



2. Review of Uplift Factors Gas year 2018/19

DESC 1st April 2019

Background

- At the 9th July 2018 meeting – DESC approved EON’s proposed “one-off” change to the approved demand models in order to influence UIG for the forthcoming Gas Year (2018/19)
- These uplift factors would be applied to the Band 1 ALPs and all EUCs for the DAFs (as agreed by DESC)
- A summary of EON’s intentions were as follows:
 - reduce the volatility of UIG
 - reduce reconciliation
 - potentially reducing UIG to circa 3% as a consequence
- Xoserve applied these uplift factors to the approved models and they have been used in daily Nominations and Allocation from 1st Oct ’18
- At the February DESC meeting it was agreed that the Spring Approach should include the possibility of using such factors again and so to support these discussions it was requested a review of their current impacts should be done

2018/19 Uplift Factors

- A reminder of the approved Uplift Factors for Gas Year 2018/19 below, also available in the UNC Related document: NDM Demand Estimation Methodology (DEM)

Table of Uplift Factors for ALPs (Band 1 only)

LDZ	Winter	Summer
EA	1.07	1.08
EM	1.05	1.03
NE	1.08	1.05
NO	1.05	1.05
NT	1.02	1.01
NW	1.08	1.06
SC	1.04	1.04
SE	1.01	1.00
SO	1.05	1.04
SW	1.03	1.02
WM	1.04	1.04
WN	1.09	1.07
WS	1.04	1.03

Table of Uplift Factors for DAFs (All EUCs)

LDZ	Factor
EA	1.04
EM	1.06
NE	1.09
NO	1.09
NT	1.04
NW	1.00
SC	1.09
SE	1.07
SO	1.07
SW	1.08
WM	1.02
WN	1.00
WS	1.05

Objective

- To review the impacts of UIG uplift factors for gas year 2018/19 so far
- To consider their potential use in the next gas year (2019/20)

Objective 1: Analysis

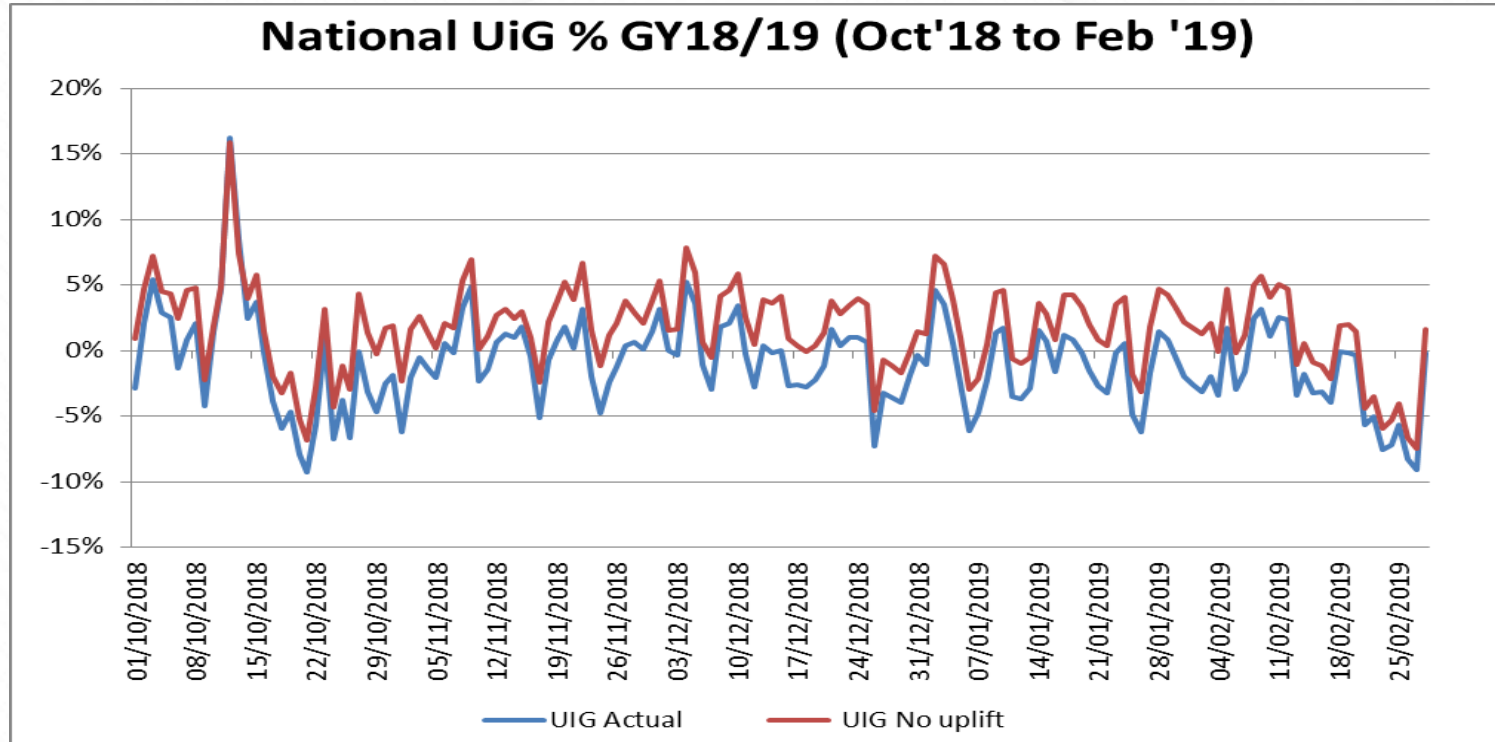
- Objective 1: To review the impacts of UIG uplift factors for gas year 2018/19 so far
- Analysis has utilised the following data
 - LDZ Inputs, DM Measurements and Shrinkage
 - Daily NDM AQ
 - ALPs and DAFs with uplift factors (referred to as “Actual” in analysis)
 - ALPs and DAFs (referred to as “No Uplift” in analysis)
- A simulation of NDM demand with and without uplift factors has been performed in order to understand the impacts to UIG with a comparison of the simulated UIG values for “Actual” and “No Uplift” carried out
- This has been done for all 13 LDZs (excl. Scottish independent sites) for the period 1st October 2018 to 28th February 2019

Statistical measures used in the analysis

The following statistics have been calculated at national and LDZ level by month:

- The average UIG percentage
- The Mean Absolute Percentage Error (MAPE) has been calculated to remove the directional bias and show where the largest deviation from zero is
- The standard deviation and variances have also been calculated to measure if there is any reduction in volatility (the smaller the value – the less variable the data is)

Analysis at National level



This chart shows the daily national UiG percentage levels for actual UiG (with uplift factors applied) and what UiG would have been if no uplift factors had been applied

Analysis at National level cont...

The following table displays the statistics for UiG at national level, by month, for all 13 LDZs (excluding the Scottish independent sites)

The cells highlighted in green are the values which are closest to zero when comparing the actual UiG value against the simulated UiG value.

Month	Average UiG %		MAPE		Variance		Std Dev.	
	No uplift	Actual	No uplift	Actual	No uplift	Actual	No uplift	Actual
Oct	1.76%	-0.70%	3.87%	4.16%	0.0021	0.0028	0.0530	0.0456
Nov	2.28%	-0.36%	2.67%	1.83%	0.0005	0.0006	0.0243	0.0221
Dec	2.11%	-0.49%	2.68%	2.06%	0.0007	0.0007	0.0264	0.0265
Jan	2.04%	-1.05%	2.84%	2.26%	0.0007	0.0007	0.0265	0.0268
Feb	0.02%	-2.39%	3.06%	3.34%	0.0014	0.0012	0.0341	0.0377
Total	1.67%	-0.98%	3.03%	2.72%	0.0011	0.0012	0.0334	0.0349

Analysis at LDZ level

This table shows the UiG averages and MAPEs by LDZ for all months (Oct '18 to Feb '19)

LDZ	Oct '18 to Feb '19			
	Average UiG percent actual	Average UiG percent no uplift	MAPE UiG actual	MAPE UiG no uplift
SC	-0.57	1.57	2.83	2.92
NO	-0.53	1.84	3.32	3.53
NW	-3.07	1.80	4.38	4.31
NE	-1.72	2.45	3.75	4.00
EM	-0.99	1.70	2.87	3.10
WM	-1.20	1.33	3.54	3.33
WN	-2.64	2.28	4.80	4.68
WS	-1.33	0.46	3.37	3.37
EA	-3.82	0.53	4.66	3.10
NT	1.44	2.51	3.14	3.51
SE	0.78	1.05	3.20	3.24
SO	-1.37	1.38	3.65	3.64
SW	1.16	2.71	6.03	6.18

The cells highlighted in green are the values which are closest to zero

9 out of 13 LDZs had an average UiG closest to zero where the uplift factors had been applied

Around half of the LDZs had a smaller MAPE where the uplift factor had been applied

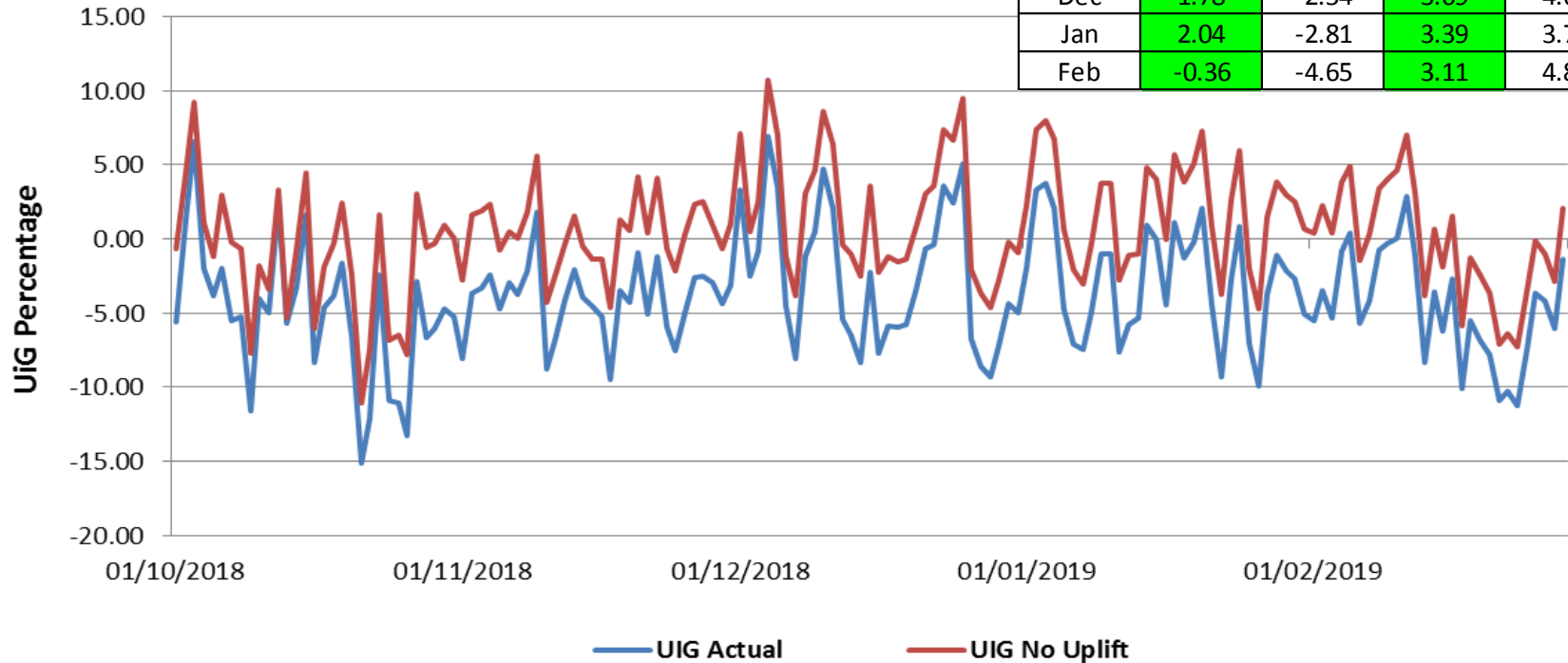
Analysis at LDZ level

- The following slides display the analysis results for 2 LDZs (SC and WM). The results for the remaining individual LDZs can be found within the appendix.

