

SECTION 12 - EVALUATION OF ALGORITHM PERFORMANCE

1. BACKGROUND

One of the responsibilities of the Demand Estimation Sub Committee (DESC) is to provide a summary of the NDM Algorithm Performance in the preceding year. UNC requirement 'H 1.8.1 (d)' states "DESC will submit to all parties a summary of the Committee's analysis of the performance in the Preceding Year of the End User Categories and Demand Models (applicable in the Preceding Year)".

The analysis is completed once a year in the Autumn, following completion of the gas year and Xserve performs this role as the common demand estimation service provider.

The implementation of Project Nexus on 1st June 2017 introduced a revised NDM Supply Meter Point Demand formula, meaning some of the original Algorithm Performance measures became redundant. At the DESC meeting on 15th November 2016, the group reviewed four proposed strands of analysis which would help assess the accuracy of the estimated allocations derived by the revised formula. These analysis strands are as follows:

- Strand 1 – Weather Analysis
- Strand 2 – Unidentified Gas Analysis
- Strand 3 – NDM Daily Demand Analysis
- Strand 4 – Reconciliation Analysis

2. NDM SUPPLY METER POINT DEMAND FORMULA

The revised NDM Supply Meter Point Demand formula (effective from 1st June 2017) used for estimating NDM daily demand is shown below:

$$SPD_t = ((AQ/365) \times ALP_t \times (1 + (DAF_t \times WCF_t)))$$

where:

AQ = Annual Quantity

ALP_t = Annual Load Profile

DAF_t = Daily Adjustment Factor (WVCE_t / SNDE_t)

WCF_t = Weather Correction Factor (CWV_t – SNCWV_t)

In addition to the revised demand formula, 1st June 2017 also saw the introduction of Unidentified Gas or UiG. UiG forms part of daily gas allocation and is calculated as the balancing figure to ensure that within in each LDZ, total input matches total output. UiG is derived as follows:

$$\text{Total LDZ Energy} - (\text{Shrinkage} + \text{DM Energy} + \text{Total LDZ NDM Energy}) = \text{UiG}$$

3. STRAND 1: WEATHER ANALYSIS

When interpreting the various strands of Algorithm Performance, it is relevant to recall the weather conditions that prevailed during the gas year being analysed.

The Composite Weather Variable (CWV) is a single measure of daily weather in each LDZ and is a function of actual temperature, wind speed, effective temperature and seasonal normal effective temperature. Further detail on the computation of the CWV can be found in Section 11 of the NDM Algorithm Booklet.

The SNCWV is the Seasonal Normal value of the Composite Weather Variable for the LDZ for the day.

The Weather Correction Factor (WCF) represents the difference between the CWV and the SNCWV for the LDZ and Gas Day.

Please note that in order to derive the weather charts and summaries depicting a national view of weather, 'GB CWV' and 'GB SNCWV' values have been derived using weightings based on LDZ throughput over the five year period 2009 to 2013.

A selection of weather related charts are presented below: Figures S12.1.1 to S12.1.12 are bar charts showing the national monthly average CWV for each specific month, ranked coldest to warmest over the past 50 years. Figures S12.1.13 to S12.1.24 are charts showing the national daily average CWV values for each specific month and how they compare to SNCWV. Figures S12.1.25 to S12.1.36 show daily observed CWV values compared to SNCWV, across each LDZ for the gas year as a whole.

A monthly weather summary for each individual month in the relevant gas year is provided below:

October 2017 was warmer than the current seasonal normal overall, ranking as the 6th warmest October over the past 50 years. The majority of the individual days throughout the month were warmer than normal, most notably the 21 day period from 8th to 28th. CWV deviation from SNCWV across all days in October 2017 ranged from +3.03 to -0.82.

November 2017 was slightly colder than the current seasonal normal overall and ranked 23rd warmest over the past 50 years. Most of the individual days were colder than normal with the last 6 days of November being significantly colder. CWV deviation from SNCWV across all days in November 2017 ranged from +3.36 to -3.65.

December 2017 was colder than the current season normal overall and ranked as the 20th coldest December over the past 50 years. Despite some warmer periods, the majority of the individual days were colder than normal, most notably the period from 8th to 19th December 2017. CWV deviation from SNCWV across all days in December 2017 ranged from +2.79 to -4.75.

January 2018 was marginally warmer than the current season normal overall and ranked as the 19th warmest January over the past 50 years. The month started and ended with warmer than normal days and mostly colder days during the middle of the month. CWV deviation from SNCWV across all days in January 2018 ranged from +2.88 to -2.40.

February 2018 was much colder than the current seasonal normal and ranked as the 13th coldest February in the past 50 years. All but 5 individual days throughout February 2018 were colder than normal, with the last week of the month being particularly colder than normal. CWV deviation from SNCWV across all days in February 2018 ranged from +1.77 to -8.63.

March 2018 was also much colder than the current seasonal normal overall which resulted in it being ranked as the 8th coldest March in the last 50 years. The much colder than normal weather from the end of February continued throughout the first week of March, followed by slightly warmer days during the second week. The third week saw a return to much colder days and the month ended with days very close to current seasonal normal. CWV deviation from SNCWV across all days in March 2018 ranged from +1.09 to -9.82.

April 2018 was slightly warmer than the current seasonal normal overall and ranked as the 8th warmest April in the past 50 years. The majority of the individual days throughout the month were warmer than normal and a significantly warmer than normal period was observed during the 7 day period from 17th to 23rd. CWV deviation from SNCWV across all days in April 2018 ranged from +4.40 to -2.65.

May 2018 was warmer than the current seasonal normal overall, ranking as the warmest May in the past 50 years. With the exception of the first 3 days, all remaining individual days throughout the month were warmer than normal and, for the first time during gas year 2017/18, instances of the CWV reaching its maximum value occurred on 27th and 28th May 2018. CWV deviation from SNCWV across all days in May 2018 ranged from +3.20 to -1.95.

June 2018 was also warmer than seasonal normal overall and, like the previous month, ranked as the warmest June in the past 50 years. Most of the individual days throughout the month were significantly warmer than normal and the CWV reached its maximum in 12 of the 13 LDZs during the period 26th to 30th June 2018. CWV deviation from SNCWV across all days for June 2018 ranged from +1.44 to -0.12.

July 2018 saw the warm summer weather continue with the month being warmer than normal overall, ranking as the warmest July over the past 50 years. Each of the individual days throughout the month were much warmer than normal and the CWV reached its maximum in at least 10 of the 13 LDZs on 22 of the days within July 2018. CWV deviation from SNCWV across all days in July 2018 ranged from +0.56 to +0.13.

August 2018 was slightly colder than the current seasonal normal overall but ranked as the 21st warmest August over the past 50 years. Individual days during the first three weeks of the month were mostly warmer than normal and over the period 2nd to 6th August 2018, the CWV reached its maximum value in at least 12 of the 13 LDZs. In sharp contrast to the warmer weather experienced over the summer, the last week of August saw days of significantly colder than normal weather. CWV deviation from SNCWV across all days in August 2018 ranged from +0.30 to -1.01.

September 2018 was colder than the current seasonal normal overall, ranking as the 22nd coldest September in the last 50 years. The majority of the individual days in the month were colder than normal with the CWV deviation from SNCWV across all days in September 2018 ranging from +0.93 to -2.64.

Overall, the first quarter (October'17 to December'17) of gas year 2017/18 was generally warmer than the current seasonal normal whereas the second quarter was generally colder. The third and fourth quarter of gas year 2017/18 was generally warmer than the current seasonal normal, with several days throughout the summer where the CWV reached the maximum cut off value.

Confidence interval analysis has been performed on the observed WCF values during Gas Year 2017/18. The confidence intervals were calculated for each month and LDZ based on five years of historic WCF data from Gas Years 2011/12, 2012/13, 2013/14, 2014/15 & 2015/16. The 95% confidence interval has been calculated by using the mean and standard deviation over the five years listed and these intervals can be used to identify when the WCF is regarded as unusual. Figures S12.1.37 to S12.1.48 are line charts showing the observed WCF during Gas Year 2017/18 for each LDZ, compared to the upper and lower confidence intervals. Figure S12.1.49 is a table showing the percentage of daily WCF values which fall within the confidence intervals for each LDZ and Month combination. In assessing this table, the months of February, March and April 2018 stand out, with the number of daily WCF values within the derived confidence intervals being less than 95% in all 13 LDZs. As previously stated, February and March 2018 were both much colder than current seasonal normal overall, with most individual days also being colder than normal. In contrast, April 2018 was warmer than current seasonal normal overall with the majority of days throughout the month being much warmer than normal.

