NATIONAL GRID TRANSMISSION WEATHER DATA

INTRODUCTION

This document contains a summary of the weather data used to derive the daily temperature and wind speed values constituting the National Grid Transmission weather database. Relationships currently available that were used in the past to backfill data when weather stations changed are also provided. Details of any other backfilling relationships that may have been used in the past to create the data are now not available.

This document also contains details of the dates of CWV definition changes as applied for Network Code and Uniform Network Code purposes and when weather stations, CWV parameters etc. change.

ORIGINAL WITHIN DAY DATA

The daily averaged temperatures and wind speeds making up the National Grid Transmission weather database has in part been based on the following weather observations. The exact weather observations used in creating the original daily weather history at the time of industry privatisation and introduction of competition in the gas industry are not known. This list is not comprehensive.

Weather Station	Weather Variable	Within Day Start	Within Day End	Code	Comments
Abbotsinch	Temp, Wind	01/01/1973	30/03/1999	ABB	Replaced by Bishopton
Bishopton	Temp	09/01/1998	to date	BIS	Replacement for Abbotsinch
Bishopton	Wind	25/03/1999	to date	BIS	-
Tyneside	Temp, Wind	20/07/1973	30/09/2005	TYN	-
Albermarle	Temp, Wind	27/02/2003	to date	ALB	Replacement for Tyneside
Ringway	Temp, Wind	01/04/1973	01/10/2003	RIN	-
Hulme	Temp, Wind	01/05/1996	to date	HLM	-
Watnall	Temp, Wind	01/11/1972	to date	WAT	-
Muirhead Tower	Temp, Wind				Replaced by Waterworks Road, Edgbaston. Max. & Min. 01/07/1981 to 09/10/1994.
Waterworks Road, Edgbaston	Within day Temp	05/06/1990	to date	BIR	Source of temperature data for WM LDZ
Waterworks Road, Edgbaston	Max,min Temp			WWR	Max. & Min. values 01/01/1928 to 31/01/1982
Elmdon	Wind		31/03/1999	BIR	Source of wind data for WM LDZ
Coleshill	Wind	01/11/1998	to date	BIR	Source of wind data for WM LDZ from 01/04/1999
Rhoose	Temp, Wind	01/01/1992	31/01/1998	RHO	Replaced by Cardiff
Cardiff	Temp, Wind	01/09/1998	30/09/2006	CAR	Replacement for Rhoose
St. Athan	Temp, Wind	01/02/1998	to date	STA	Replacement for Cardiff
London Weather Centre	Temp, Wind	24/04/1973		LON	Replaced by Heathrow
Heathrow	Temp, Wind	14/10/1986 temp 01/11/2001 wind	to date	HEA	Replacement for London Weather Centre
Southampton Weather Centre	Temp, Wind	01/04/1973	16/09/2001	SOT	Replaced by Southampton Oceanographic Institute
Southampton Oceanographic Institute	Temp	15/02/2000	to date	SOC	Replacement for Southampton Weather Centre
	Wind	24/04/2000	to date	SOC	
Bristol	Temp, Wind	01/01/1982	03/10/2001	BRI	Replacement for Southampton for SW LDZ
Filton - Old	Temp, Wind	01/01/1957	30/04/1980	FIL	-
Filton - New	Temp	17/05/2000	to date	FIL	Replaced Bristol for SW LDZ
Filton - New	Wind	09/03/2001	to date	FIL	Replaced Bristol for SW LDZ

Backfilled daily data from the old British Gas Regions from 01/01/1928 to 31/03/1995 was used to fill in gaps in the weather history. The source of this data is not known. SC may be Springburn Park and NO Durham. NW temperatures are Ringway but the wind speeds will be either Ringway or Bidston.

COMPOSITE WEATHER VARIABLES (CWV)

This section lists the dates of changes to definitions of CWVs that have been created since the start of the original Network Code on 1st March 1996 and sets out the gas years they were in use. A gas year runs from 1st October of one calendar year to 30th September of the following calendar year. From 2005 onwards gas transporters collectively (through xoserve) have held responsibility for CWV definitions used for Demand Estimation purposes.

Network Code started 01/03/1996

Initially derived definitions of CWVs applied for part gas year 1995/96 (1st March 1996 to 30th September 1996) and all of gas year 1996/97.

Period: Gas Year 1997/98 to Gas Year 1990/00

Detailed information relating to weather station changes and backfilling over this period is not available due to computer system changes and application software changes between this past period and the present.

In summary,
For gas year 1997/98, a revised CWV was derived for NO LDZ using Tyneside.
For gas year 1998/99, a revised CWV for WS LDZ was derived using Cardiff weather data.
For gas year 1999/00, a revised CWV for SW LDZ was derived using Bristol weather data

For gas year 2000/01

CWV parameters reoptimised for all LDZs except NO, WS, SO and SW as part of comprehensive 5-yearly review of CWVs. No backfilling was required except for SC LDZ, where the weather station changed from Abbotsinch to Bishopton.

Bishopton backfilling equations:

Bishopton was selected by the Met. Office as a replacement for Abbotsinch because the CAA wished to terminate the agreements it had with the Met. Office. The overlap between Abbotsinch and Bishopton temperatures was for just over one year from January 9th 1998 to March 30th 1999. There was no overlap for wind speeds.