Analysis at LDZ level - EA

Month	LDZ = EA			
	Average UiG %		MAPE	
	no uplift	actual	no uplift	actual
Oct	-1.26	-5.08	3.44	5.84
Nov	0.36	-4.11	1.83	4.23
Dec	1.78	-2.54	3.69	4.62
Jan	2.04	-2.81	3.39	3.71
Feb	-0.36	-4.65	3.11	4.88

EA

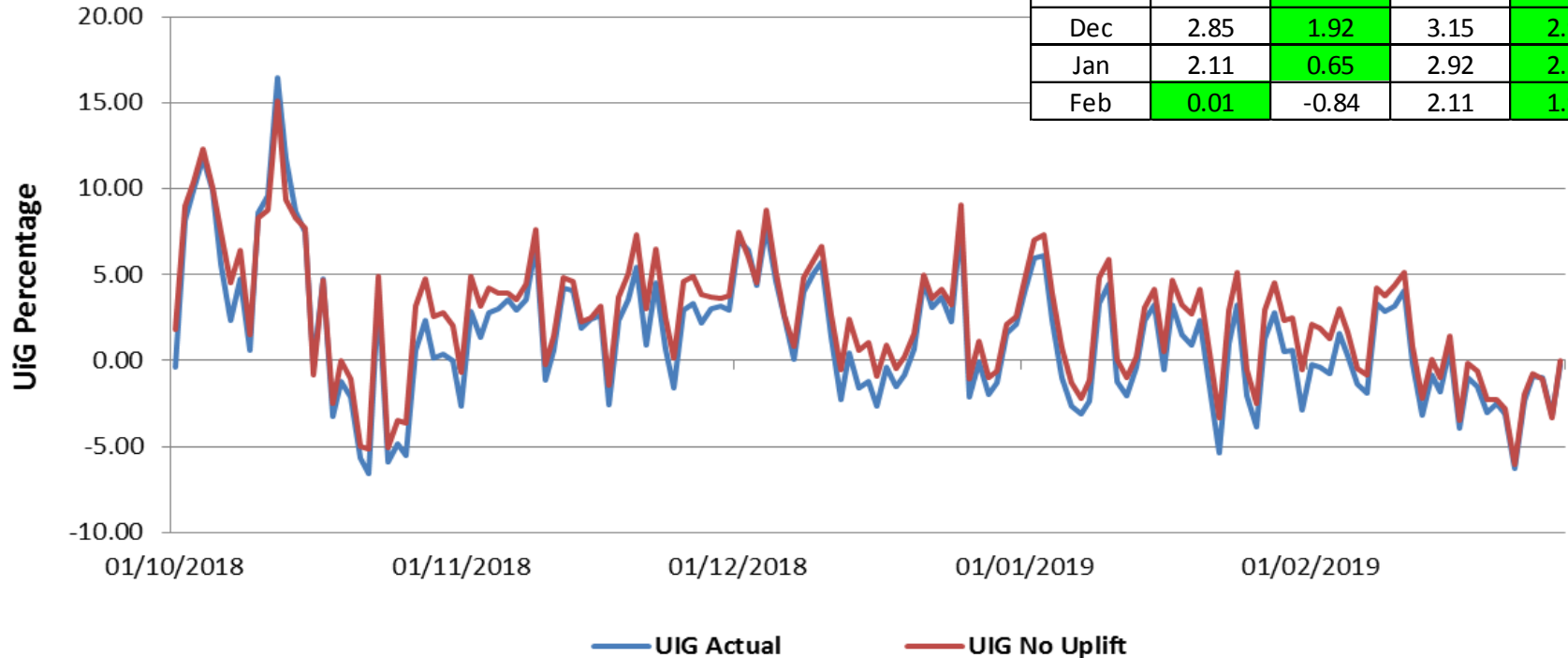


Analysis at LDZ level - NT

LDZ = NT

Month	Average UiG %		MAPE	
	no uplift	actual	no uplift	actual
Oct	3.85	2.97	5.57	5.28
Nov	3.50	2.33	3.65	2.86
Dec	2.85	1.92	3.15	2.95
Jan	2.11	0.65	2.92	2.52
Feb	0.01	-0.84	2.11	1.99

