Demand Estimation Sub Committee

4.3 NDM Algorithm Review
Strand 3 - NDM Daily Demand Analysis
19 December 23

Contents

- Background, Objectives and Executive Summary
- Daily Demand Analysis Highlights
- Conclusion and Recommendations

Background

- Supply Meter Point Demand Formula (NDM Algorithm) – Section H UNC 2.2.1

$$\frac{AQ}{365}\ \text{(Average Daily Consumption)} \times ALP_t\ \text{(Seasonal Normal Consumption)} \times (1 + (WCF_t * DAF_t))\ \text{(Weather Corrected Consumption)} = \text{NDM Demand (Class 3 and 4)}$$

- Strand 3: NDM Daily Demand Analysis, is the key strand for assessing the performance of DESC's EUCs and Demand Models. It compares daily actual demand from the NDM sample with the estimated value from the NDM Algorithm
- Strand 3 results deliver the main conclusions for DESC which can be used in future approaches to Demand Modelling
- Key Point: AQ used in this analysis is NOT the AQ used in the core systems. This is because the analysis is focusing on the Demand Models and not changes in AQ levels (considered in Strand 2). The AQ used in the analysis is derived from the sample data
- NDM Daily Demand Analysis summary to be discussed under Agenda Item 4.3, with full set of results to be provided in the accompanying Strand 3 – NDM Daily Demand Analysis document available here

Objectives

- An evaluation of the NDM supply meter point formula is carried out every year and its purpose is:
  - to assess the accuracy of the Demand Models and Profiles which are used by the NDM Algorithm
  - identify any possible areas of improvement for future demand modelling

- This is done by comparing daily actual demands, with allocated demands produced by the NDM Algorithm

- Analysis is carried out using the Demand Estimation Sample supply meter points as presented in 3.0 NDM Sample Update

Executive Summary

- Objective 1 – to assess the accuracy of the Demand Models and Profiles which are used by the NDM Algorithm
  - Overall modelling error results (MPE) for most EUCs are better than the previous Gas Year

EUC	20-21			21-22			22-23		
	Winter	Summer	Year	Winter	Summer	Year	Winter	Summer	Year
01BND	0.6%	2.9%	1.1%	-3.7%	11.3%	-0.5%	-0.7%	0.4%	-0.4%
01BNI	.	.	.	-4.8%	18.3%	0.3%	-3.2%	12.0%	0.2%
01BPD	.	.	.	-6.5%	25.4%	0.5%	-2.9%	10.0%	0.2%
02BND	.	.	.	-3.4%	15.0%	1.4%	2.7%	-2.6%	1.1%
02BNI	.	.	.	-4.3%	16.7%	1.3%	-0.8%	5.0%	0.9%
03B	.	.	.	-2.9%	12.2%	1.4%	-1.2%	6.8%	1.1%
04B	.	.	.	-1.5%	8.9%	1.6%	0.1%	4.0%	1.3%
05B	.	.	.	-0.1%	7.8%	2.6%	0.0%	5.8%	2.0%
06B	.	.	.	-0.1%	10.1%	3.8%	3.0%	2.8%	2.9%
07B	.	.	.	-1.1%	12.9%	4.7%	-0.1%	8.9%	3.7%
08B	.	.	.	5.5%	4.0%	4.8%	4.5%	2.8%	3.7%

- Objective 2 – Identify any possible areas of improvement for future demand modelling
  - A deep dive into 01BNI is suggested (similar to the 01BND ad hoc workplan item in 2022/23)

Approach

Analysis has taken the following approach:

- Daily NDM consumption data obtained for Gas Year 2022/23
  - Validation applied – See 3.0 NDM Sample update slides for more information
- Calculate the Modelling Error using Actual and Allocated Energy
- Allocated Energy values use
  - NDM sample derived AQs
  - 2022/23 Weather Correction Factors (WCF)
- Two approaches to Allocation
  - MODEL: Allocated using 2022/23 ALPs and DAFs - All analysis shown is on this basis unless stated
  - RETRO: Allocated using 2023/24 ALPs and DAFs (adjusted for 2022/23 calendar)

Validated Sample Count

The table below shows a breakdown of the sites that passed validation, spilt by EUC and LDZ, used for the Algorithm Performance analysis

EUC\	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total
01BND	375	386	381	357	395	394	301	345	397	418	403	392	394	**4,938**
01BNI	595	515	742	524	504	427	56	373	443	402	499	374	435	**5,889**
01BPD	229	365	819	379	353	421	254	257	425	300	227	817	401	**5,247**
02BND	30	20	36	39	43	38	13	21	44	49	38	33	30	**434**
02BNI	729	379	790	434	576	557	44	249	351	528	440	536	431	**6,044**
03B	459	151	326	188	236	207	31	122	219	291	280	239	186	**2,935**
04B	393	175	214	214	201	192	31	107	176	240	306	253	151	**2,653**
05B	132	75	85	79	75	88	12	36	60	91	103	62	37	**935**
06B	54	25	35	37	43	28	4	17	16	20	26	29	25	**359**
07B	12	14	11	20	26	13	1	3	4	2	13	6	6	**131**
08B	6	5	1	5	9	7	1	3	4	2	4	0	2	**49**
Total	**3,014**	**2,110**	**3,440**	**2,276**	**2,461**	**2,372**	**748**	**1,533**	**2,139**	**2,343**	**2,339**	**2,741**	**2,098**	**29,614**

- Note: 258 sample meters were rejected after validation due to not fitting the analysis criteria (e.g. class 1 and 2 meters) we will look at excluding these at an earlier stage
- Except for 01BPD and 02BND sample counts have reduced for all EUCs

Tests

- Assessments conducted by
  - Major EUCs for Consumption Bands 1 and 2 and ‘bucket’ bands for Consumption Bands 3-8
  - For all LDZs separately where sample data allowed, aggregated otherwise
  - Winter/Summer (October to March and April to September)
  - Month
  - Day of Week
  - Holiday Codes

- Mean Absolute Percentage Error (MAPE) is a measure of **prediction accuracy** of a forecasting method
  - It is calculated as Absolute(Model Energy-Actual Energy) / Actual Energy
  - The lower the MAPE value, the closer the prediction was to the actual value

- Mean Percentage Error (MPE) is a measure of the **bias** in the forecasting method
  - It is calculated as (Model Energy-Actual Energy) / Actual Energy
  - E.G. if MPE is -2% the model has **under-allocated** by 2%, if MPE is 2% the model has **over-allocated** by 2%

Analysis – Gas Year and Seasonal Error (MPE) by EUC

The table below show the MPE (Mean Percentage Error) for the last 3 years by EUC

EUC	20-21 Winter	20-21 Summer	20-21 Year	21-22 Winter	21-22 Summer	21-22 Year	22-23 Winter	22-23 Summer	22-23 Year
01BND	0.6%	2.9%	1.1%	-3.7%	11.3%	-0.5%	-0.7%	0.4%	-0.4%
01BNI	.	.	.	-4.8%	18.3%	0.3%	-3.2%	12.0%	0.2%
01BPD	.	.	.	-6.5%	25.4%	0.5%	-2.9%	10.0%	0.2%
02BND	.	.	.	-3.4%	15.0%	1.4%	2.7%	-2.6%	1.1%
02BNI	.	.	.	-4.3%	16.7%	1.3%	-0.8%	5.0%	0.9%
03B	.	.	.	-2.9%	12.2%	1.4%	-1.2%	6.8%	1.1%
04B	.	.	.	-1.5%	8.9%	1.6%	0.1%	4.0%	1.3%
05B	.	.	.	-0.1%	7.8%	2.6%	0.0%	5.8%	2.0%
06B	.	.	.	-0.1%	10.1%	3.8%	3.0%	2.8%	2.9%
07B	.	.	.	-1.1%	12.9%	4.7%	-0.1%	8.9%	3.7%
08B	.	.	.	5.5%	4.0%	4.8%	4.5%	2.8%	3.7%

Note: only 01BND is shown for Gas Year 20-21, as the models were not updated for the other EUCs, due to the impact of Covid lockdowns

- Under forecast values (i.e. negative MPEs) are shaded
- 21-22 shows the significant impact of the cost of energy on consumers behaviour
  - As prices rose in Spring 22, there was a step change in behaviour between Winter and Summer
  - This wasn't seen in 22-23 as the impact was across the whole year

Analysis – Gas Year and LDZ Error (MPE) by EUC

The table below show the MPE (Mean Percentage Error) for Gas Year 2022/23

EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total
01BND	-0.6%	-0.9%	-0.4%	-0.6%	-0.7%	-0.6%	-0.5%	-0.4%	-0.1%	-0.3%	-0.2%	-0.4%	0.0%	-0.4%
01BNI	0.3%	-0.2%	0.1%	-0.2%	0.1%	0.2%	0.2%	0.4%	0.5%	0.6%	0.2%	0.2%	0.4%	0.2%
01BPD	0.2%	0.2%	0.2%	0.0%	-0.1%	0.2%	0.1%	0.5%	0.1%	0.0%	0.2%	0.2%	0.1%	0.2%
02BND														1.1%
02BNI	0.4%	0.9%	0.7%	0.8%	0.8%	1.1%	0.6%	1.4%	0.8%	1.1%	0.9%	1.4%	0.9%	0.9%
03B	0.8%	1.6%	0.9%	1.0%	1.2%	1.3%	0.9%	1.6%	0.9%	1.0%	1.1%	1.7%	1.3%	1.1%
04B	0.8%	1.5%	1.2%	1.4%	1.6%	1.4%	1.1%	1.8%	1.3%	1.1%	1.3%	1.7%	1.5%	1.3%
05B	1.9%	2.4%	1.7%	2.1%	2.3%	2.0%	1.6%	2.6%	1.7%	1.5%	1.8%	2.6%	2.1%	2.0%
06B														2.9%
07B														3.7%
08B														3.7%

