Transporters revised approach to derivation of New Seasonal Normal Basis for use in UNC NDM Demand Estimation: 1st October 2010 to 30th September 2015

Background

UNC Sections H1.4 and H1.5 states that it is the transporters responsibility to consult, review and revise if appropriate the definitions of CWVs and the seasonal normal basis and to do so every five years or more frequently if transporters think fit.

Transporters have consulted DESC on the CWV review and the approach to deriving the new CWV parameters has been set out and agreed.

Transporters have also undertaken extensive analyses of appropriate new seasonal normal bases. Initially a number of cases of fixed historical periods were considered, subsequently a historical breakpoint analysis identified a 12 or 8 year basis as potentially appropriate. These analyses have been presented to DESC.
Following Modifications 218 and 254 (and taking in to account the sentiments expressed in the discussions surrounding the adoption of those modifications) transporters have included forecast data (obtained from the Met Office) in their consideration of potential new seasonal normal bases. Moreover, transporters note that these Modifications were promoted at the time as enabling changes with the sponsors of these Modifications accepting that the ultimate decision was one remaining for transporters.

Transporters have consulted DESC on the new seasonal normal basis and have produced an approach that they believe is consistent with the formulation of the CWV, and with gas industry weather history while also including forecast data in its derivation. Transporters have undertaken analyses that show the impact of their proposed approach on NDM EUC profiles and have presented these also to DESC.

Following the extraordinary DESC meeting held on 2nd December 2009, Transporters have further revised their approach to implement linearly varying temperature increments instead of the originally proposed application of fixed EP2-WP8 temperature increments.

Summary of Transporters revised approach

The transporter approach to deriving the new seasonal normal basis may be summarised as follows:

1. Base the new seasonal normal basis on the mid year (2012/13) of the five year target period.

2. Use gas industry database historical temperatures and wind speeds combined with the forecast temperature increments for the target gas year (2012/13) from the EP2-WP8 project. The EP2-WP8 data is specified in terms of GMT while the new seasonal normal basis has to apply to prevailing clock time. Therefore the forecast increments are appropriately shifted by one hour during the period over which BST would apply.

3. All daily temperatures and windspeeds and applicable daily temperature increments are derived from within day values (2-hourly and weighted for temperatures and 4-hourly unweighted for wind speeds). The weightings applied are provided in Appendix 12 of each year's NDM report.

4. Apply temperature increments that vary linearly over the period 1971 to 2006 and are derived from the original EP2-WP8 fixed temperature increments (in the manner specified by the Met Office and schematically illustrated in the Annex to this note), to the days of the 36 individual years of gas industry history temperature data from 1971 to 2006, to get 36 different incremented daily forecast temperature streams for each day of the target forecast year (i.e. 2012/13). The EP2-WP8 temperature increments are applied to the corresponding gas industry history temperature data. Weightings are applied as described above (point 3).

5. Wind speed data used are actual wind speeds for each of the gas industry base period days (no increments specified by EP2-WP8 for wind speed).

6. Thus, each forecast daily temperature data stream is also associated with a daily historical wind speed data stream. The historical wind speed data stream does not have a forecast component added to it.

7. Apply the revised definitions of CWV to the ensuing computations. Note that CWV definitions are based on the fit of daily values of demand to daily values of weather (temperature and wind speed).

8. Compute 36 different CWVs for each future day of the target gas year (2012/13) and average to a single value for each day of the gas year (i.e. take the mean of each set of 36 separate CWV values as the CWV applicable to each day of the target gas year). Note that 29th February is ignored in all calculations. The SNCWV for 29th February is later set to the average of the values of the two adjacent days.

9. This gives an unsmoothed value of CWV for each day of the target year.

10. Smooth the computed CWV profile using the loess method of data smoothing to remove excessive day-to-day variation in CWV profile. Apply smoothing so as to ensure that the overall area under the curve is not altered (no additional warming or cooling introduced).