NT



— UiG Actual

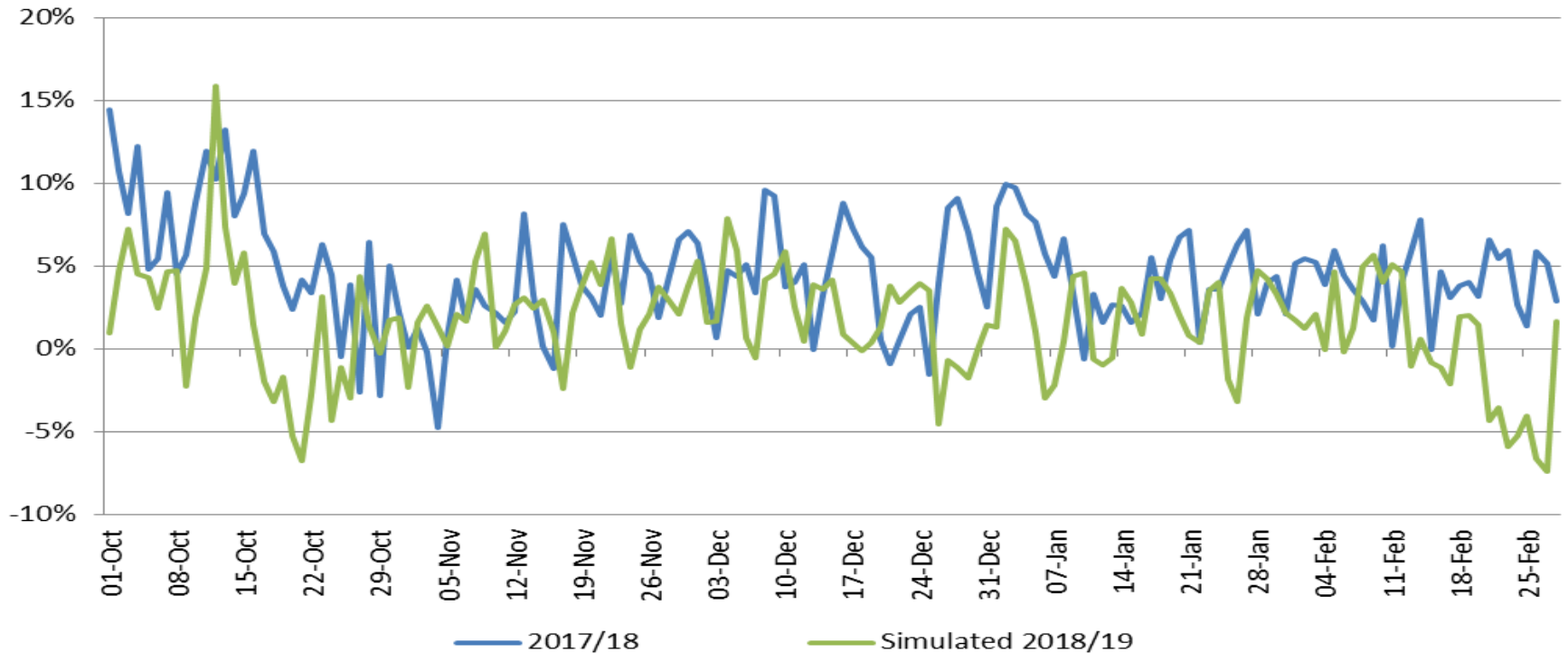
— UiG No Uplift

Comparison of National UIG - Gas Year 2017/18 & 2018/19

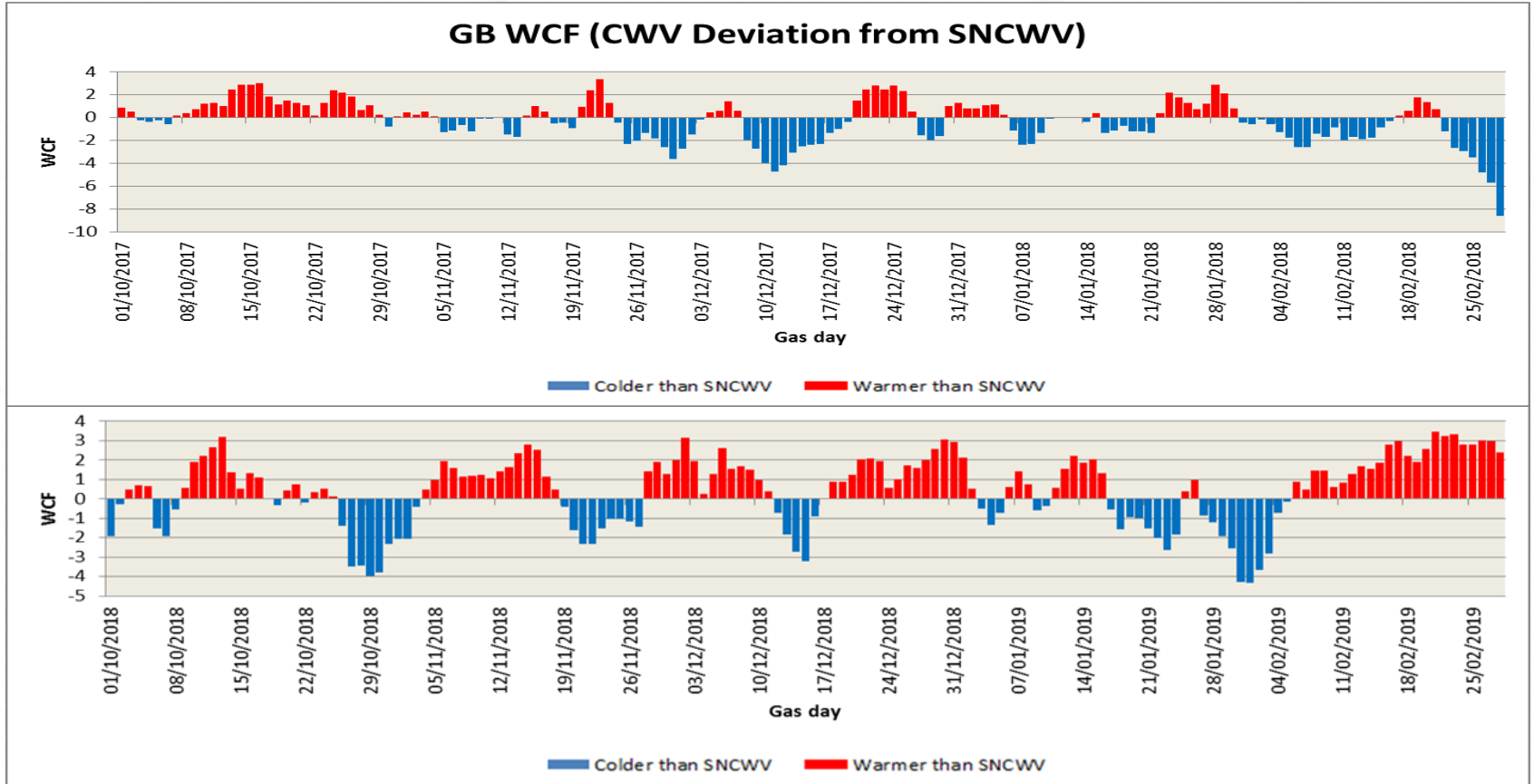
- The next few slides compare the National UIG for Gas Year 2017/18 with the simulated UIG for 2018/19. It is worth noting the weather we have experienced over the analysis period and the potential impact it could have had on UIG
- The slides show the following:
 - Comparison of National UIG
 - Comparison of the GB WCF for the analysis period in order to reflect on weather experienced
 - Review of February where there was a large contrast in weather experienced

UiG comparison by gas year

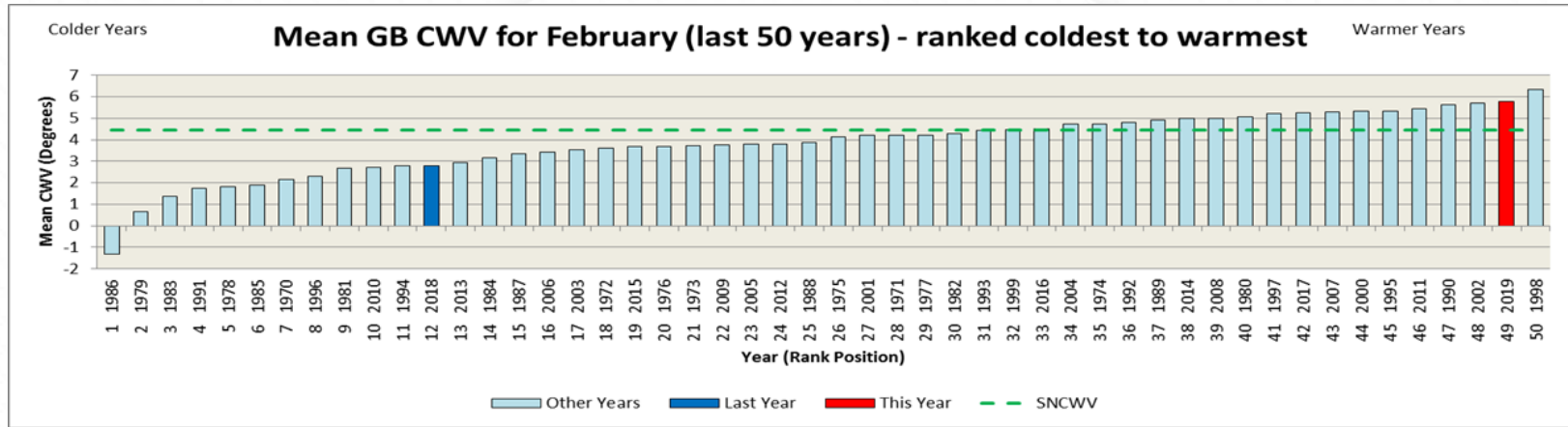
National UiG % D+5



Comparison of GB WCF



GB CWV monthly comparison cont...



Objective 1: Conclusions

- Objective: To review the impacts of UIG uplift factors for gas year 2018/19 so far
- Nationally, it appears that UiG levels have been reduced overall by applying the uplift factors
- By analysing the standard deviation and variances (which are very similar in both instances of UiG – with and without the uplift factors applied), it is not possible to state that volatility has been reduced
- Analysis at LDZ level provides a similar conclusion
- Analysis suggests that uplift factors have increased the NDM demand too much as expectation generally is that UIG should be a positive value
- This is supported by the levels of reconciliation seen so far for Gas Year 2018/19 which has generally been a credit (and therefore a debit to UIG)

Objective 2: Analysis

- Objective: To consider their potential use in the next gas year (2019/20)
- DESC's remit is to produce robust demand models for daily NDM Nominations and Allocation with the objective of minimising reconciliation
- In the absence of major industry changes to address UIG volatility/levels, DESC approved a one off use of Uplift Factors in Gas Year 2018/19 to influence UIG
- Any decision on whether to use Uplift Factors again in the next Gas Year should consider industry changes expected in time for Gas Year 2019/20
 - Analysis of the possible impacts of the new EUCs on UIG has been carried out
 - A summary of the latest UIG Taskforce recommendations and their current status is also provided

New EUCs in Bands 01 & 02

- DESC approved the use of additional EUCs in the consumption range 0 to 293 MWh pa (Bands 1 and 2) for Gas Year 2019/20
- DESC's objective is to ensure the daily estimation of NDM demand is as accurate as can be. These additional EUCs will provide consumption profiles which are more reflective of the target EUC's use – example of this in action below:

Chart below shows consumption from Non-Domestic sites in 01B but it is allocated using one demand model (based on domestic sites)

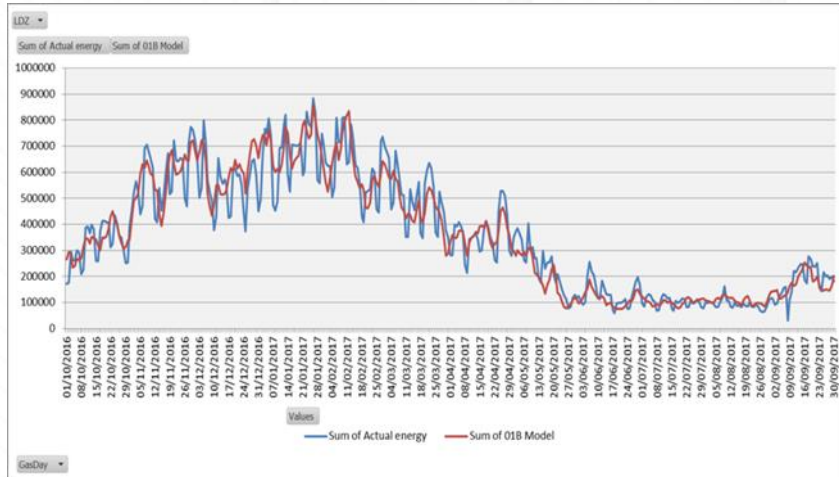
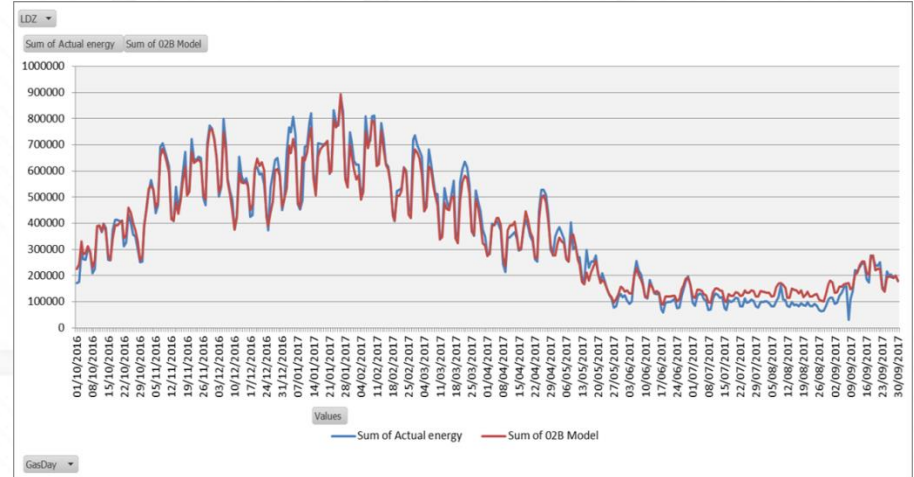


Chart below shows same consumption from Non-Domestic sites in 01B but it is allocated using a demand model based on non-domestic sites



Simulation using New EUCs in Bands 01 & 02

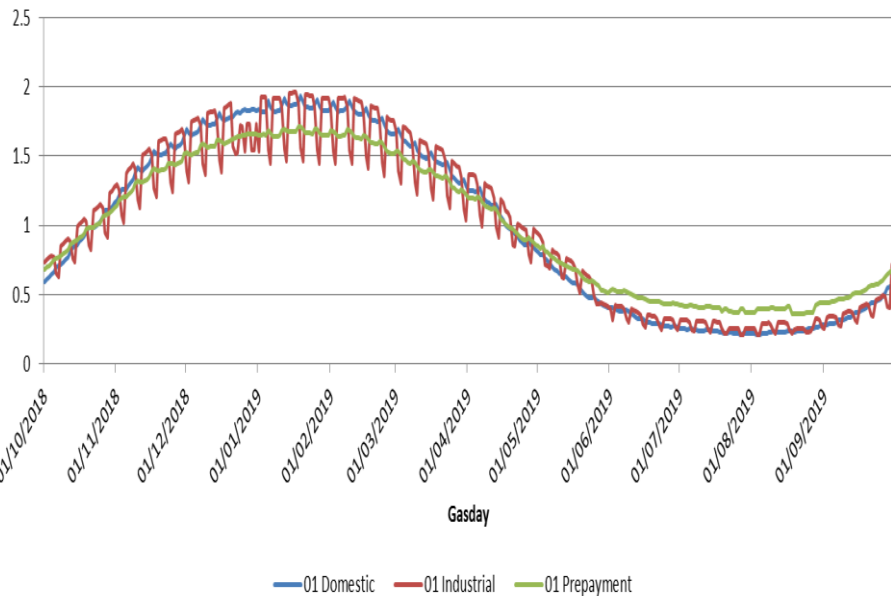
- Although not used, last year DESC produced additional demand models for Bands 1 and 2 which reflected the different consumer consumption patterns – these were 01B, 01I and 01P and 02B and 02D
- Simulation of NDM demand has been completed using these profiles in order to understand the possible consequences to UIG in Gas Year 2019/20
- This has been achieved by weighting the AQ in the simulation by the average % breakdown of 01B and 02B. Example weightings below:

Consumption Band 1 : Average Percentage Splits per category - Oct 2018 to Mar 2019													
LDZ	SC	NO	NW	NE	EM	WM	WN	WS	EA	NT	SE	SO	SW
D	88.49%	89.28%	88.30%	89.62%	89.90%	88.94%	85.81%	87.21%	90.79%	88.00%	89.65%	91.99%	90.43%
I	3.35%	3.45%	3.90%	4.18%	3.74%	3.68%	4.97%	3.92%	3.59%	4.10%	3.63%	3.94%	4.50%
P	8.16%	7.27%	7.80%	6.19%	6.36%	7.37%	9.22%	8.86%	5.62%	7.90%	6.72%	4.07%	5.07%

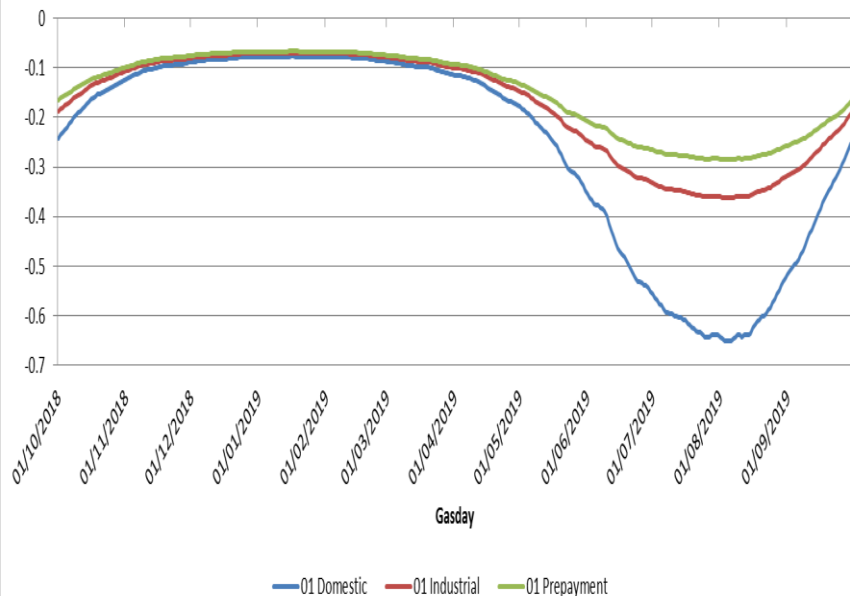
- Note this is done using Market Sector Code and Meter Mechanism Type only – in reality the EUC assignment will use a finer granularity including Payment Method for Smart meters
- Note: The simulation used ALPs and DAFs without Uplift Factors

Example of different Band 1 ALPs and DAFs

LDZ WM 201819 Consumption Band 1 Annual Load Profiles
Domestic / Industrial / Prepayment

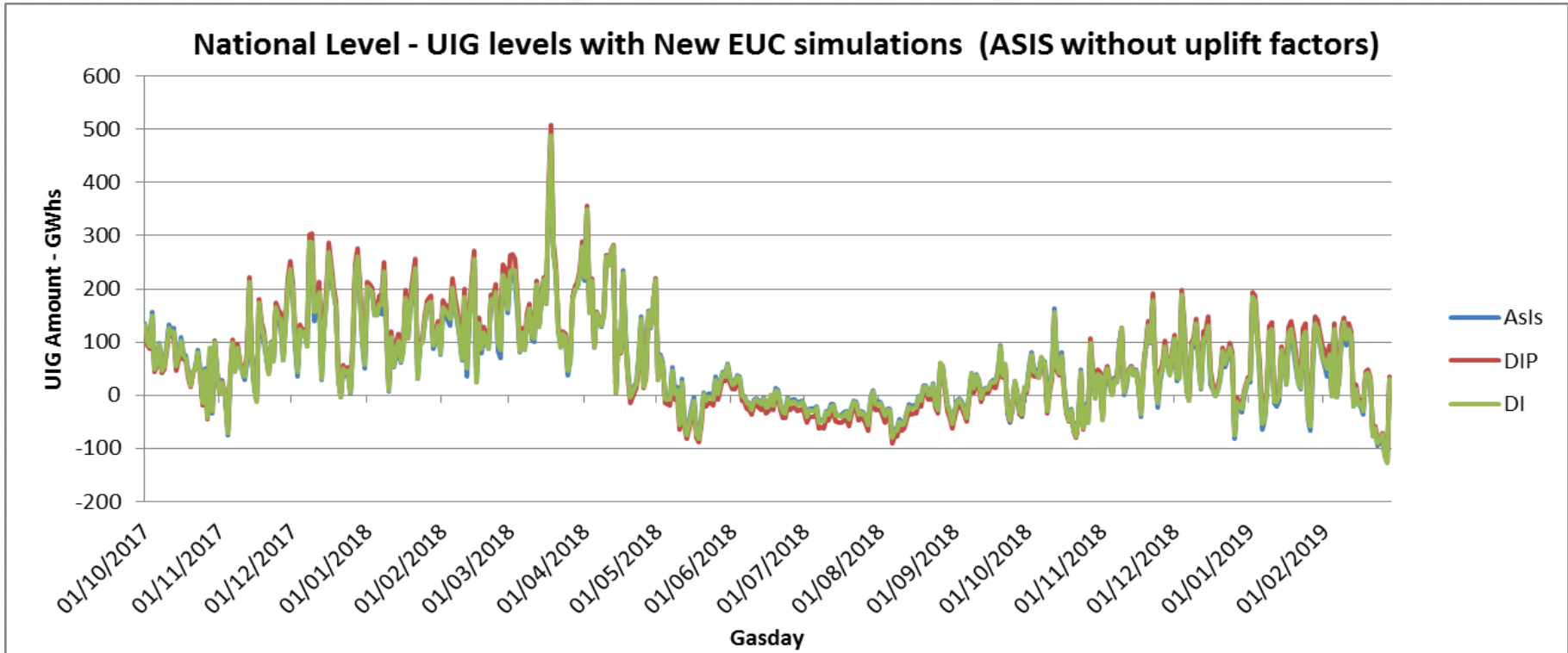


LDZ WM 201819 Consumption Band 1 - Daily Adjustment Factors
Domestic / Industrial / Prepayment



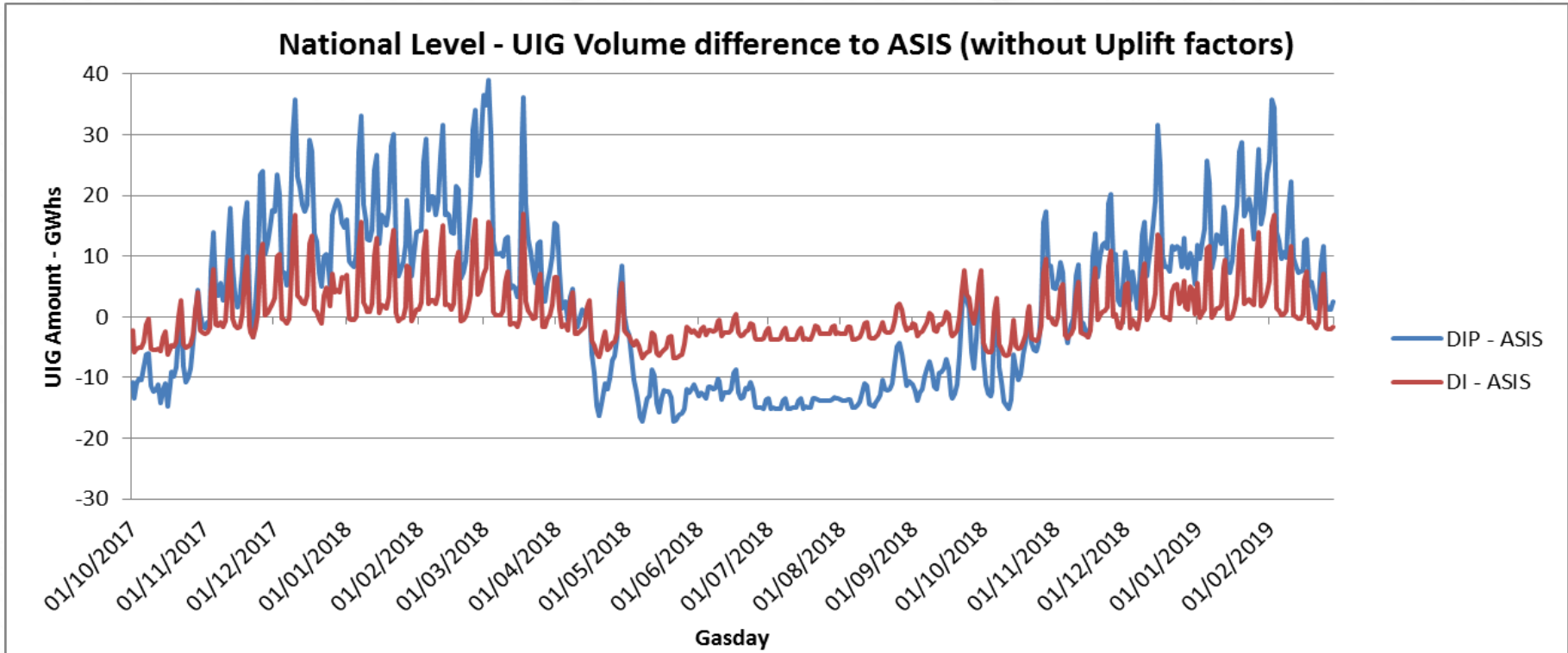
- The Prepayment profile is much flatter than domestic profile
- The Industrial profile has opposite weekend effects than domestic profile

Results of simulation UIG levels – Oct'17–Feb'19



- Generally positive UIG in Winter and negative in Summer
- Levels of UIG in Winter 18/19 lower than seen in 17/18

Results of simulation UIG Difference – Oct'17–Feb'19



- Introduction of New EUCs likely to increase UIG in Winter and reduce in Summer
- Day of the week pattern possibly suggests that current Market Sector Codes are not accurate ?