Where only a total is shown, individual LDZ analysis was not possible due to the small sample size

- Values are very similar to the result for 2021/22
- The MPEs are consistently positive (and therefore over-forecast) for all LDZs in all EUCs except for Band 1 (01BND, 01BNI and 01BPD)
- Most LDZs follow a similar trend to the others in the EUC, with little difference in values

Analysis – Gas Year and LDZ Error (MAPE) by EUC

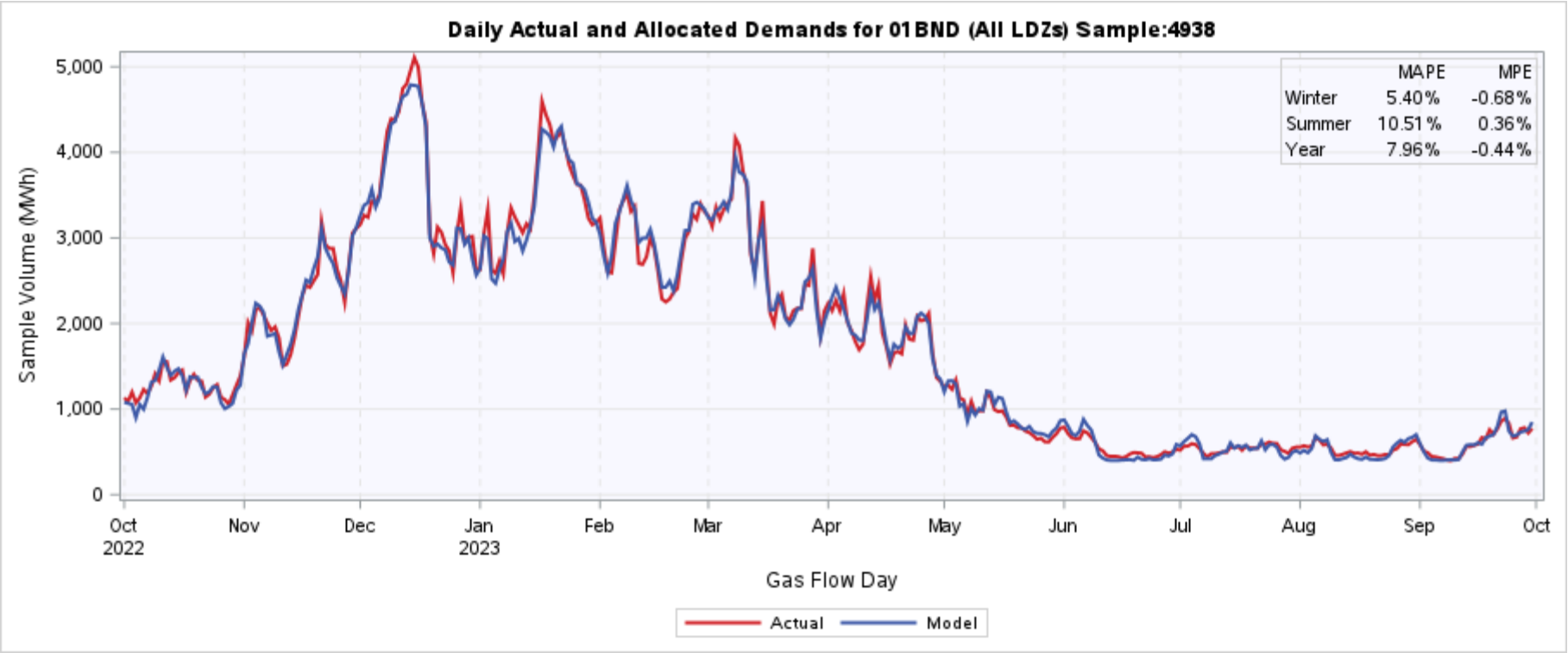
The table below show the MAPE (Mean Absolute Percentage Error) for Gas Year 2022/23

EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Overall
01BND	8.3%	8.1%	8.4%	9.2%	8.3%	9.9%	10.7%	8.5%	6.6%	6.0%	6.7%	6.4%	7.4%	8.0%
01BNI	15.5%	15.3%	23.1%	12.2%	14.7%	11.8%	11.9%	25.9%	12.9%	12.6%	8.6%	8.9%	17.9%	15.2%
01BPD	8.4%	10.5%	10.1%	9.4%	10.1%	8.5%	13.1%	10.2%	11.0%	9.7%	9.7%	16.0%	10.3%	11.0%
02BND														11.7%
02BNI	8.7%	8.1%	12.7%	6.6%	5.9%	6.8%	9.6%	15.4%	8.6%	7.8%	6.5%	8.0%	6.0%	8.4%
03B	6.6%	6.9%	9.2%	10.5%	10.0%	7.8%	8.2%	18.3%	7.0%	6.6%	6.9%	7.3%	13.5%	8.6%
04B	6.7%	5.6%	8.0%	6.4%	10.7%	7.6%	10.0%	6.6%	8.8%	5.1%	6.8%	6.1%	8.8%	7.2%
05B	8.2%	8.7%	7.6%	11.2%	8.1%	8.1%	17.1%	14.3%	7.8%	6.1%	7.2%	10.0%	9.1%	8.6%
06B														9.9%
07B														17.5%
08B														20.1%

- Where only a total is shown, individual LDZ analysis was not possible due to the small sample size
- LDZ MAPE values are generally similar to the EUC overall, however WS and WN have a number of outliers
  - Analysis showed that for WS and NW, 01BNI and 02BNI there were a significant number of government buildings, such as libraries, where consumption dropped to zero over the summer
- Whilst results for 01BNI are better than last year, they are still high and possibly due to incorrect classification of Domestic sites – review suggested

Analysis – 01BND Gas Year Time series

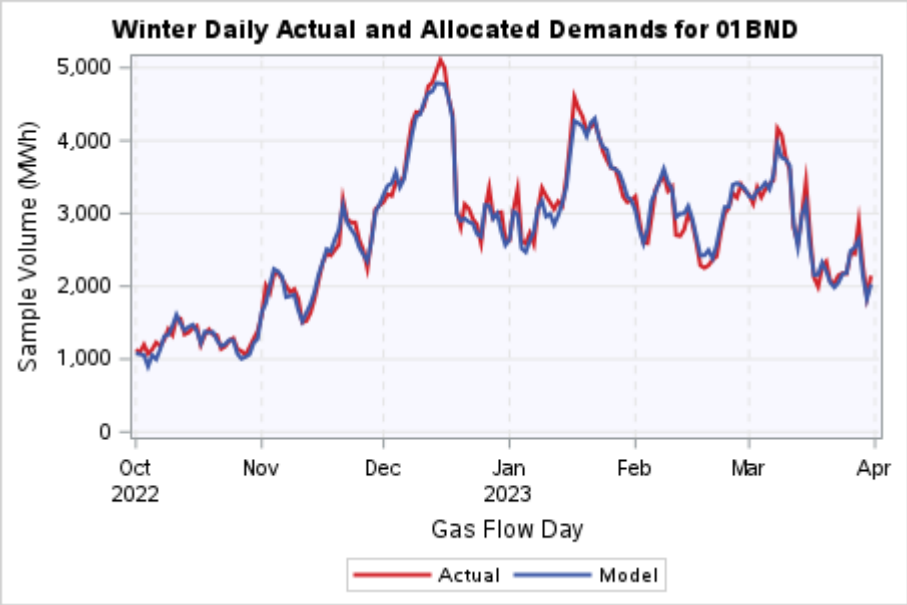
EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total
01BND	375	386	381	357	395	394	301	345	397	418	403	392	394	4,938



Analysis – 01BND Gas Year Time series

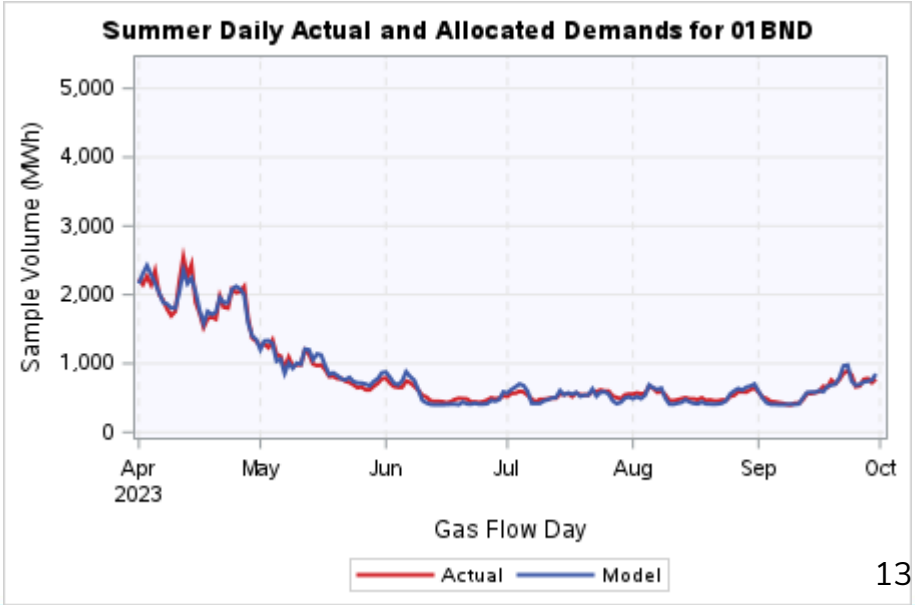
The chart below shows the Winter daily values for 01BND