Figure S12.1.1 – 50 Year GB CWV Ranking – October

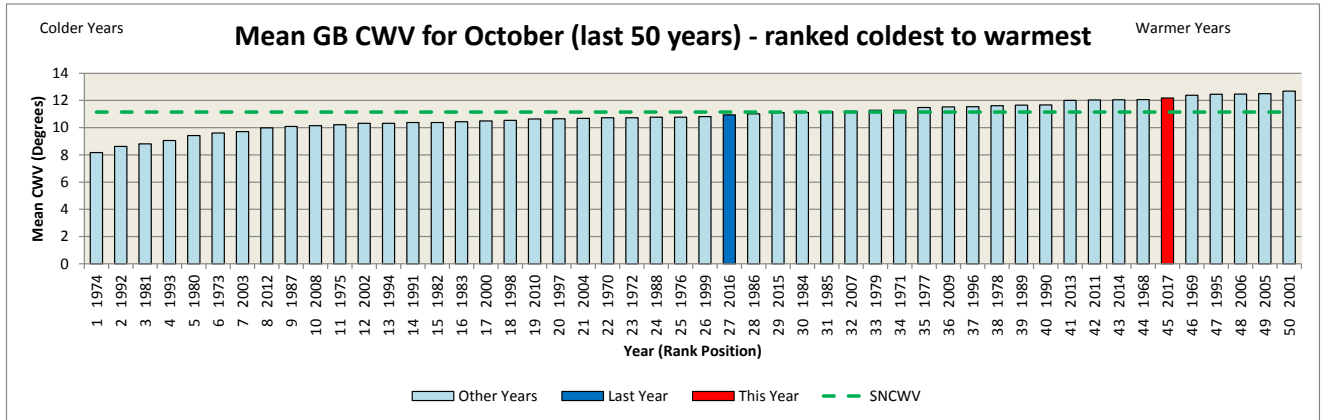


Figure S12.1.2 – 50 Year GB CWV Ranking - November

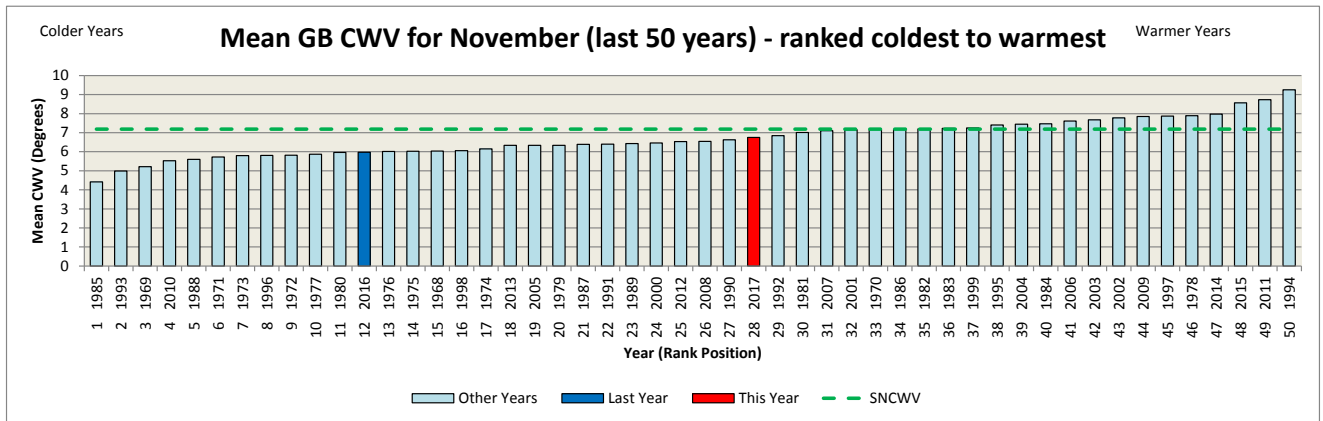


Figure S12.1.3 – 50 Year GB CWV Ranking - December

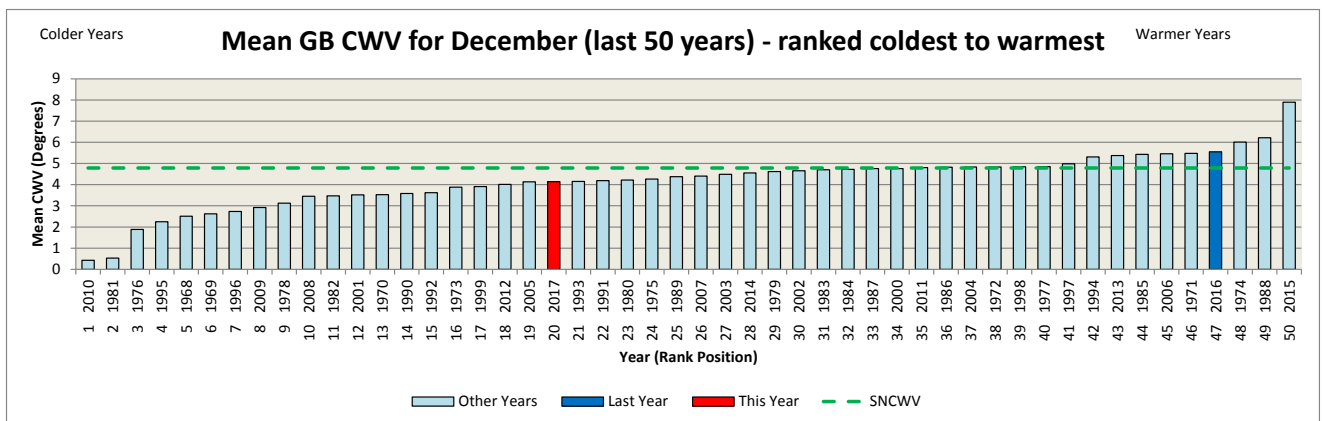


Figure S12.1.4 – 50 Year GB CWV Ranking - January

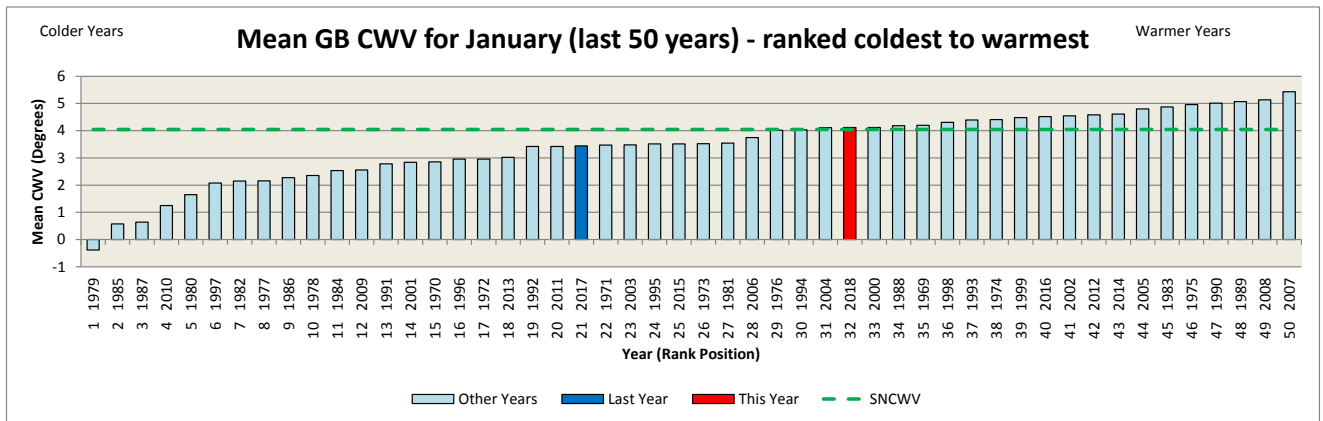


Figure S12.1.5 – 50 Year GB CWV Ranking - February

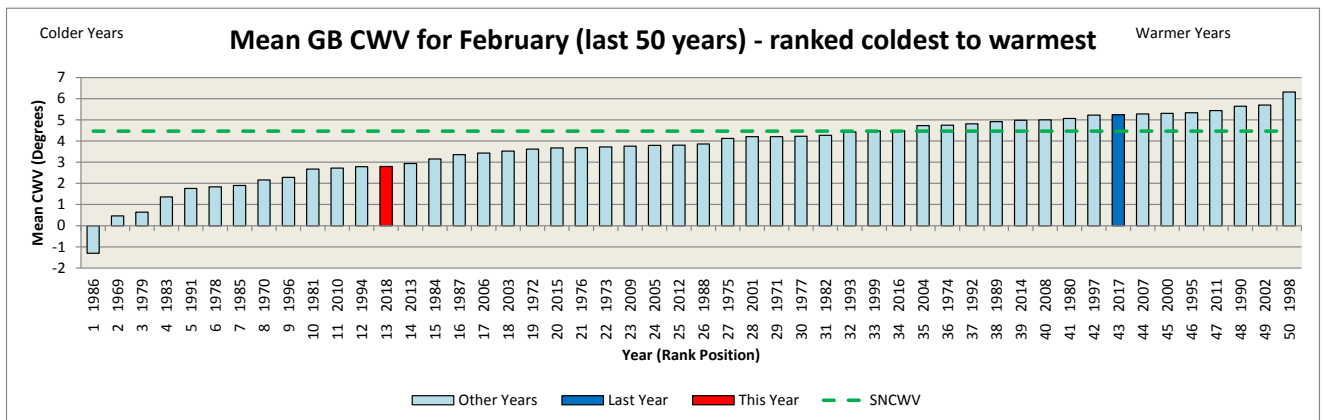


Figure S12.1.6 – 50 Year GB CWV Ranking - March

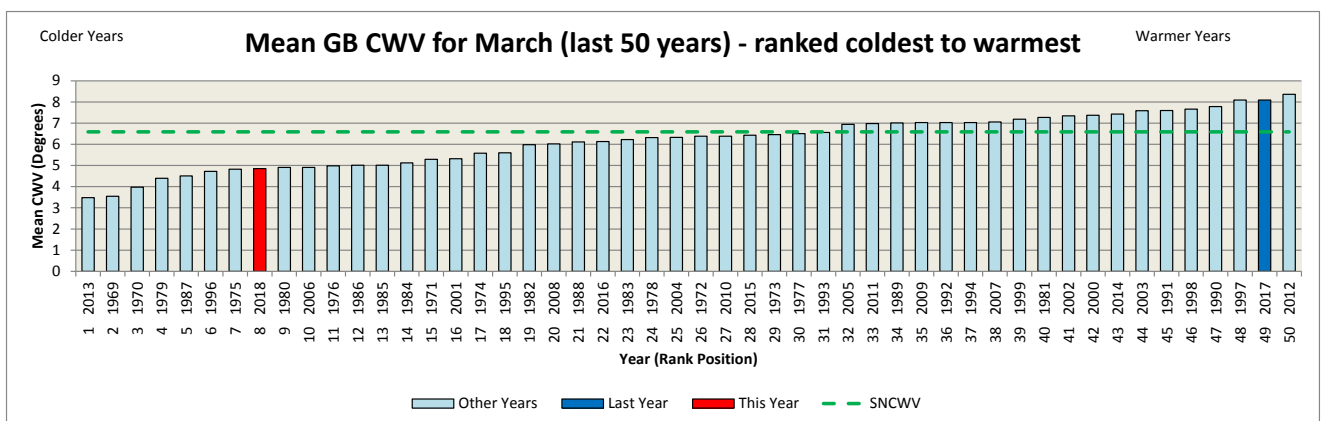


Figure S12.1.7 – 50 Year GB CWV Ranking - April

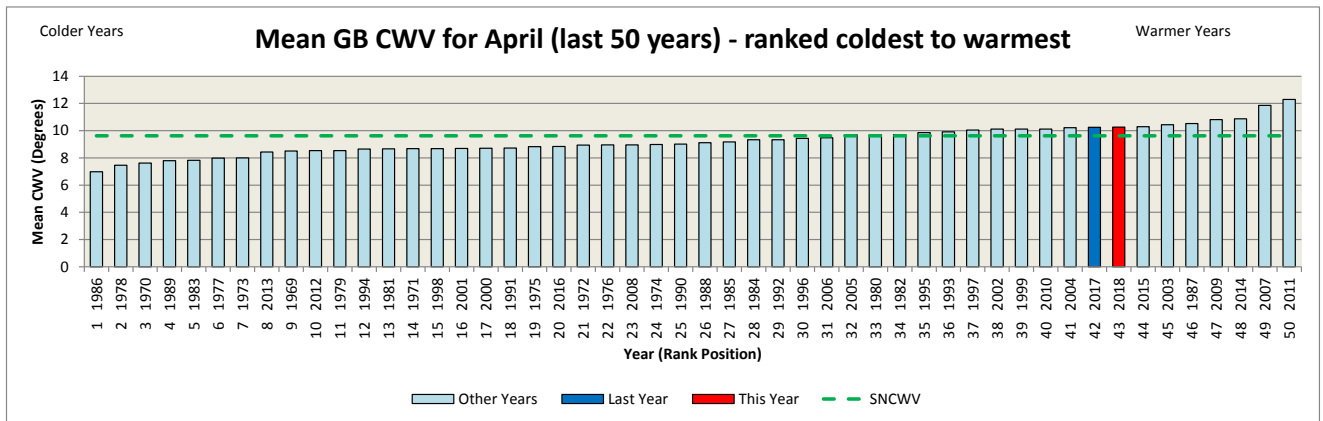


Figure S12.1.8 – 50 Year GB CWV Ranking - May

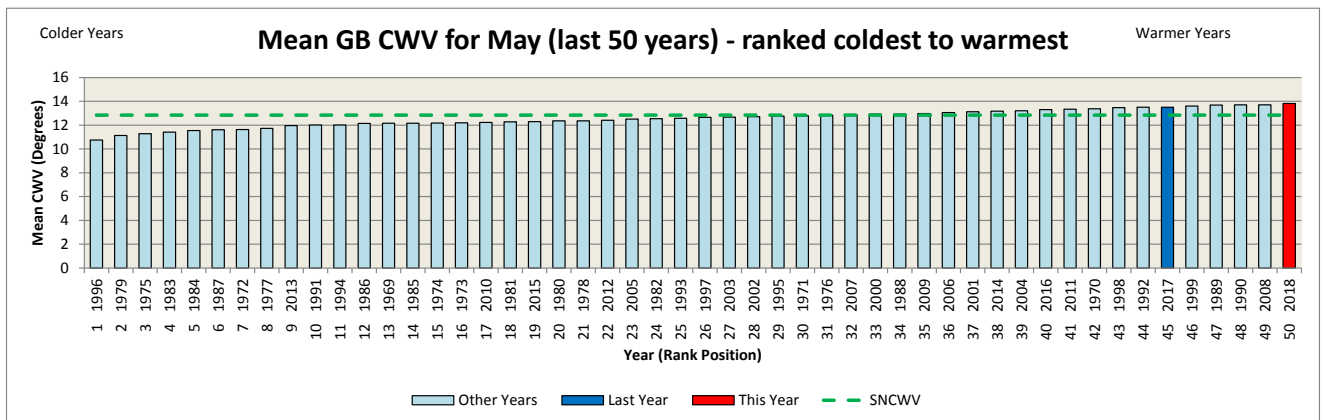


Figure S12.1.9 – 50 Year GB CWV Ranking - June

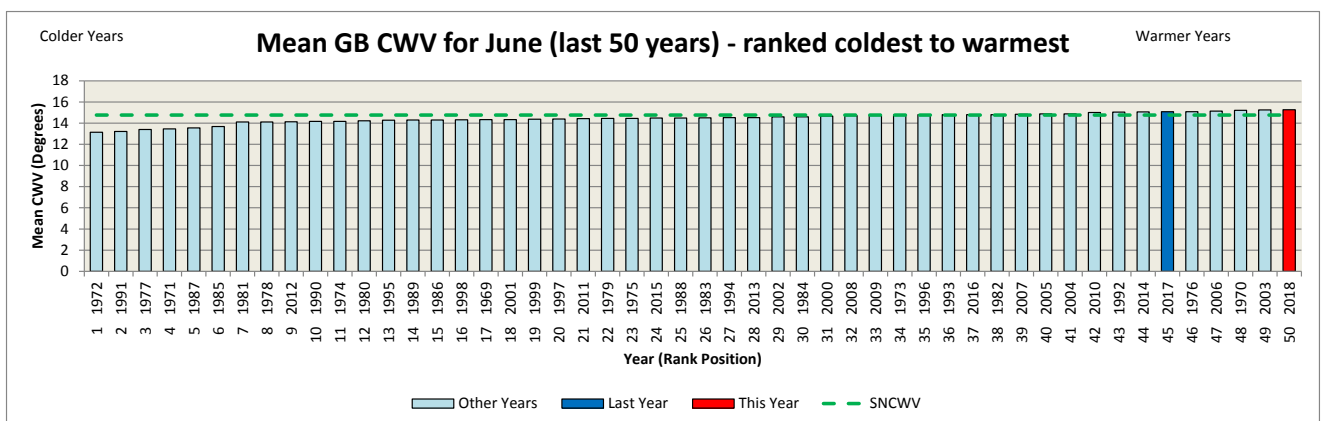


Figure S12.1.10 – 50 Year GB CWV Ranking - July

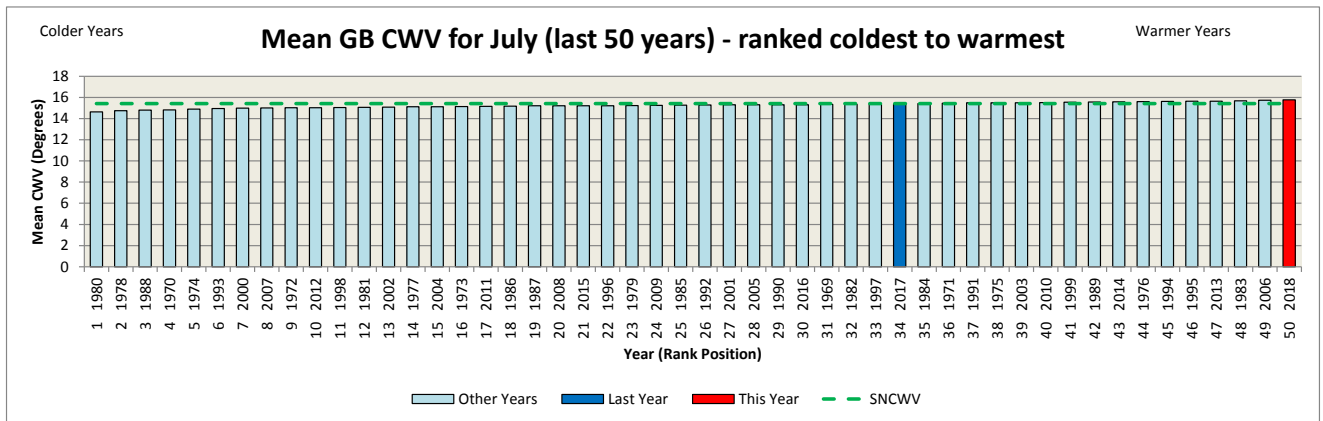


Figure S12.1.11 – 50 Year GB CWV Ranking - August

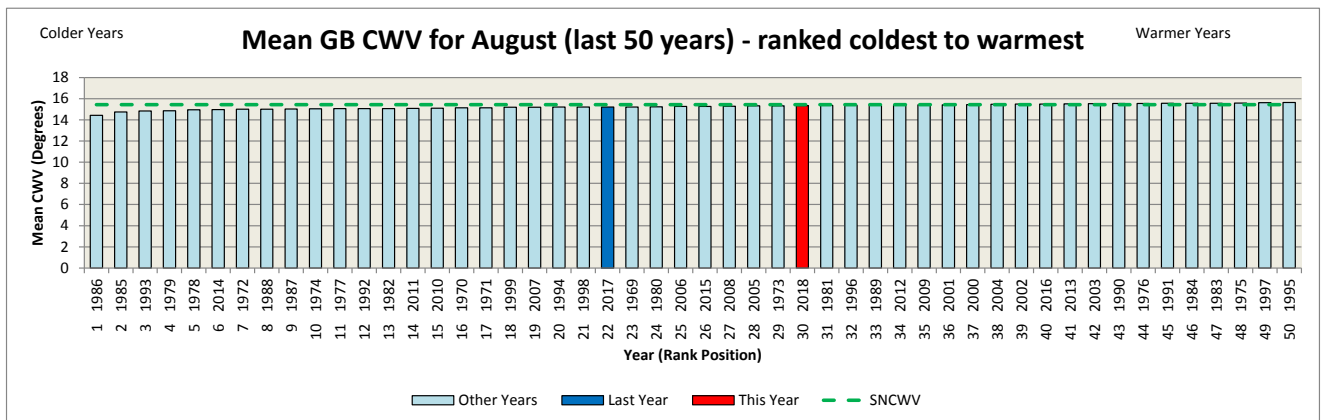


Figure S12.1.12 – 50 Year GB CWV Ranking - September

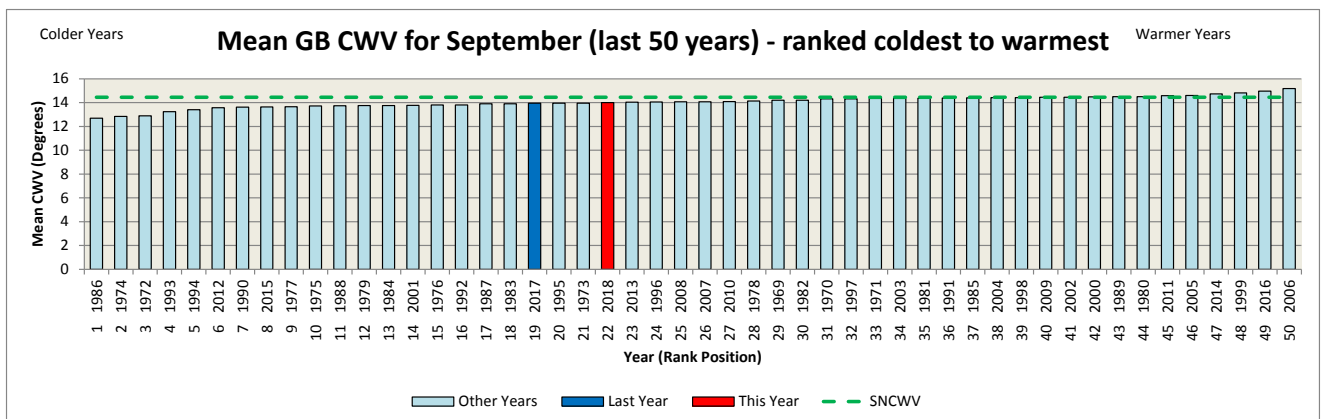


Figure S12.1.13 – Daily Comparisons of CWV vs SNCWV (GB) - October

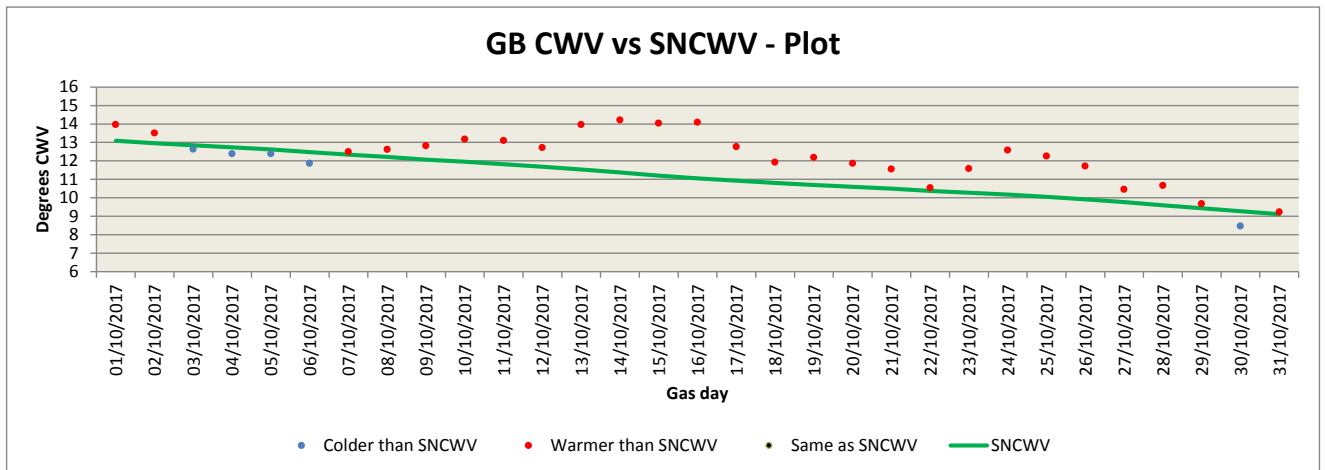


Figure S12.1.14 – Daily Comparisons of CWV vs SNCWV (GB) - November

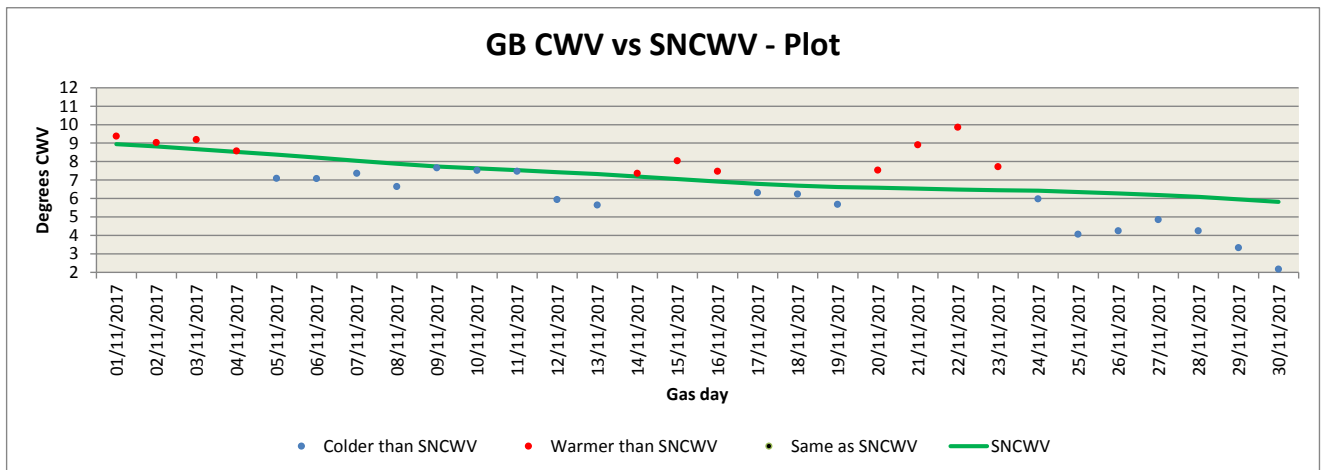


Figure S12.1.15 – Daily Comparisons of CWV vs SNCWV (GB) - December

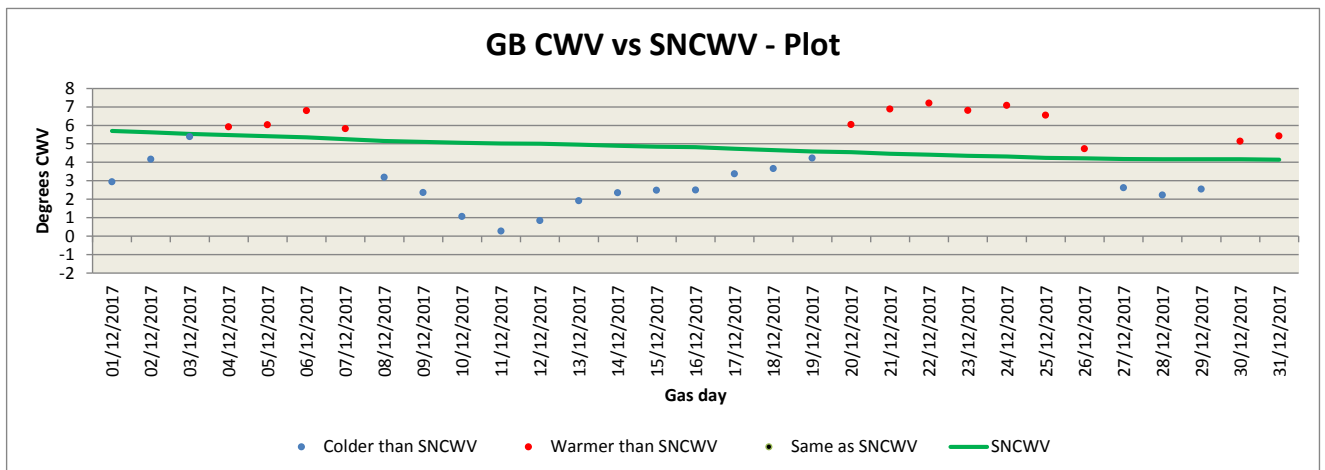


Figure S12.1.16 – Daily Comparisons of CWV vs SNCWV (GB) - January

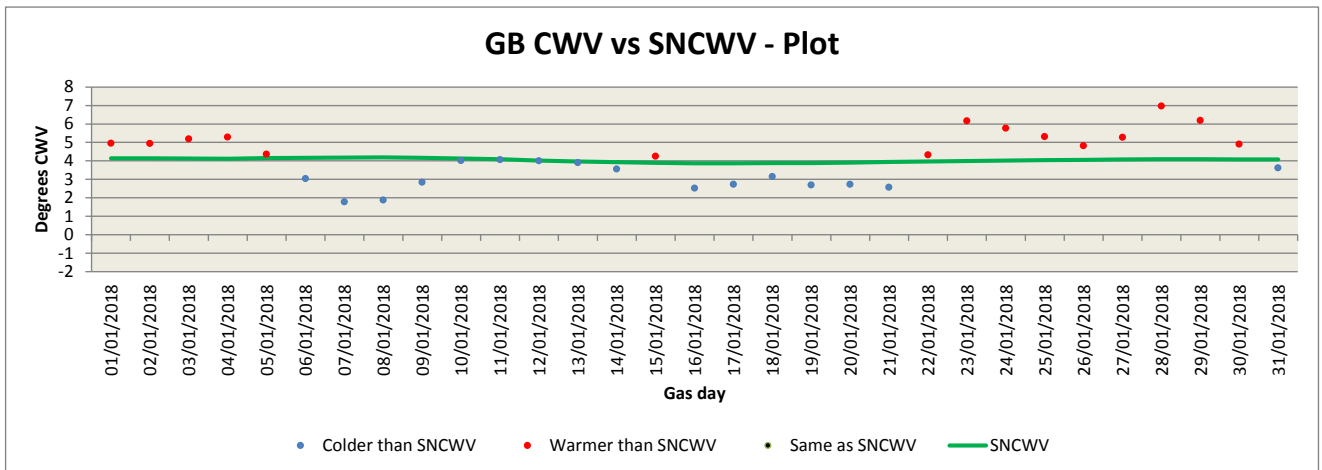


Figure S12.1.17 – Daily Comparisons of CWV vs SNCWV (GB) - February

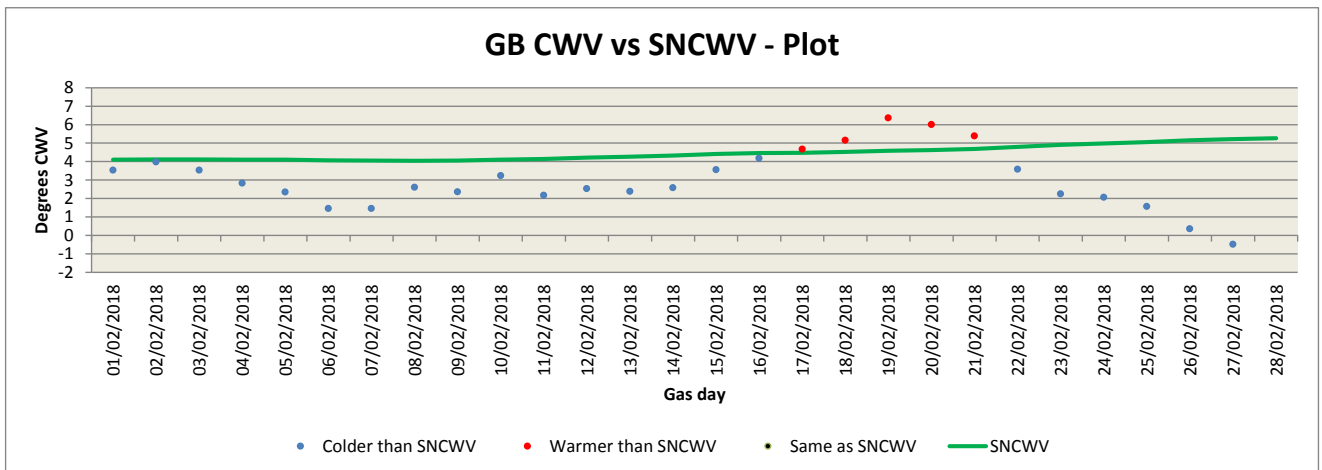


Figure S12.1.18 – Daily Comparisons of CWV vs SNCWV (GB) - March

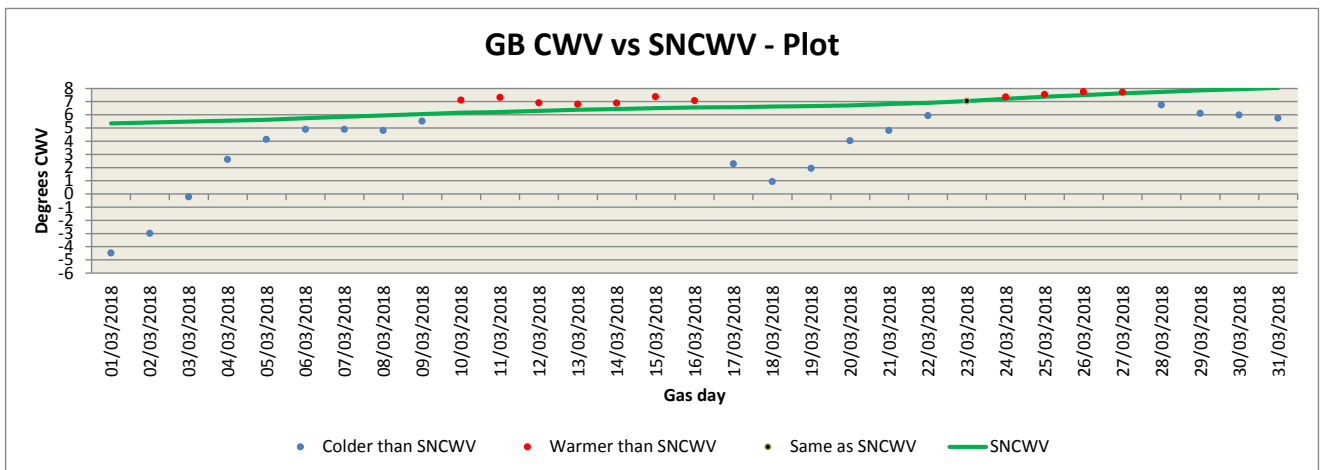


Figure S12.1.19 – Daily Comparisons of CWV vs SNCWV (GB) - April

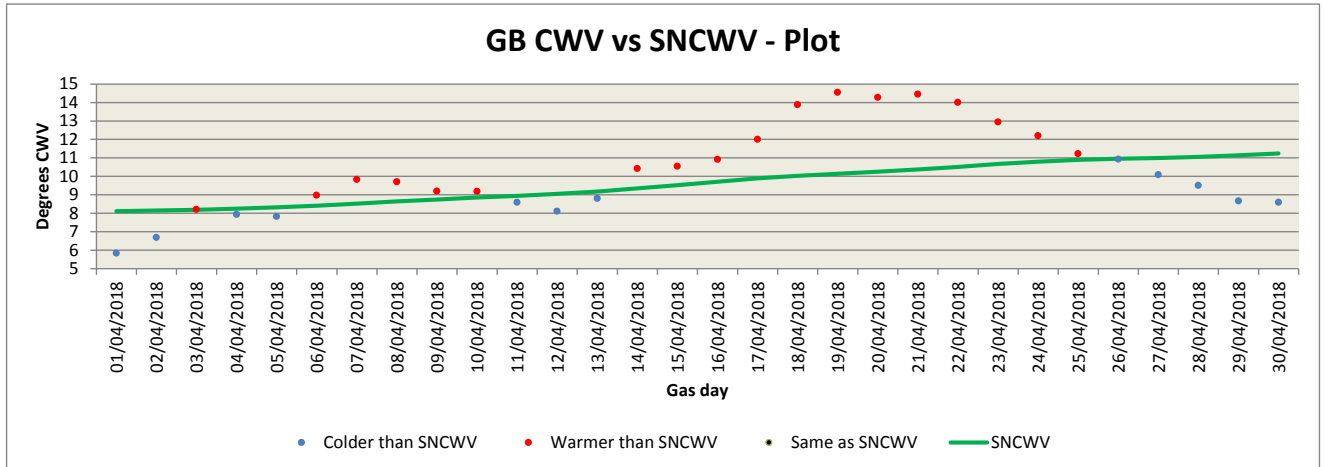


Figure S12.1.20 – Daily Comparisons of CWV vs SNCWV (GB) - May

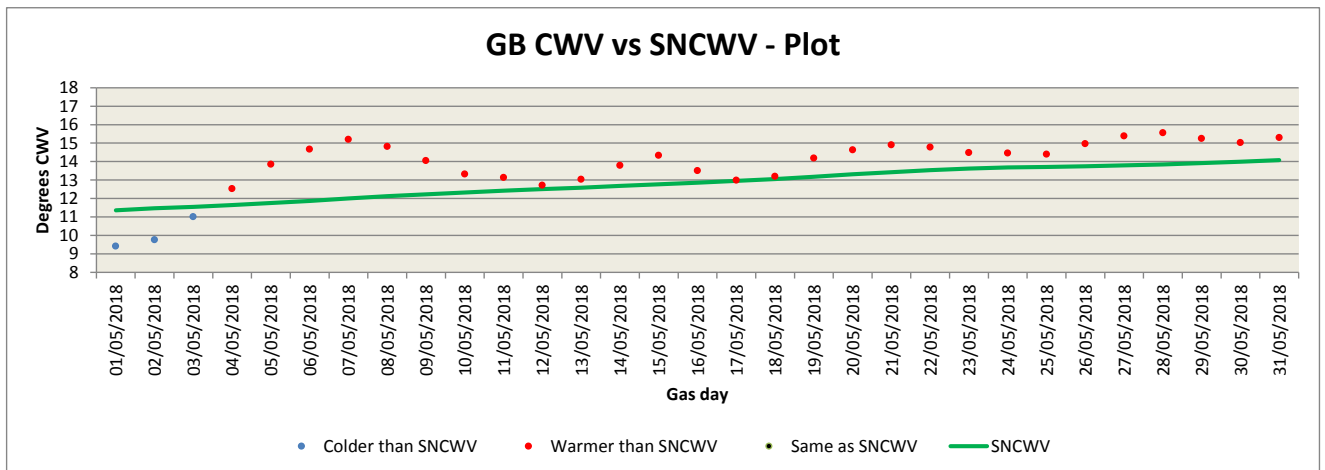


Figure S12.1.21 – Daily Comparisons of CWV vs SNCWV (GB) - June

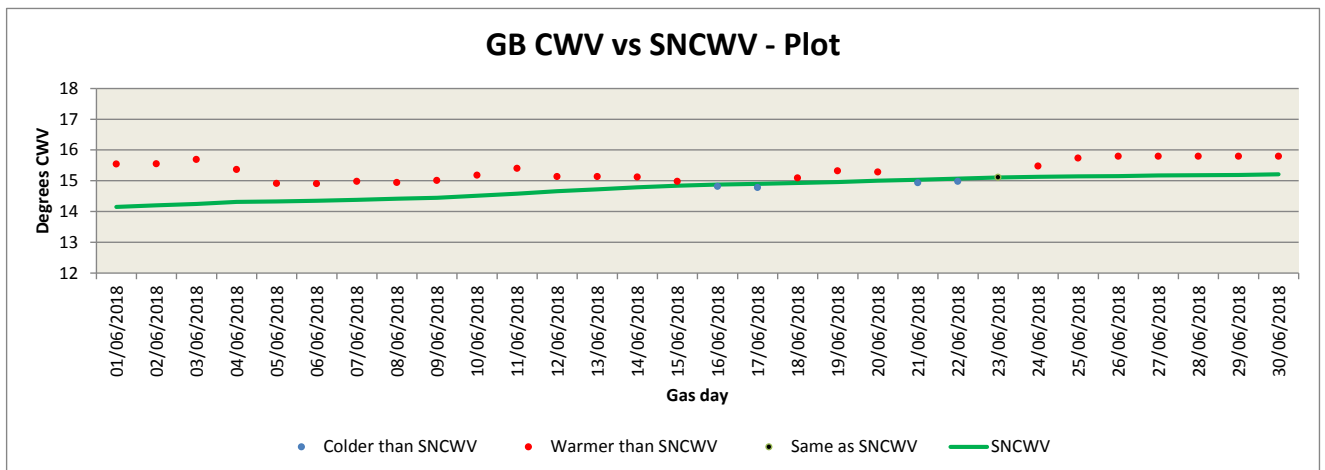


Figure S12.1.22 – Daily Comparisons of CWV vs SNCWV (GB) - July

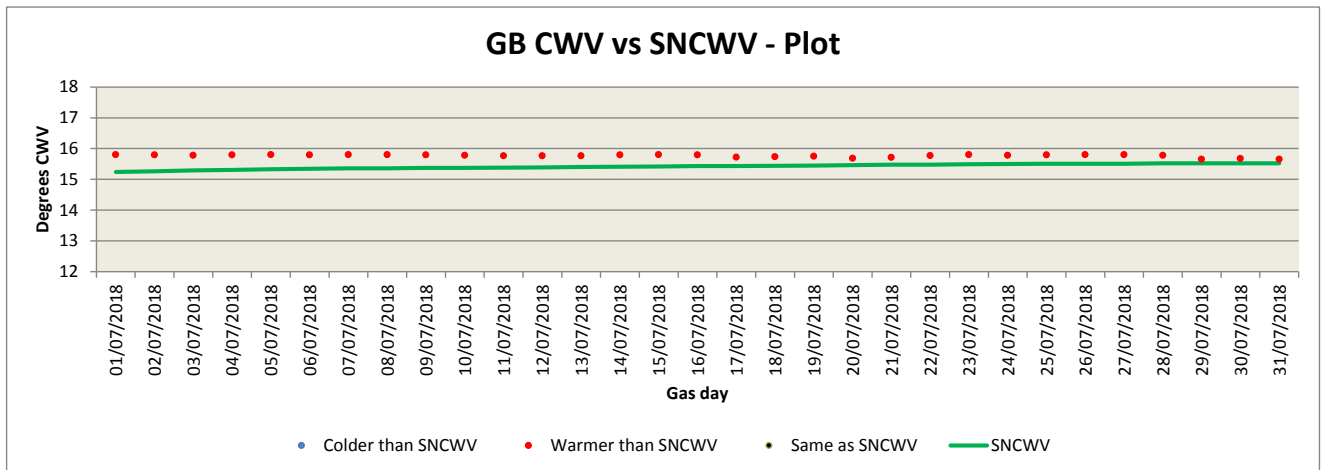


Figure S12.1.23 – Daily Comparisons of CWV vs SNCWV (GB) - August

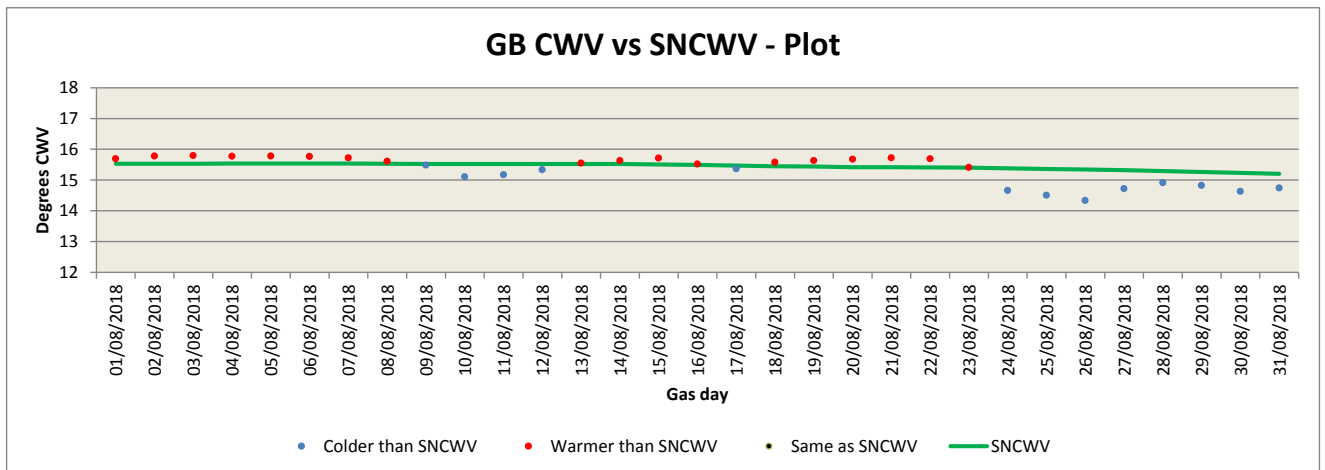


Figure S12.1.24 – Daily Comparisons of CWV vs SNCWV (GB) - September

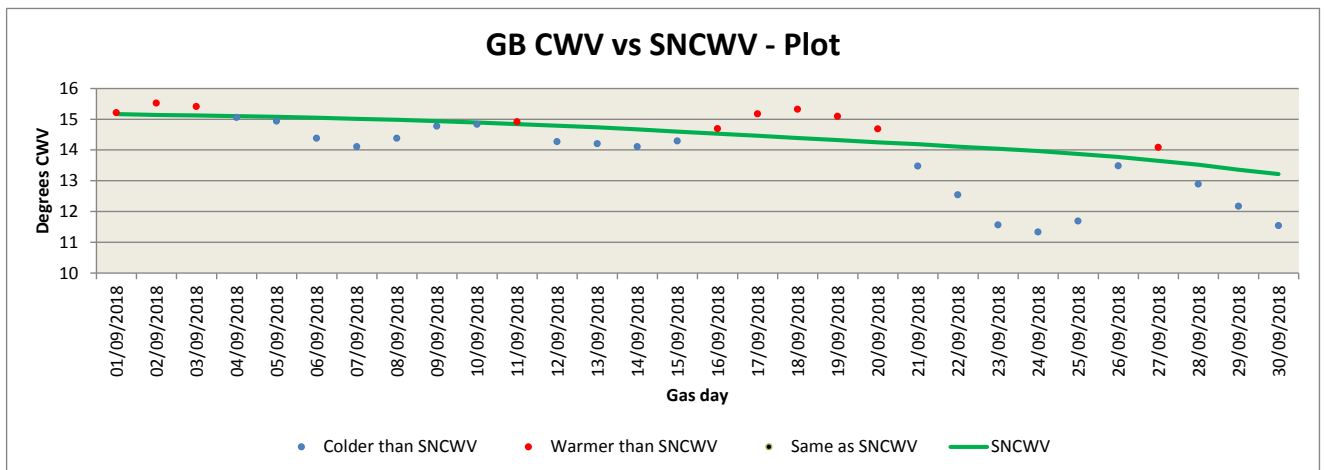


Figure S12.1.25 – Daily Comparisons of CWV vs SNCWV (LDZ SC) - Full Year

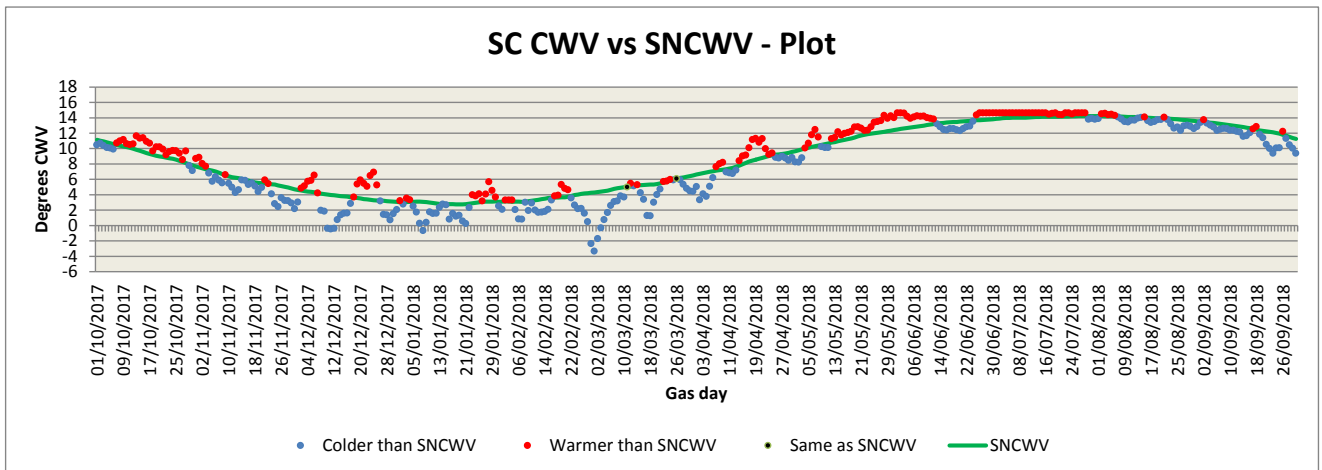


Figure S12.1.26 – Daily Comparisons of CWV vs SNCWV (LDZ NO) - Full Year

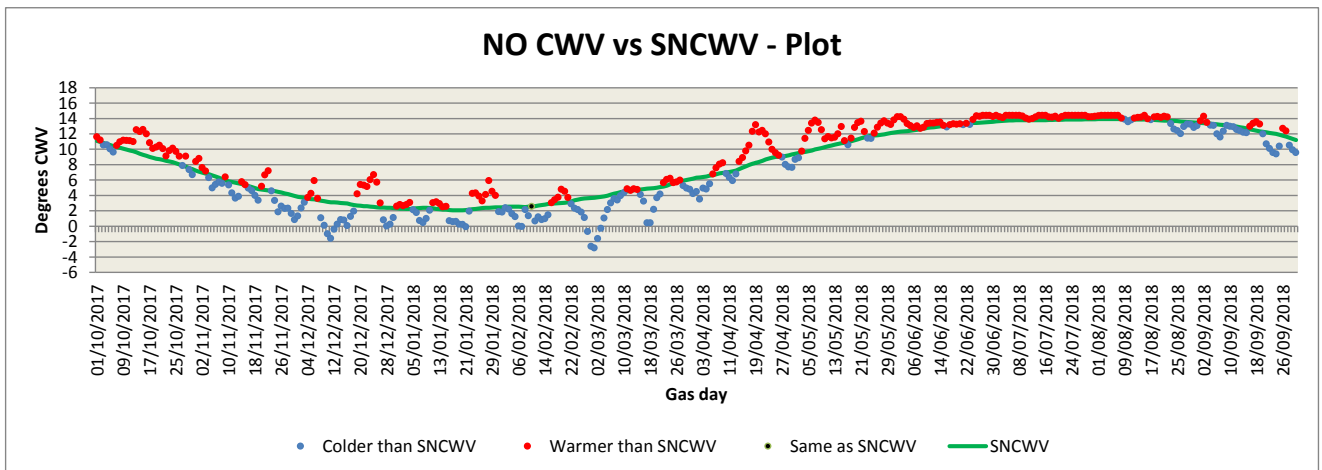


Figure S12.1.27 – Daily Comparisons of CWV vs SNCWV (LDZ NW & WN) - Full Year

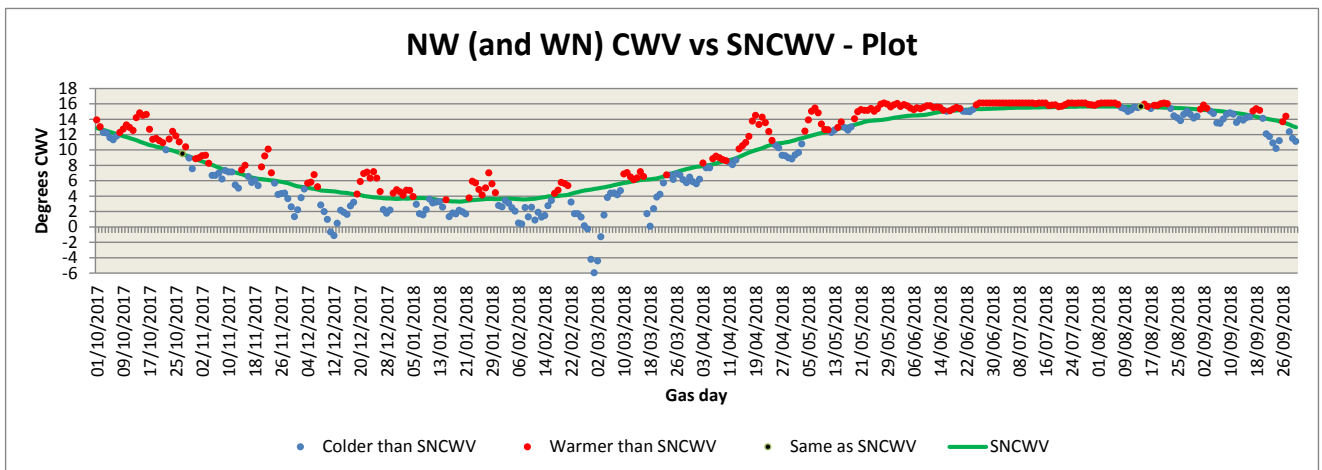


Figure S12.1.28 – Daily Comparisons of CWV vs SNCWV (LDZ NE) - Full Year

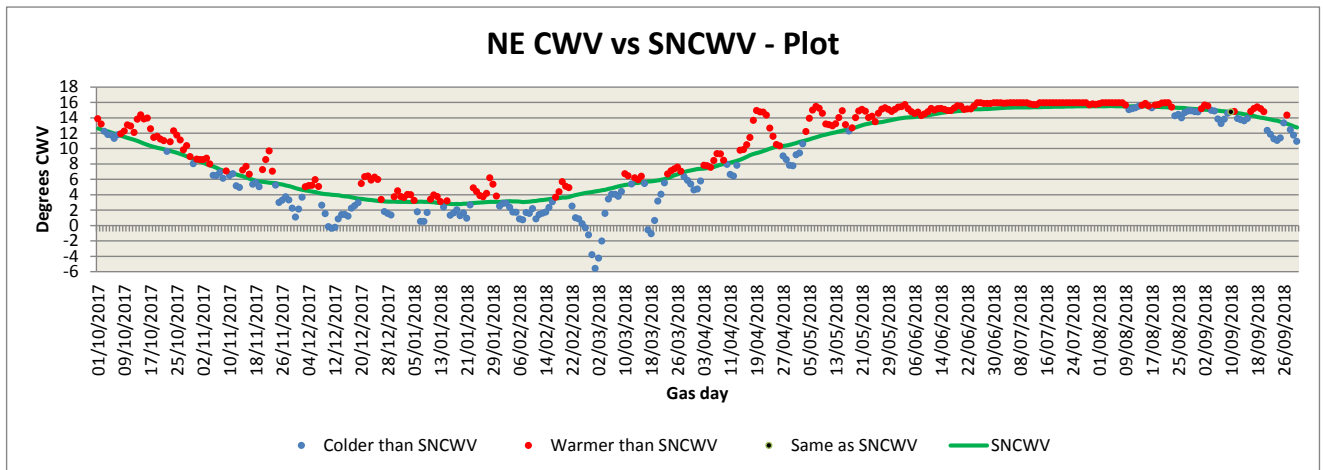


Figure S12.1.29 – Daily Comparisons of CWV vs SNCWV (LDZ EM) - Full Year