Simulation Results

- Although there may be an improvement in the accuracy of the allocation to 01B and 02B EUCs and hopefully reduced reconciliation, this does rely upon the data items held on SAP-ISU being accurate
- Results indicate as a result of introducing the new EUCs that UIG may be increased in the winter and reduced in the summer – this is not the direction desired
- The results in 2018/19 perhaps indicate that the Market Sector Code may not be completely accurate or that the small I&C models are not reflecting how the small I&C population consume their gas
- Highlights need to ensure relevant data items in SAP-ISU are as upto date as possible to ensure assignment of EUCs to supply points in Sept '19 is appropriate

Summary of UIG Task Force Findings and Next Steps

- UIG Task Force findings to date were presented at a special UNC UIG Workgroup meeting in January
- Recommendations to address were also presented
- Most recommendations require action from Shippers and/or changes to industry rules
- Summary of findings and Workgroup's preferred options to address are set out on following slides with assessment of timescales for reduction/resolution

UIG Task Force Findings 1 of 4

Log #	Description	Impact on base UIG	Impact on UIG volatility	Resolution Action Plan	Resolution lead times
3.2.1	Non Daily Metered (NDM) Sites in End User Category 09 (AQ >58.6m kWh)	Up to 0.4%	Up to 0.7%	Ongoing engagement with Shippers by Xoserve and PAC, report to Ofgem, UNC Mod to automate changes to Meter Read Frequency	Dependent on Shipper actions and UNC Mod process
3.2.2	NDM Sample sites with actual usage very different to UK Link AQ	0.25% est.	0.2% est.	PAC to investigate levels of meter read rejections (could be due to low AQs)	Dependent on Shipper actions
1	Use of Estimates for DM Sites (Actuals not loading)	0.09% est.	0.9% est.	Ongoing engagement with Shippers and DMSPs by Xoserve, report to Ofgem, possible UNC Mod to introduce/ increase incentives	Dependent on Shipper actions and UNC Mod process

UIG Task Force Findings 2 of 4

Log #	Description	Impact on base UIG	Impact on UIG volatility	Resolution Action Plan	Resolution lead times
12.1	Use of standard volume-to-energy conversion factor (AQ>732,000) (also referred to as “Correction Factor”)	0.1%	N/A	Ongoing engagement with Shippers by Xoserve and PAC, UNC Mod to update to last available non-standard CF if available (MOD 0681)	Dependent on Shipper actions and UNC Mod process
12.3	Use of non-standard volume-to-energy conversion factor (AQ<732,000)	- 0.02%	N/A	Engagement with Shippers by Xoserve and PAC, UNC Mod to update to standard CF (MOD 0681)	Dependent on Shipper actions and UNC Mod process
12.2	Appropriateness of standard volume-to-energy conversion factor of 1.02664	0.4%	3% est.	Further discussion needed, possible UNC Review Group	Dependent on UNC review timescales

UIG Task Force Findings 3 of 4

Log #	Description	Impact on base UIG	Impact on UIG volatility	Resolution Action Plan	Resolution lead times
3.2.8	NDM Sample sites registering consumption, with UK Link AQ=1 (highlighted inaccurate AQs)	0.35% est.	N/A	Ongoing engagement with Shippers by Xoserve and PAC, pending UKLink change XRN4803 to remove a cause of erroneous read rejections	Review in July 2019, consider other options if needed
3.1	AQ calculation errors due to rejection of uncorrected meter reads	TBC	TBC	2 Xoserve Changes raised for temporary workaround pending full system change in November	Review in November/ December 2019
2	Low Take-up of WAR Band End User Categories for sites based on Winter Annual Ratio (AQ>293,000 kWh)	0.03%	2.5% est.	Ongoing engagement with Shippers by Xoserve and PAC, UNC MOD 0652 enhances reporting.	Dependent on Shipper actions

UIG Task Force Findings 4 of 4

Log #	Description	Impact on base UIG	Impact on UIG volatility	Resolution Action Plan	Resolution lead times
13.2.2	Accuracy of NDM Algorithm – Use of weather data/weather sensitivity	TBC	TBC	Passed to DESC for further consideration	Gas Year 2020
13.2.5	Use of additional weather in the NDM Estimation Algorithm	TBC	TBC	Passed to DESC for further consideration	Gas Year 2020

Objective 2: Conclusions

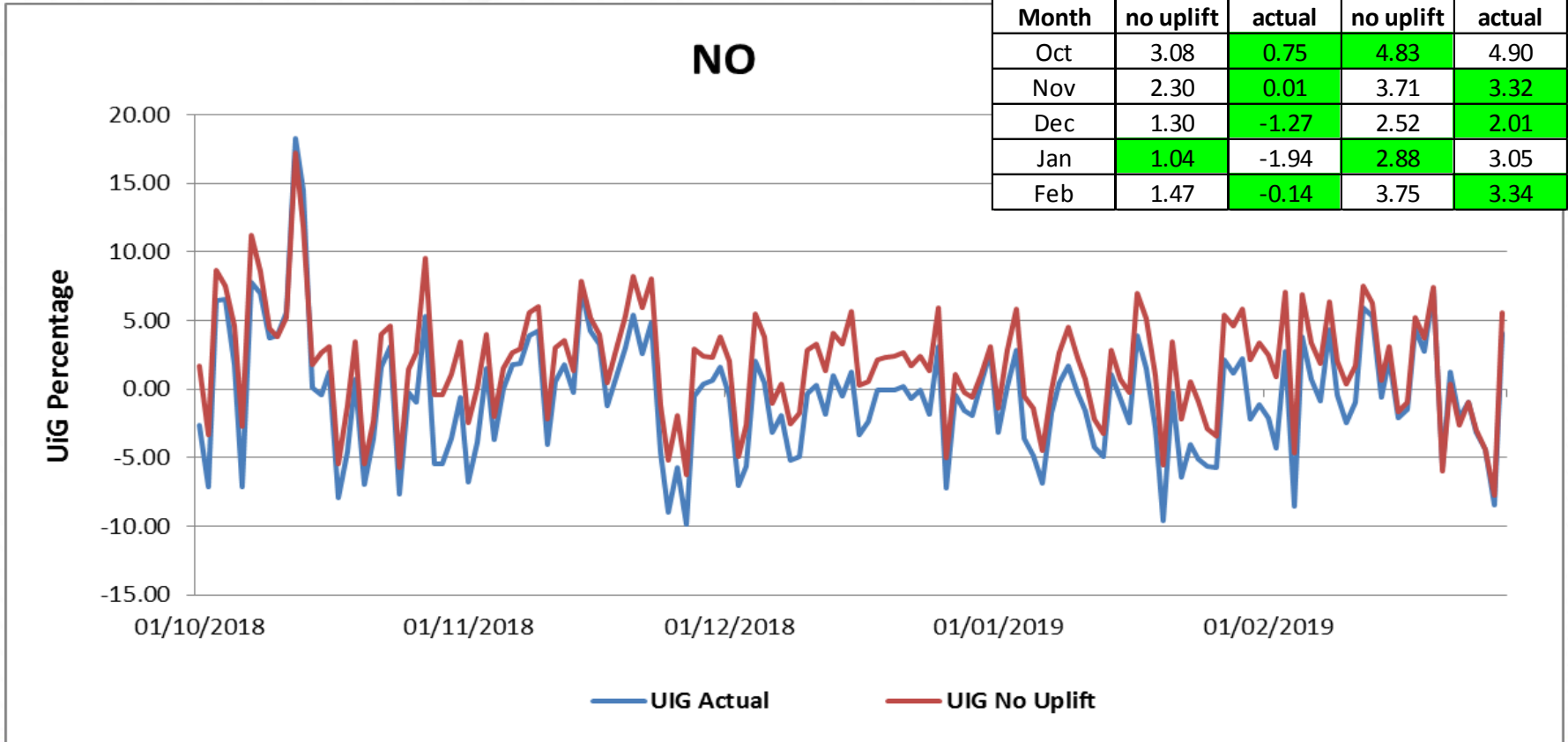
- Objective: To consider their potential use in the next gas year (2019/20)
- New EUC definitions and associated profiles likely to increase UIG in winter and reduce in summer
- Lead times on UIG Taskforce findings vary and many reply upon Shipper actions / UNC Mods
- Options available to DESC for Gas Year 2019/20:
 - Do nothing i.e. use ALPs and DAFs without Uplift Factors
 - Apply existing Uplift Factors (change required to DEM)
 - Apply revised set of Uplift Factors (how will these be calculated and by whom ? change required to DEM)

Next Steps

- DESC to agree how it wishes to proceed with this topic ? and how we engage with the wider industry as a decision to use Uplift Factors in Gas Year 2019/20 is likely to be high profile
- Reminder of timetable ahead:
 - Draft profiles for Gas Year 2019/20 will be produced end of May and made available for DESC review in early June
 - Consultation to take place in June/July with approval of profiles expected mid to late July
 - Final set of profiles needed for interface files early August

Appendix

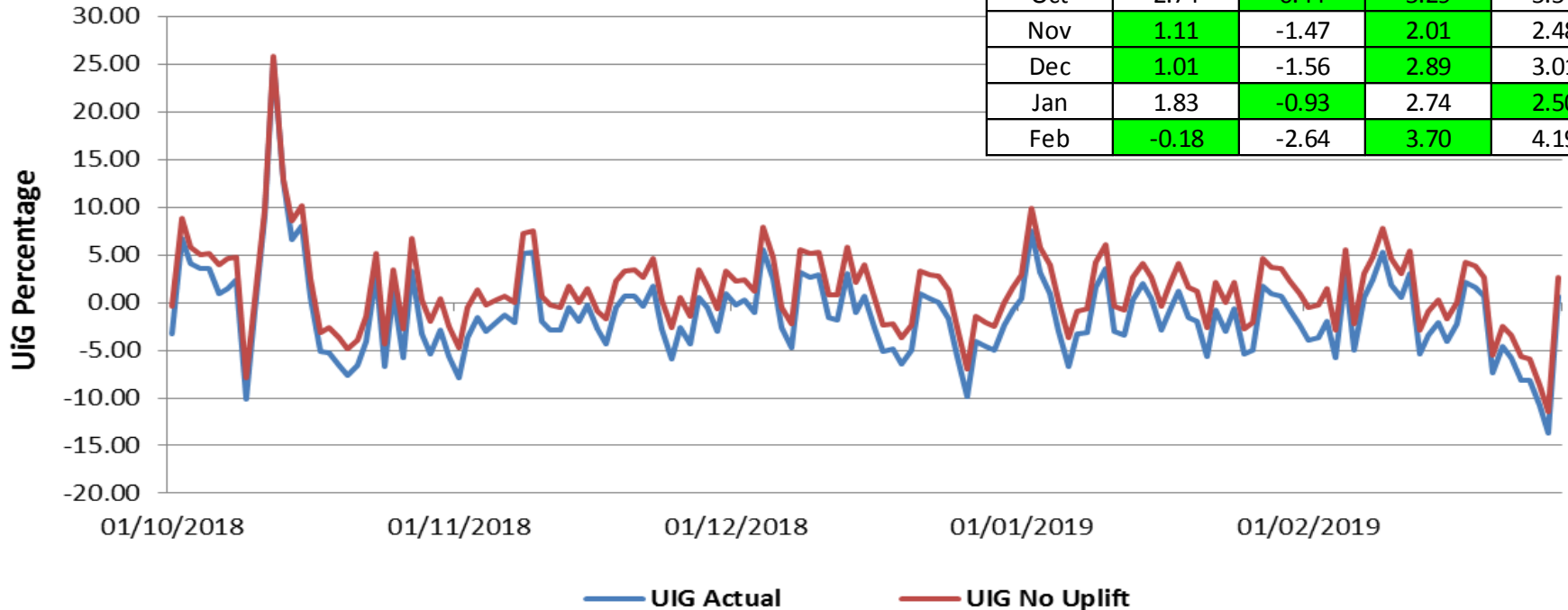
Month	LDZ = NO			
	Average UiG %		MAPE	
	no uplift	actual	no uplift	actual
Oct	3.08	0.75	4.83	4.90
Nov	2.30	0.01	3.71	3.32
Dec	1.30	-1.27	2.52	2.01
Jan	1.04	-1.94	2.88	3.05
Feb	1.47	-0.14	3.75	3.34