- Peaks of cold weather in December, January and March are clear, with under allocation on the highest consuming days
- February was warm with some over allocation on the lowest consuming days



The chart below shows the Summer daily values for 01BND

- April weather was mixed, allocation was less accurate for the CWV peaks and troughs
- May was warm, with slight over allocation on most days
- There is under allocation for the lowest forecast days June to September



Analysis – 01BND – LDZ and Month Error

The table below shows the MPE (Mean Percentage Error) for Gas Year 2022/23 by LDZ and Month for 01BND

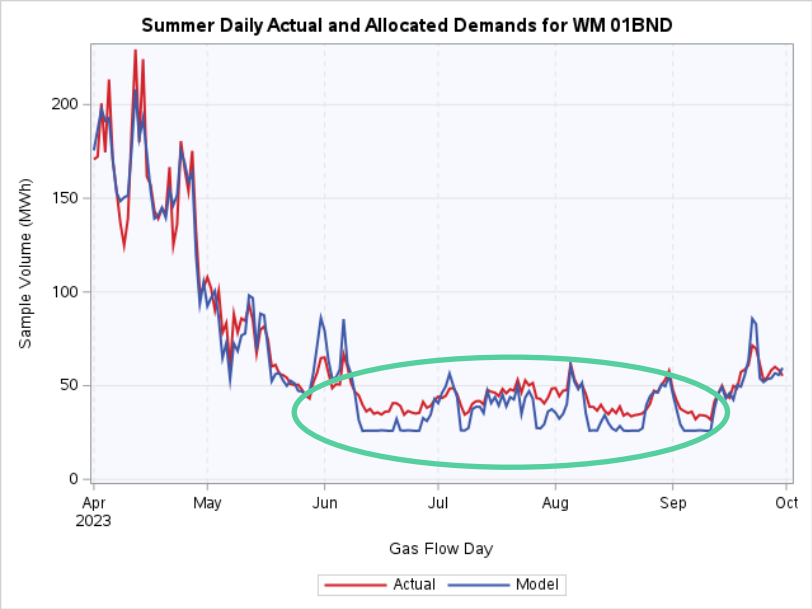
Month	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW
October	-0.6%	-3.1%	-2.0%	-3.7%	0.2%	-1.7%	1.2%	-5.3%	4.2%	-2.8%	-8.5%	-4.8%	-3.9%
November	-2.3%	1.3%	-0.5%	-3.0%	0.3%	0.2%	-1.6%	-1.0%	2.1%	-1.1%	-0.5%	3.4%	1.5%
December	-4.6%	-0.5%	-3.2%	-4.8%	-2.7%	-0.2%	-4.2%	2.2%	-3.0%	-0.5%	1.9%	-2.6%	-0.3%
January	-3.0%	-3.5%	-3.2%	-3.7%	-3.6%	0.8%	-3.9%	0.0%	-3.3%	-0.8%	1.8%	-2.9%	1.9%
February	0.6%	1.5%	0.1%	3.6%	2.9%	5.2%	0.4%	6.2%	2.4%	4.1%	3.0%	3.3%	5.6%
March	0.8%	-1.7%	-3.3%	-0.3%	-1.5%	-1.0%	-3.0%	-2.0%	-2.4%	-0.9%	-1.0%	-1.5%	-1.0%
April	1.7%	-5.1%	2.0%	1.6%	0.5%	0.1%	5.4%	-0.8%	3.2%	1.6%	2.0%	0.7%	-2.9%
May	-0.1%	1.9%	15.4%	10.4%	1.0%	-2.0%	23.3%	4.5%	9.3%	4.3%	-8.4%	-0.6%	4.4%
June	2.3%	8.9%	10.6%	14.7%	3.1%	-10.7%	2.2%	-7.0%	-4.0%	-7.6%	-8.3%	-3.6%	-8.4%
July	16.6%	4.9%	10.4%	-0.4%	0.2%	-11.5%	5.0%	-8.8%	-3.9%	-7.6%	-3.6%	4.8%	-1.9%
August	3.2%	-1.6%	2.4%	-2.9%	-2.9%	-14.4%	-2.1%	-11.7%	-1.2%	-4.4%	1.7%	3.1%	-10.9%
September	3.4%	-0.4%	1.1%	7.5%	2.3%	-6.0%	-0.6%	-10.9%	4.4%	-1.5%	-1.5%	3.9%	-5.3%
Full Year	-0.6%	-0.9%	-0.4%	-0.6%	-0.7%	-0.6%	-0.5%	-0.4%	-0.1%	-0.3%	-0.2%	-0.4%	0.0%

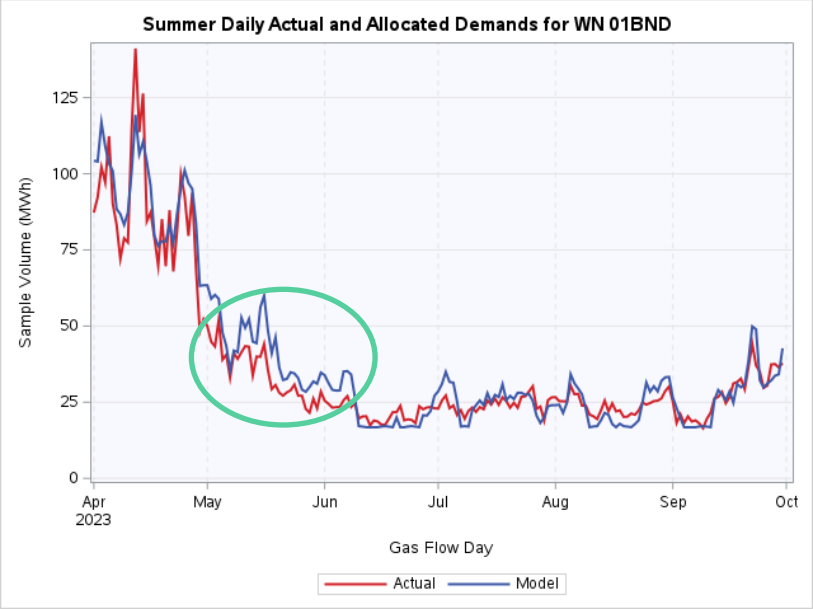
- There are no clear trends for all areas; all months except February (which was unusually warm), show a mix of positive and negative MPEs
- Over the summer a couple of areas saw fairly significant under forecast, however other areas were over forecast, all areas show similar Full-Year results - highlighted values are covered on the following slide

Analysis – 01BND – WM and WN

The charts below show the areas highlighted in the table on the previous slide.

- For WM the model had a lower forecast than actuals for the summer
- For WN May was over forecast, and a similar variance was seen in 01BPD
- Both of these variances are being investigated