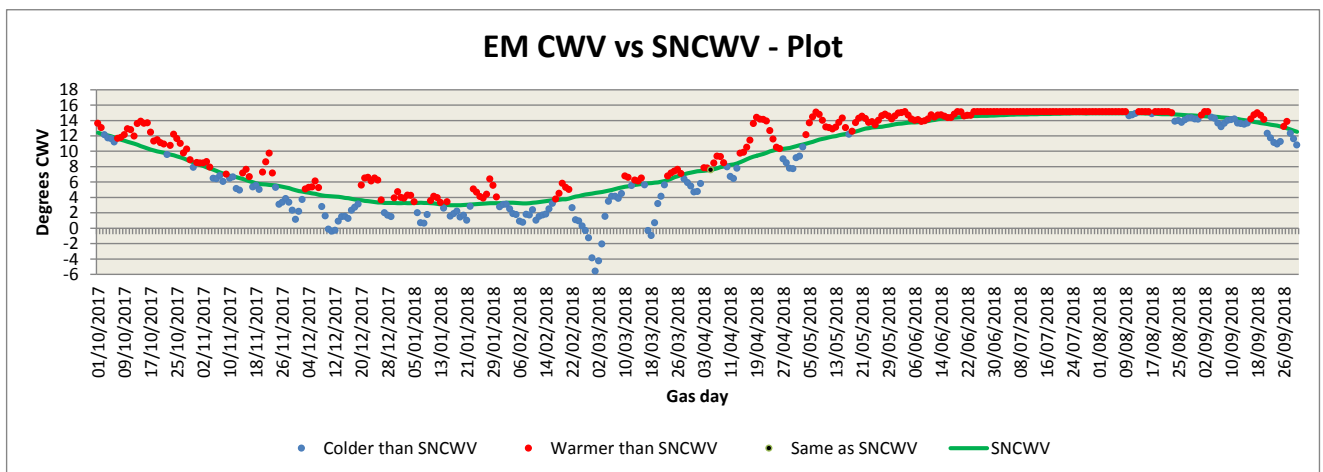


Figure S12.1.30 – Daily Comparisons of CWV vs SNCWV (LDZ WM) - Full Year

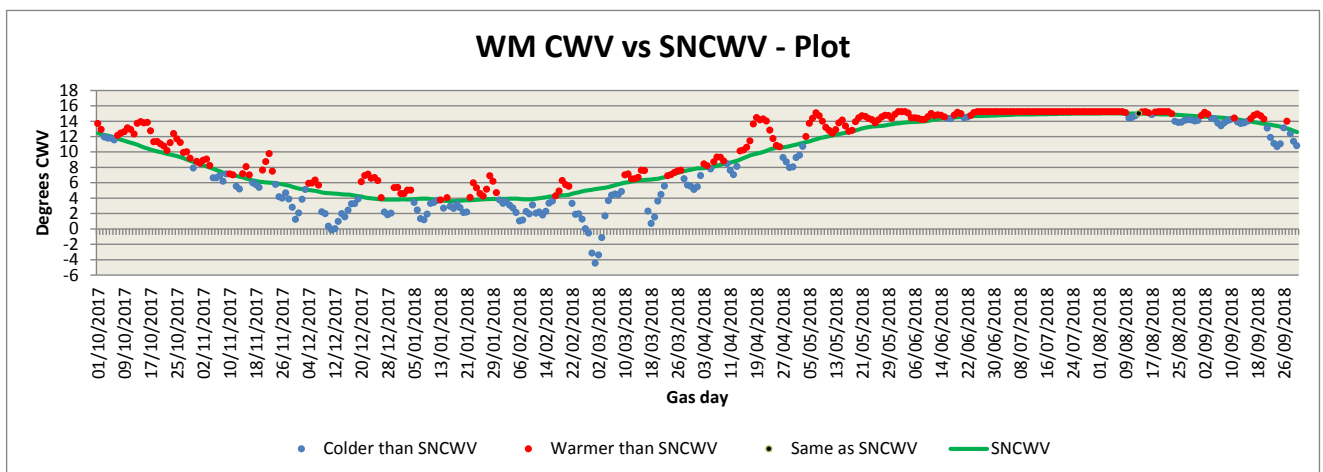


Figure S12.1.31 – Daily Comparisons of CWV vs SNCWV (LDZ WS) - Full Year

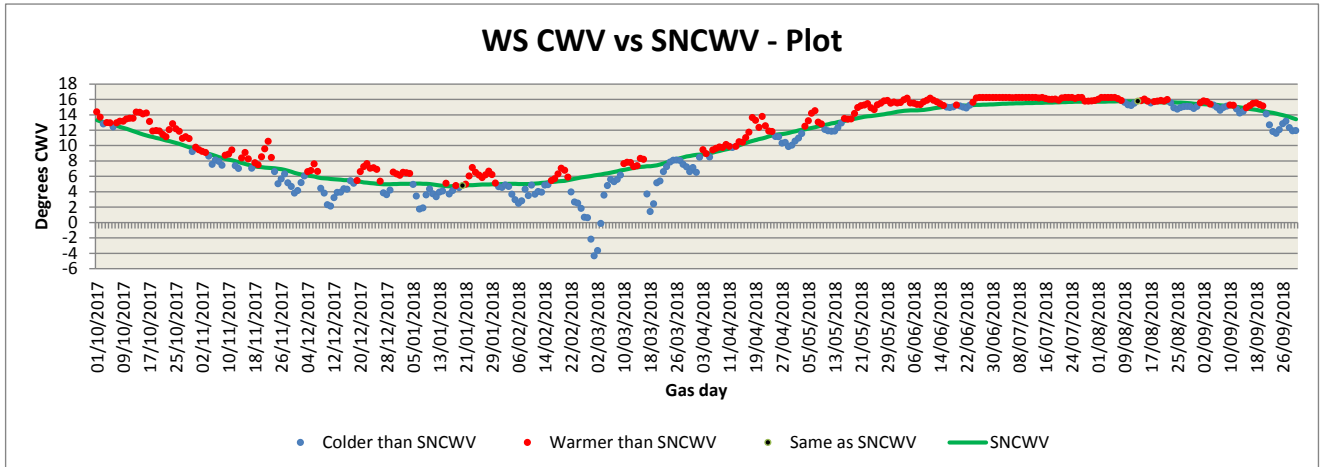


Figure S12.1.32 – Daily Comparisons of CWV vs SNCWV (LDZ EA) - Full Year

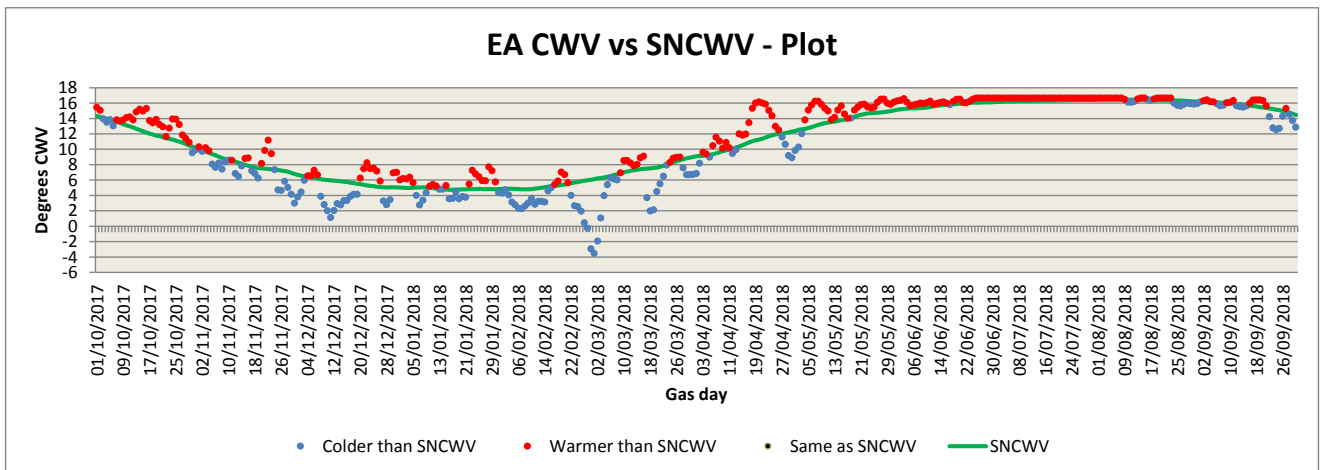


Figure S12.1.33 – Daily Comparisons of CWV vs SNCWV (LDZ NT) - Full Year

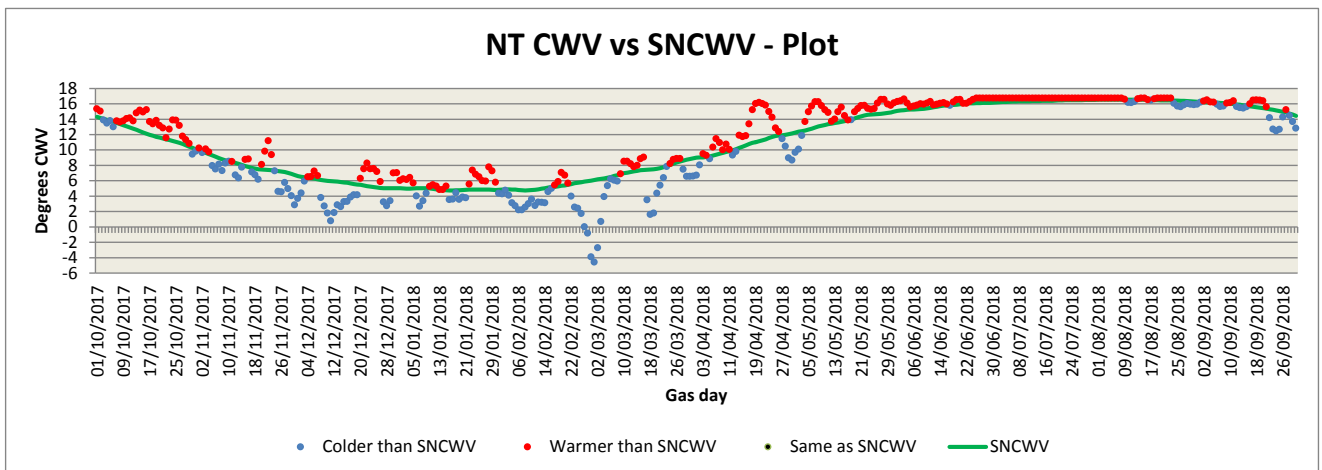


Figure S12.1.34 – Daily Comparisons of CWV vs SNCWV (LDZ SE) - Full Year

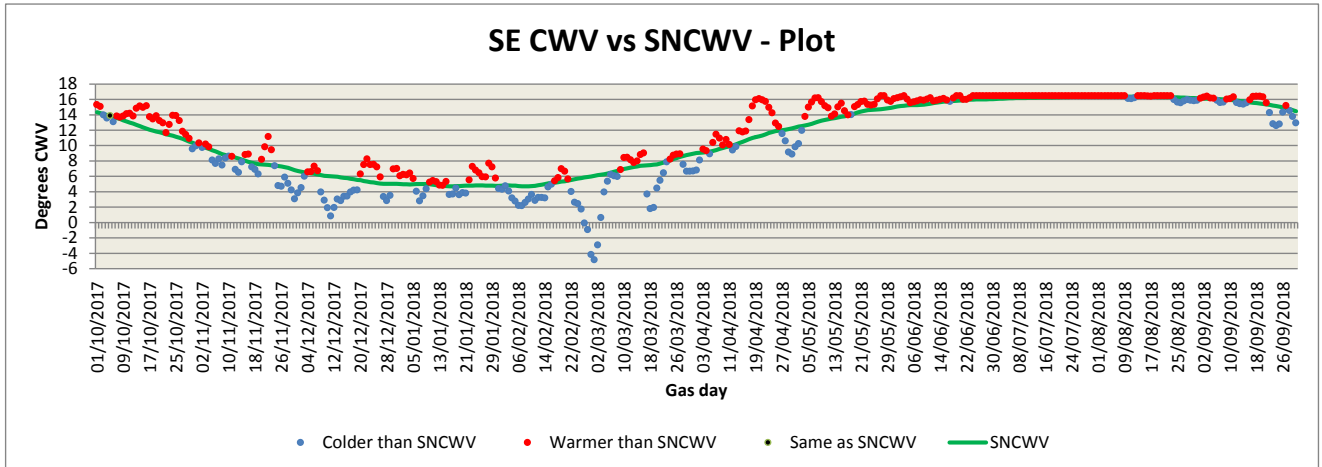


Figure S12.1.35 – Daily Comparisons of CWV vs SNCWV (LDZ SO) - Full Year

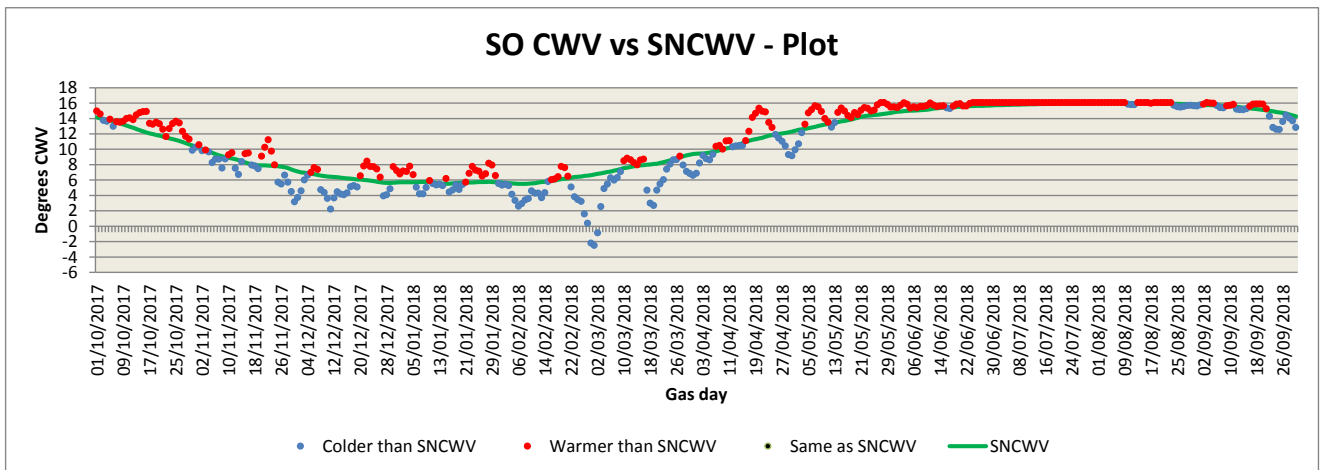


Figure S12.1.36 – Daily Comparisons of CWV vs SNCWV (LDZ SW) - Full Year

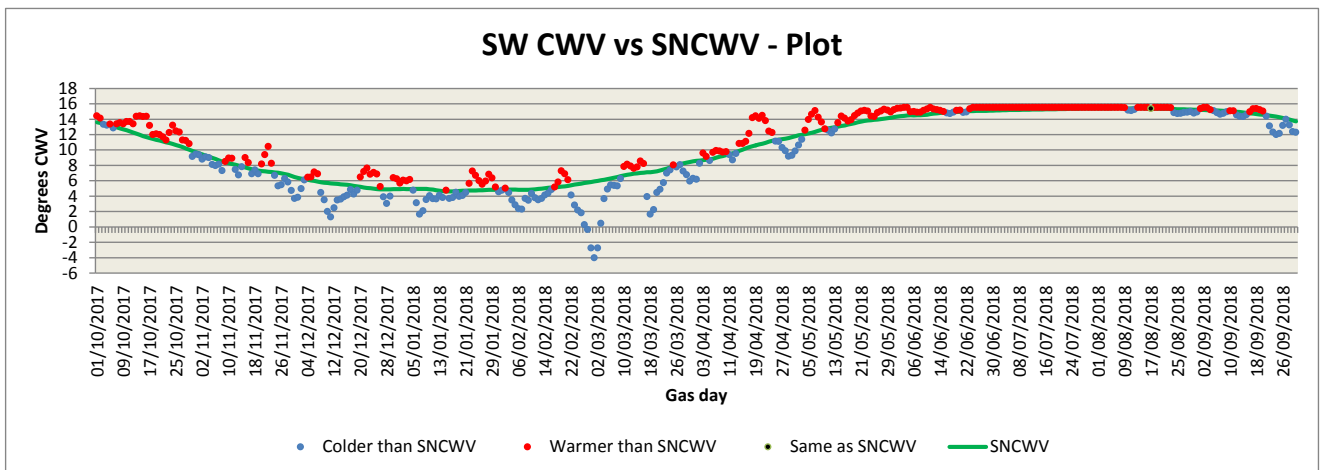


Figure S12.1.37 – WCF vs Confidence Intervals (LDZ SC) - Full Year

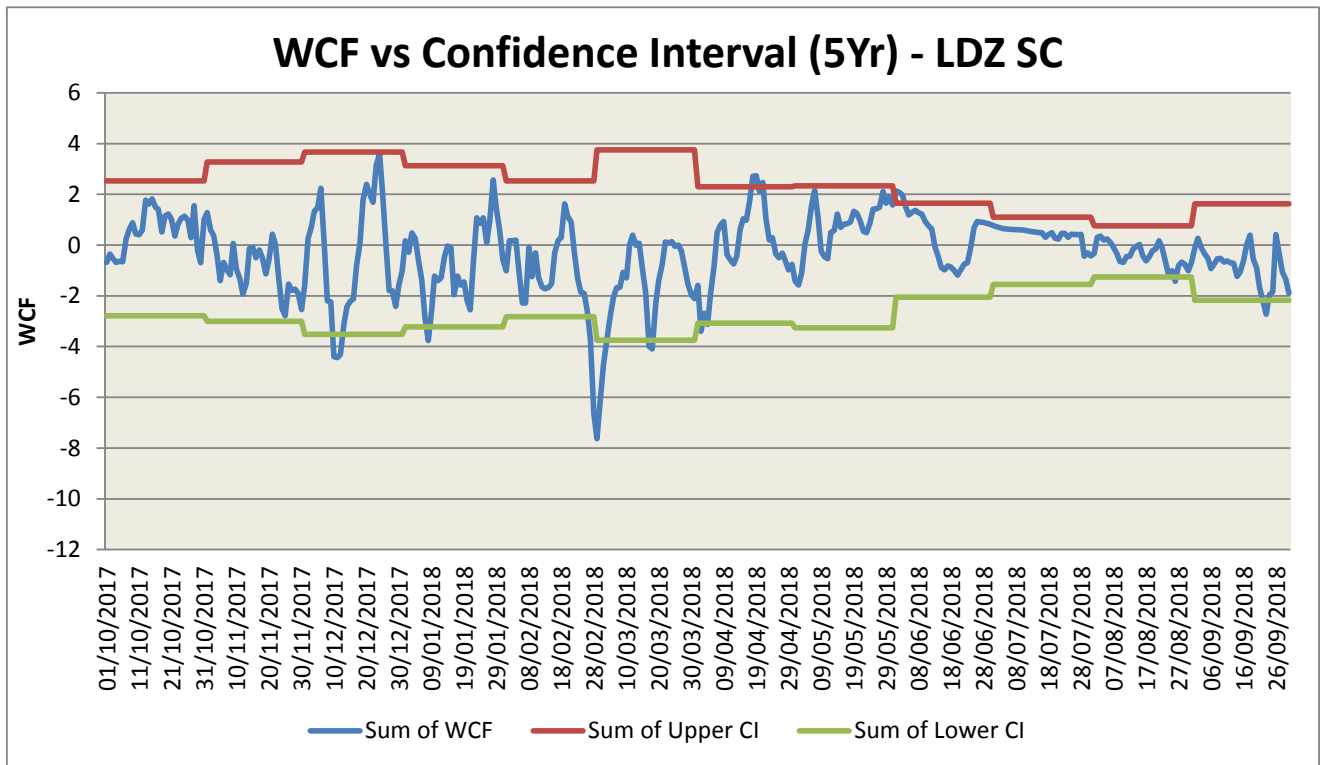


Figure S12.1.38 – WCF vs Confidence Intervals (LDZ NO) - Full Year

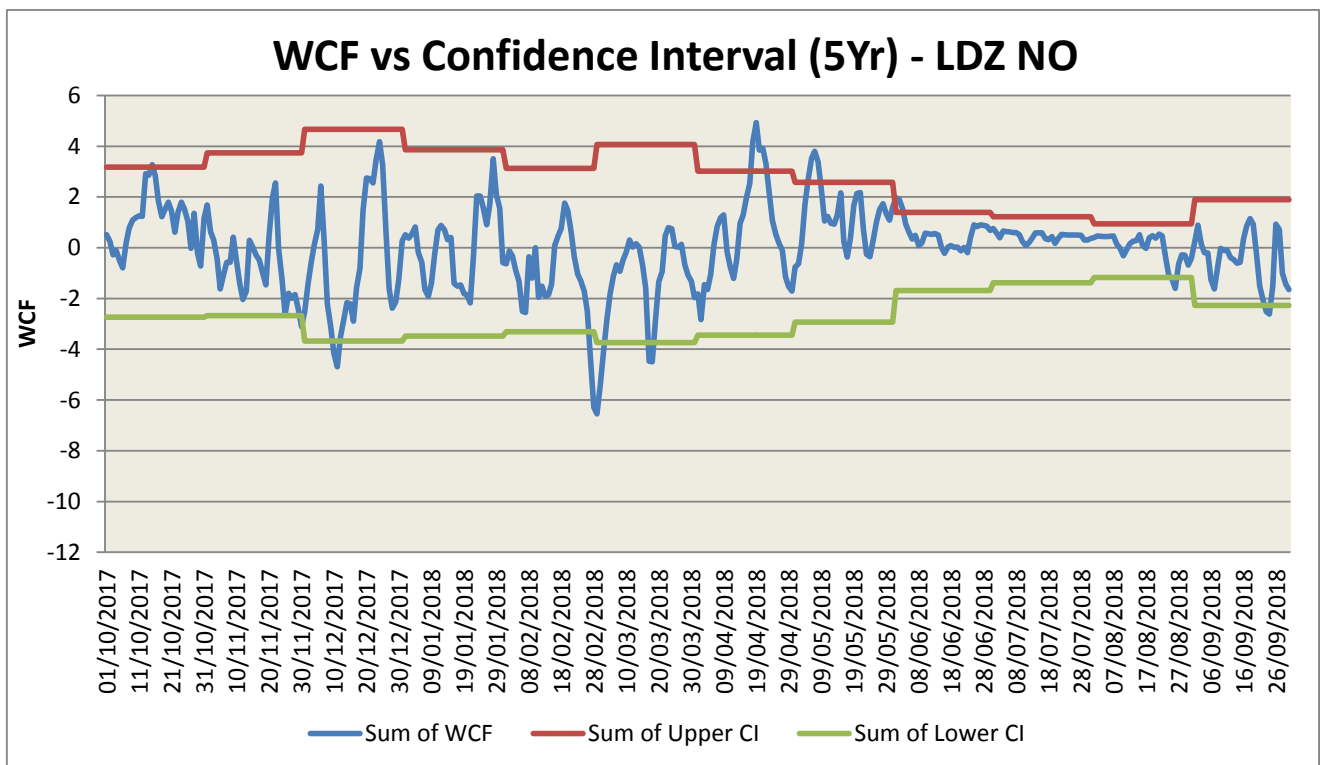


Figure S12.1.39 – WCF vs Confidence Intervals (LDZ NW and WN) - Full Year

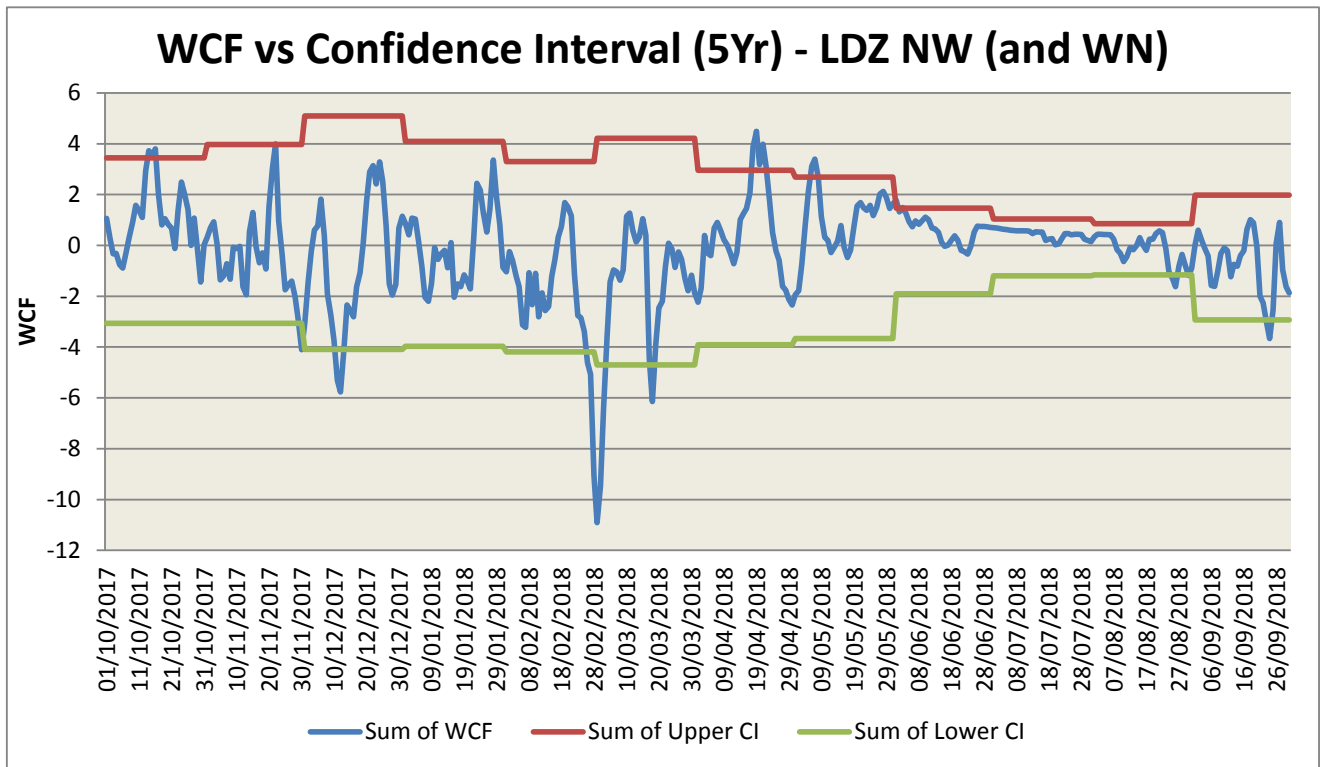


Figure S12.1.40 – WCF vs Confidence Intervals (LDZ NE) - Full Year

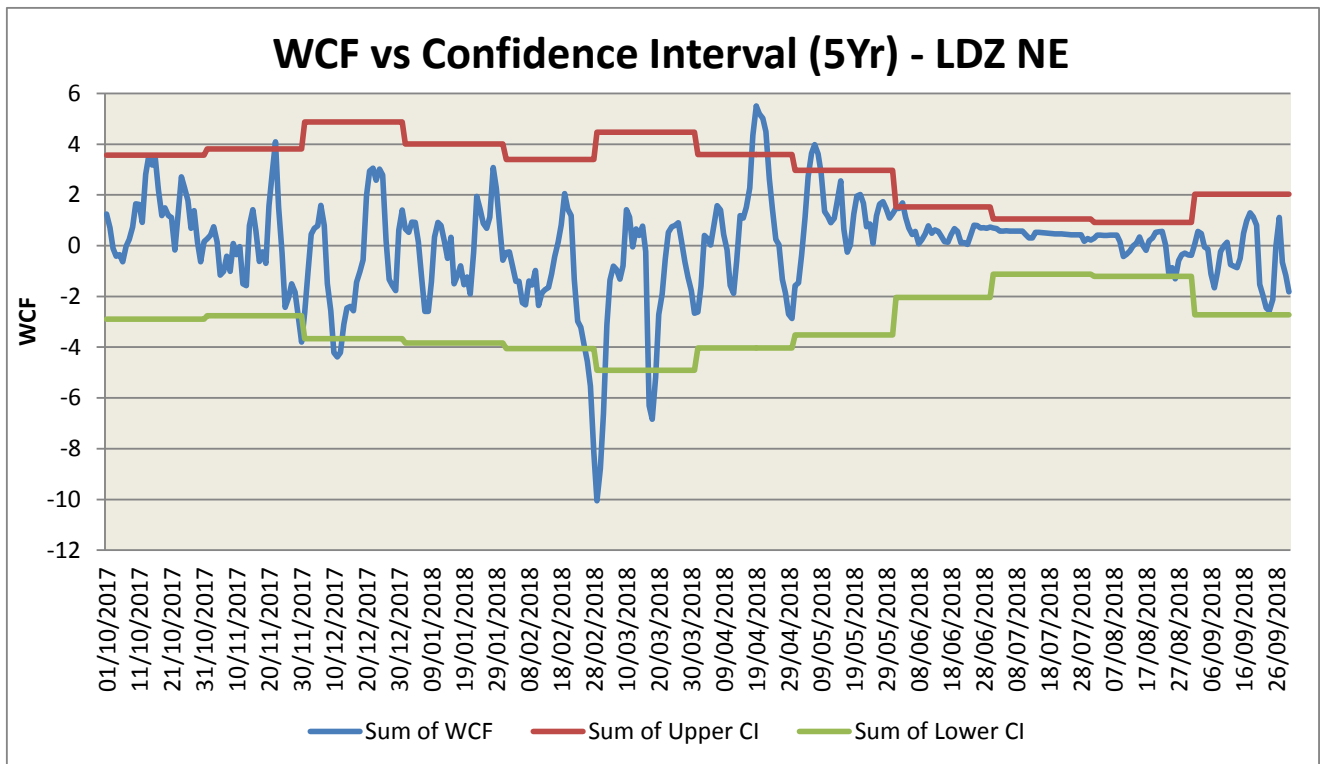


Figure S12.1.41 – WCF vs Confidence Intervals (LDZ EM) - Full Year

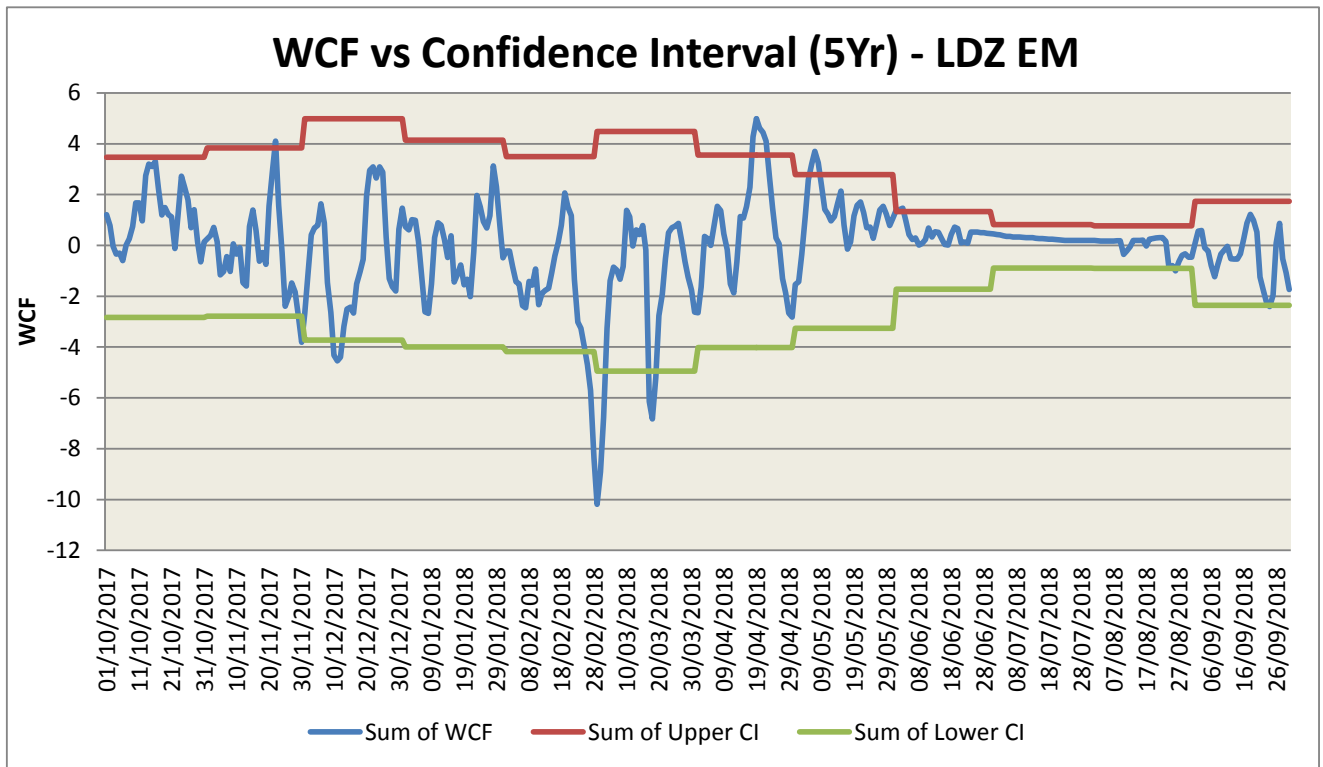


Figure S12.1.42 – WCF vs Confidence Intervals (LDZ WM) - Full Year

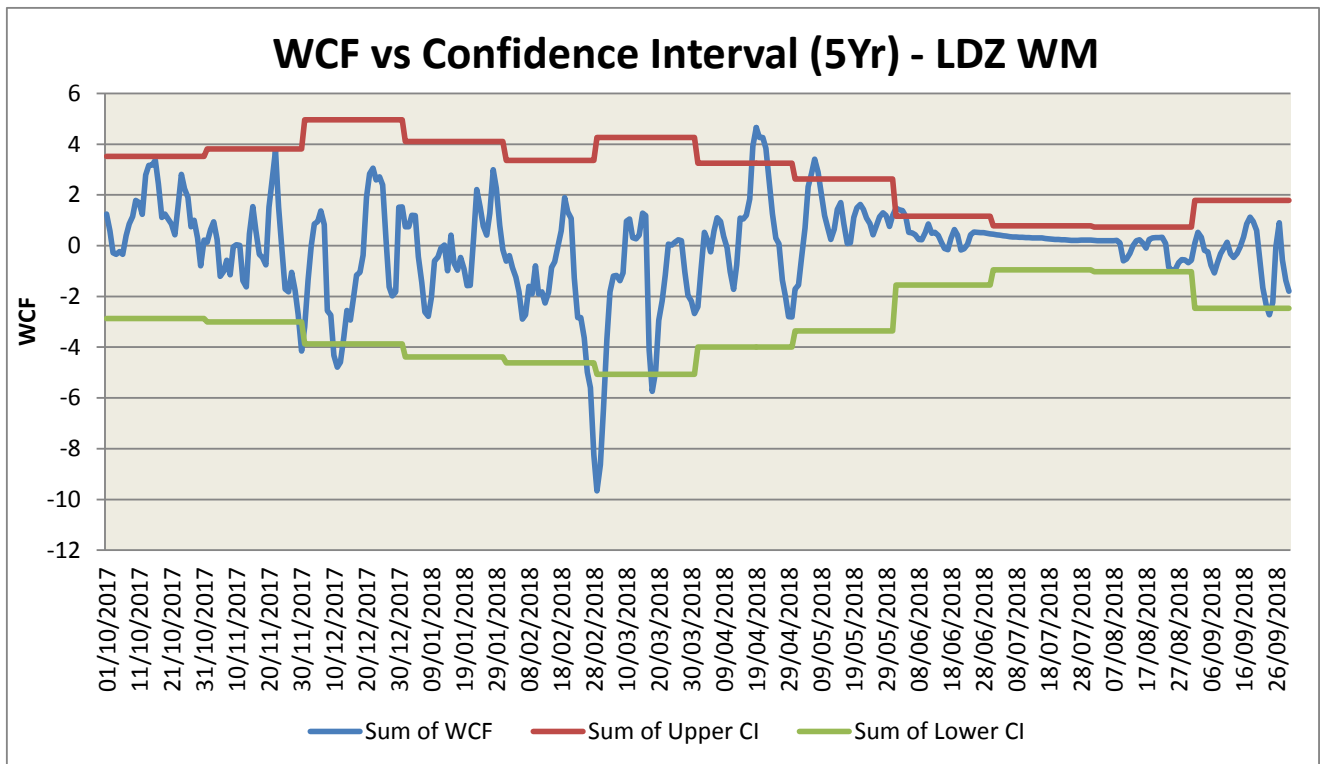


Figure S12.1.43 – WCF vs Confidence Intervals (LDZ WS) - Full Year

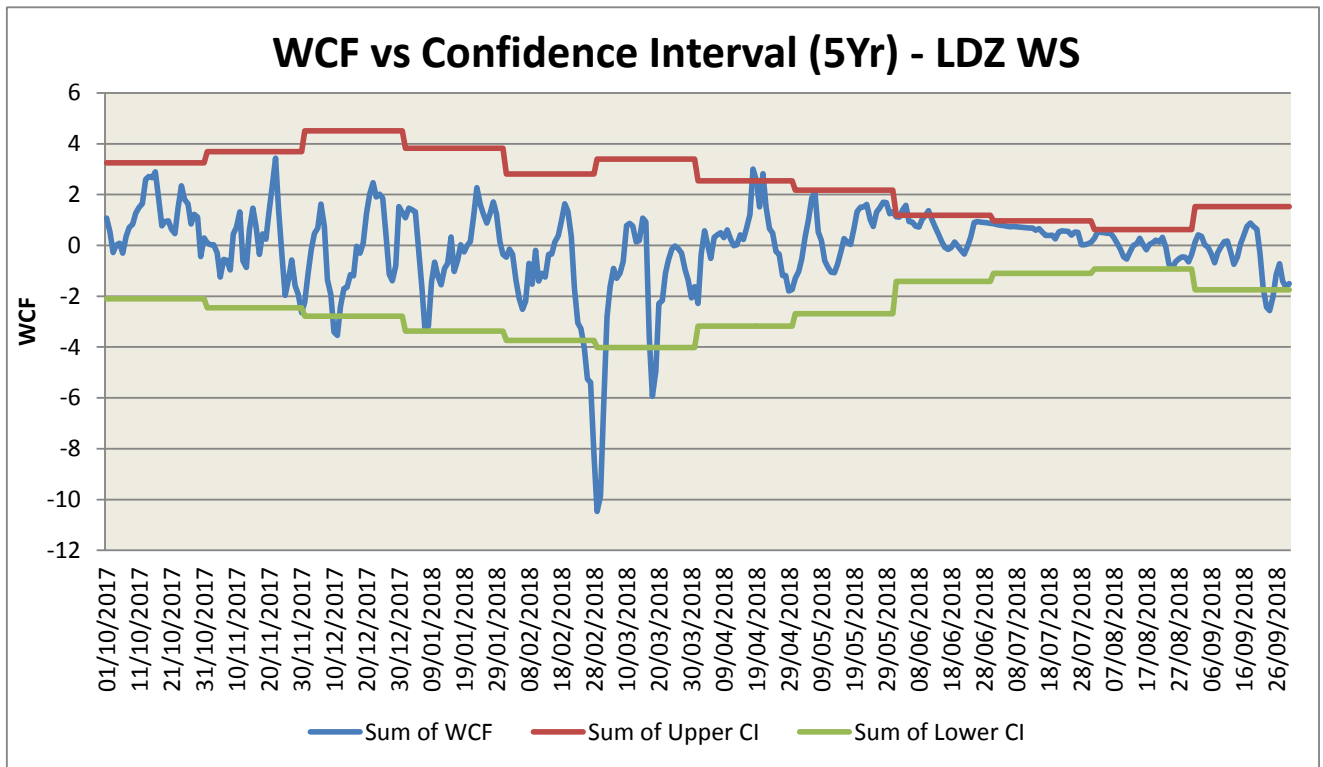


Figure S12.1.44 – WCF vs Confidence Intervals (LDZ EA) - Full Year

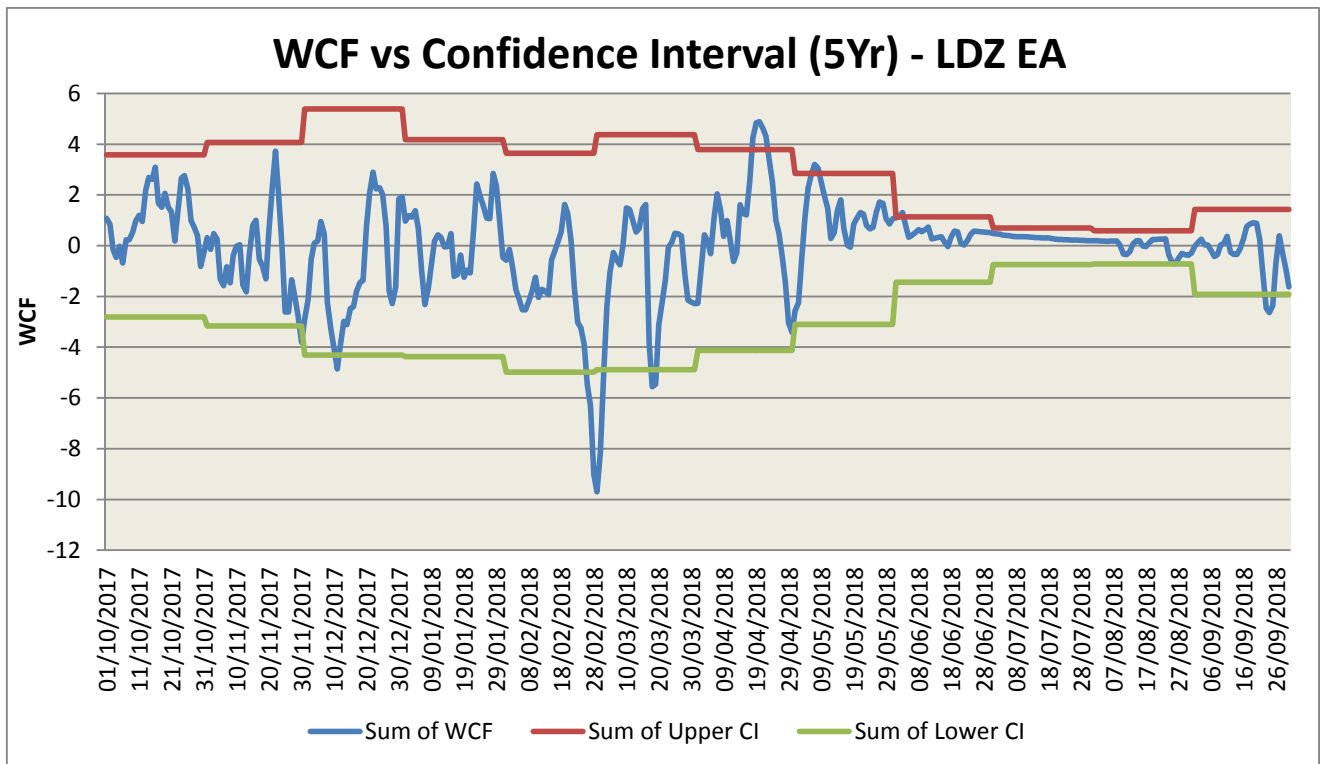


Figure S12.1.45 – WCF vs Confidence Intervals (LDZ NT) - Full Year

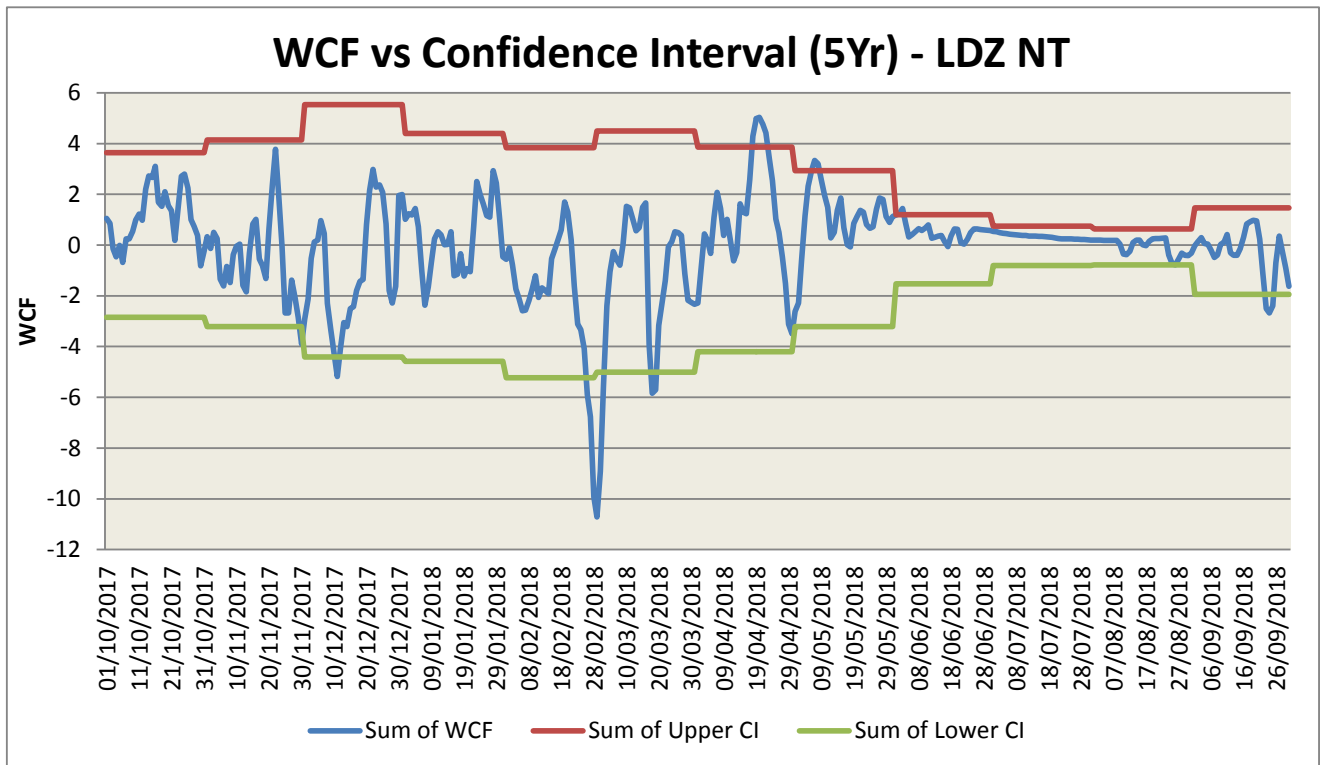


Figure S12.1.46 – WCF vs Confidence Intervals (LDZ SE) - Full Year

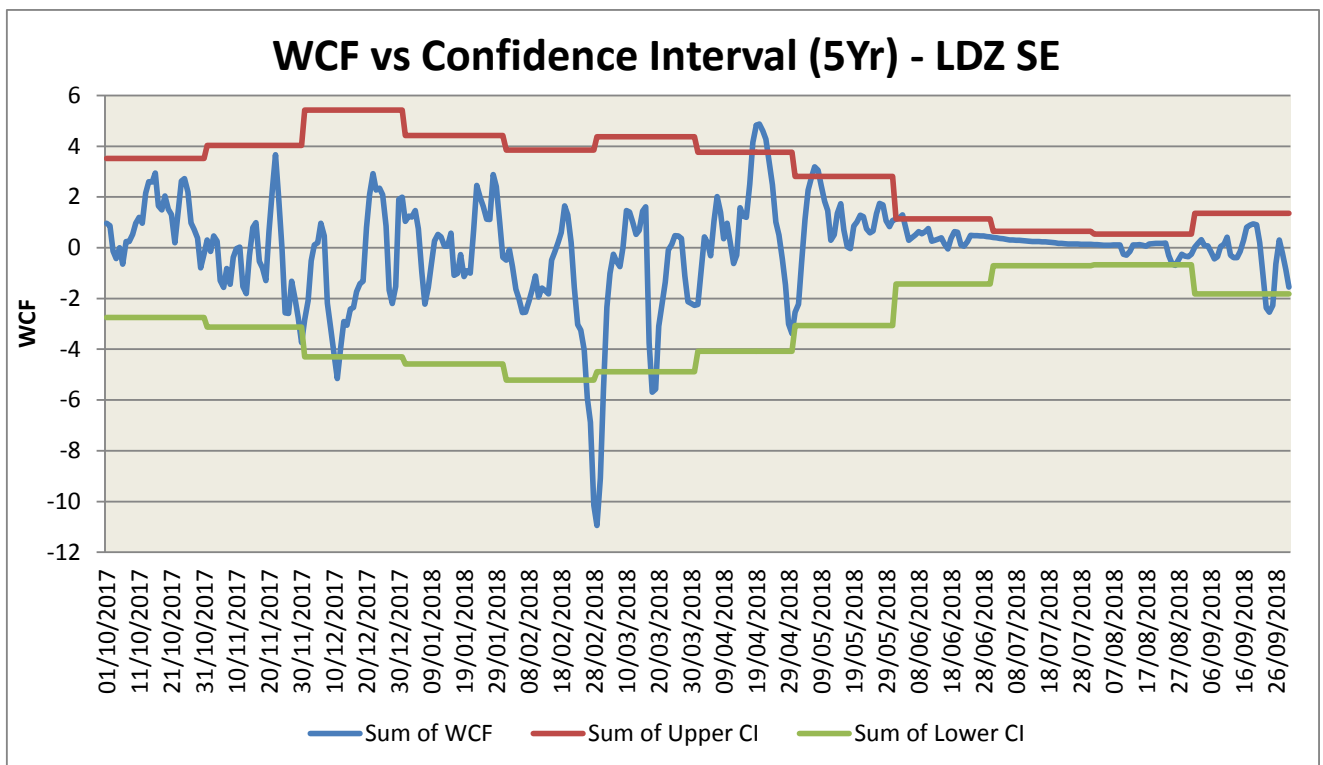


Figure S12.1.47 – WCF vs Confidence Intervals (LDZ SO) - Full Year

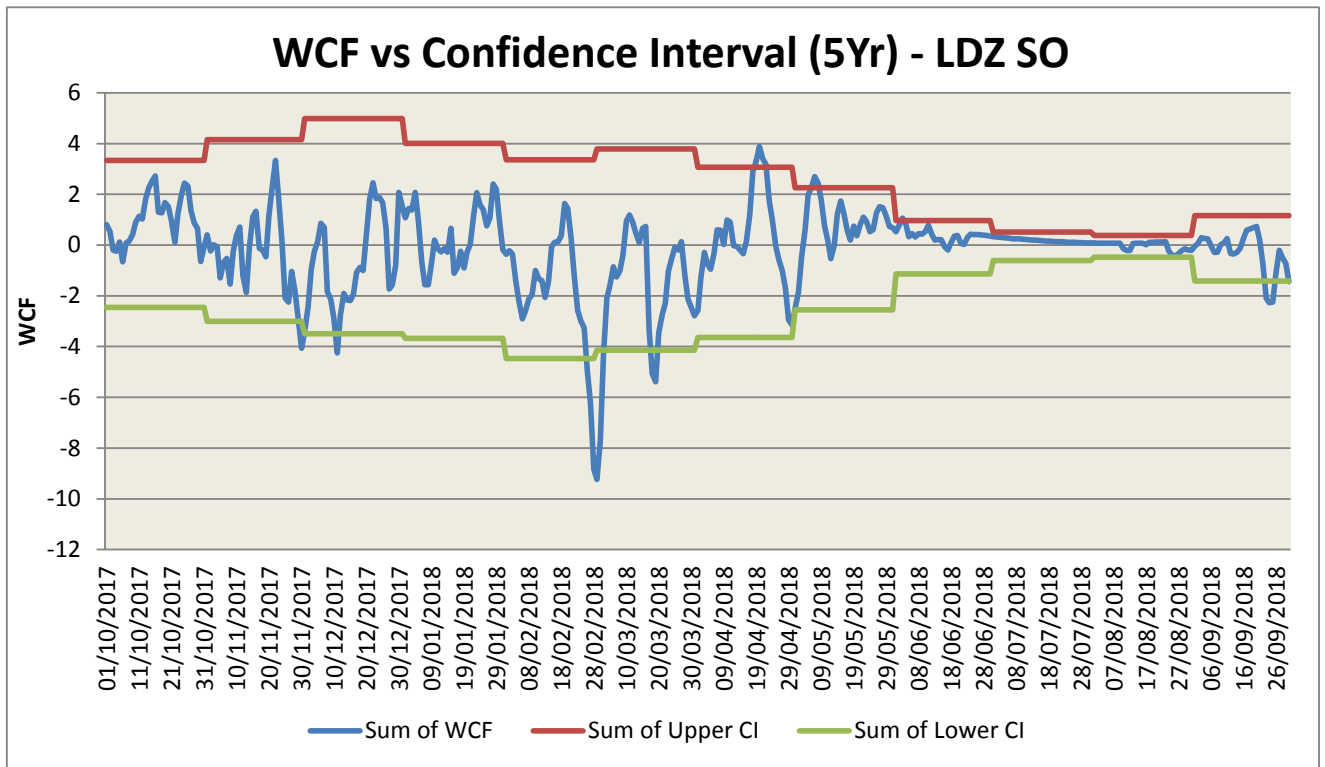


Figure S12.1.48 – WCF vs Confidence Intervals (LDZ SW) - Full Year

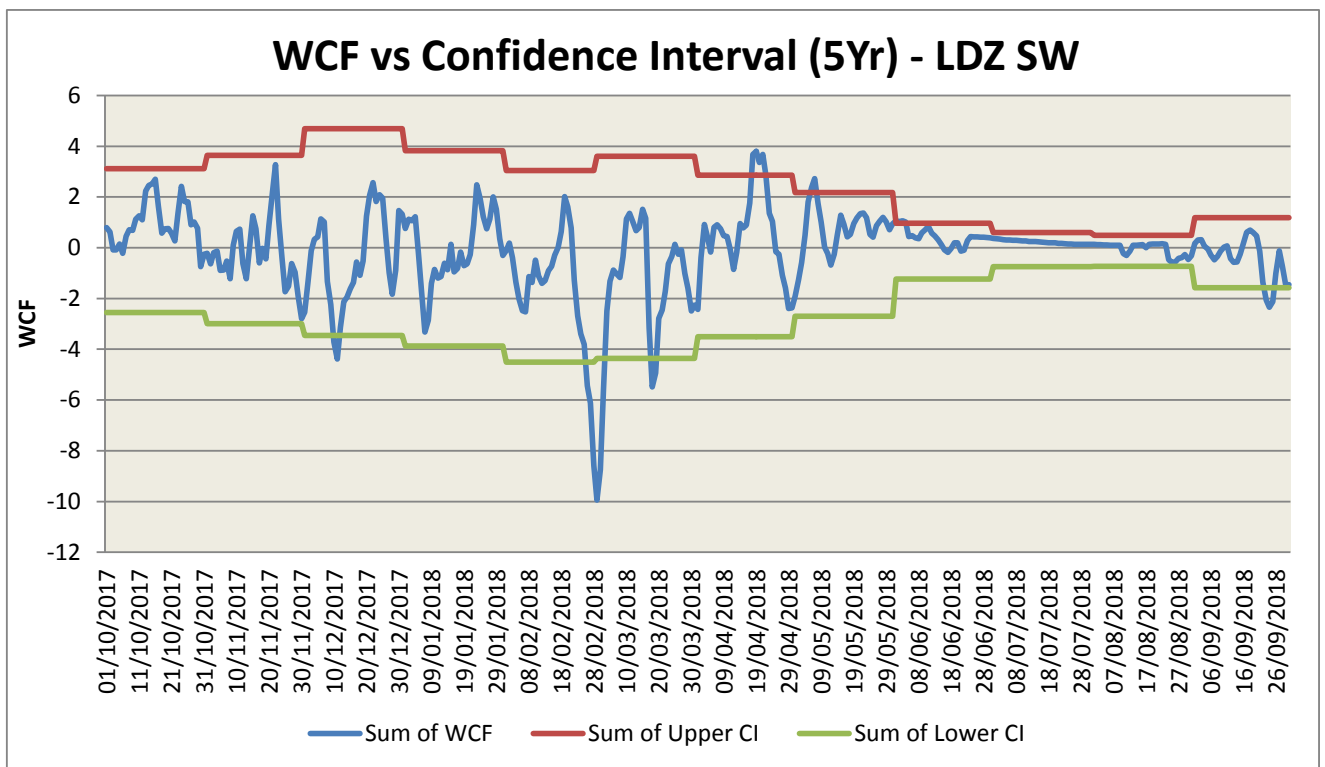


Figure S12.1.49 – Percentage of WCF Values within Confidence Intervals for each LDZ/Month

Month	SC	NO	NW / WN	NE	EM	WM	WS	EA	NT	SE	SO	SW
Oct'17	100%	97%	90%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Nov'17	100%	97%	93%	93%	93%	97%	97%	97%	97%	97%	97%	100%
Dec'17	90%	94%	90%	90%	90%	90%	94%	97%	97%	97%	97%	94%
Jan'18	97%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb'18	93%	93%	89%	89%	89%	89%	86%	89%	89%	89%	89%	89%
Mar'18	84%	84%	87%	81%	81%	87%	84%	84%	84%	84%	84%	84%
Apr'18	83%	83%	83%	83%	83%	83%	93%	83%	83%	83%	87%	87%
May'18	100%	87%	94%	90%	90%	90%	100%	94%	94%	94%	90%	94%
Jun'18	90%	90%	93%	97%	90%	87%	90%	97%	93%	93%	97%	87%
Jul'18	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Aug'18	97%	94%	90%	97%	97%	100%	100%	100%	100%	97%	100%	100%