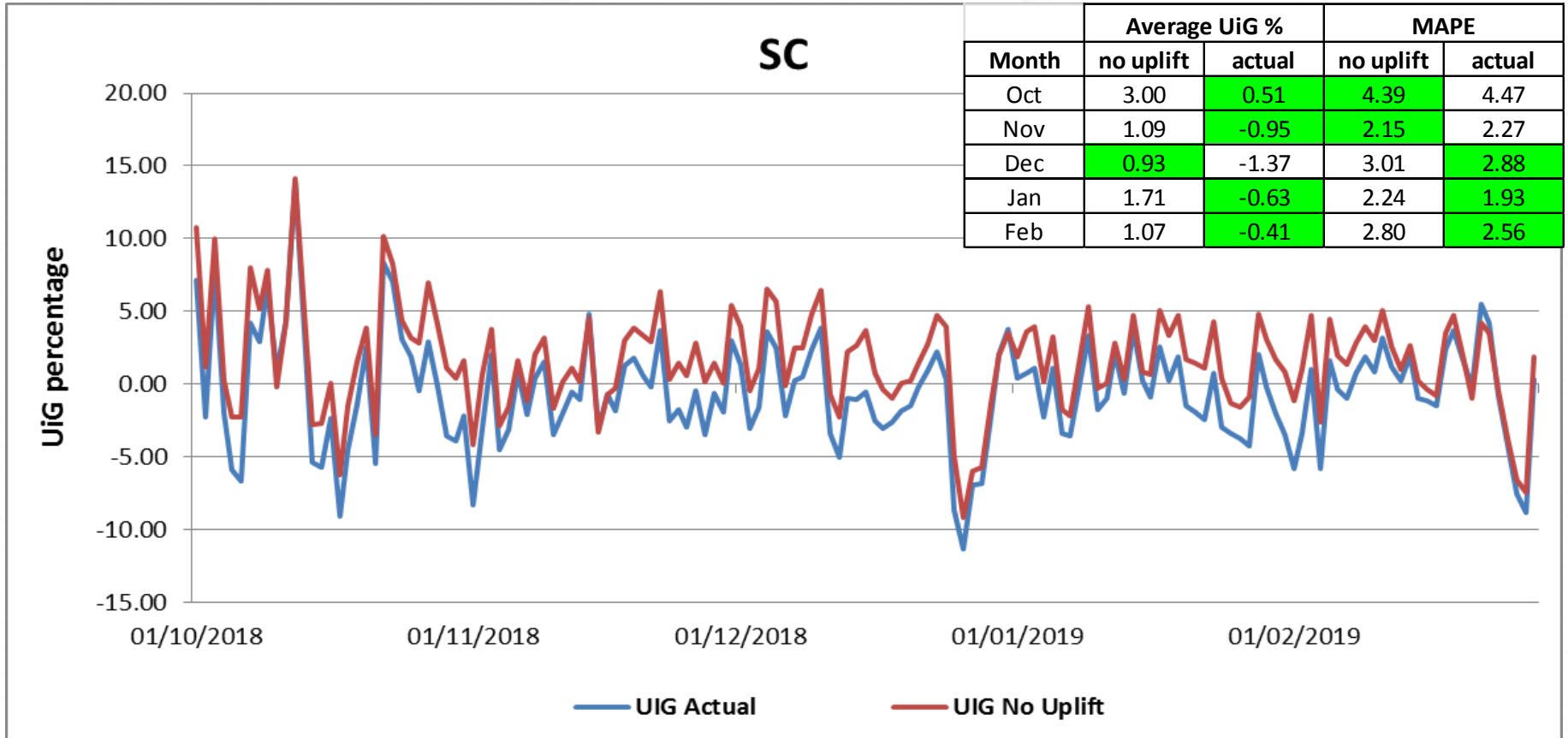
Appendix

WM

Month	Average UiG %		MAPE	
	no uplift	actual	no uplift	actual
Oct	2.74	0.44	5.29	5.54
Nov	1.11	-1.47	2.01	2.48
Dec	1.01	-1.56	2.89	3.01
Jan	1.83	-0.93	2.74	2.50
Feb	-0.18	-2.64	3.70	4.19

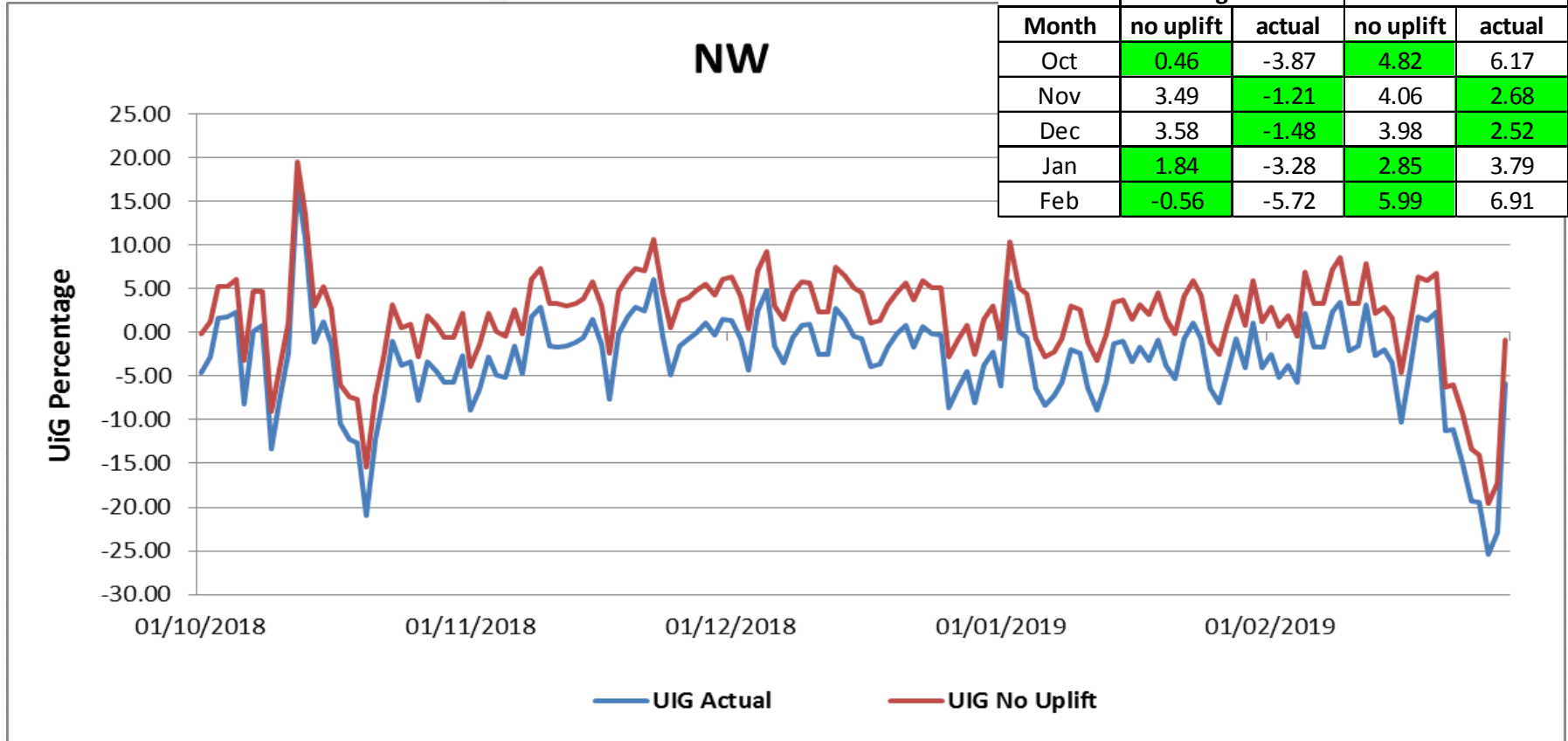


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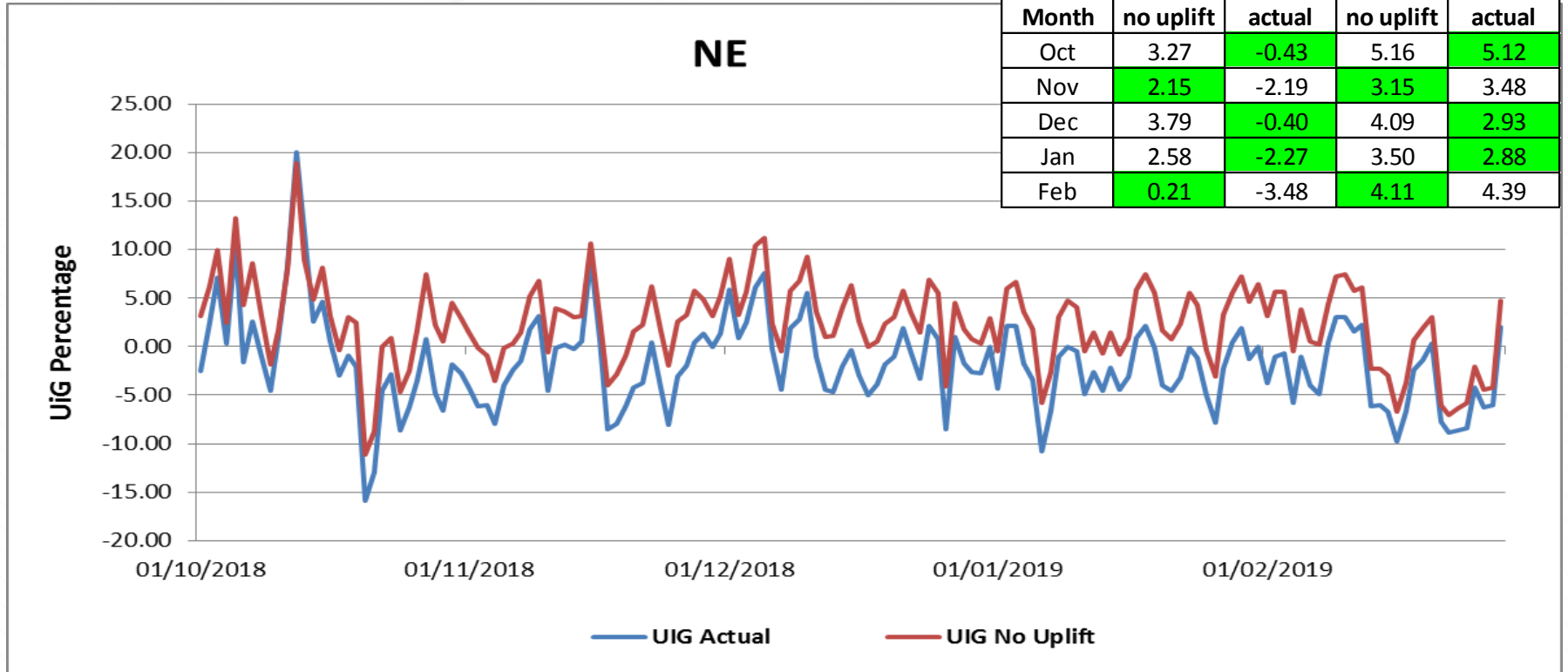