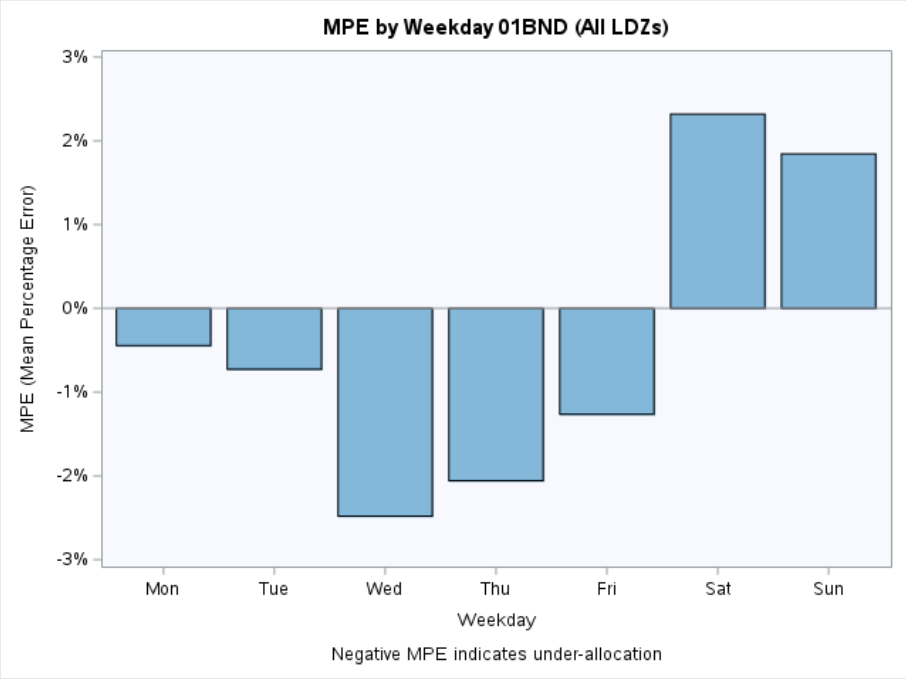


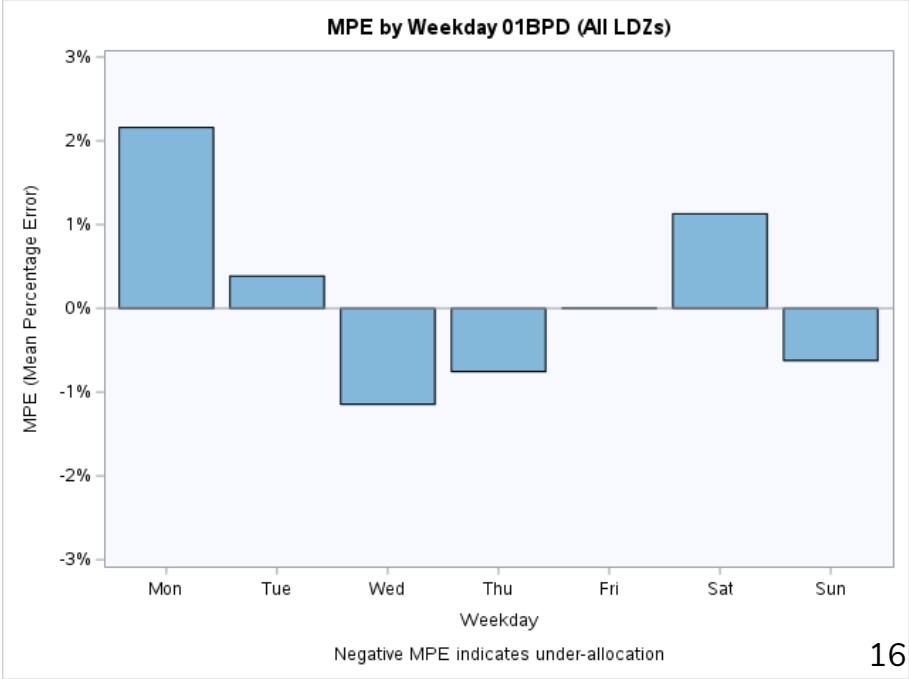


Analysis – Domestic – Day of Week Error (MPE)

The charts below show the MPE by Weekday for 01BND (on the left) and 01BPD (right).

- 01BND has a clear, albeit small, Monday to Friday under-forecast with Saturday and Sunday over-forecast
- 01BPD, has a different pattern, of over-forecast Mondays and mixed results for other days

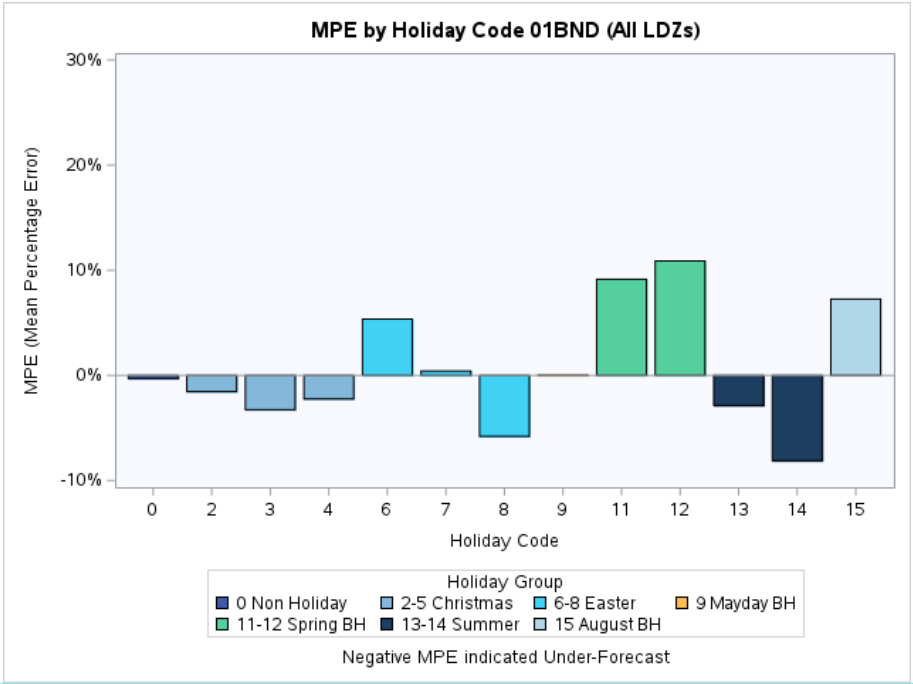


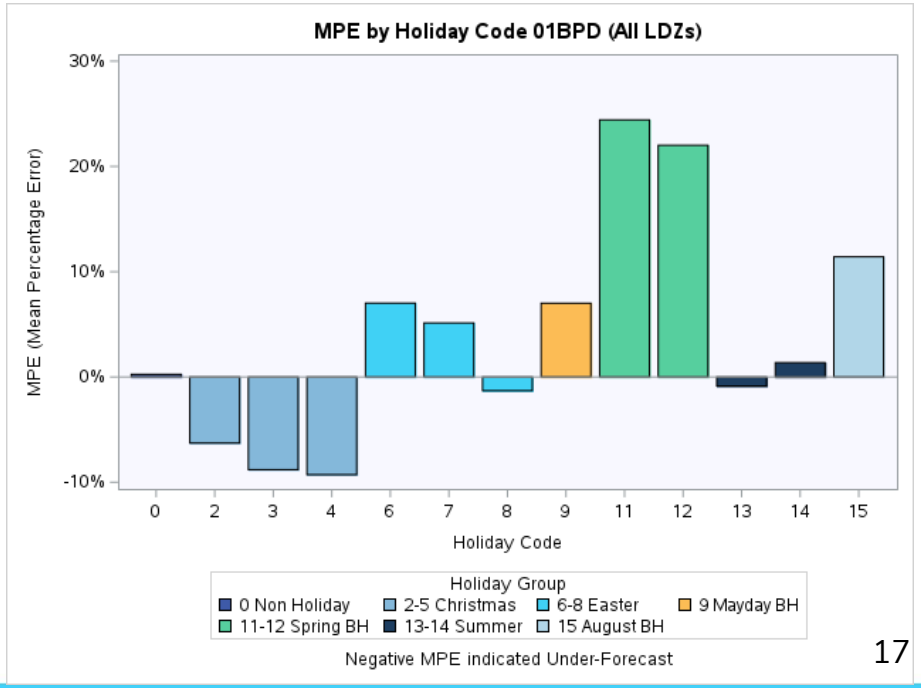


Analysis – Domestic – Holiday Error (MPE)

The charts below show the MPE by Holiday Code for 01BND (on the left) and 01BPD (right)

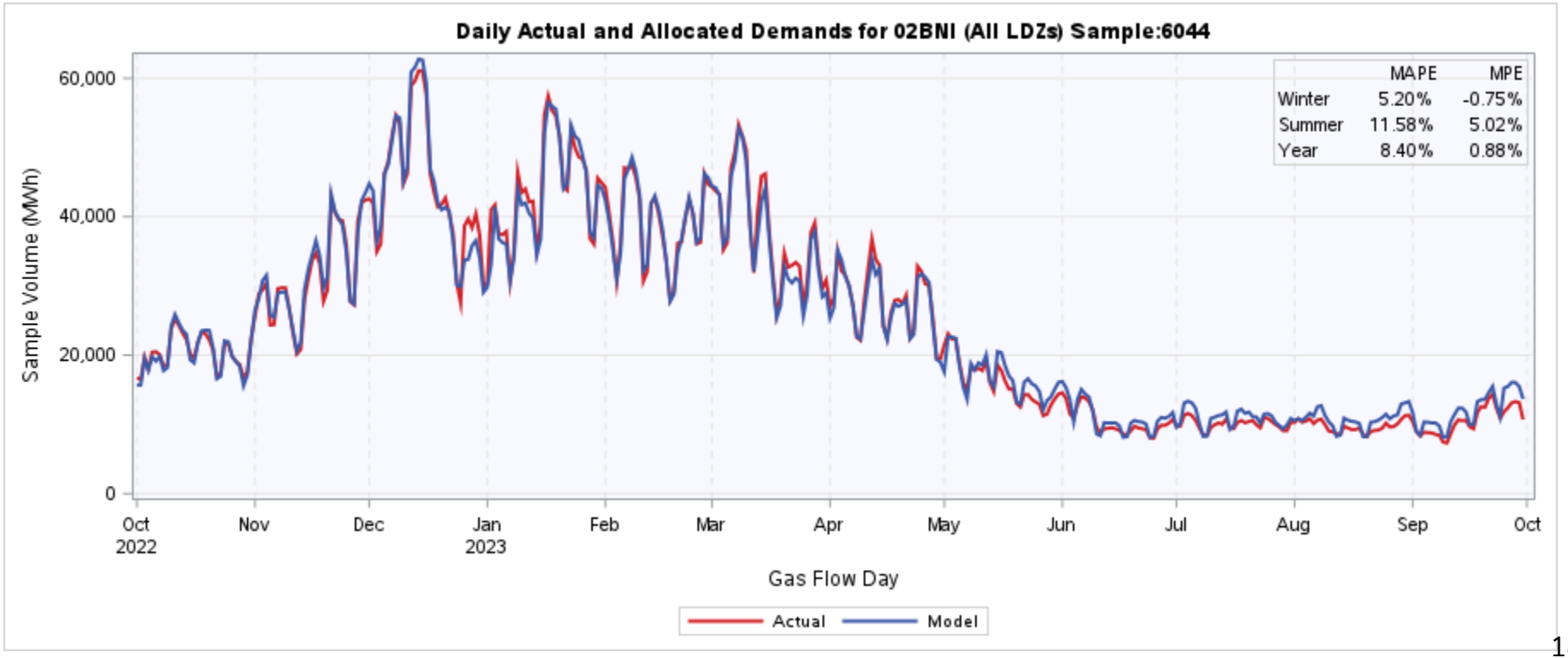
- Both results show under-forecasting over the Christmas / New Year period and over forecasting in Spring and August
- This is the first year the news holiday codes have been used and analysis is in the accompanying document