Sep'18	97%	93%	93%	100%	97%	97%	90%	90%	90%	90%	87%	90%

4. STRAND 2: UNIDENTIFIED GAS ANALYSIS

The concept of Unidentified Gas (UiG) was introduced on 1st June 2017 under Project Nexus, which introduced a revised NDM allocation formula brought about by UNC Modification 0432. Unidentified Gas forms part of daily gas allocation and is calculated as the balancing figure to ensure that within in each LDZ, total input matches total output. UiG is derived as follows:

$$\text{Total LDZ Energy} - (\text{Shrinkage} + \text{DM Energy} + \text{Total LDZ NDM Energy}) = \text{UiG}$$

The ideal UiG value is zero but it is worth noting that UiG can be a positive or negative value. UiG volatility may occur for a variety of reasons including imperfections in the NDM Algorithms themselves, but also errors in aggregate NDM Aqs and in measured LDZ and DM consumption. If these factors are not material, a positive UiG value could indicate a tendency for the NDM algorithms to under allocate, whereas a negative UiG value could indicate the algorithm over allocates.

The following analysis is based on gas year 17/18. The data was analysed by seasons which are defined as:

- Autumn: Oct '17 to Dec '17
- Winter: Jan '18 to Mar '18
- Spring: Apr '18 to Jun '18
- Summer: Jul '18 to Sep '18

A selection of bar charts and distribution graphs are presented below:

Figures S12.2.1 to S12.2.4 show the monthly average percentage (displayed by season) of Unidentified Gas for each LDZ observed during gas year 2017/18.

Figure S12.2.5 is a line graph showing the national daily UiG % values (at D+5) from 1st October 2017 to 30th September 2018.

Figures S12.2.6 to S12.2.9 show the national distribution of UiG % values by seasons.

During the analysis period of 1st October 2017 to 30th September 2018, the average UiG percentage levels by month and LDZ have been mostly positive and have ranged from -32.7% (in WS LDZ during September'18) to +25.53% (in SW LDZ during April'18). When considering the percentage UiG ranges for the seasons, Autumn (Oct '17 to Dec '17) ranged from -14.26% to +22.98%, with 95% of UiG values between -5% and +15%. Winter (Jan '18 to Mar '18) ranged from -6.72% to +22.91%, with 95% of values between -3% and +14%. Spring (Apr '18 to Jun '18) ranged from -17.13% to +25.53%, with 95% of values between -10% and +14%. Summer (Jul '18 to Sep '18) ranged from -32.7% to +21.48%, with 95% of values between -15% and +11%.

Since its introduction on 1st June 2017, UiG has been somewhat variable with no apparent pattern or consistency in the day to day volatility. As described earlier, UiG volatility can occur for a number of reasons. The UiG taskforce, who's main purpose is to investigate the underlying reasons for UiG, continues its work and is providing recommendations to the industry via the Unidentified Gas Work Group.

Performance analysis of the NDM supply meter point demand formula is specifically assessed under Strand 3 'NDM Daily Demand Analysis'.