Appendix

Month	LDZ = NW			
	Average UiG %		MAPE	
	no uplift	actual	no uplift	actual
Oct	0.46	-3.87	4.82	6.17
Nov	3.49	-1.21	4.06	2.68
Dec	3.58	-1.48	3.98	2.52
Jan	1.84	-3.28	2.85	3.79
Feb	-0.56	-5.72	5.99	6.91



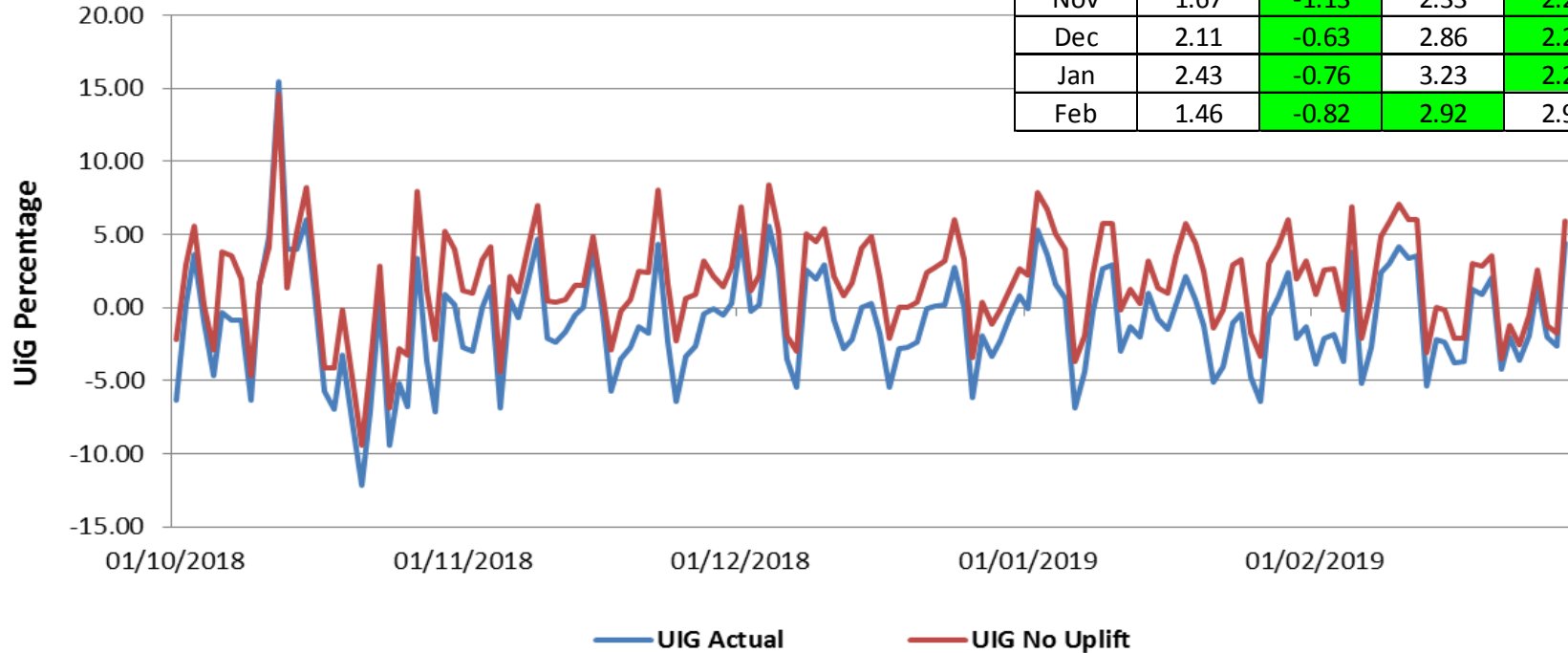
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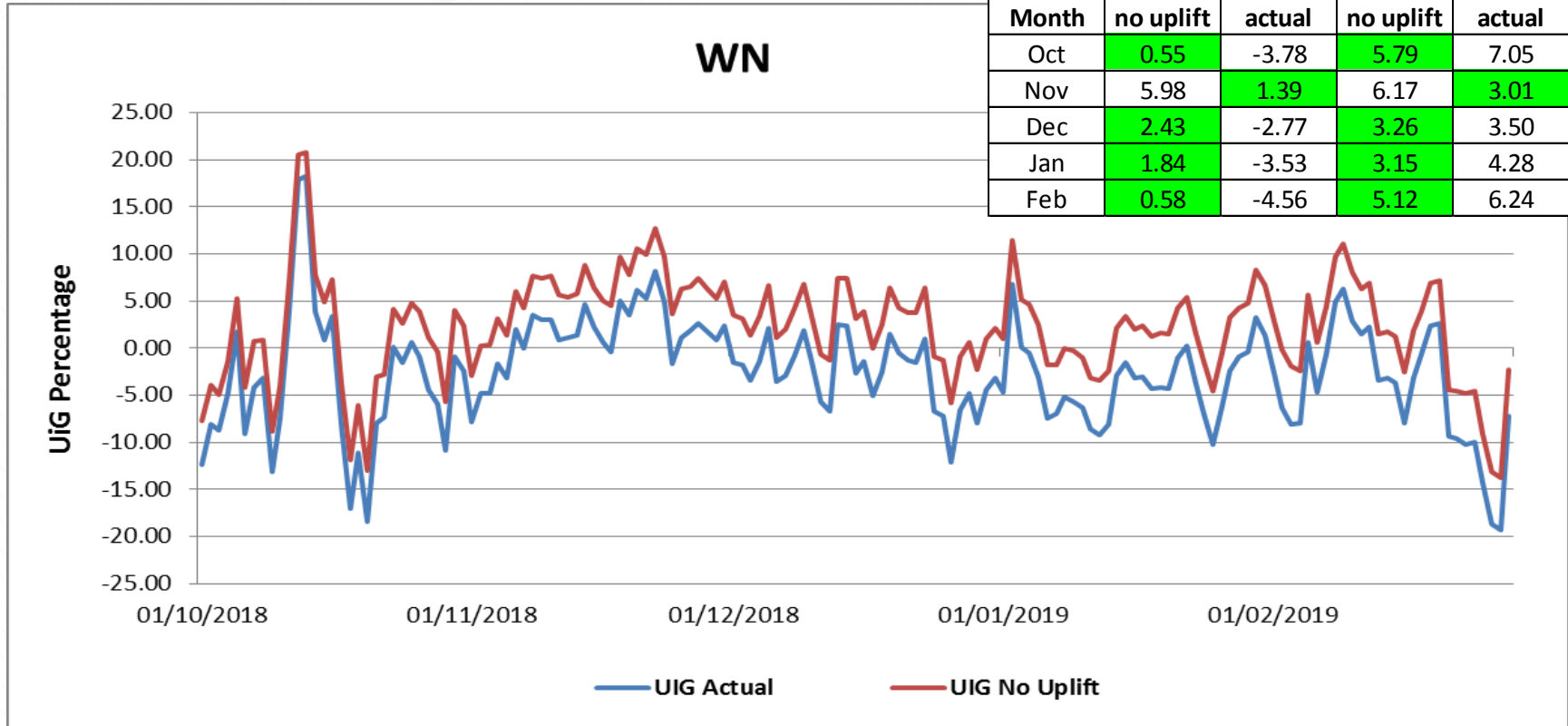
Appendix

LDZ = EM				
Average UiG %		MAPE		
Month	no uplift	actual	no uplift	actual
Oct	0.80	-1.62	4.14	4.55
Nov	1.67	-1.13	2.33	2.28
Dec	2.11	-0.63	2.86	2.25
Jan	2.43	-0.76	3.23	2.29
Feb	1.46	-0.82	2.92	2.99