Historical wind speeds were copied directly from Abbotsinch data because there was no overlap to provide a backfilling equation. The stages used to calculate Bishopton daily temperatures from January 1st 1928 were:

Within-day temperature backfilling equations used to backfill the history of within day Bishopton temperatures from January 1st 1973.

Bishopton = 0.6125 + 0.7435 * Abbotsinch when Abbotsinch < 3.7
Bishopton = -0.2052 + 0.9648 * Abbotsinch when Abbotsinch >= 3.7

Daily temperature backfilling equations used to backfill Bishopton daily figures from January 1st 1928 to December 1st 1972 and infill any missing values after that date.
Bishopton = 1.0593 + 0.8273 * Springburn Park when Springburn Park < 2.3
Bishopton = 0.8557 + 0.9147 * Springburn Park when Springburn Park >= 2.3

For gas year 2001/02

NO LDZ CWV was reoptimised. No backfilling required for NO LDZ.

Southampton Weather Centre (SOT) was replaced by Southampton Oceanographic Institute (SOC) on 17th September 2001.

For the last 14 days of gas year 2000/01, from 17th September 2001 onwards, and thereafter during all of gas year 2001/02, Southampton Weather Centre (SOT) was backfilled from Southampton Oceanographic Institute (SOC).

SO LDZ daily temperatures:
If Oceanographic Institute < 17 then Weather Centre = -0.0047 + 1.0008 * Oceanographic Institute
Else Weather Centre = -1.9117 + 1.1119 * Oceanographic Institute

SO LDZ daily wind speeds:
Weather Centre = 0.9871 + 0.4821 * Oceanographic Institute

Bristol Weather Centre (BRI) was replaced by Filton (FIL) on 1st October 2001.

From October 1st 2001, for gas year 2001/02, Bristol Weather Centre (BRI) was backfilled from Filton (FIL).

SW LDZ daily temperatures:
   If Filton ≤ 9 then Bristol = 1.4551 + 0.9054 * Filton
   If Filton > 9 then Bristol = 0.6138 + 0.9987 * Filton

SW LDZ daily wind speeds:
   If Filton > 8 then Bristol = 0.8676 + 0.6754 * Filton
   If Filton ≤ 8 then Bristol = -0.3994 + 0.8273 * Filton

For gas year 2002/03

SO and SW LDZs have been reoptimised using weather data from Southampton Oceanographic Institute (SOC) and Filton (FIL) respectively.

Southampton Oceanographic backfilling equations:

SOC temp = 0.0871 + 0.9929 * SOT temp
SOC wind = 1.5076 + 1.3351 * SOT wind

Filton backfilling equations:

If Bristol temp < 10 Filton temp = -1.5594 + 1.0994 * Bristol temp
If Bristol temp ≥ 10 Filton temp = -0.4751 + 0.9948 * Bristol temp

If Bristol wind < 9 Filton wind = 1.8713 + 1.0066 * Bristol wind
If Bristol wind ≥ 9 Filton wind = -2.8060 + 1.5438 * Bristol wind

For gas years 2003/04 and 2004/05

Only affects NW LDZ which was reoptimised using weather data from Hulme Library. This change also affects WN LDZ which has the same CWV as NW LDZ.

Hulme Library backfilling equations:

If Ringway temp ≤ 2   Hulme temp = 0.9083 + 0.8543 * Ringway temp
If Ringway temp >2 and < 11 Hulme temp = 0.7448 + 0.9705 * Ringway temp
If Ringway temp ≥ 11   Hulme temp = 0.0530 + 1.0316 * Ringway temp

If Ringway wind ≤ 5   Hulme wind = 1.0267 * Ringway wind
If Ringway wind > 5   Hulme wind = 1.7385 + 0.6820 * Ringway wind

For gas year 2005/06

For NO LDZ Albermarle replaced Newcastle weather station (Tyneside).

Albermarle backfilling equations:

Albermarle temp = -1.041 + 0.9865 * Tyneside temp – 0.0674 * Max (0, (8.4 - Tyneside temp))
Albermarle wind = 0.2788 + 1.3668 * Tyneside wind + 1.22 * Max (0, (3 - Tyneside wind))

For gas year 2006/07

Only affects WS LDZ St. Athan replaced Cardiff Weather Station.

St. Athan backfilling equations:

St. Athan temp = - 0.2009 + 0.9679 * Cardiff temp
-        0.0587 * Max (0, (7.5 - Cardiff temp)) – 0.1438 * Max (0, Cardiff temp - 15.6))
St. Athan wind = 1.8638 + 0.9512 * Cardiff wind - 0.0846 * Max (0, (6 - Cardiff wind))

For gas years 2007/08 to 2009/10

Only affects EA, NT and SE LDZs. Heathrow replaced London Weather Centre (LWC).

Heathrow backfilling equations:

Heathrow temp = 0.1892 + 0.9720 * LWC temp - 0.0642 * Max (0, (17.5 - LWC temp))
Heathrow wind = -1.1265 + 1.1700 * LWC wind + 0.8076 * Max (0, 4.1 - LWC temp))

For gas year 2010/11 onwards

Revised CWV definitions for all LDZs from 5-yearly review of CWVs and SNCWVs.
The SNCWV is now based on the 36 years from 1971 to 2006 with the temperatures increased for climate change using the EP2 increments scaled linearly. The resulting mean values are then smoothed using the Loess method instead of the Fourier smoothing used previously.

No backfilling was required.