Figure S12.2.1 – Monthly average UiG% (at D+5) Autumn

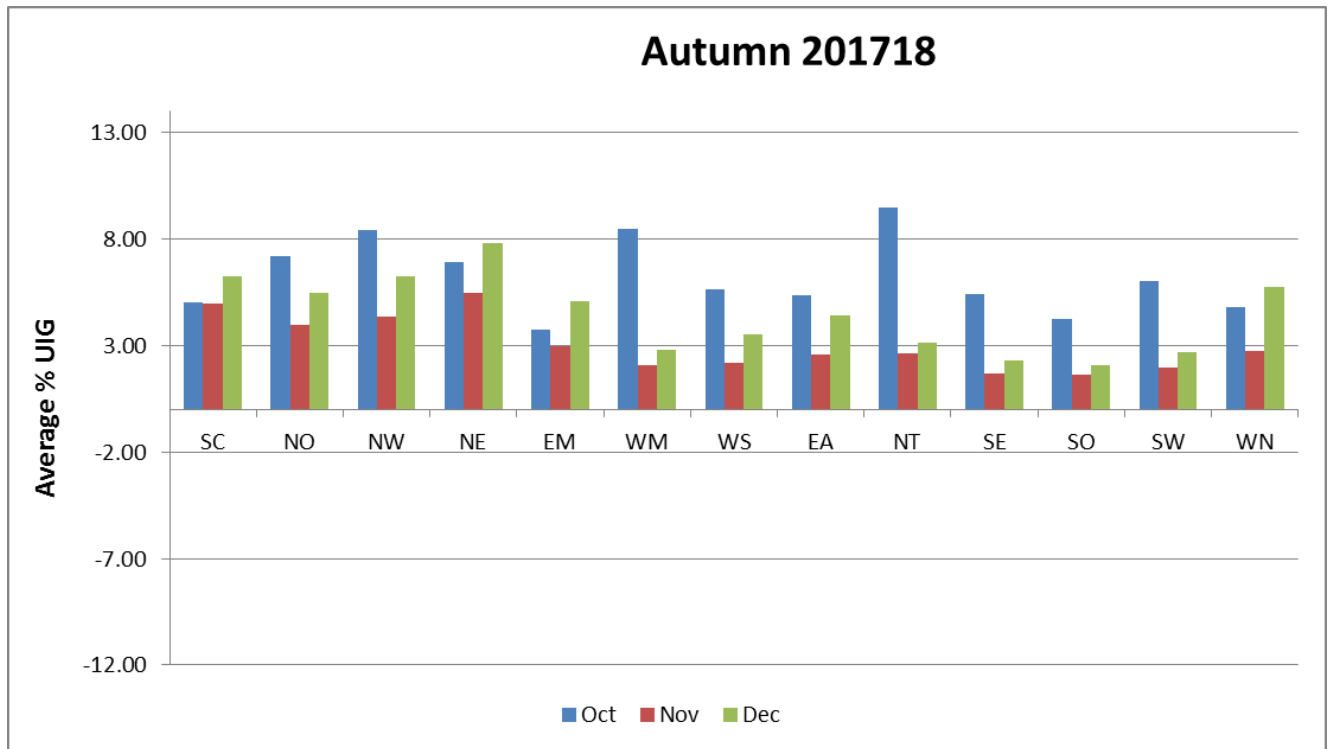


Figure S12.2.2 – Monthly average UiG% (at D+5) Winter

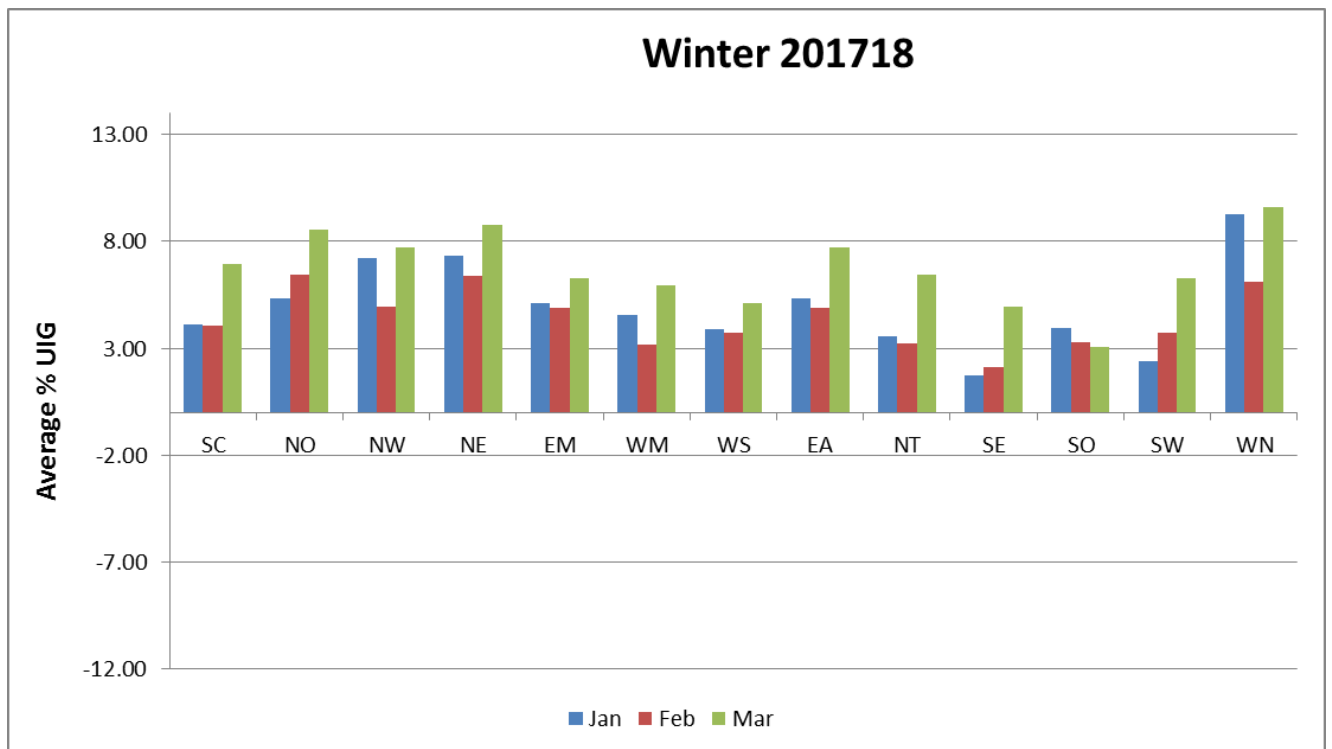


Figure S12.2.3 – Monthly average UiG% (at D+5) Spring

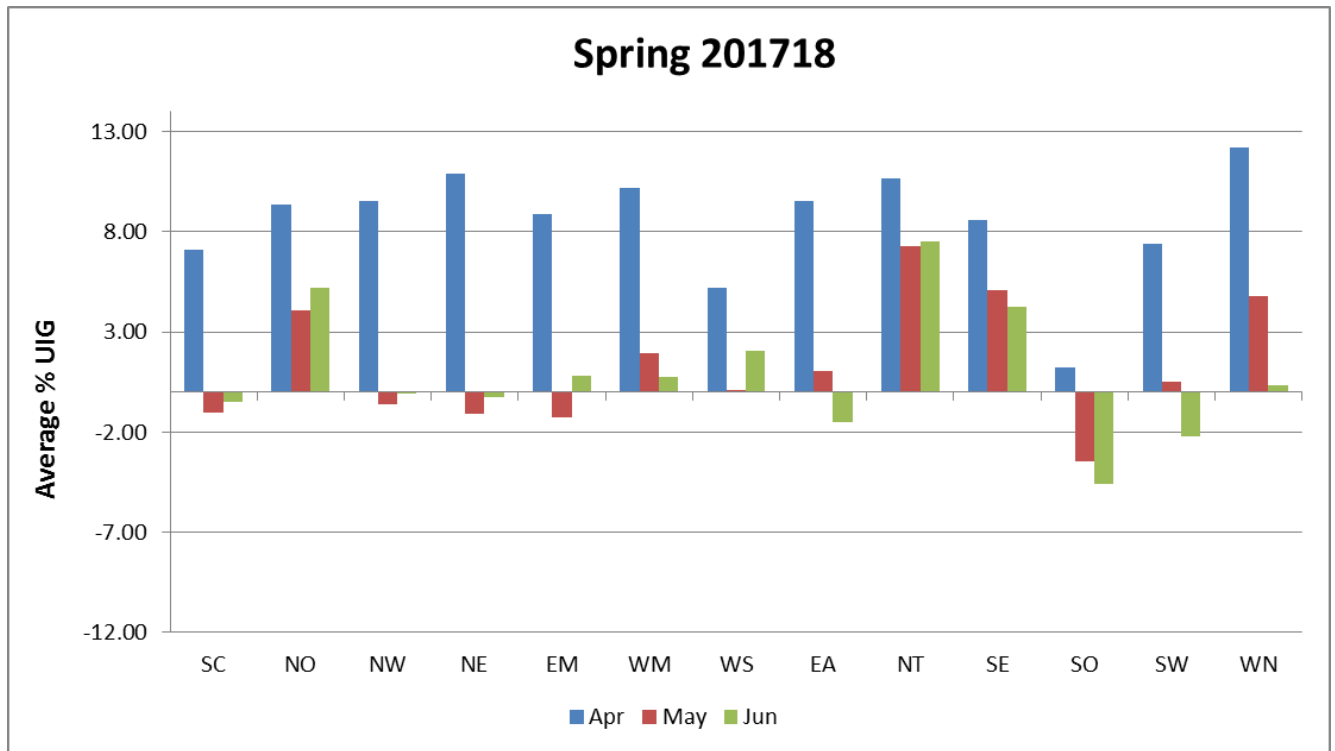


Figure S12.2.4 – Monthly average UiG% (at D+5) Summer

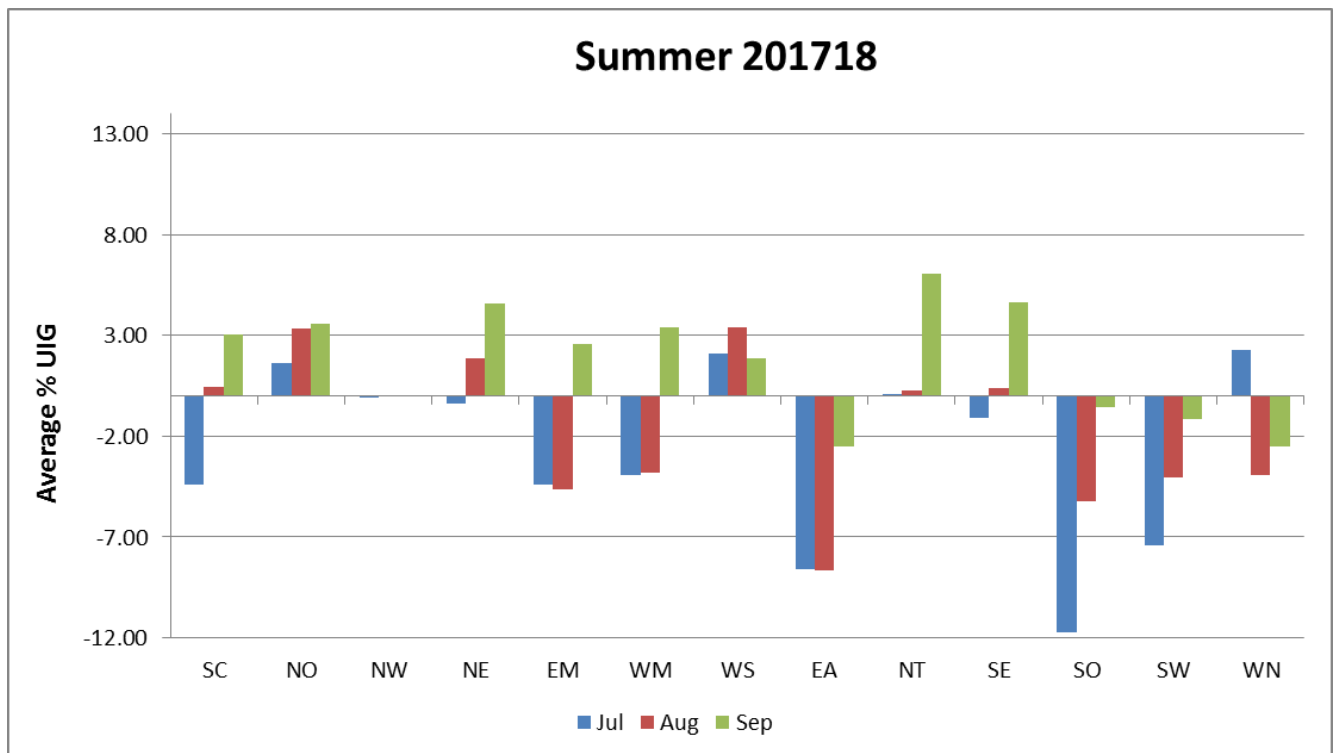


Figure S12.2.5 – National Daily UiG% values (D+5)

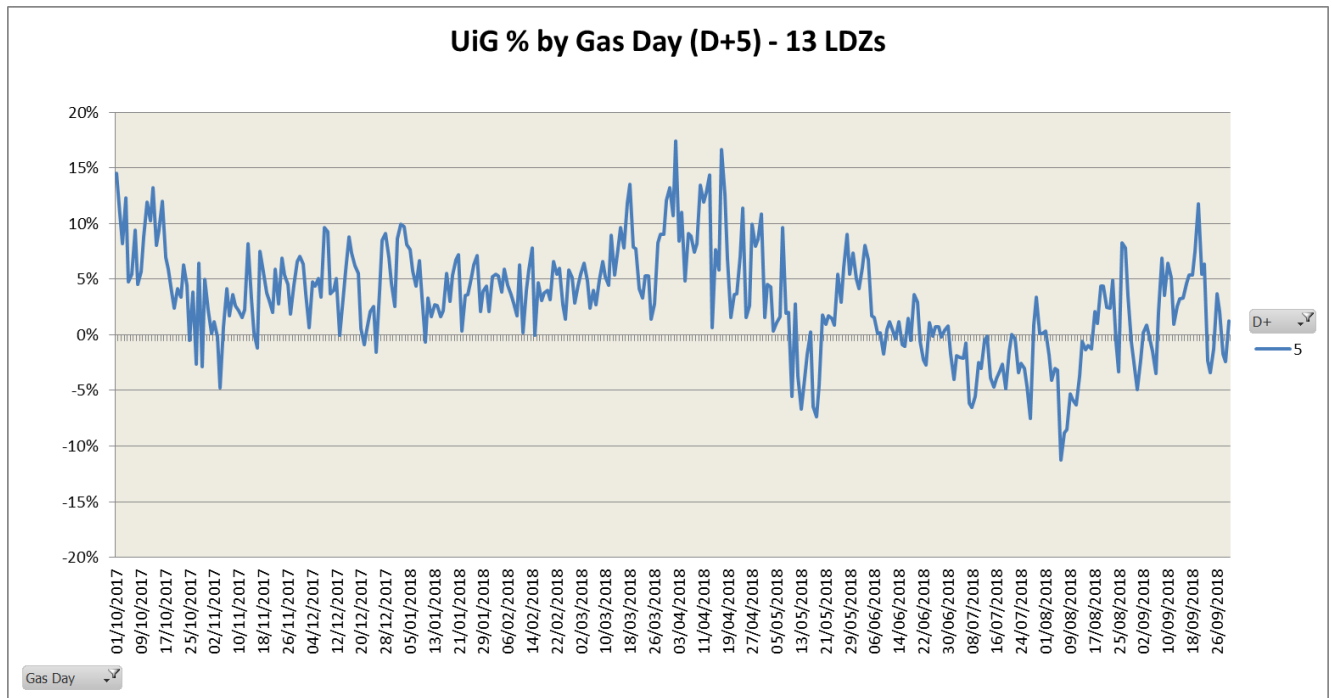


Figure S12.2.6 – Distribution of UiG % values by Season - Autumn

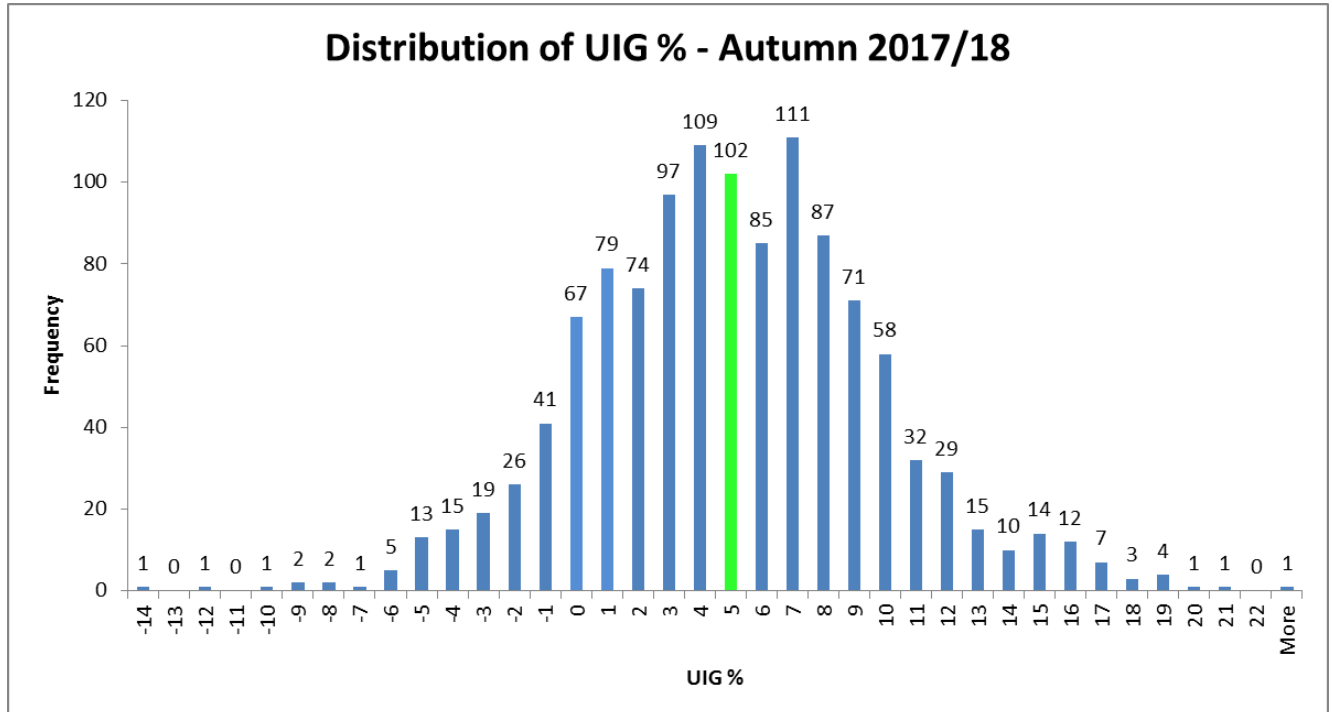


Figure S12.2.7 – Distribution of UIG % values by Season - Winter

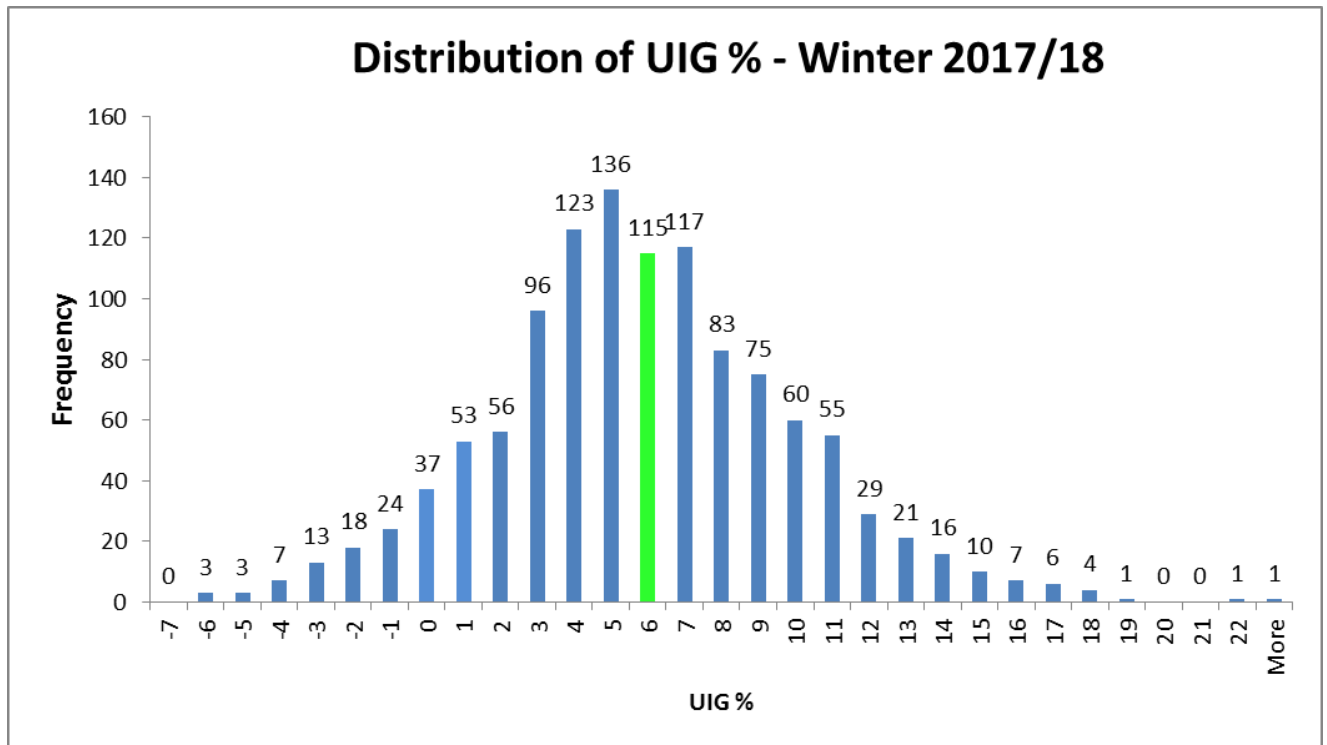


Figure S12.2.8 – Distribution of UIG % values by Season - Spring

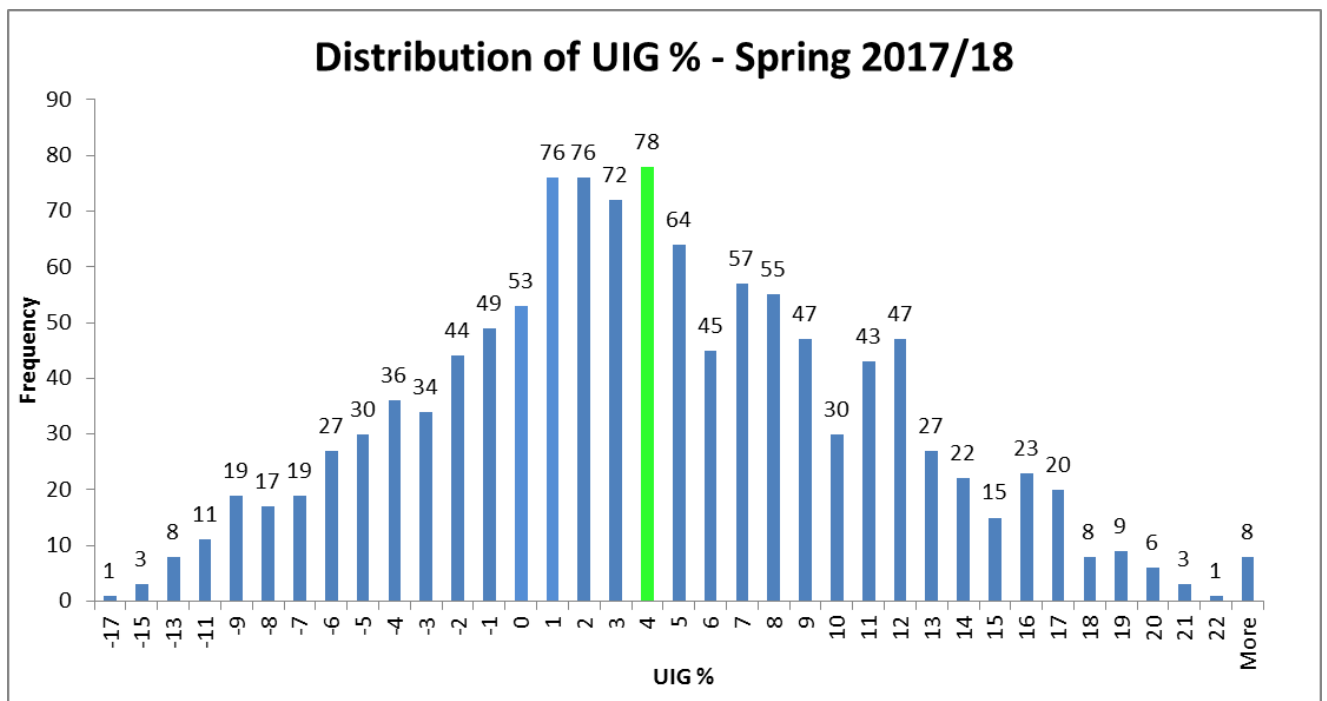
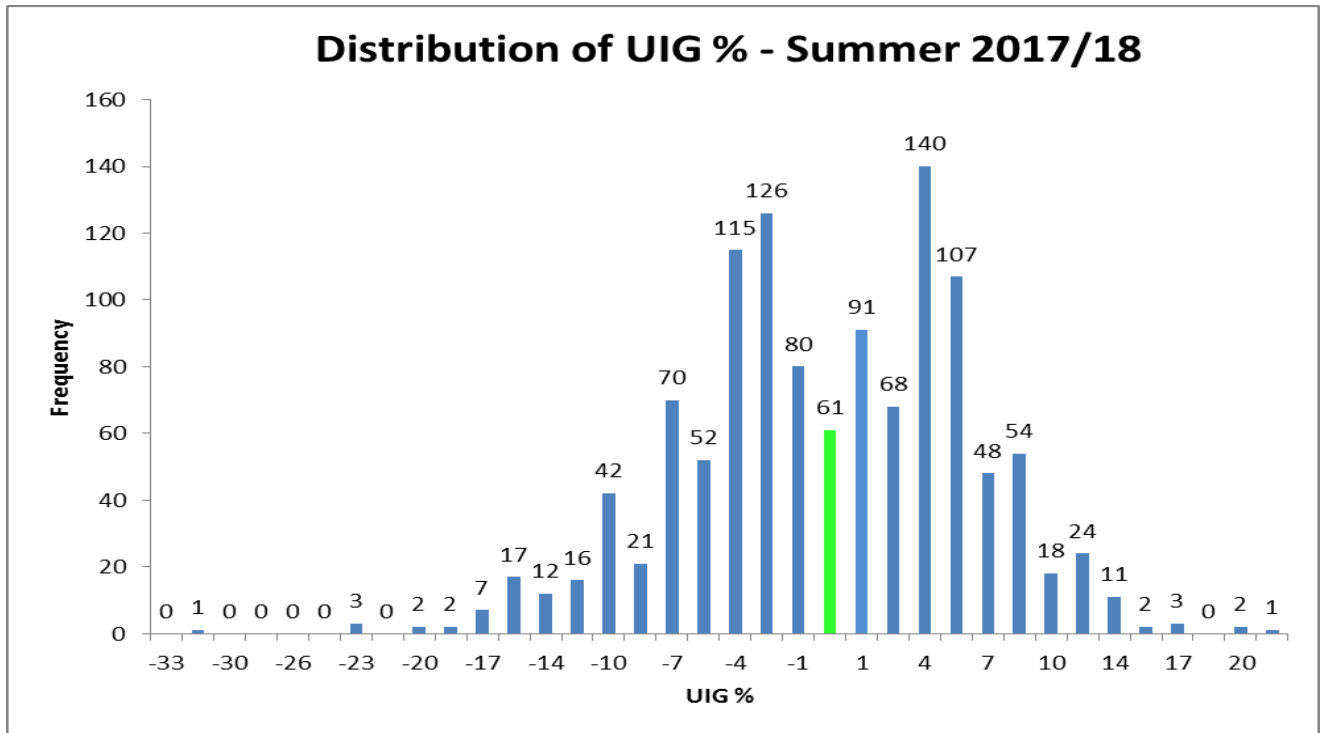


Figure S12.2.9 – Distribution of UIG % values by Season - Summer



5. STRAND 3: NDM DAILY DEMAND ANALYSIS

The performance of the NDM Supply Meter Point Demand Formula has been evaluated by comparing actual daily demands for supply points in the NDM sample with estimates of their daily demands (as per the NDM demand formula) across the range of EUCs (bucket bands only). This evaluation covers the period of the gas year 2017/18.

The performance of the algorithms has been evaluated on two bases:

- i) MODEL – allocated using 2017/18 ALPs, DAFs, WCFs and NDM sample derived Aqs
- ii) RETRO – allocated using 2018/19 ALPs, DAFs (adjusted to apply to pattern of days/holidays in 2017/18), WCFs and NDM sample derived Aqs

The 'MODEL' analysis is based on the algorithms that applied to the gas year being analysed (i.e. 2017/18). The Aqs used in the analysis are based on the consumption data of the sample itself rather than system Aqs, which removes bias which might be introduced as a result of any erroneous Aqs.

The 'RETRO' analysis is based on the algorithms derived for the current gas year (i.e. 2018/19) but retro fitted with appropriate adjustment for the pattern of days of the week and holidays for gas year 2017/18. This analysis is helpful in assessing the performance of the most current algorithms had they applied to the gas year being analysed.

Analysis is performed on supply meter points which comprise the Demand Estimation Sample, where actual daily consumption values are known for days within the gas year being analysed. Daily NDM consumption data for gas year 2017/18 was available from three sources, namely 'Xserve managed', 'Network managed' (both of which are long established datasets) and 'Third Party provided' which has been provided voluntarily by shippers. Only supply meter points that are NDM and have passed data validation can be used. Figure S12.3.1 shows the number of validated supply meter points, by LDZ and EUC band, which have been used in this NDM Daily Demand Analysis. Please note that supply meter points listed in EUCs '01B I&C' and '02B Dom' have not been utilised in the main analysis but have been used to analyse the application of dedicated allocation profiles for Industrial & Commercial and Domestic end users in bands 01 and 02 respectively (figures S12.3.36 to S12.3.38). It is worth noting at the outset that some EUC & LDZ combinations contain either no sample data and therefore no analysis is possible or very few validated sample points, which can skew the results significantly. Additionally, results for band 09 are unreliable and are disregarded in this assessment, as this band is represented by a very small number of supply meter points distributed in only some of the 13 LDZs. Analysis has been performed on bucket band EUCs only, as generally the number of validated supply meter points available are not sufficient to perform analysis on WAR (Winter Annual Ratio) band EUCs.

Figures S12.3.2 to S12.3.9 are graphs showing actual demand and allocated demand on the 'MODEL' and 'RETRO' bases for each consumption band. In general, the allocated demand for both bases was close to the actual demand for each consumption band on most days. For band 01, the most notable exceptions occurred during the much colder than normal weather during the weekend of 17th & 18th March 2018 (which also included widespread snow) and from 29th March to 2nd April 2018. For bands 02 through to 08, the most notable deviation occurred during the much colder than normal period at the end of February'18 and beginning of March'18.