Analysis – 02BNI Gas Year Time series

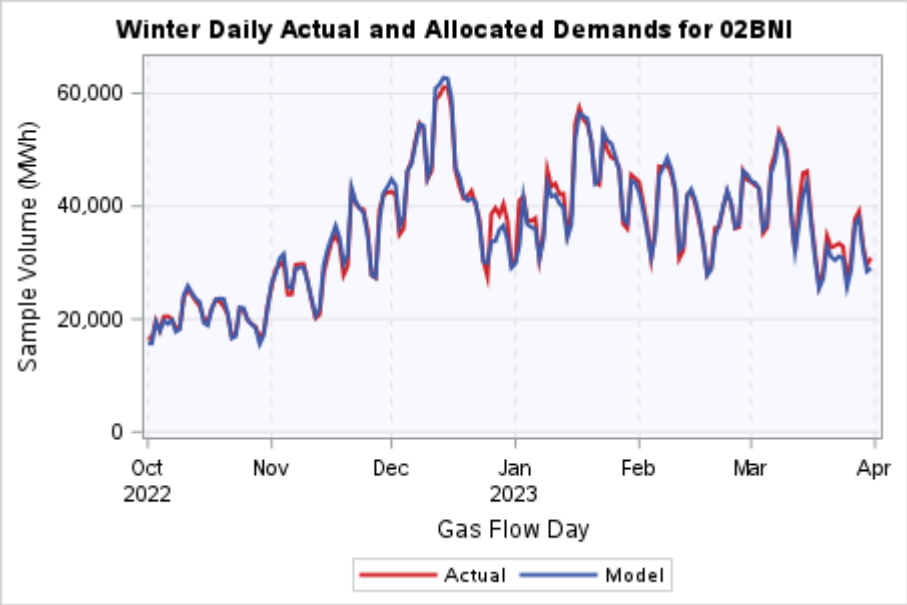
EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total
02BNI	729	379	790	434	576	557	44	249	351	528	440	536	431	6,044



Analysis – 02BNI Gas Year Time series

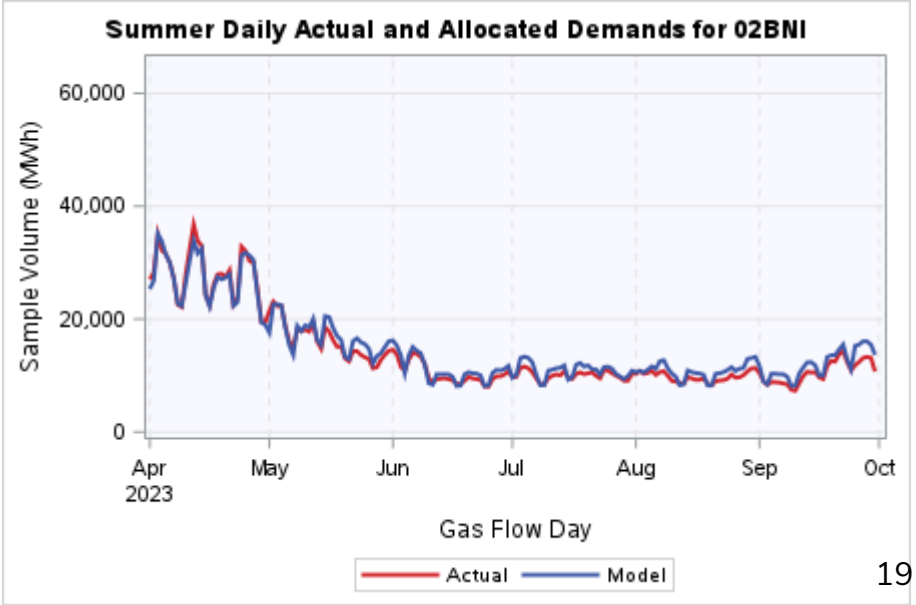
The chart below shows the Winter daily values for 02BNI

- There is slight under allocation over the Christmas and New Year period, and in late spring
- There is good correlation between actual and allocated demands for the rest of the period



The chart below shows the Summer daily values for 02BNI

- Most of the summer shows some slight over allocation during weekdays
- This is possibly as a result of continued energy conservation due to high prices



Analysis – 02BNI – LDZ and Month Error

The table below shows the MPE (Mean Percentage Error) for Gas Year 2022/23 by LDZ and Month for 02BNI

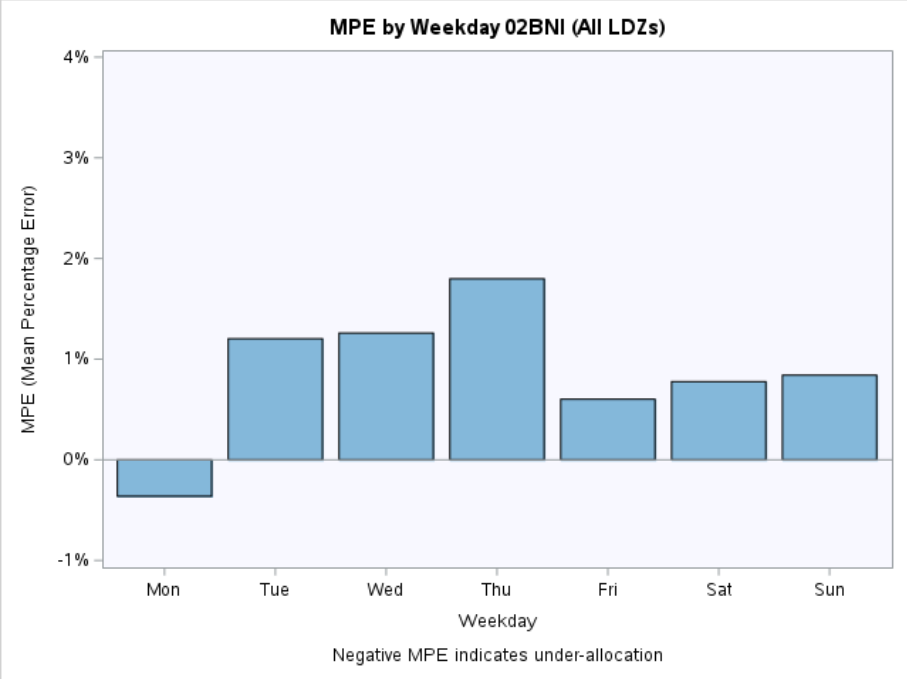
Month	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW
October	-5.2%	-2.7%	-2.0%	-1.9%	0.1%	4.8%	1.0%	4.8%	3.6%	1.9%	-3.6%	-0.9%	-1.4%
November	-0.5%	1.7%	-2.4%	0.3%	4.2%	3.5%	0.6%	-0.6%	7.3%	0.9%	3.5%	2.4%	1.5%
December	-1.5%	2.2%	-2.0%	-1.3%	0.2%	-0.3%	-3.2%	-2.1%	1.1%	-2.3%	5.0%	1.0%	1.0%
January	-2.8%	-2.2%	-5.7%	-1.6%	-0.4%	-0.8%	-3.5%	-3.9%	0.2%	-2.1%	2.6%	-2.3%	2.1%
February	-1.7%	-1.3%	-3.4%	0.9%	2.5%	1.4%	0.7%	0.0%	3.0%	-1.3%	3.1%	-0.3%	1.0%
March	-1.3%	-4.3%	-6.1%	-1.2%	0.1%	-1.4%	-5.3%	-7.7%	-3.2%	-4.8%	-0.6%	-4.2%	-3.0%
April	0.3%	-5.5%	0.5%	0.3%	-0.7%	-3.2%	-0.3%	-1.0%	-2.6%	-3.4%	-1.9%	-2.5%	-6.3%
May	-3.9%	8.1%	17.4%	7.3%	2.9%	4.6%	16.4%	13.3%	-1.2%	6.7%	-2.0%	7.1%	5.1%
June	9.9%	15.5%	20.5%	5.6%	-3.1%	2.4%	12.8%	16.6%	-6.4%	9.9%	-6.8%	9.4%	3.0%
July	20.7%	13.6%	19.7%	2.5%	-1.1%	1.3%	12.0%	17.5%	-2.7%	11.7%	-6.4%	10.0%	7.0%
August	17.7%	10.2%	23.9%	6.9%	-0.3%	2.8%	4.9%	21.5%	3.2%	14.4%	-1.7%	16.9%	6.6%
September	14.4%	12.8%	18.7%	12.7%	4.3%	11.2%	8.7%	21.4%	8.9%	21.3%	5.9%	19.6%	11.6%
Full Year	0.4%	0.9%	0.7%	0.8%	0.8%	1.1%	0.6%	1.4%	0.8%	1.1%	0.9%	1.4%	0.9%

