregarded. The document should include a description of the approach at a high level appropriate for industry participants to understand, without revealing proprietary methods and intellectual property rights.
- The Service Provider will be required to apply the Methodology to generate a series of datasets as described below under "Outputs of the Methodology".
- The Methodology and datasets delivered by the Service Provider to Xserve must then be approved by the Demand Estimation Sub-Committee prior to their use by the GB Gas Industry.
- The Service Provider should include a recommendation for when a next review is required to refresh the results derived from the Methodology.

Scope of Methodology

- The Service Provider will be required to develop a Methodology which will be applied to:
 - Hourly data, for all data items
 - History for all data items from 1 January 1960
 - Data up to end of previous complete gas year (a “gas year” runs from 1 October to 30 September each year)
 - Data forward for a period of 13 years starting from 1 October 2022
 - List of data items required to be considered for Climate Change:
 - Temperature in °C
 - Wind speed in meters per second
 - Solar Radiation in Kilojoules per meter² (or other specified measure)
 - Precipitation in millimetres
 - List of optional data items, to be subject to a separate quotation:
 - Wind direction in ° (from 0 to 359°, specifying which compass point is represented by 0)
 - Relative humidity in %
- The Service Provider will be required to provide the data items for a defined list of current GB Weather stations (see Appendix 1)
- The outputs of this service (Methodology and Dataset) must be licensed for disclosure by Xserve to all UNC parties on request (Gas Shippers and Transporters)

Outputs of the Methodology

The outcome of the assignment (in addition to the methodology) will be an updated view of the predicted impacts of climate change trends on GB weather experience for a number of historical and future years using a base year of 2021/22 as the reference point.

The following principles should be applied:

- Appropriate Correlation between the variables is maintained at an hourly level
- Appropriate Correlation between weather variables on successive days is maintained

The data outputs will be:

1. An adjusted view of the historic hourly weather datasets derived from the current hourly weather history used by the Gas Industry, reflecting the estimated impacts of climate change based on results from a base year of 2021/22
- 2a. Predicted hourly climatological average values for the period 1 October 2022 to 30 September 2035 based on the predicted impact of climate change trends for the future period
- 2b. Predicted hourly increment values – difference between predicted hourly climatological average values and base year averages (2021/22)

Management of delivery of the Service

A small advisory group of key industry stakeholders will be established, following agreement of a contract between Xserve and the Service Provider, to oversee delivery of the service and provide more detailed guidance on requirements

Appendix 1

The following weather stations, and applicable weather variables, are currently used in Gas industry calculations and therefore must be included:

LDZ	Temperature	Windspeed	Solar Radiation	Precipitation
SC	Glasgow (03134)	Glasgow (03134)	Glasgow (03134)	Glasgow (03134)
NO	Albemarle (03238)	Albemarle (03238)	Durham (99049)	Albemarle (03238)
NW / WN	Rostherne No 2 (03351)	Rostherne No 2 (03351)	Rostherne No 2 (03351)	Rostherne No 2 (03351)
NE / EM	Watnall (03354)	Watnall (03354)	Watnall (03354)	Watnall (03354)
WM	Winterbourne no 2 (99062)	Coleshill (03535)	Coleshill (03535)	Winterbourne no 2 (99062)
WS	St. Athan (03716)	St. Athan (03716)	St. Athan (03716)	St. Athan (03716)
EA / NT / SE	London Heathrow (03772)	London Heathrow (03772)	London Heathrow (03772)	London Heathrow (03772)
SO	Southampton (99079)	Southampton (99079)	Southampton (99079)	Middle Wallop (03749)
SW	Yeovilton (03853)	Yeovilton (03853)	Yeovilton (03853)	Yeovilton (03853)

The service provider should provide a separate quotation indicating the additional costs to scale up the number of weather stations for which data outputs are derived. As a minimum it is expected that one substitute station for each of the above will be requested.

Version History

Version	Date	Author	Summary of changes
0.1	10.01.2023	Demand Estimation Team	Initial Draft – Presented to DESC on 17 th January 2023
0.2	24.01.2023	Demand Estimation Team	Updated based on DESC review comments – Issued to DESC members for second review on 24 th January 2023
1.0	06.02.2023	Demand Estimation Team	Version 1.0 of document confirmed following no DESC comments received