Tables showing the error ("allocated-actual") expressed as a percentage of full year demand, for the whole year and for winter and summer separately, for each of the two bases, are attached as Figures S12.3.10 to S12.3.15. Note that positive errors denote over allocation whereas negative errors denote under allocation by the algorithms. Additionally, due to its significance in throughput terms, Figure S12.3.16 shows the percentage error of full year demand, by LDZ and month, for consumption band 01 for the 'MODEL' basis and Figure S12.3.17 shows the same assessment but for the 'RETRO' basis.

Figures S12.3.18 and S12.3.19 are bar charts showing a simple summary of the overall picture given by the two sets of tables (Figures S12.3.10 to S12.2.15), achieved using a weighted average error across LDZs based on validated supply meter points. The overall error and apparent winter/summer bias for EUCs in each consumption band is shown averaged across all LDZs.

Figures S12.3.20 to S12.3.27 are monthly bar charts comparing actual and allocated demands, across all LDZs for consumption bands 01 to 08 respectively and Figures S12.3.28 to S12.3.35 are bar charts showing the day of the week error summary (on the 'MODEL' basis), by LDZ.

Finally, figures S12.3.36 to S12.3.38 are graphs showing actual demand and allocated demand analysis for sites which will be affected by change proposal XRN4665 – “Creation of New End User Categories”, which introduces additional EUC profiles in bands 01 and 02.

3.1 Analysis

On the evidence of the bar chart in Figure S12.3.18 (MODEL), there was very little overall error in the algorithms for any of the consumption bands over the whole of gas year 2017/18 (full year errors range between -0.79% and +0.16% for all bands). The relatively small positive errors over 12 months in consumption bands 01 and 03 (+0.16% and +0.002% respectively) indicate slight over allocation by the models. Conversely, the negative errors over 12 months in band 02 and bands 04 to 08 inclusive indicate under allocation by the models. Overall, consumption band winter period errors range from -0.65% to +5.89% and overall consumption band summer period errors range from -13.95% to +3.21%. Actual summer demands are lower and hence percentage errors can be somewhat greater in the summer. The levels of the winter and summer period errors suggest that for consumption band 01 and 07, the profile was a little too flat and for bands 02 to 06 and band 08 the profiles in 2017/18 were a little too peaky. There are (of course) exceptions to this broad generalisation in some individual LDZs (see Figures S12.3.11 and S12.3.12).

The absolute difference of winter and summer errors by band (on the MODEL basis) is as follows: 3.85% in 01B; 19.80% in 02B; 19.54% in 03B; 7.42% in 04B; 0.43% in 05B; 0.40% in 06B; 0.36% in 07B and 4.64% in 08B. The high summer errors in bands 02B and 03B have been influenced by the inclusion of many sites with a flatter consumption profile. Figure S12.3.1 shows Band 02 and 03 are represented by a very high proportion of Third Party provided data and by excluding this data from the analysis, the absolute winter and summer difference reduces to 2.81% in 02B and 8.22% in 03B.

The bar chart in Figure S12.3.19 (RETRO) shows that the algorithms derived for 2018/19 would (if applied to gas year 2017/18) have resulted in a similar outcome for the majority of consumption bands overall. Whole year errors are very small overall for all the consumption bands, but for this ‘RETRO’ case they range between -0.84% and +0.16%. Winter and summer period errors (based on absolute difference) are notably improved for bands 02, 03, 04 and 08. However, the winter and summer period errors are slightly worse for bands 01, 05, 06 and 07.

It must be borne in mind that both the ‘MODEL’ and ‘RETRO’ analyses are based on validated NDM sample data which is not necessarily representative of the population as a whole. Furthermore, this sample dataset suffers from small numbers of contributing meter/supply points at the higher consumption bands.

The selection of monthly charts in Figures S12.3.20 to S12.3.27 show for each month of gas year 2017/18, actual demand and allocated demand on the ‘MODEL’ and ‘RETRO’ bases. In interpreting these monthly charts it is relevant to recall the weather conditions that prevailed during gas year 2017/18 (please refer to section 3 of this document - Strand 1: Weather Analysis).

The monthly chart for band 01, in Figure S12.3.20, indicates winter under allocation in October 2017, December 2017, January 2018 and March 2018 (which was the 8th coldest March in 50 years) but over allocation in November 2017 and February 2018. During the summer months, over allocation was evident from May through to September 2018 (May, June and July 2018 each ranked as the warmest over a 50 year history) whilst summer under allocation was present in April 2018.

The monthly chart for band 02, in Figure S12.3.21, indicates winter over allocation in November 2017 through to March 2018 and under allocation in all summer months.

Figure S12.3.22 is the monthly chart for band 03, which shows over allocation during the winter months with the exception of October 2017 but also shows under allocation during each of the summer months.

Figure S12.3.23 is the monthly chart for band 04, which shows mostly over allocation in the winter, the exception being in October 2017 and March 2018. Under allocation is prevalent during the summer months with the exception of July 2018.

The monthly charts for bands 05 to 07 are in Figures S12.3.24 to S12.3.26. Overall, these bands (05, 06 & 07) don’t appear to show a trend over the winter and summer period.

The monthly chart for band 08, Figure S12.3.27, shows a tendency for over allocation over the winter months and under allocation over the summer months.

Figures S12.3.28 to S12.3.35 show the day of the week error summary on the ‘MODEL’ basis, by LDZ for each of the EUC bands. Band 01 shows mostly under allocation from Monday to Wednesday and over

allocation from Thursday to Sunday. For bands 02, 03, 04 and 05 the analysis shows mostly over allocation during weekdays (i.e. Monday to Friday) and under allocation during weekend days (i.e. Saturday and Sunday). For bands 06 and 08 analysis shows a mixture of under and over allocation across all days, whilst band 07 displays mostly under allocation during weekdays and over allocation during weekend days.

Change proposal XRN4665 – “Creation of New End User Categories”, introduces additional EUC profiles in bands 01 and 02 which will result in the application of dedicated allocation profiles for Domestic, Industrial and Commercial and Pre-Payment customers. Additional profiles were developed in spring 2018, however changes required to UK Link and lack of industry readiness meant they could not be used for gas year 2018/19. Third party provided data has enabled analysis of the EUC01I and EUC02D profiles (for use against ‘I&C’ consumers in band 01 and Domestic consumers in band 02 respectively) on the ‘RETRO’ basis. Figure S12.3.36 shows daily actual and allocated demand using the traditional 01B profile for 2,781 I&C sites in band 01. Figure S12.3.37 displays the results of applying the ‘I&C’ specific profile (01I) to the same sampled sites and shows notable improvements which would, when implemented, be seen against approximately 538,000 supply meter points overall. Figure S12.3.38 shows daily actual and allocated demand against 23 Domestic sites in band 02 using the traditional bucket band (02B) and the ‘Domestic’ specific profile (02D). Improvements to allocation using the ‘domestic’ specific profile are clearly evident despite the small number of sites used in this assessment. The observed improvements in allocation support DESC’s approach of creating additional EUCs in bands 01 and 02.

Finally, development of the traditional and newly proposed allocation profiles is reliant on the availability of daily gas consumption data for NDM supply meter points. Analysis completed for gas year 2017/18 highlights that by including an increased amount of Third party sourced NDM sample data in future modelling will help make the profiles even more representative of the population as a whole.

Figure S12.3.1 – Validated Sample Site Breakdown

EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	ALL LDZs	% Non-Third Party	% Third Party
01B Dom	221	195	207	225	208	229	54	196	240	212	234	248	244	2,713	68%	32%
01B I&C	475	120	202	124	228	248	39	103	326	276	239	225	176	2,781	12%	88%
02B Dom	3	2	1	2	3	4	0	0	2	6	10	1	1	35	34%	66%
02B I&C	871	205	410	231	505	465	40	95	570	437	402	357	328	4,916	13%	87%
03B I&C	891	143	251	182	282	243	37	65	265	267	307	242	212	3,387	32%	68%
04B I&C	641	238	234	292	181	217	31	79	217	243	381	289	168	3,211	67%	33%
05B I&C	240	107	104	142	98	107	16	35	72	114	146	111	55	1,347	86%	14%
06B I&C	88	42	36	45	47	46	8	15	24	41	38	41	27	498	93%	7%
07B I&C	26	11	15	26	24	10	1	4	8	4	14	9	16	168	96%	4%
08B I&C	8	4	7	6	15	15	0	4	1	4	4	3	4	75	99%	1%
Total	3,464	1,067	1,467	1,275	1,591	1,584	226	596	1,725	1,604	1,775	1,526	1,231	19,131		

Figure S12.3.2 – Daily Actual and Deemed Demands for 01B (across all LDZs)

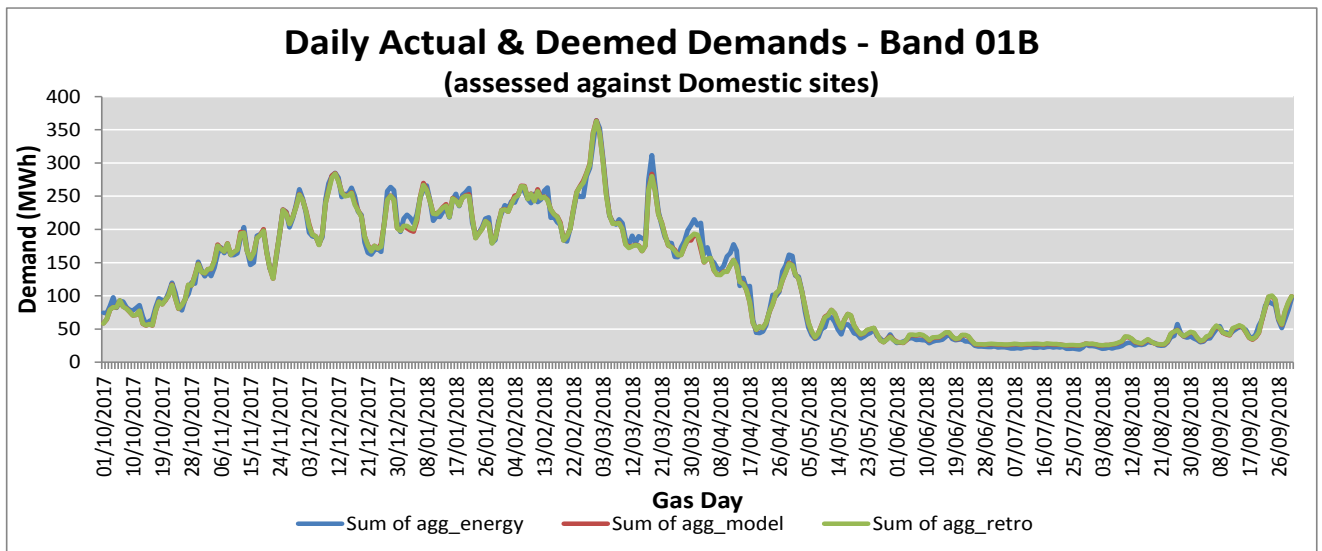


Figure S12.3.3 – Daily Actual and Deemed Demands for 02B (across all LDZs)

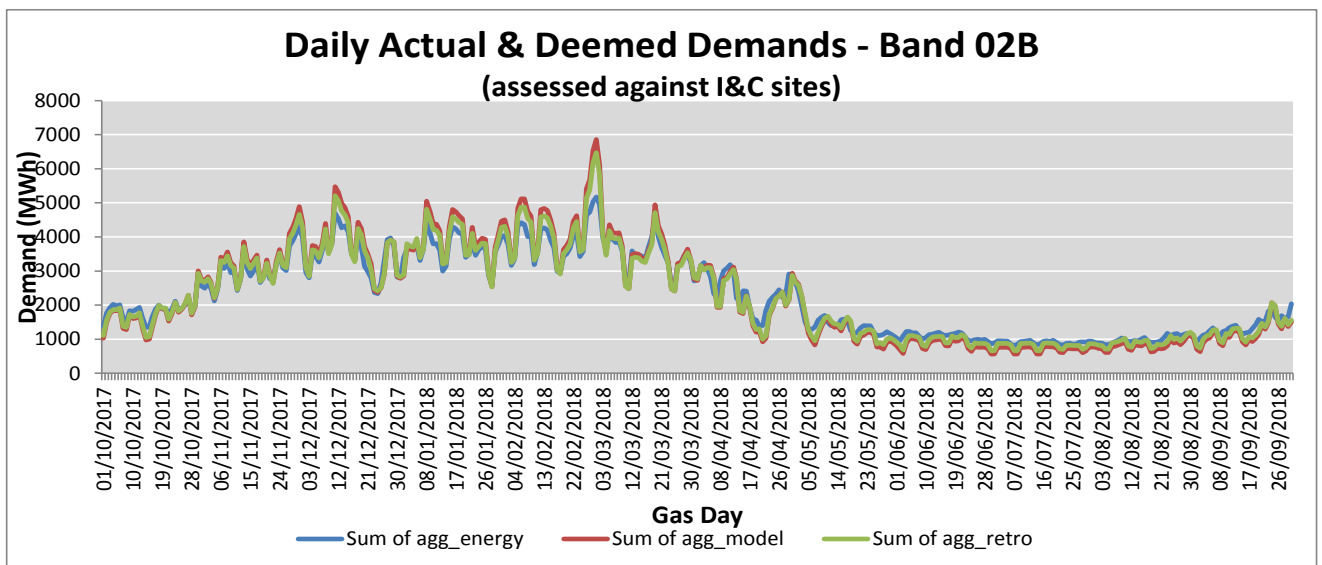


Figure S12.3.4 – Daily Actual and Deemed Demands for 03B (across all LDZs)

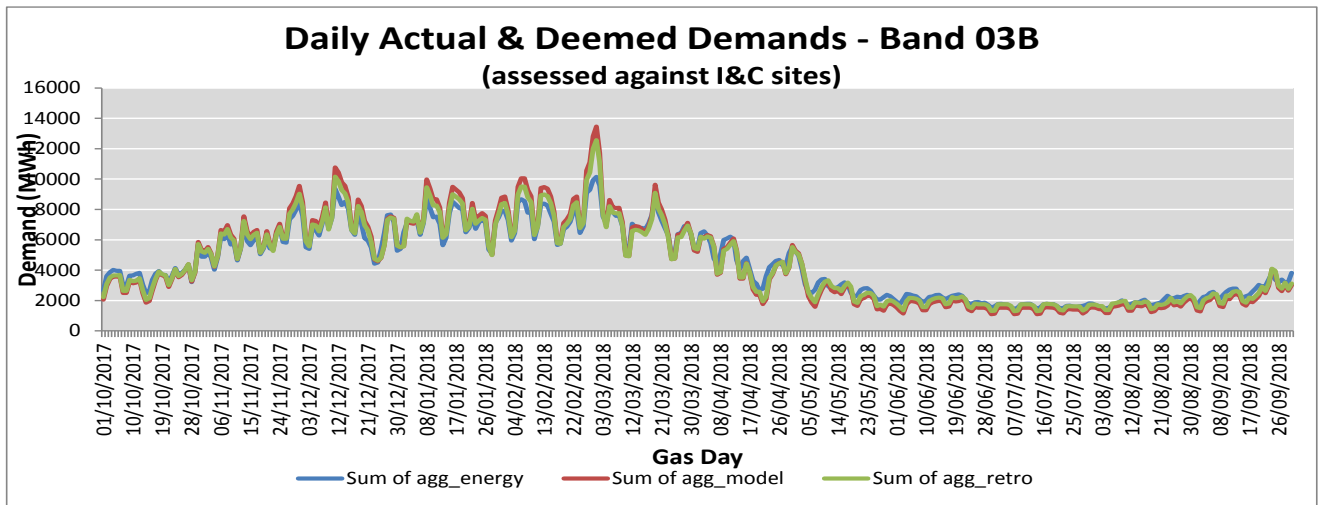


Figure S12.3.5 – Daily Actual and Deemed Demands for 04B (across all LDZs)

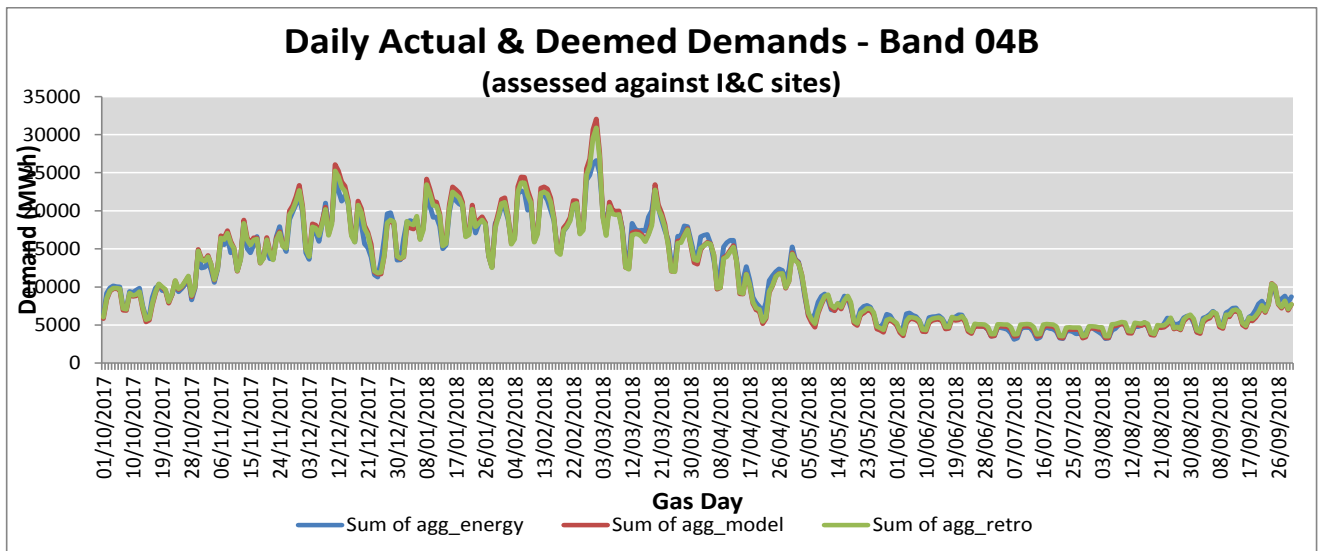


Figure S12.3.6 – Daily Actual and Deemed Demands for 05B (across all LDZs)

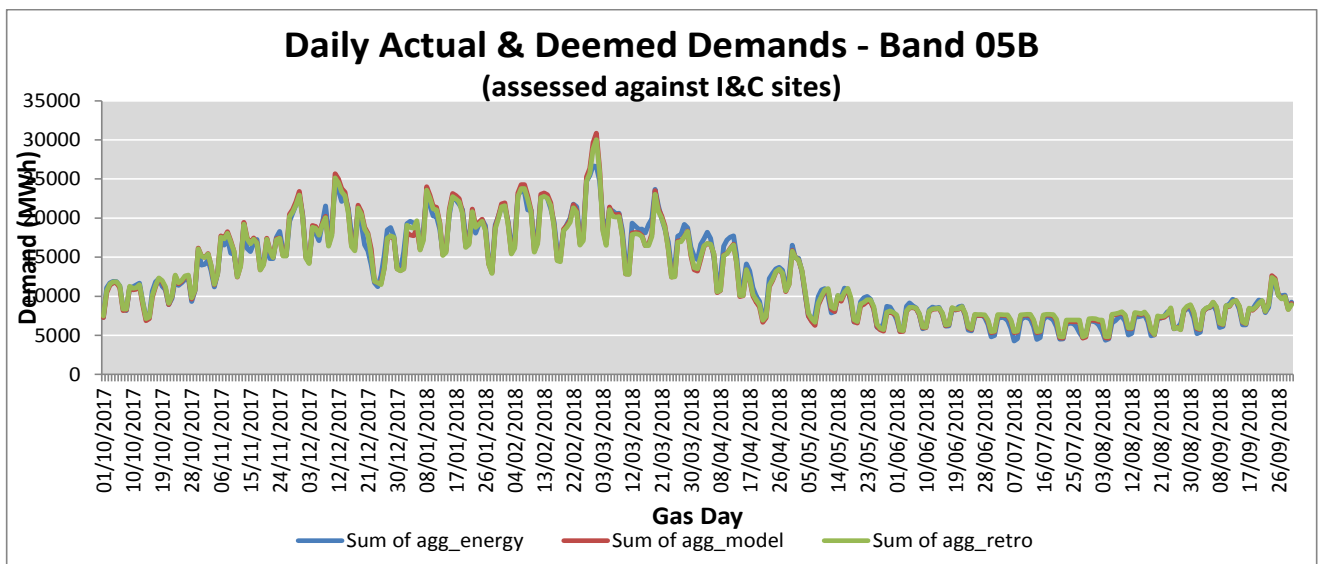


Figure S12.3.7 – Daily Actual and Deemed Demands for 06B (across all LDZs)

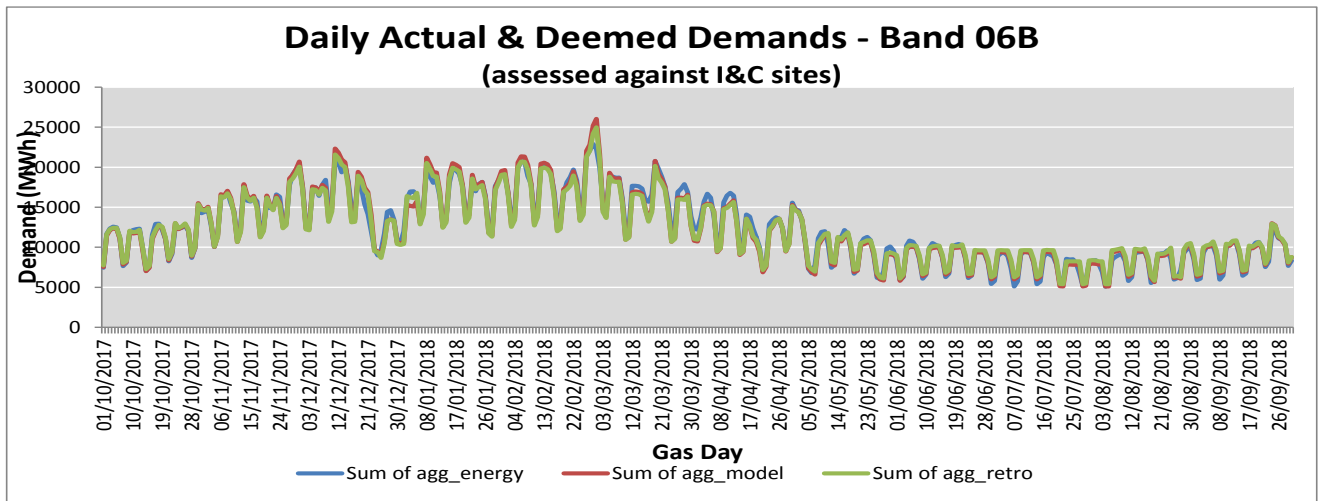


Figure S12.3.8 – Daily Actual and Deemed Demands for 07B (across all LDZs)

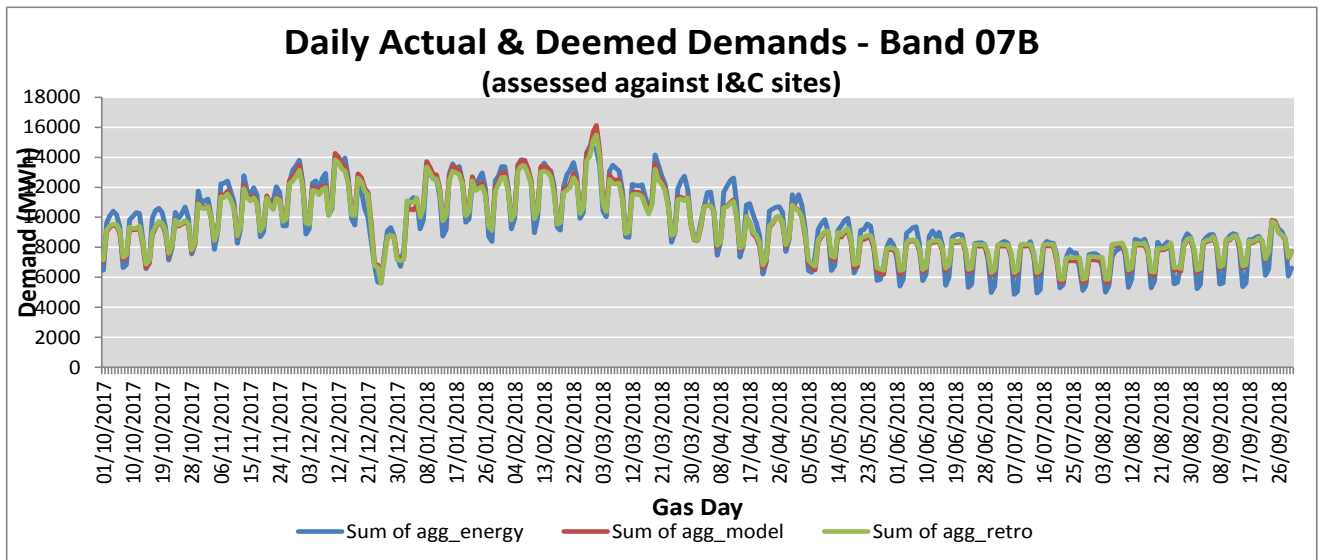


Figure S12.3.9 – Daily Actual and Deemed Demands for 08B (across all LDZs)

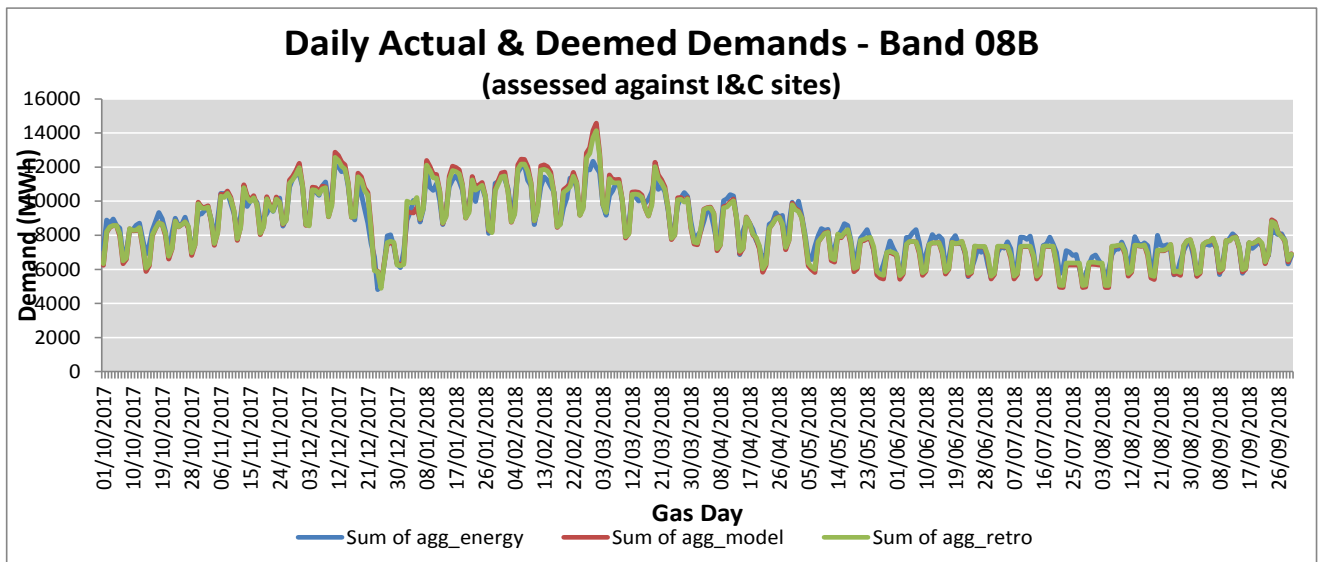


Figure S12.3.10 – Percentage Error over Full Year (Oct’17 to Sep’18) “MODEL Basis”

EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total Weighted
01B	0.32%	0.06%	0.21%	0.08%	0.16%	0.20%	0.21%	0.18%	0.09%	0.17%	0.15%	0.12%	0.22%	0.16%
02B	-0.21%	-0.08%	-0.16%	-0.09%	-0.09%	-0.08%	-0.16%	0.04%	-0.03%	-0.14%	-0.14%	-0.08%	-0.16%	-0.12%
03B	-0.22%	0.28%	0.12%	-0.08%	0.15%	0.38%	0.12%	0.43%	-0.07%	-0.10%	-0.10%	0.21%	0.04%	0.00%
04B	-0.32%	-0.05%	-0.17%	0.12%	-0.24%	0.01%	-0.17%	-0.15%	-0.11%	-0.09%	-0.16%	-0.26%	-0.35%	-0.16%
05B	-0.73%	-0.05%	-0.45%	-0.11%	-0.29%	-0.46%	-0.45%	0.04%	-0.22%	-0.13%	-0.24%	-0.44%	-0.57%	-0.35%
06B	-1.34%	-0.06%	-0.92%	-0.18%	-0.44%	-0.61%	-0.92%	-0.08%	-0.42%	-0.28%	-0.28%	-0.70%	-0.68%	-0.60%
07B	-1.95%	-0.05%	-1.15%	-0.19%	-0.56%	-0.95%	-1.15%	-0.29%	-0.50%	-0.40%	-0.29%	-0.70%	-1.08%	-0.79%
08B	-1.95%	-0.05%	-1.15%	-0.19%	-0.56%	-0.95%	0.00%	-0.29%	-0.50%	-0.40%	-0.29%	-0.70%	-1.08%	-0.78%

Figure S12.3.11 – Percentage Error over Winter (Oct’17 to Mar’18) “MODEL Basis”

EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total Weighted
01B	-0.01%	-0.20%	-0.76%	-1.46%	0.00%	-0.80%	-2.65%	-0.91%	-1.44%	-0.52%	0.41%	-2.29%	0.85%	-0.65%
02B	1.01%	8.90%	8.04%	5.95%	7.84%	7.29%	-0.79%	15.33%	3.37%	6.18%	5.98%	8.60%	7.59%	5.85%
03B	0.26%	8.27%	10.36%	5.49%	7.73%	8.67%	9.54%	12.97%	5.36%	6.95%	6.40%	8.36%	10.28%	5.89%
04B	2.01%	3.11%	1.98%	2.87%	-0.39%	3.09%	1.57%	1.71%	1.53%	1.30%	2.14%	1.90%	2.57%	2.04%
05B	-0.01%	0.86%	0.63%	1.27%	-2.16%	-1.47%	-3.04%	-2.82%	0.22%	1.90%	-0.73%	-1.59%	-0.29%	-0.18%
06B	-0.46%	0.31%	1.39%	-2.92%	-0.88%	-0.20%	5.04%	-9.18%	-4.61%	1.40%	1.62%	1.96%	-1.63%	-0.43%
07B	-0.93%	-0.44%	7.48%	-5.60%	1.03%	-3.11%	20.67%	-7.82%	-13.53%	-14.16%	-0.10%	11.82%	3.49%	-0.50%
08B	0.70%	8.14%	5.46%	3.55%	3.29%	-6.26%	0.00%	14.73%	1.56%	2.79%	11.86%	-6.22%	-7.04%	1.67%

Figure S12.3.12 – Percentage Error over Summer (Apr’18 to Sep’18) “MODEL Basis”

EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total Weighted
01B	1.29%	0.96%	3.75%	5.73%	0.75%	4.16%	11.59%	4.22%	5.91%	2.81%	-0.82%	9.19%	-2.09%	3.21%
02B	-3.13%	-18.56%	-18.01%	-15.14%	-20.26%	-18.49%	1.72%	-30.59%	-9.49%	-13.21%	-13.95%	-19.51%	-17.56%	-13.95%
03B	-1.39%	-17.46%	-21.67%	-13.37%	-18.25%	-19.53%	-20.41%	-26.85%	-14.48%	-15.48%	-15.43%	-19.09%	-23.20%	-13.65%
04B	-5.50%	-7.59%	-5.32%	-6.33%	0.13%	-7.70%	-4.40%	-4.76%	-4.24%	-3.46%	-5.64%	-5.62%	-6.78%	-5.37%
05B	-2.08%	-1.87%	-2.38%	-2.76%	3.59%	1.65%	4.71%	6.27%	-1.15%	-4.41%	0.78%	2.04%	-1.10%	-0.61%
06B	-2.76%	-0.65%	-4.26%	3.86%	0.24%	-1.27%	-8.86%	17.16%	6.89%	-3.22%	-3.67%	-5.39%	1.04%	-0.82%
07B	-3.33%	0.45%	-10.72%	7.03%	-2.54%	2.02%	-20.37%	12.20%	24.38%	32.06%	-0.64%	-17.55%	-6.67%	-0.13%
08B	-5.40%	-8.74%	-8.78%	-4.26%	-5.12%	6.95%	0.00%	-15.39%	-3.11%	-4.93%	-16.92%	11.28%	8.35%	-2.97%

Figure S12.3.13 – Percentage Error over Full Year (Oct’17 to Sep’18) “RETRO Basis”

EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total Weighted
01B	0.30%	0.10%	0.18%	0.12%	0.15%	0.20%	0.18%	0.18%	0.09%	0.18%	0.14%	0.12%	0.22%	0.16%
02B	-0.38%	-0.05%	-0.32%	-0.07%	-0.14%	-0.18%	-0.32%	-0.05%	-0.07%	-0.21%	-0.22%	-0.26%	-0.28%	-0.22%
03B	-0.37%	0.17%	-0.10%	-0.11%	0.03%	0.10%	-0.10%	0.00%	-0.13%	-0.17%	-0.19%	-0.21%	-0.18%	-0.16%
04B	-0.47%	-0.05%	-0.25%	0.10%	-0.25%	-0.11%	-0.25%	-0.15%	-0.14%	-0.12%	-0.20%	-0.36%	-0.44%	-0.23%
05B	-0.80%	-0.05%	-0.50%	-0.12%	-0.29%	-0.45%	-0.50%	0.05%	-0.24%	-0.16%	-0.26%	-0.53%	-0.63%	-0.38%
06B	-1.47%	-0.06%	-0.92%	-0.18%	-0.47%	-0.78%	-0.92%	-0.12%	-0.45%	-0.32%	-0.32%	-0.80%	-0.74%	-0.66%
07B	-2.13%	-0.04%	-1.22%	-0.19%	-0.56%	-0.94%	-1.22%	-0.31%	-0.52%	-0.37%	-0.36%	-0.90%	-1.11%	-0.84%
08B	-2.13%	-0.04%	-1.22%	-0.19%	-0.56%	-0.94%	0.00%	-0.31%	-0.52%	-0.37%	-0.36%	-0.90%	-1.11%	-0.82%

Figure S12.3.14 – Percentage Error over Winter (Oct’17 to Mar’18) “RETRO Basis”

EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total Weighted
01B	-0.28%	-0.48%	-1.49%	-1.50%	-0.41%	-0.98%	-3.36%	-0.94%	-1.63%	-0.79%	-0.07%	-1.99%	0.78%	-0.87%
02B	-0.54%	5.88%	4.81%	4.02%	5.06%	4.28%	-3.76%	11.22%	2.26%	2.60%	3.19%	5.36%	4.63%	3.30%
03B	-1.08%	4.93%	6.33%	2.54%	4.82%	5.23%	5.54%	8.03%	2.77%	2.77%	3.26%	4.40%	5.60%	2.92%
04B	0.57%	1.77%	0.56%	1.47%	-1.37%	1.54%	0.16%	1.06%	0.03%	0.46%	0.76%	0.30%	0.66%	0.66%
05B	-0.74%	0.75%	-0.23%	-0.83%	-1.96%	-1.26%	-3.87%	-2.84%	-0.40%	0.71%	-1.57%	-2.18%	-1.85%	-0.92%
06B	-1.75%	-1.17%	1.32%	-4.33%	-2.72%	-2.24%	4.97%	-9.40%	-5.85%	-1.05%	-0.06%	0.04%	-1.75%	-1.84%
07B	-3.16%	-0.78%	5.95%	-6.02%	0.67%	-2.63%	18.96%	-8.61%	-14.44%	-12.66%	-2.94%	8.52%	2.59%	-1.62%
08B	-1.56%	7.77%	3.96%	3.09%	2.92%	-5.79%	0.00%	13.74%	0.48%	4.58%	8.68%	-8.99%	-7.85%	0.96%

Figure S12.3.15 – Percentage Error over Summer (Apr’18 to Sep’18) “RETRO Basis”

EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total Weighted
01B	2.02%	2.11%	6.23%	6.05%	2.24%	4.90%	14.26%	4.31%	6.65%	3.91%	0.94%	8.07%	-1.81%	4.02%
02B	-0.01%	-12.25%	-11.50%	-10.27%	-13.36%	-11.30%	9.78%	-22.63%	-6.56%	-6.03%	-7.91%	-12.84%	-11.31%	-8.39%
03B	1.34%	-10.40%	-13.78%	-6.43%	-11.59%	-12.20%	-12.39%	-17.45%	-7.82%	-6.58%	-8.33%	-11.13%	-13.28%	-7.28%
04B	-2.77%	-4.37%	-2.20%	-3.12%	2.63%	-4.24%	-1.24%	-3.15%	-0.58%	-1.49%	-2.50%	-2.00%	-2.84%	-2.33%
05B	-0.92%	-1.64%	-0.98%	1.22%	3.17%	1.23%	6.21%	6.36%	0.10%	-2.00%	2.44%	3.04%	1.68%	0.74%
06B	-1.02%	1.69%	-4.16%	5.92%	3.00%	1.60%	-8.75%	17.47%	8.97%	0.95%	-0.78%	-2.28%	1.10%	1.34%
07B	-0.74%	0.89%	-9.17%	7.57%	-2.09%	1.38%	-18.98%	13.46%	26.07%	28.64%	4.37%	-13.59%	-5.63%	1.31%
08B	-2.87%	-8.34%	-7.20%	-3.77%	-4.68%	6.29%	0.00%	-14.44%	-1.80%	-7.40%	-12.73%	16.62%	9.55%	-2.10%

Figure S12.3.16 - Percentage Error over Full Year (Band 01B) “MODEL Basis”

Month	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW
Oct	-0.47%	-1.10%	-6.14%	-7.09%	-5.07%	-4.28%	1.17%	-2.34%	-4.20%	-4.60%	-4.41%	-6.15%	-6.41%
Nov	1.01%	3.07%	1.18%	-0.65%	1.88%	4.52%	2.12%	2.72%	0.22%	2.28%	-0.50%	-0.34%	2.79%
Dec	-1.05%	0.59%	0.22%	-1.70%	-0.29%	-0.23%	-1.48%	0.83%	-1.99%	0.83%	0.19%	-1.63%	2.58%
Jan	0.45%	0.66%	-1.36%	-1.06%	-0.85%	-2.42%	-8.20%	-1.90%	-1.73%	0.27%	1.79%	-4.10%	1.79%
Feb	2.96%	1.70%	2.42%	2.19%	4.19%	1.28%	-0.43%	0.68%	0.98%	-0.48%	4.03%	-1.21%	2.86%
Mar	-2.85%	-5.91%	-3.39%	-3.32%	-2.26%	-4.36%	-5.14%	-5.18%	-3.26%	-3.28%	-1.88%	-2.19%	-2.45%
Apr	-4.94%	-7.71%	-7.34%	-7.80%	-9.88%	-10.89%	-5.59%	-8.47%	-8.53%	-5.59%	-5.27%	-2.42%	-8.22%
May	10.32%	9.12%	12.41%	19.25%	11.92%	11.37%	19.84%	17.83%	5.84%	5.99%	0.38%	18.94%	-0.96%
Jun	6.33%	0.86%	18.08%	22.77%	8.19%	22.29%	38.69%	17.65%	18.74%	8.26%	0.63%	24.38%	0.52%
Jul	12.44%	8.99%	17.42%	33.07%	24.31%	30.97%	23.21%	15.15%	31.52%	12.02%	7.26%	29.17%	11.45%
Aug	5.25%	8.42%	10.76%	20.49%	17.35%	20.50%	25.29%	12.38%	18.55%	11.42%	4.46%	13.24%	1.98%
Sep	-3.74%	5.74%	4.53%	-1.03%	-5.15%	9.40%	21.19%	6.58%	13.89%	6.18%	-0.02%	5.98%	1.45%

Figure S12.3.17 - Percentage Error over Full Year (Band 01B) “RETRO Basis”

Month	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW
Oct	-0.28%	-0.60%	-5.58%	-6.92%	-6.91%	-4.14%	1.78%	-2.46%	-3.86%	-4.29%	-4.01%	-6.58%	-6.30%
Nov	0.72%	2.77%	0.50%	-0.79%	1.25%	4.27%	1.43%	2.61%	-0.02%	1.98%	-1.02%	-0.15%	2.71%
Dec	-1.26%	0.07%	-0.76%	-1.57%	-0.60%	-0.52%	-2.45%	0.62%	-2.35%	0.09%	-0.56%	-1.30%	2.30%
Jan	0.06%	0.42%	-2.20%	-1.04%	-1.00%	-2.47%	-8.98%	-1.66%	-1.80%	0.21%	1.42%	-3.40%	1.86%
Feb	2.54%	1.26%	1.33%	1.95%	3.90%	0.94%	-1.48%	0.57%	0.60%	-0.92%	3.27%	-0.84%	2.74%
Mar	-3.10%	-6.15%	-3.99%	-3.42%	-2.36%	-4.50%	-5.73%	-5.13%	-3.39%	-3.35%	-2.21%	-2.04%	-2.49%
Apr	-5.02%	-7.47%	-6.80%	-7.71%	-10.32%	-10.75%	-5.04%	-8.34%	-8.03%	-4.90%	-4.60%	-2.91%	-8.21%
May	10.72%	9.61%	13.99%	18.51%	7.80%	12.07%	21.52%	17.90%	6.42%	6.77%	1.81%	17.87%	-0.67%
Jun	8.02%	3.47%	24.36%	24.14%	13.42%	24.19%	46.07%	17.52%	20.59%	10.27%	3.69%	22.04%	1.14%
Jul	15.95%	12.66%	26.28%	34.92%	28.54%	32.76%	32.50%	15.40%	32.41%	14.37%	11.08%	27.03%	11.62%
Aug	6.80%	10.75%	16.15%	21.19%	20.15%	22.74%	31.39%	12.99%	18.64%	12.66%	8.15%	11.69%	3.04%
Sep	-3.15%	7.07%	6.40%	-0.51%	2.77%	10.02%	23.35%	6.38%	15.03%	7.30%	1.57%	4.73%	1.81%

Figure S12.3.18 – Percentage Error Summary (Weighted average across LDZs) “MODEL Basis”

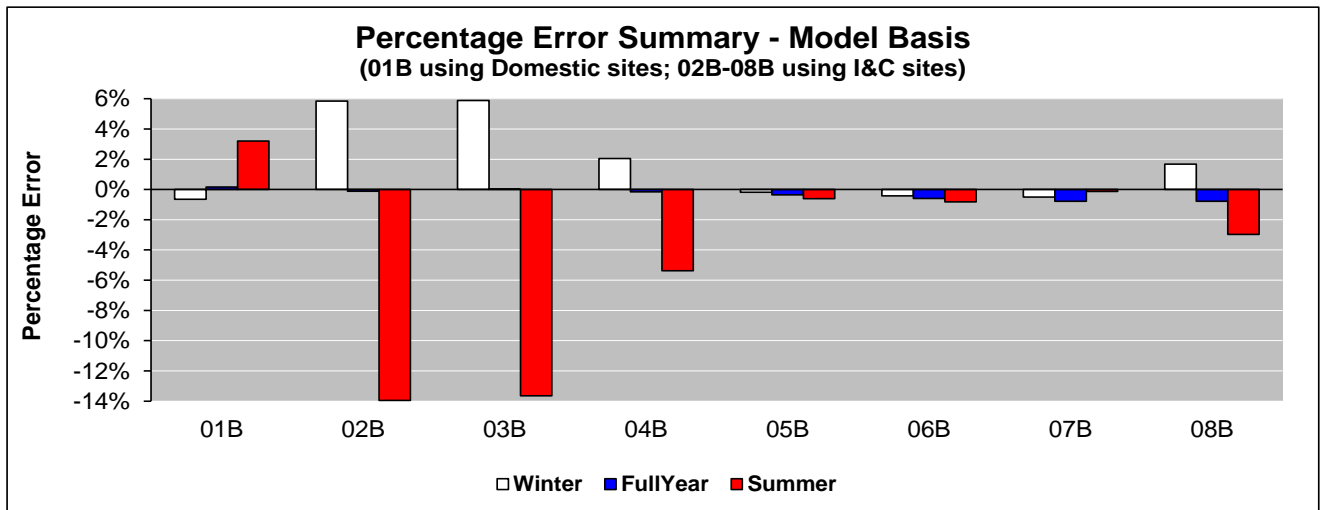


Figure S12.3.19 – Percentage Error Summary (Weighted average across LDZs) “RETRO Basis”

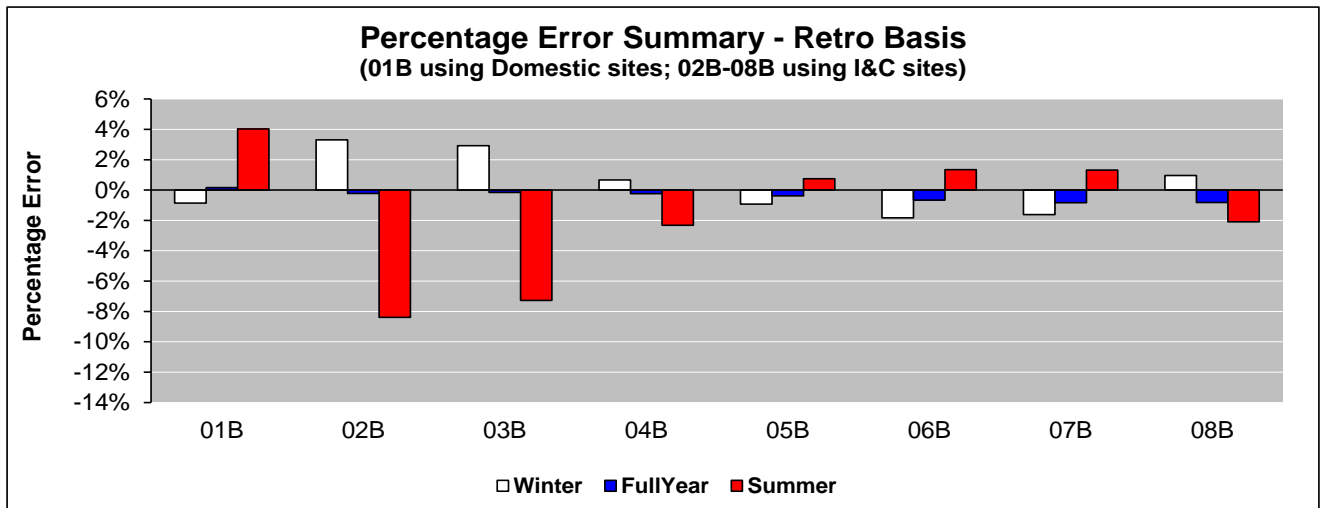


Figure S12.3.20 – Monthly Actual and Deemed Demands for 01B (across all LDZs)

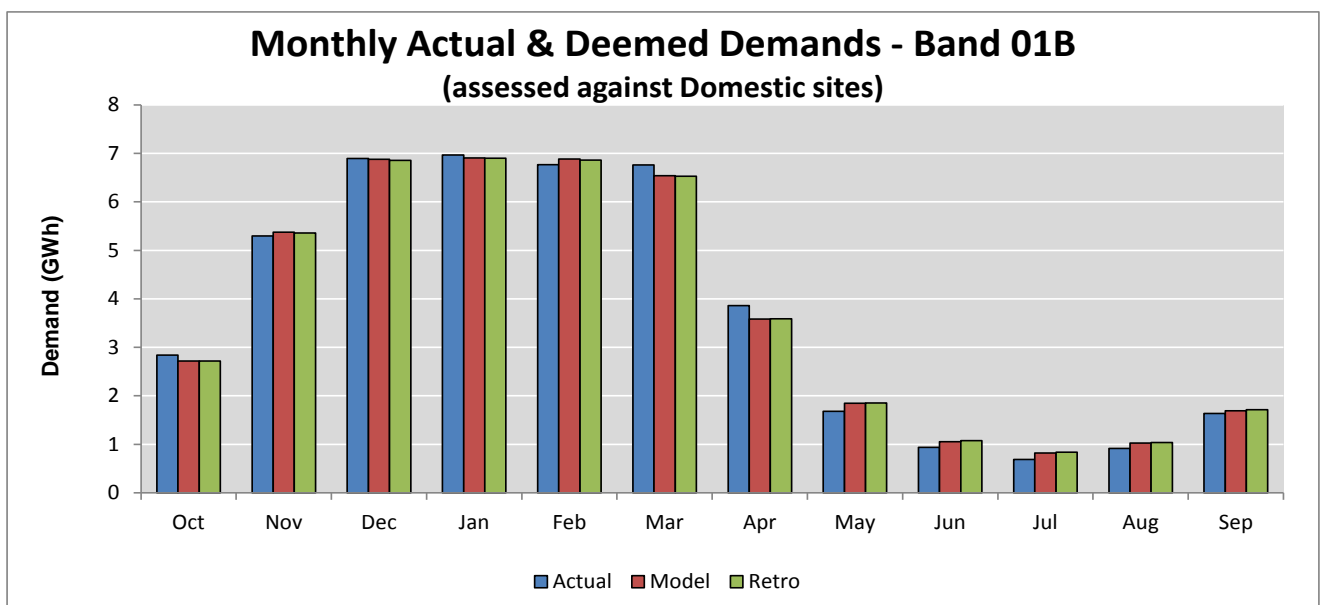


Figure S12.3.21 – Monthly Actual and Deemed Demands for 02B (across all LDZs)

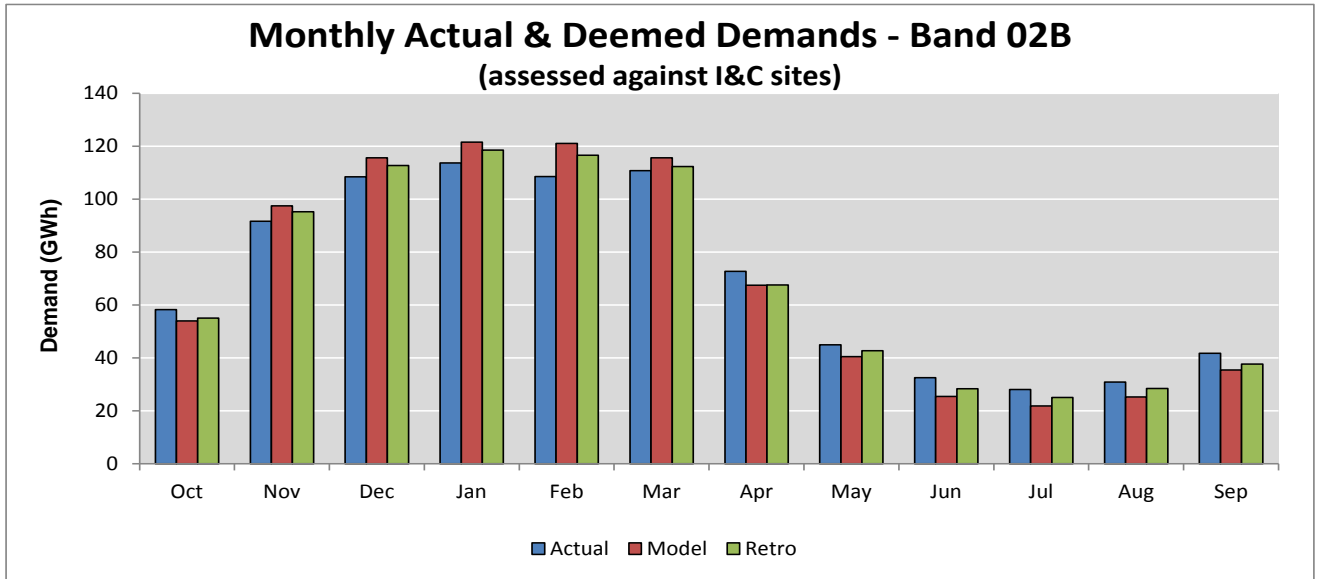


Figure S12.3.22 – Monthly Actual and Deemed Demands for 03B (across all LDZs)

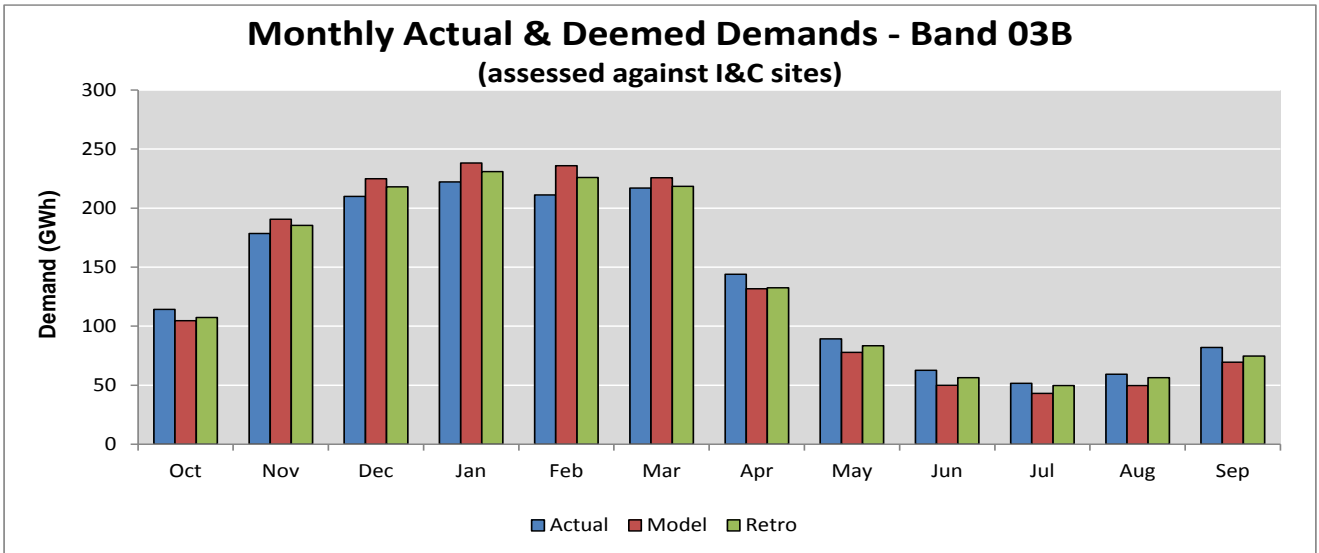


Figure S12.3.23 – Monthly Actual and Deemed Demands for 04B (across all LDZs)

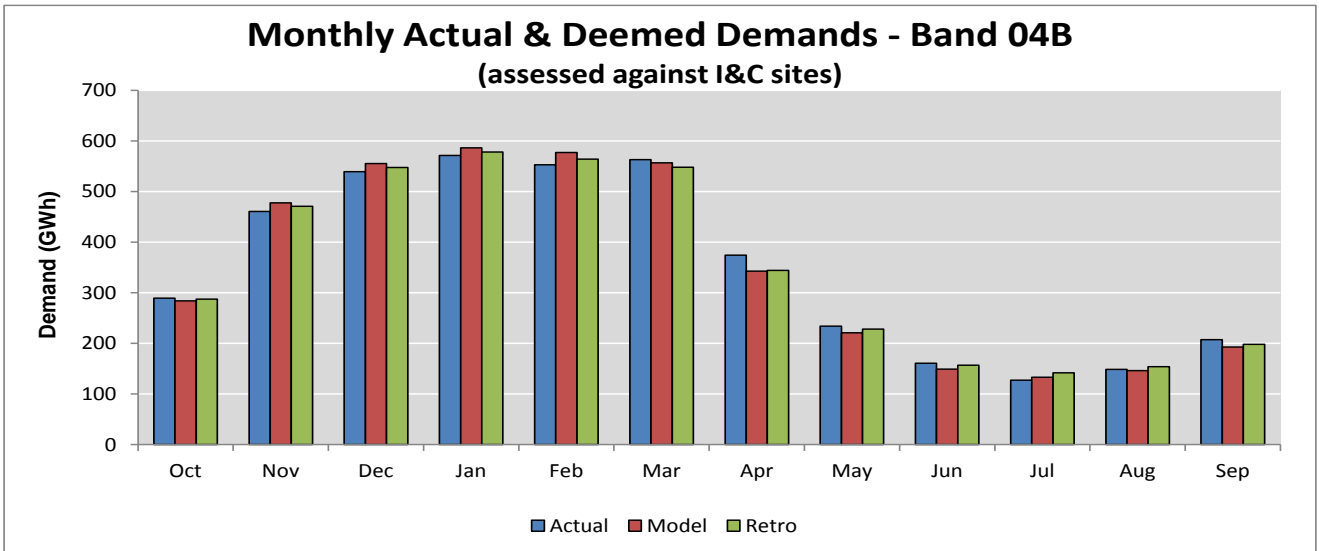


Figure S12.3.24– Monthly Actual and Deemed Demands for 05B (across all LDZs)

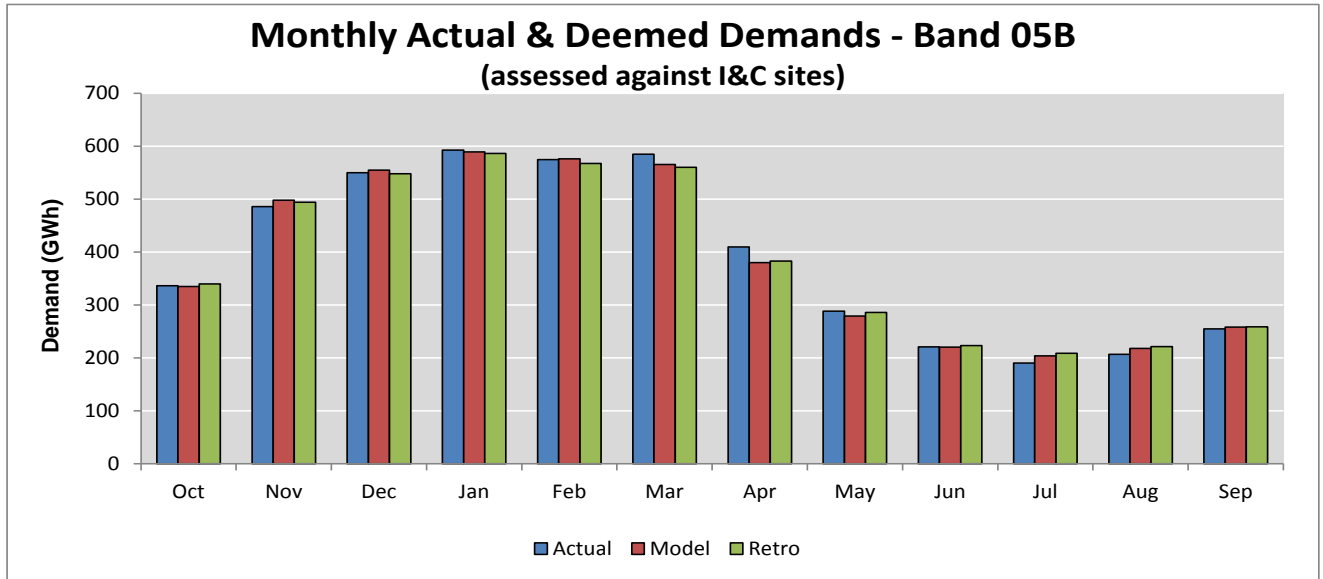


Figure S12.3.25 – Monthly Actual and Deemed Demands for 06B (across all LDZs)

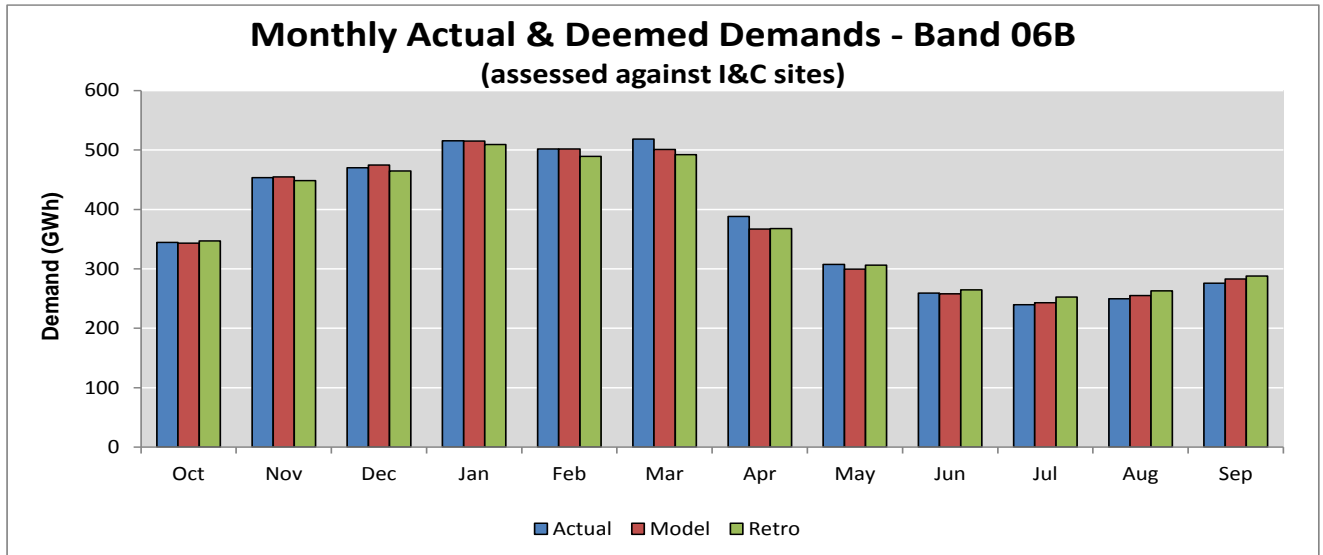


Figure S12.3.26 – Monthly Actual and Deemed Demands for 07B (across all LDZs)