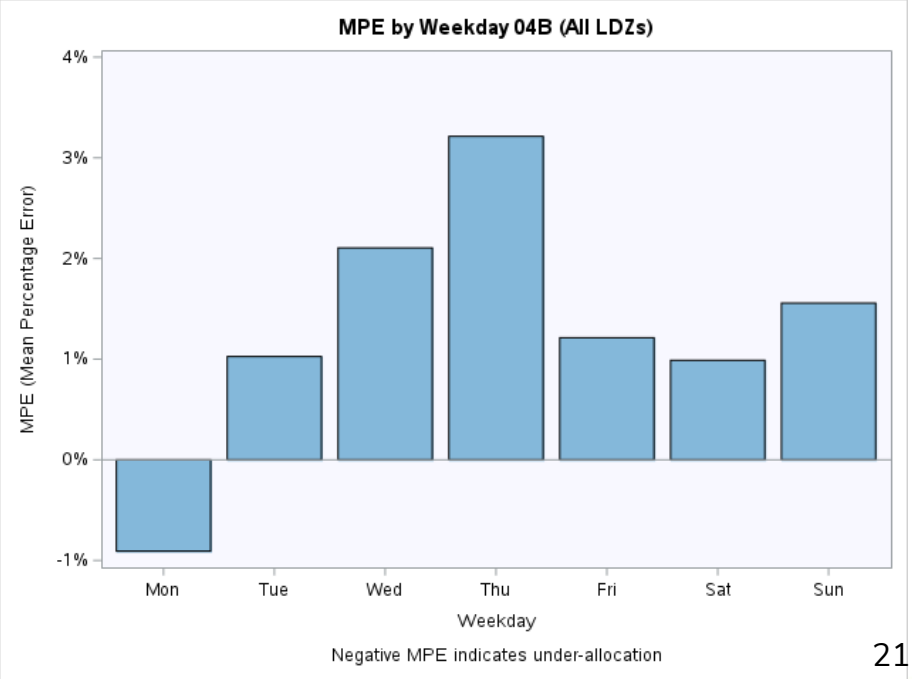
- Most LDZs show an over-forecast in the summer months, which is likely to have been driven by warm temperatures and reduced consumption due to high prices

Analysis – Small I&C – Day of Week Error (MPE)

The charts below show the MPE by Weekday for 02BNI (on the left) and 04B (right).

- Both small I&C EUCs shown here (and 03B) all show Mondays slightly under-forecast and the other days over-forecast
- 01BNI showed a very small over-forecast for Monday to Saturday and under-forecast on Sunday

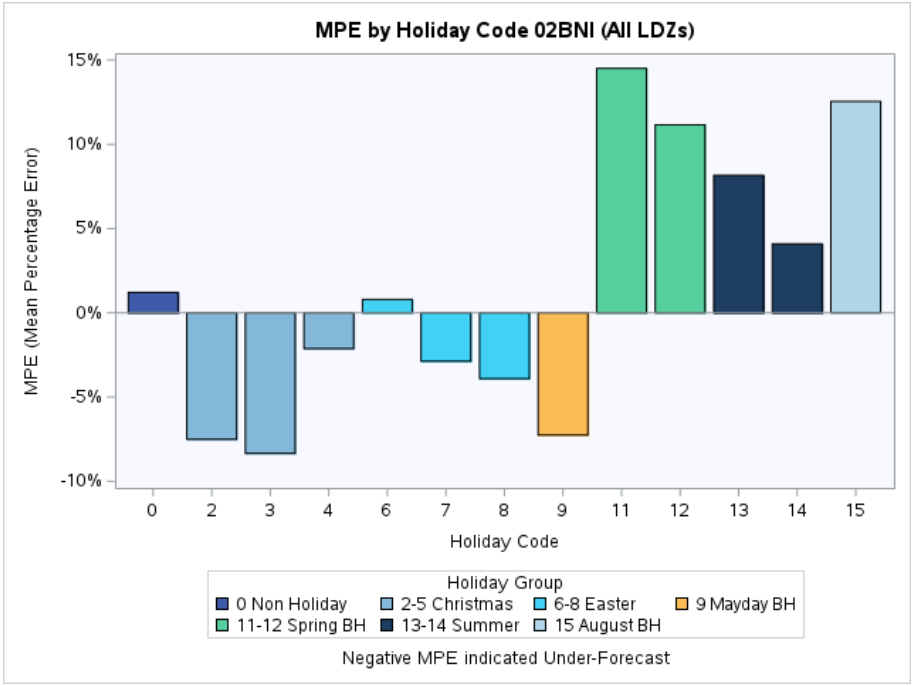


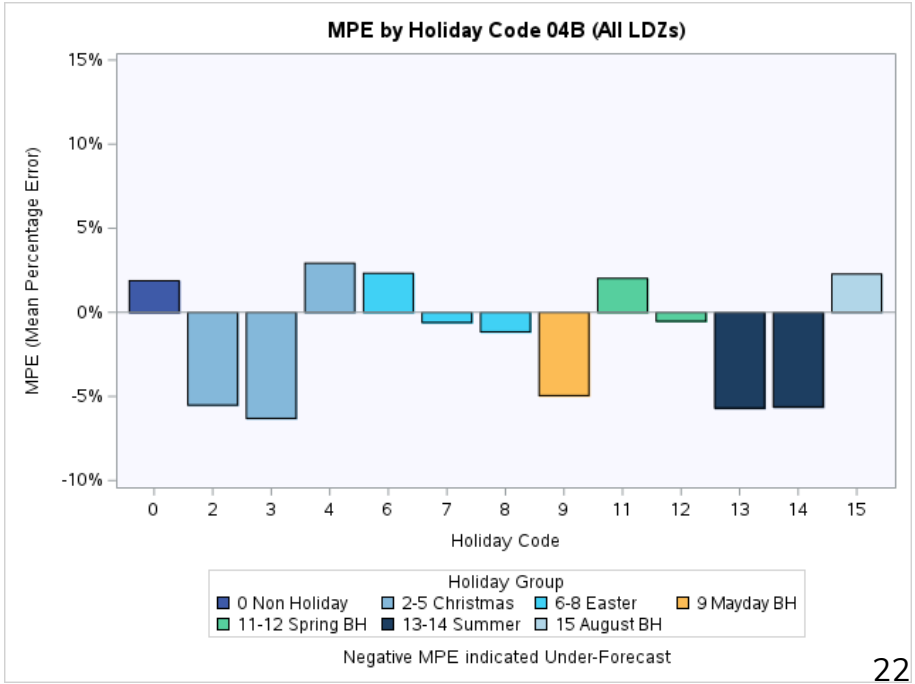


Analysis – Small I&C – Holiday Error (MPE)

The charts below show the MPE by Holiday Code for 02BNI (on the left) and 04B (right).

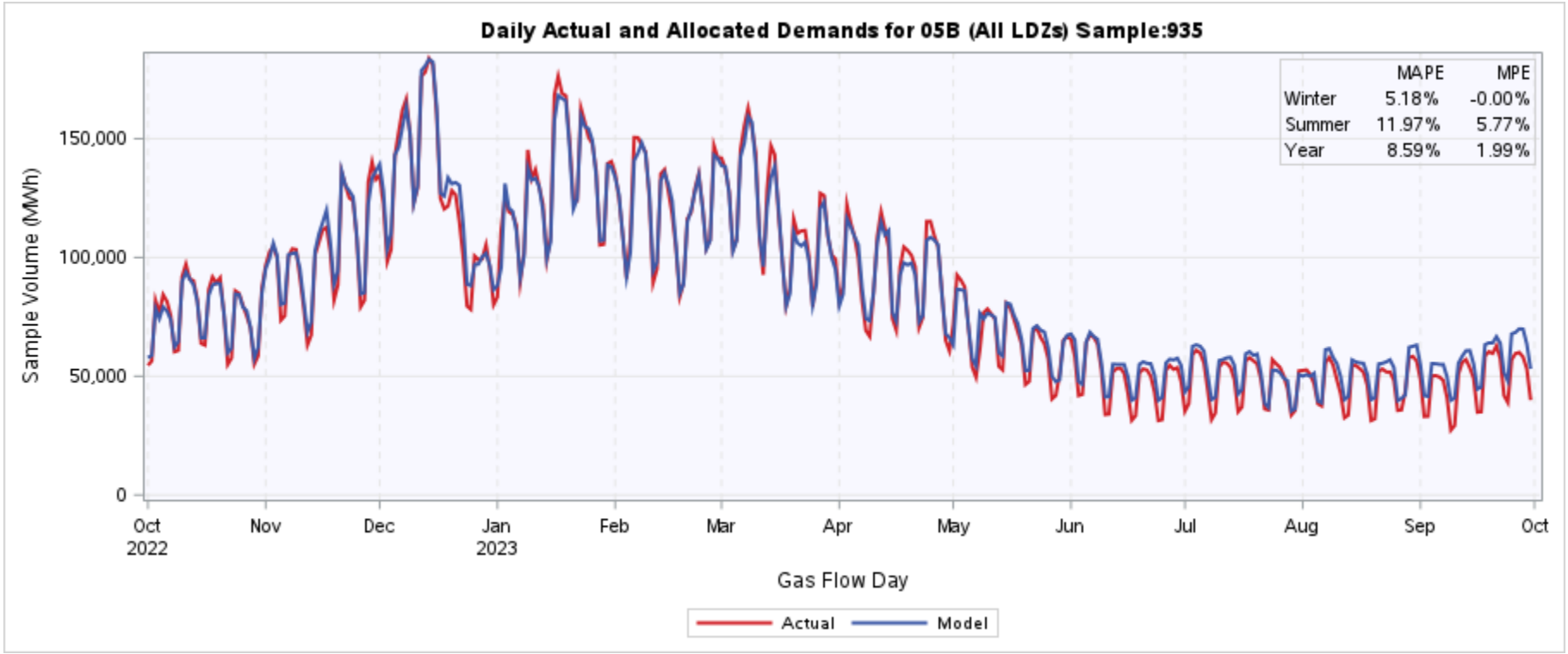
- 02BNI shows under-forecasting for Winter Holiday Codes and over-forecasting for Summer Holiday Codes, both 01BNI and 03B have similar results (not shown)
- 04B MPEs are generally smaller, and only the Summer period is different to the other small I&C EUCs