11. When smoothing ensure retention of the kinks and bumps evident in visual observation of the EP2-WP2 temperature curve.

12. The fixed increment method was initially undertaken for a single example instance (WM LDZ) to verify feasibility. The results, including the impacts on key NDM EUC profiles, were assessed and presented to DESC.

Annex

Computation of Linearly Varying Increments

Details extracted from pages 9 and 10 of Met Office report entitled: "Review of xoserve proposed approach for a new seasonal normal basis for the CWV", dated 6th November 2009 Met Office Ref: RN/09/EP2/WP8/CWV

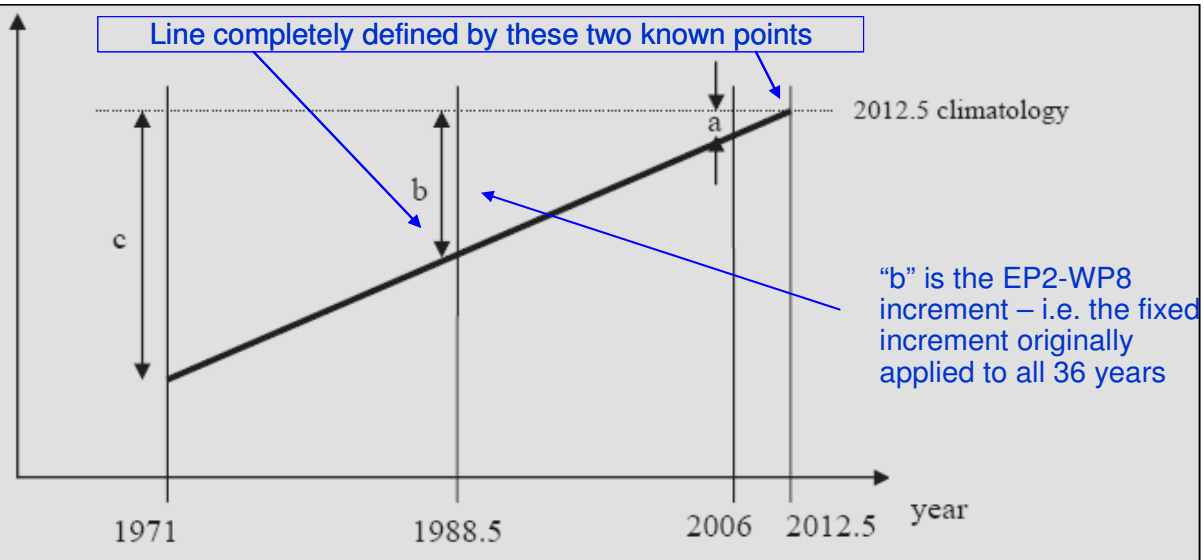

Fig. 2: Schematic illustration of a potential method for applying EP2-WP8 corrections to adjust temperature climatology in individual years 1971-2006 to values appropriate for 2012.5. The bold line shows the assumed linear warming over the 1971-2012.5 period. To adjust climatology in any year to 2012.5 climatology, progressively larger corrections are required for years further back in time (as illustrated by distances a, b and c). 1988.5 is the central point of the 1971-2006 period used in the EP2-WP8 climatologies: under the linear assumption, the correction applied at this point (b) will be equal to the EP2-WP8 correction.

With the linear assumption, corrections for other years (e.g. 'a' and 'c' in Fig. 2) may be calculated using the following formula.

$$C(Y) = C_{EP2} \times \frac{(2012.5 - Y)}{(2012.5 - 1988.5)} \quad , \qquad (1)$$

where $C(Y)$ is the correction for year Y and C_{EP2} is the EP2-WP8 correction for 2012.5.

From equation (1) the multiplication factor on C_{EP2} for 1988.5 is 1.0, and no change is made to the EP2-WP8 correction. The multiplication factor is greater than 1.0 for years earlier than 1988.5 and smaller than 1.0 for years after 1988.5. As desired, no correction [$C(Y)=0$] is made to the trend line at 2012.5.