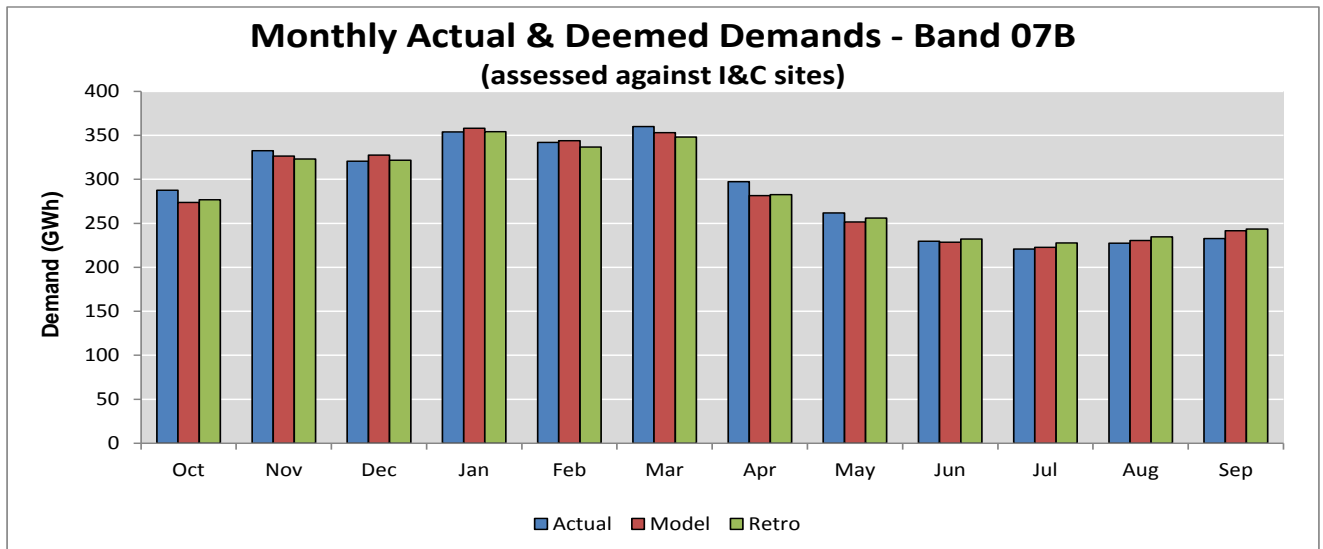


Figure S12.3.27 – Monthly Actual and Deemed Demands for 08B (across all LDZs)

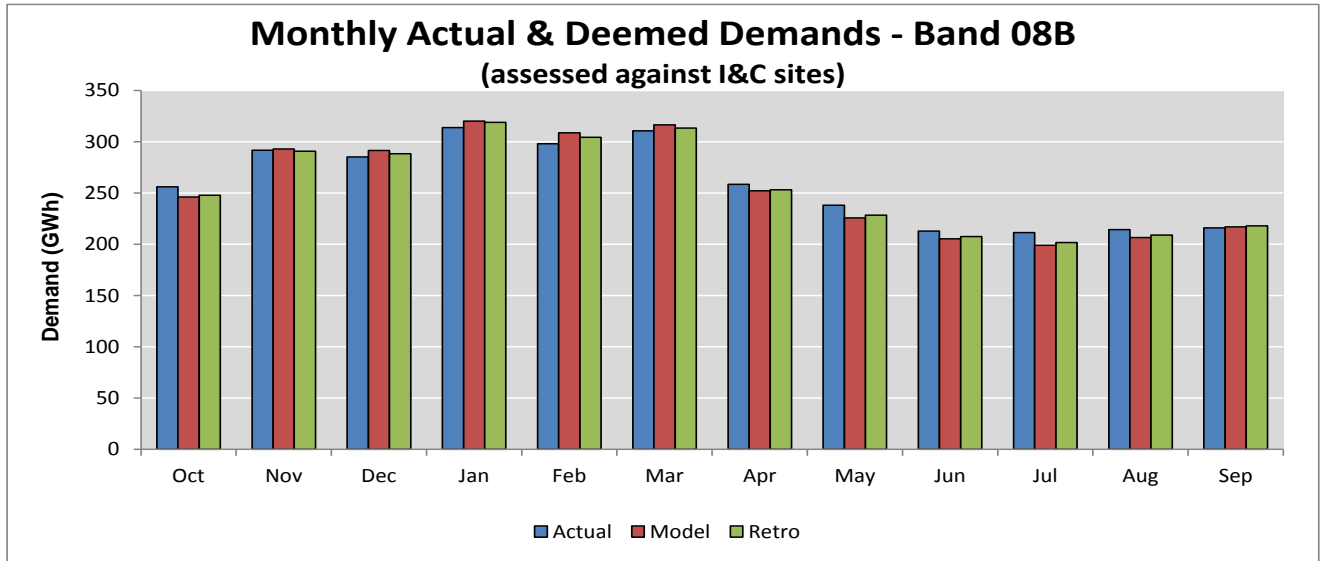


Figure S12.3.28 – Day of the Week Percentage Error Summary (Model) 01B

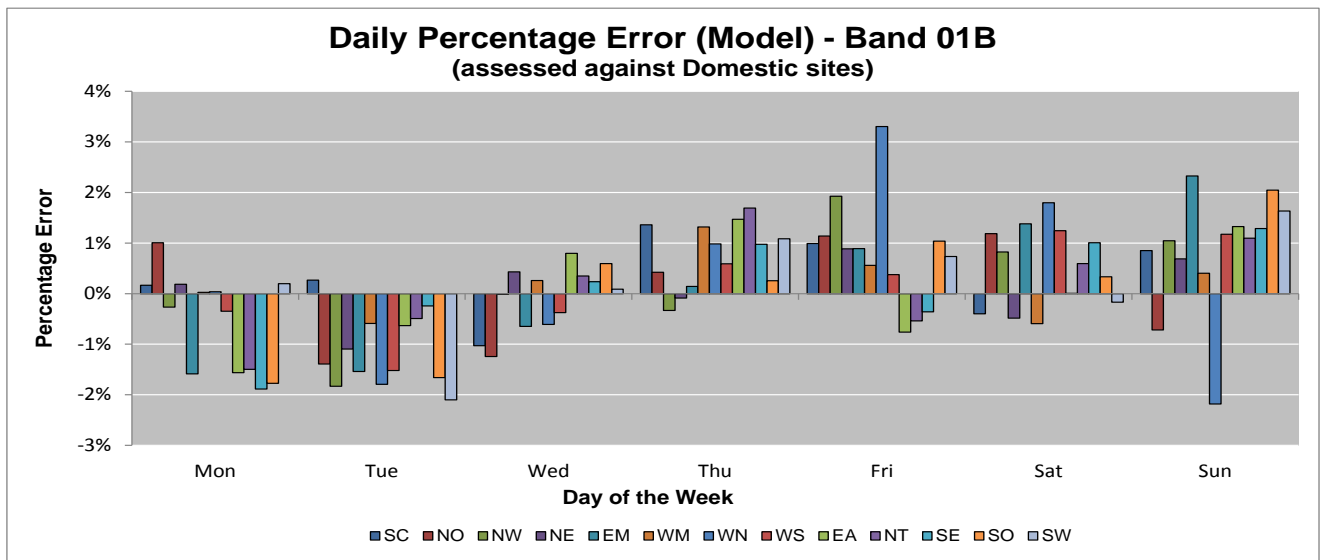


Figure S12.3.29 – Day of the Week Percentage Error Summary (Model) 02B

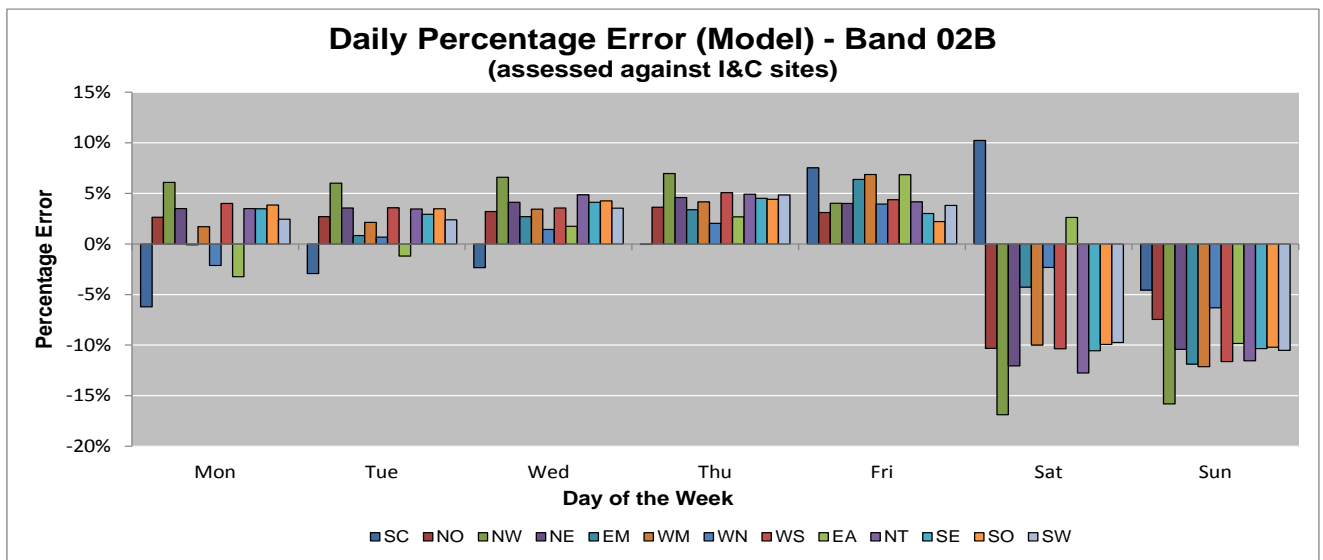


Figure S12.3.30 – Day of the Week Percentage Error Summary (Model) 03B

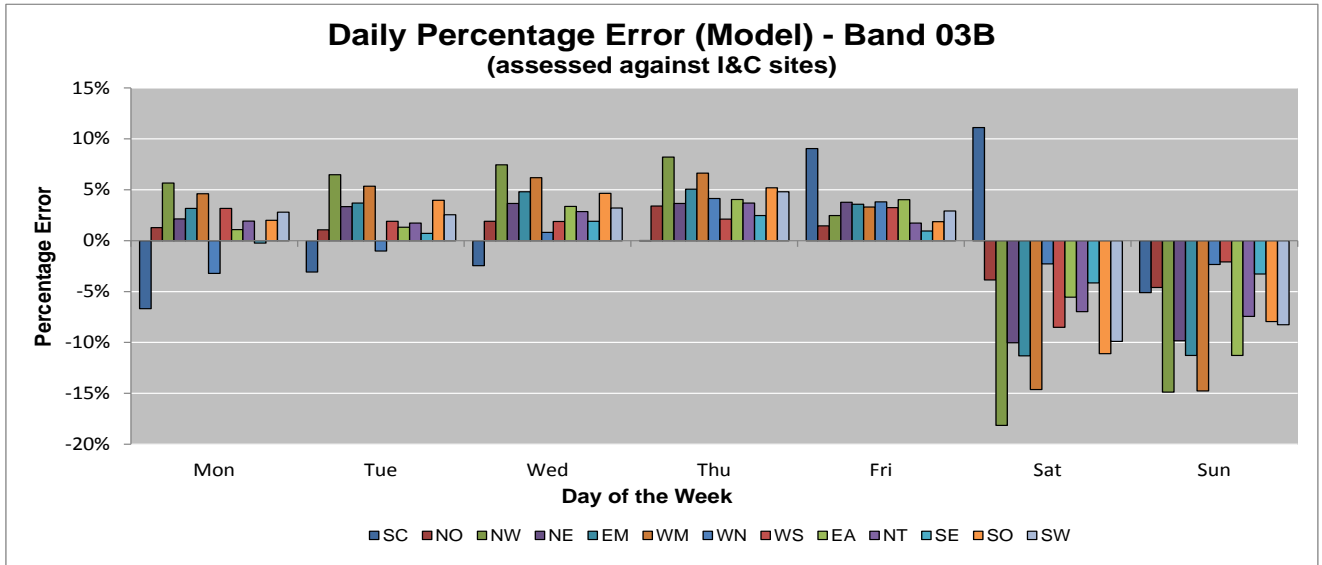


Figure S12.3.31 – Day of the Week Percentage Error Summary (Model) 04B

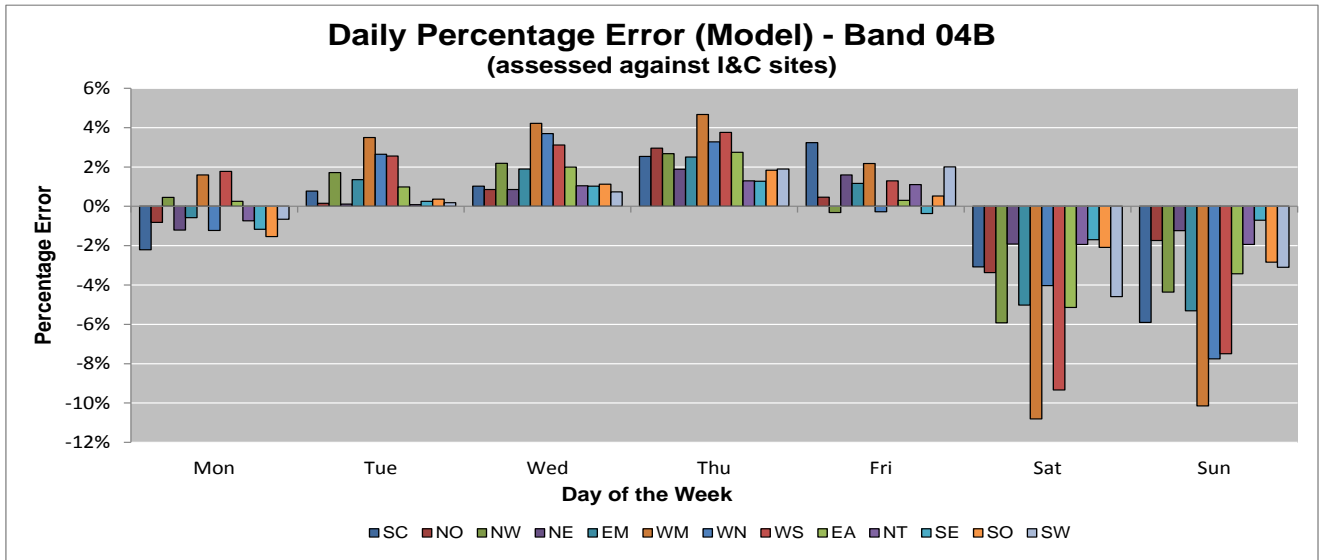


Figure S12.3.32 – Day of the Week Percentage Error Summary (Model) 05B

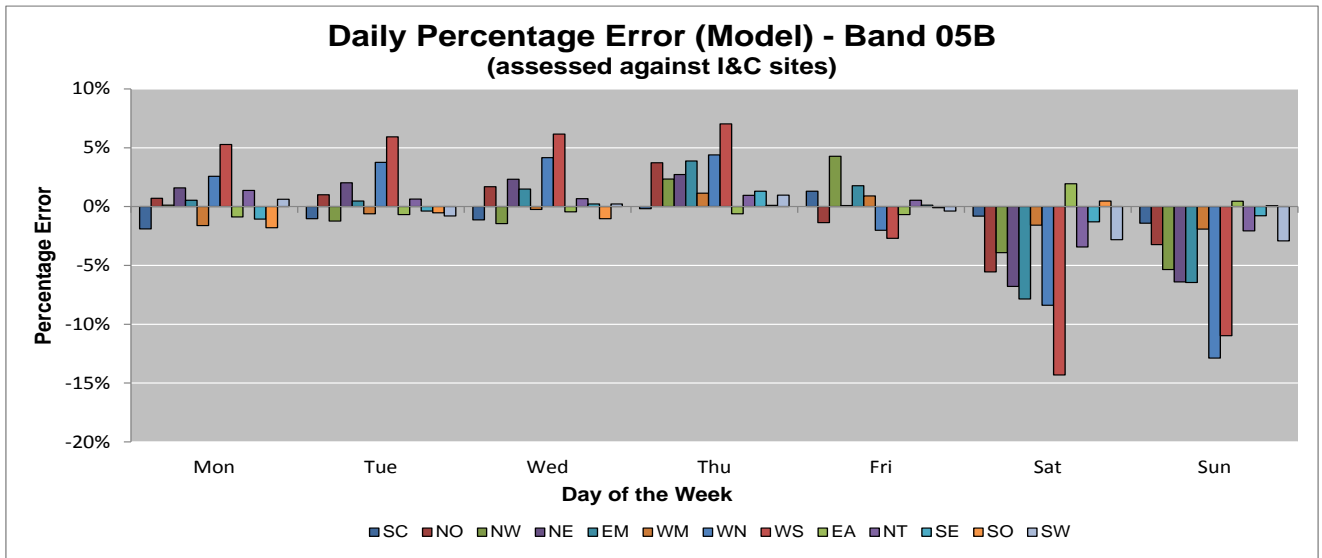


Figure S12.3.33 – Day of the Week Percentage Error Summary (Model) 06B

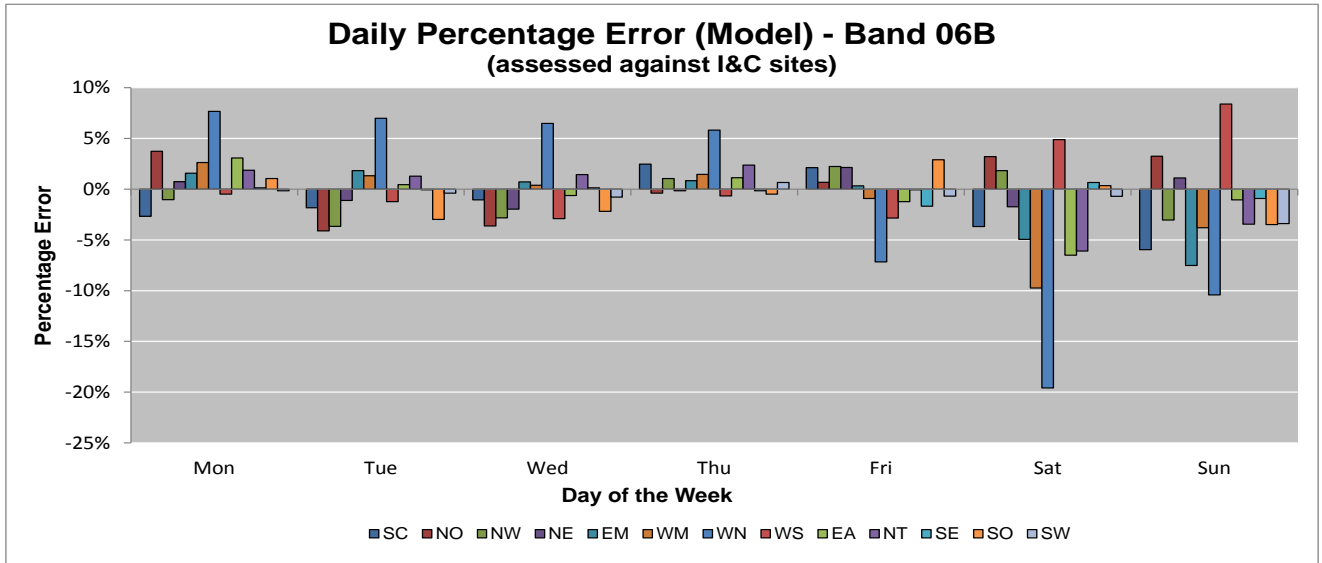


Figure S12.3.34 – Day of the Week Percentage Error Summary (Model) 07B

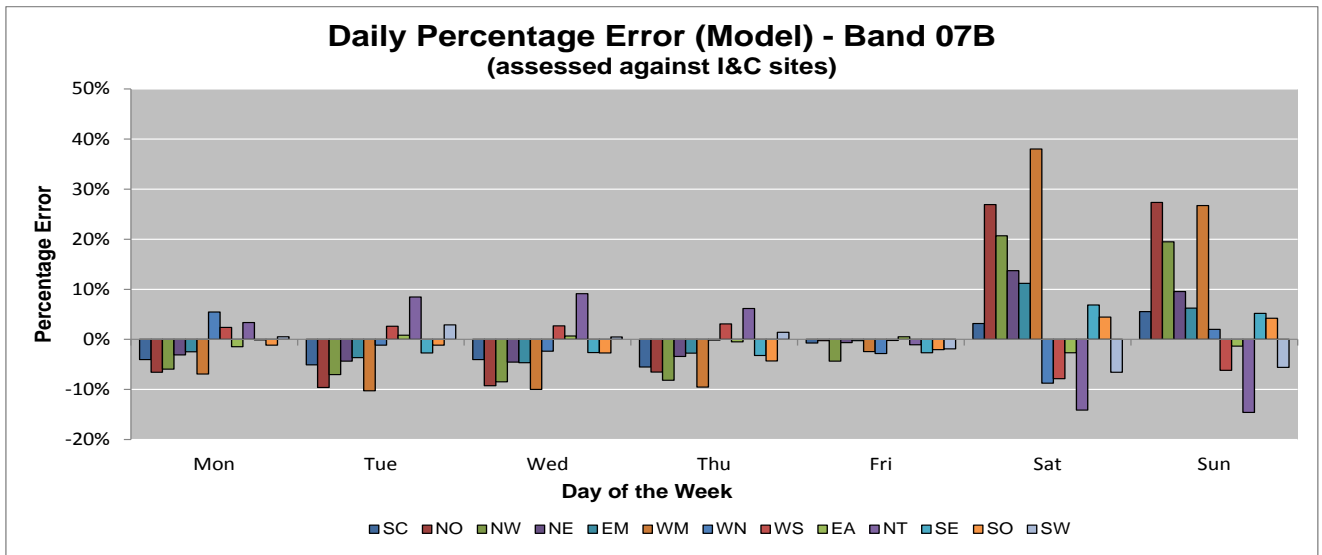


Figure S12.3.35 – Day of the Week Percentage Error Summary (Model) 08B

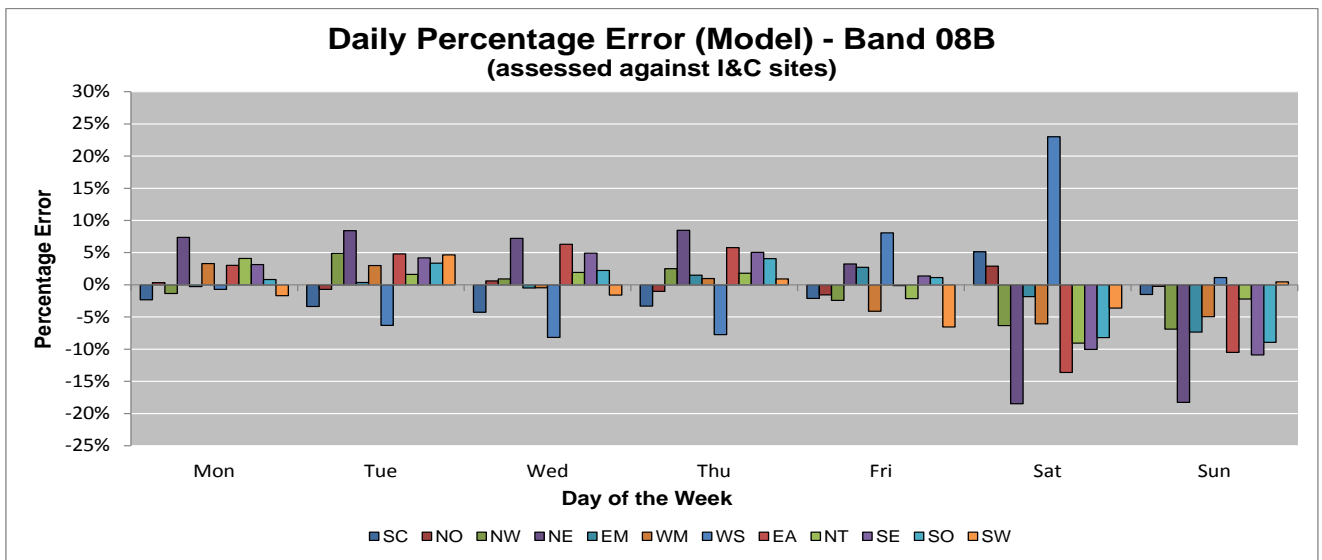


Figure S12.3.36 – Daily Actual and Deemed Demands for I&C sites in band 01 (Domestic profile)

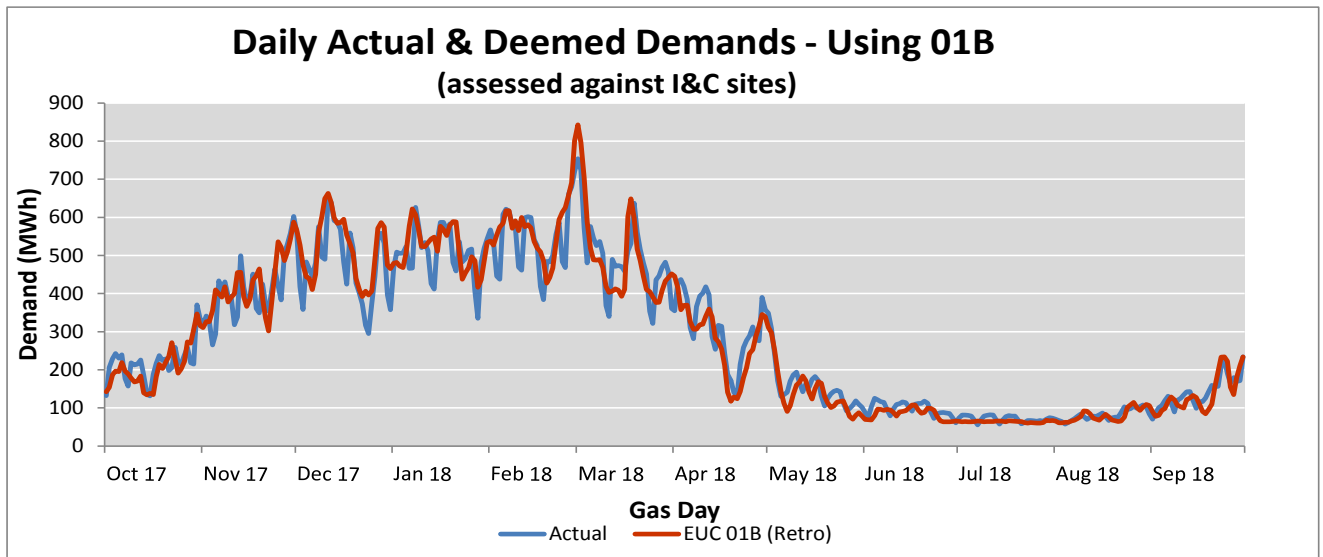


Figure S12.3.37 – Daily Actual and Deemed Demands for I&C sites in band 01 (NEW I&C profile)

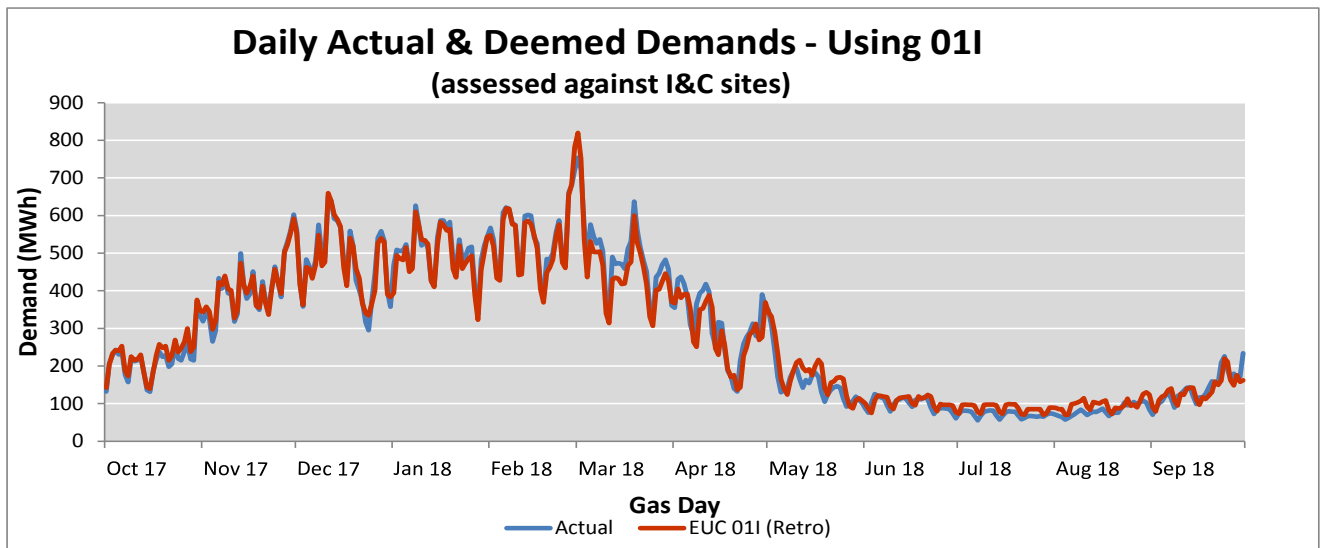
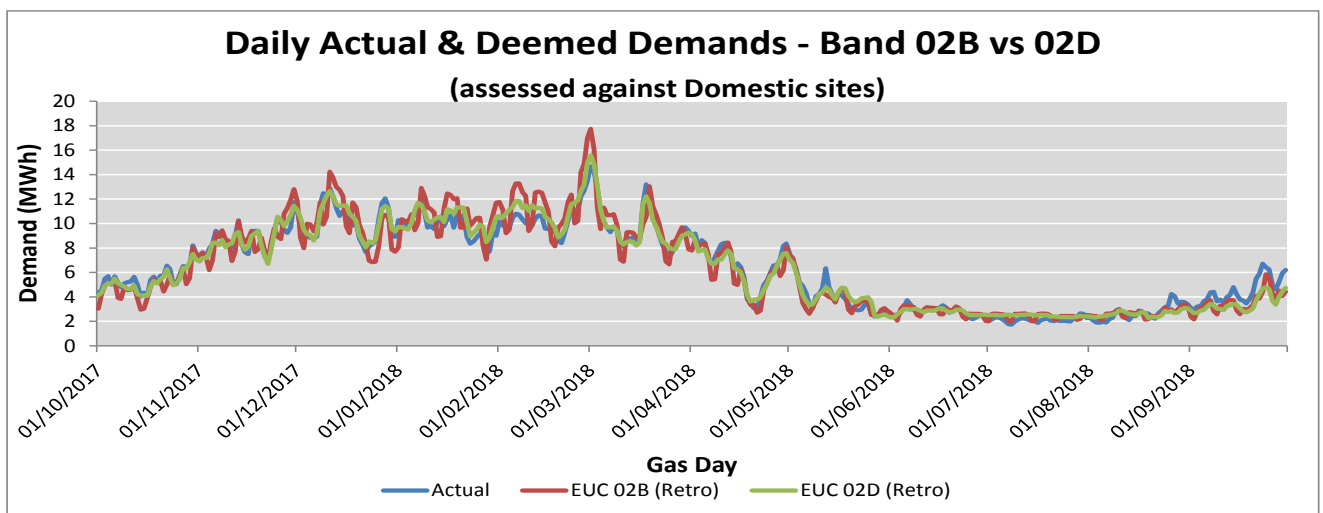


Figure S12.3.38 – Daily Actual and Deemed Demands for Domestic sites in band 02 (NEW Dom profile)



6. STRAND 4: RECONCILIATION ANALYSIS

Reconciliation Analysis for gas year 2017/18 is due to be presented at the February 2019 DESC meeting, therefore the summary will follow.