Analysis – 05B Gas Year Time series

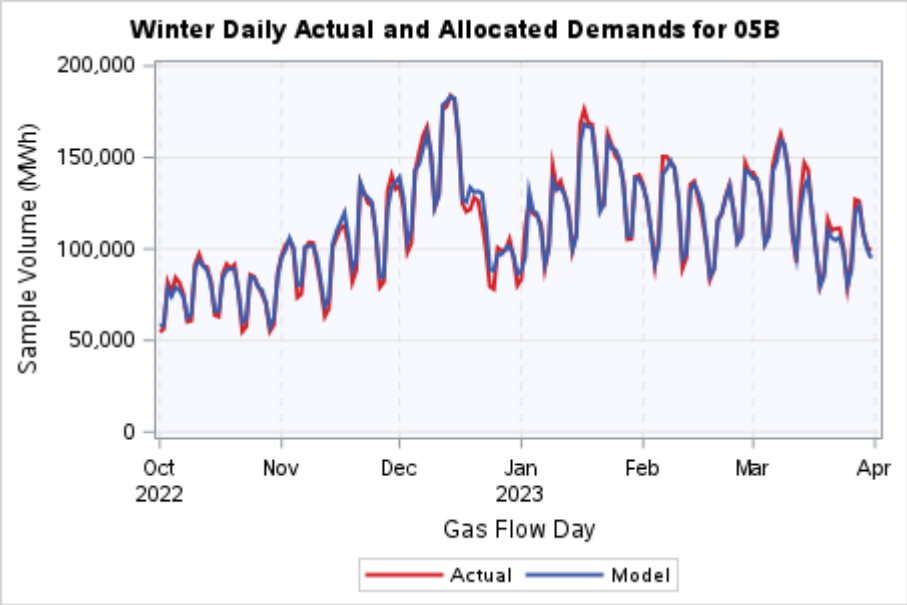
EUC	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW	Total
05B	132	75	85	79	75	88	12	36	60	91	103	62	37	935



Analysis – 05B Gas Year Time series

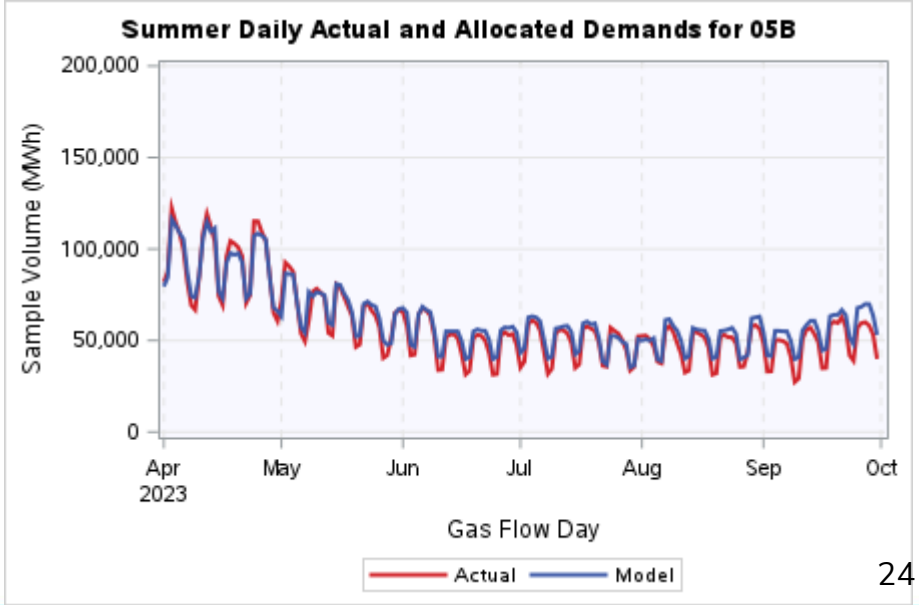
The chart below shows the Winter daily values for 05B

- There is good correlation between the forecast and actual demand volumes for the winter



The chart below shows the Summer daily values for 05B

- Summer shows over-forecasting, particularly on weekends
- This is likely to be because of energy conservation due to high costs



Analysis – 05B – LDZ and Month Error

The table below shows the MPE (Mean Percentage Error) for Gas Year 2022/23 by LDZ and Month for 05B

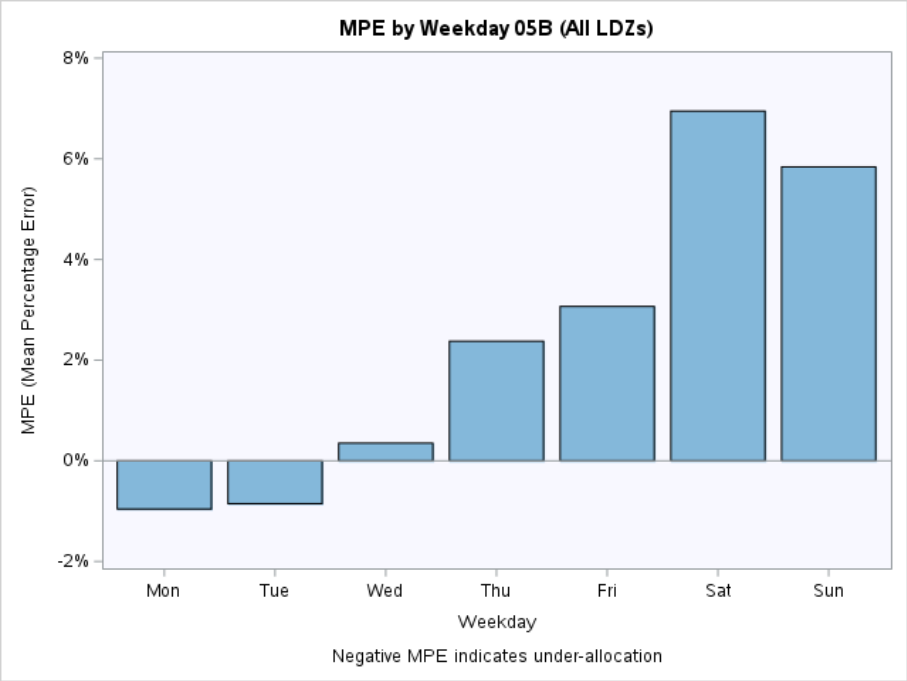
Month	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW
October	-0.4%	3.1%	-0.5%	-4.2%	-6.5%	-5.8%	5.6%	2.1%	2.7%	5.9%	2.8%	0.8%	1.8%
November	-0.7%	4.3%	1.4%	3.6%	-1.8%	0.0%	0.3%	5.2%	1.8%	7.8%	2.1%	2.7%	-0.7%
December	-1.0%	1.3%	4.2%	-1.1%	6.7%	7.5%	-8.4%	10.1%	-0.7%	1.5%	2.9%	1.6%	3.0%
January	-2.1%	-2.9%	-2.3%	-3.0%	1.7%	0.0%	-10.2%	-4.6%	-2.2%	0.5%	2.1%	-3.1%	-0.5%
February	-0.3%	-0.3%	-1.1%	-0.4%	2.4%	1.4%	-9.1%	-0.7%	-1.9%	-1.2%	-0.1%	-1.2%	-0.6%
March	-0.4%	-1.1%	-5.3%	-4.7%	3.6%	-0.5%	-7.7%	-4.1%	-1.9%	-5.2%	-1.7%	-4.3%	-0.6%
April	-1.4%	-0.3%	-2.9%	-0.5%	4.0%	1.6%	-5.2%	5.8%	0.2%	-3.2%	0.2%	-3.3%	-1.8%
May	-1.4%	-1.6%	1.7%	4.3%	-0.2%	-0.9%	23.9%	10.2%	4.0%	8.4%	5.0%	8.8%	-0.6%
June	12.7%	8.5%	10.3%	19.8%	3.1%	11.0%	36.8%	1.2%	7.6%	2.3%	0.0%	17.0%	14.1%
July	16.0%	10.6%	5.9%	14.2%	-0.1%	3.8%	27.5%	-3.1%	5.8%	-3.0%	0.1%	11.4%	5.7%
August	14.1%	10.4%	10.7%	8.8%	7.8%	4.7%	18.3%	4.0%	10.9%	-0.6%	1.6%	15.7%	7.8%
September	13.6%	19.2%	18.1%	22.0%	10.1%	8.8%	29.3%	17.6%	18.8%	16.0%	12.1%	25.0%	15.4%
Full Year	1.9%	2.4%	1.7%	2.1%	2.3%	2.0%	1.6%	2.6%	1.7%	1.5%	1.8%	2.6%	2.1%