EM



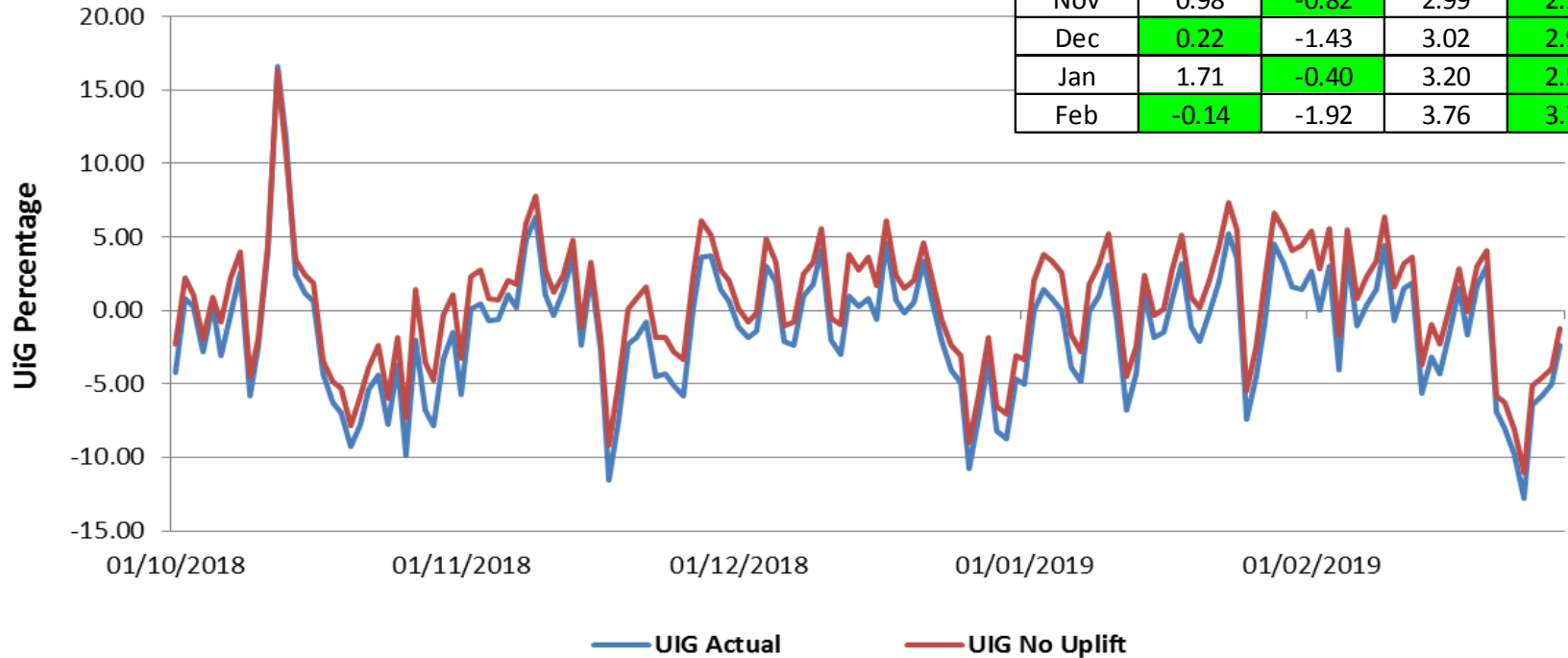
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Appendix

Month	LDZ = WS			
	Average UiG %		MAPE	
	no uplift	actual	no uplift	actual
Oct	-0.53	-2.10	3.90	4.72
Nov	0.98	-0.82	2.99	2.90
Dec	0.22	-1.43	3.02	2.98
Jan	1.71	-0.40	3.20	2.52
Feb	-0.14	-1.92	3.76	3.72

WS

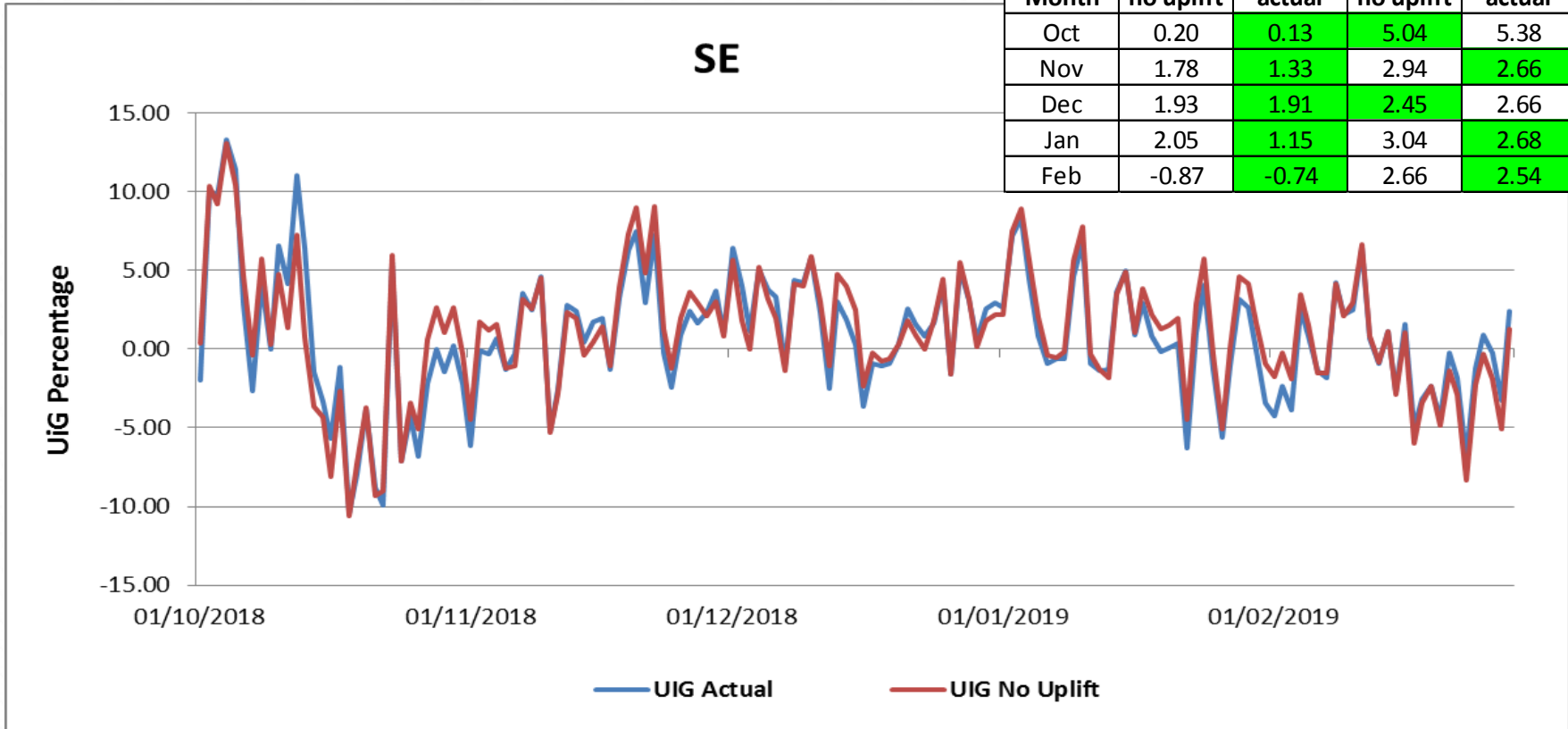


Appendix

LDZ = SE

Month	Average UiG %		MAPE	
	no uplift	actual	no uplift	actual
Oct	0.20	0.13	5.04	5.38
Nov	1.78	1.33	2.94	2.66
Dec	1.93	1.91	2.45	2.66
Jan	2.05	1.15	3.04	2.68
Feb	-0.87	-0.74	2.66	2.54

SE

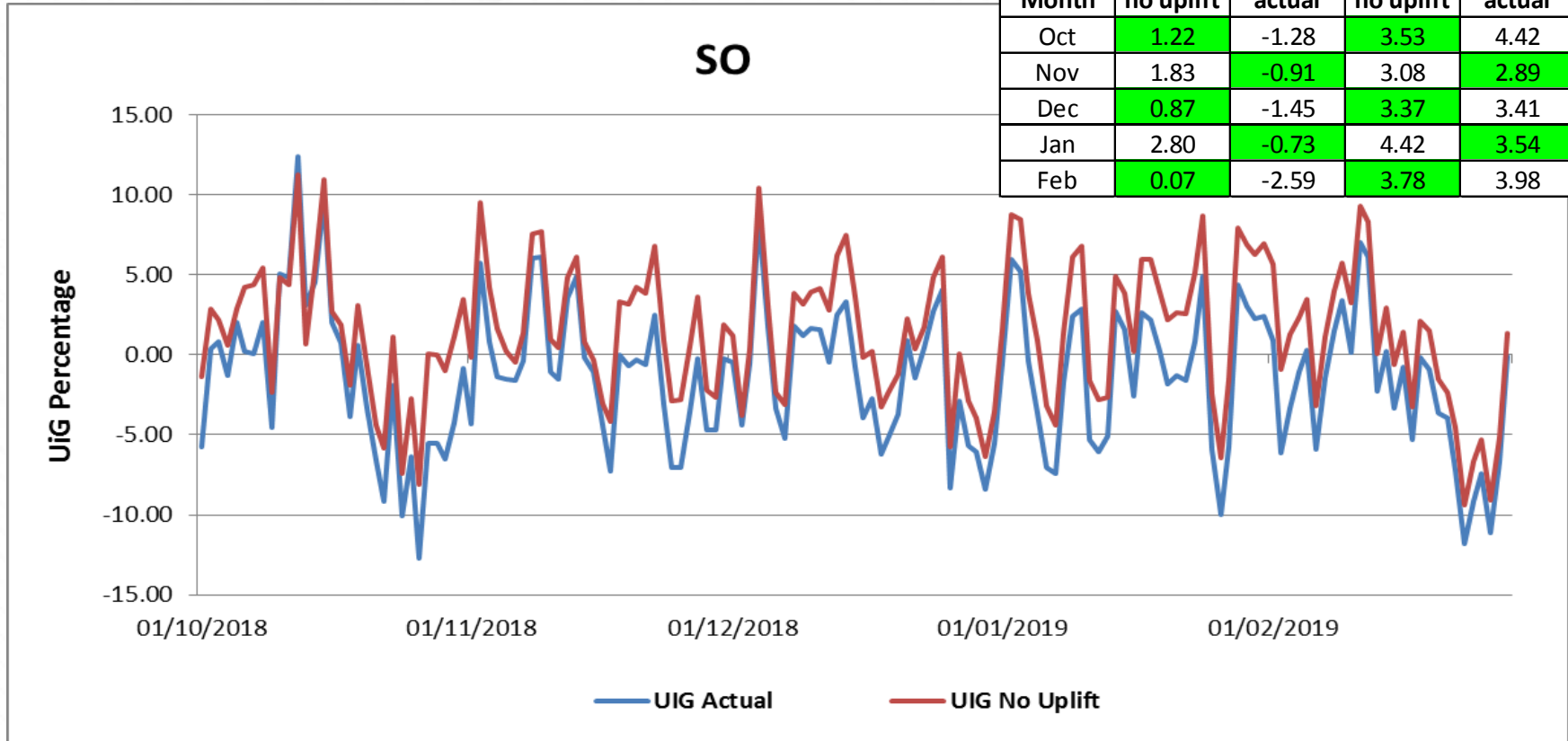


— UiG Actual

— UiG No Uplift

Appendix

Month	LDZ = SO			
	Average UiG %		MAPE	
	no uplift	actual	no uplift	actual
Oct	1.22	-1.28	3.53	4.42
Nov	1.83	-0.91	3.08	2.89
Dec	0.87	-1.45	3.37	3.41
Jan	2.80	-0.73	4.42	3.54
Feb	0.07	-2.59	3.78	3.98



Appendix

Month	LDZ = SW			
	Average UiG %		MAPE	
	no uplift	actual	no uplift	actual
Oct	4.85	3.41	9.09	9.91
Nov	6.37	4.92	6.75	5.97
Dec	3.20	2.19	5.37	4.88
Jan	1.72	-0.64	3.62	3.03
Feb	-3.02	-4.53	6.07	6.39

SW