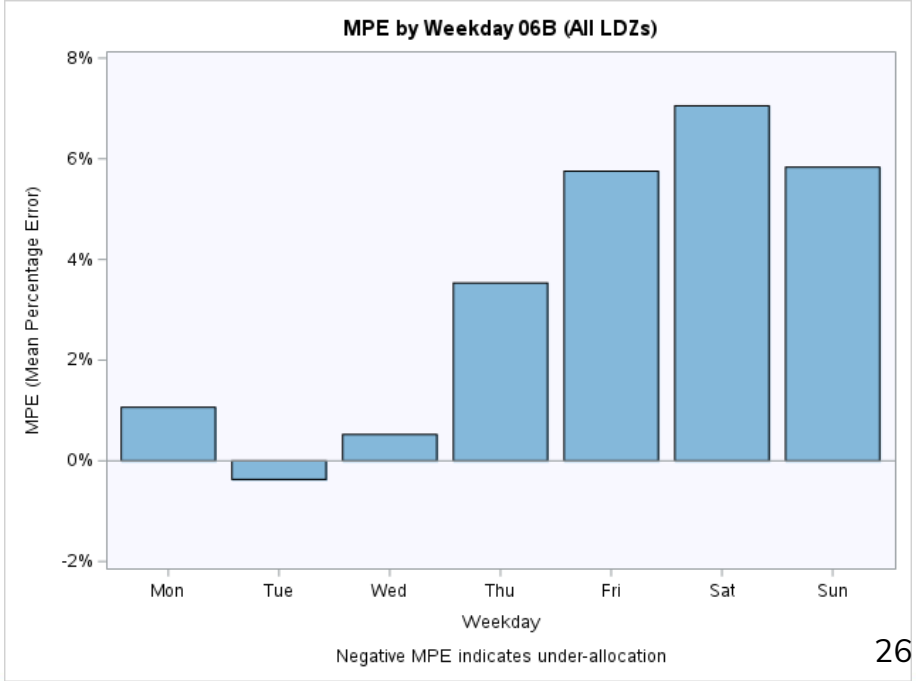
- There is some under-forecasting for most LDZs for January to April
- January and March had spells of unseasonably cold weather (covered in Strand 1)
- The Summer is largely over-forecast, as seen on the previous slide
- Further investigation will be carried out into WN Summer variance

Analysis – Large I&C – Day of Week Error (MPE)

The charts below show the MPE by Weekday for 05B (on the left) and 06B (right).

- Both Large I&C EUCs shown here (and 07B) show over-forecasting on weekends (08B shows the opposite)
- Weekend Factors have been increasing in recent years (i.e. less of a reduction in consumption), however recent economic factors may have resulted in a trend towards reduced weekend consumption

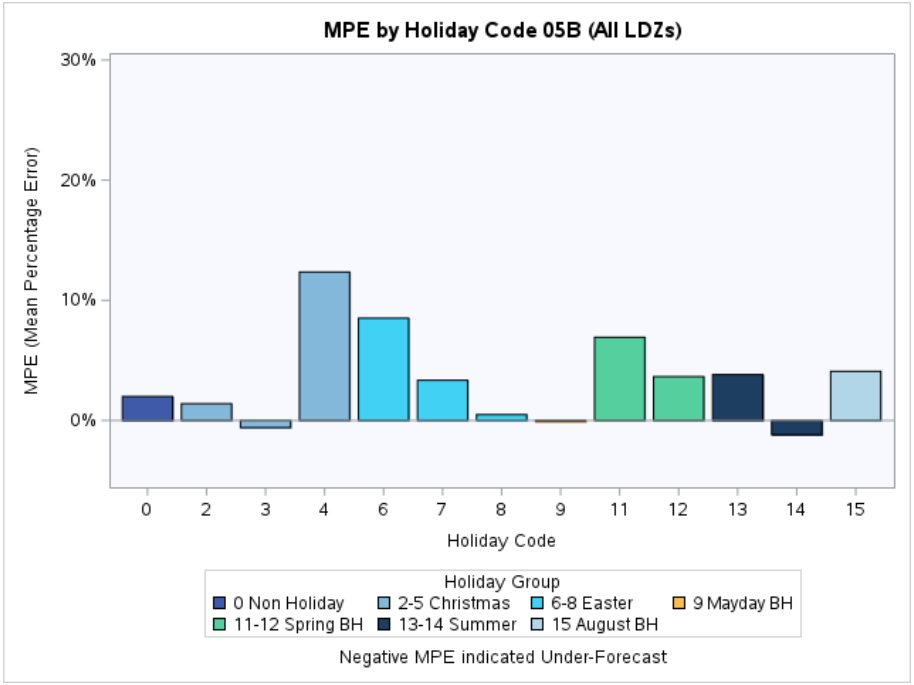


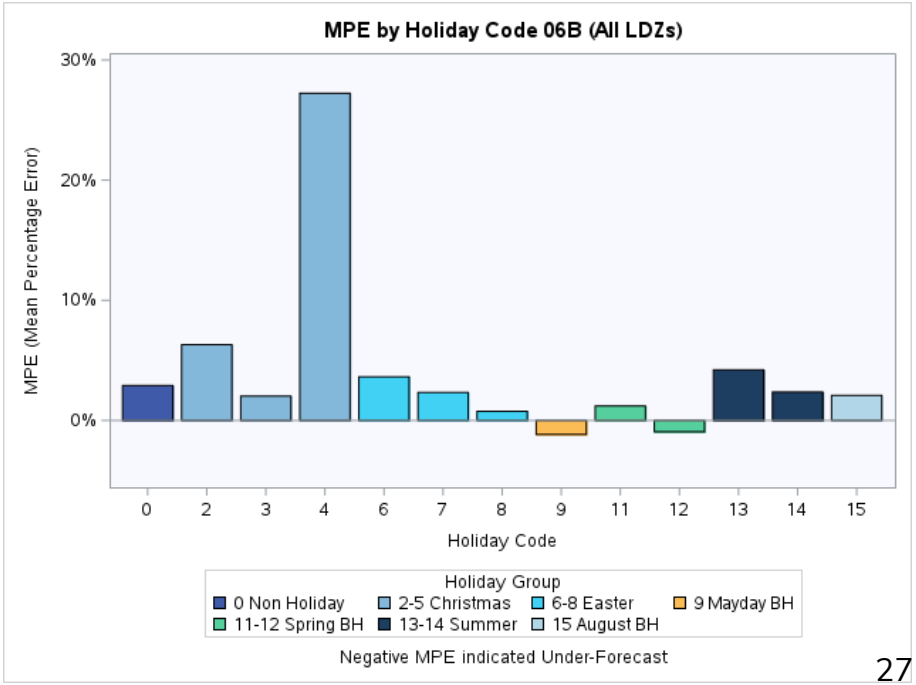


Analysis – Large I&C – Holiday Error (MPE)

The charts below show the MPE by Holiday Code for 05B (on the left) and 06B (right).

- Results are quite mixed across all the Large I&C LDZs except for over-forecasting for holiday code 4 (non-Bank Holiday weekdays before and after the Christmas period)





Conclusions

Reminder of Objective

- **To assess the accuracy of the Demand Models and Profiles which are used by the NDM Algorithm**
- identify any possible areas of improvement for future demand modelling

- Once the impact of AQs is removed, the underlying demand models and profiles overall have been proven to be robust and accurate. Results are improved on Gas Year 21-22
- Results shared here are a snapshot, full results for the main EUCs are available in the Strand 3 – NDM Daily Demand Analysis document, and also Section 12 of the NDM Algorithm Booklet to be published in Summer 2024
- Initial results suggest overall the change in holiday codes appears to have been a benefit, this is covered more in the Strand 3 Document

Recommendations

Reminder of Objective

- to assess the accuracy of the Demand Models and Profiles which are used by the NDM Algorithm
- **identify any possible areas of improvement for future demand modelling**

- A deep dive review of 01BNI (similar to that carried out for 01BND in 2022/23) is suggested as results continue to be poor despite the large sample

- A number of other areas identified here, such as 01BND during the summer months, will be followed up and reported to DESC in March and Section 12 of the NDM Algorithms Booklet

- These Strand 3 results will also feed into the Day of the Week analysis which is being carried out as part of this year's Ad Hoc workplan