Demand Estimation Sub Committee

2.0 2022/23 NDM Algorithms Review DESC Representations

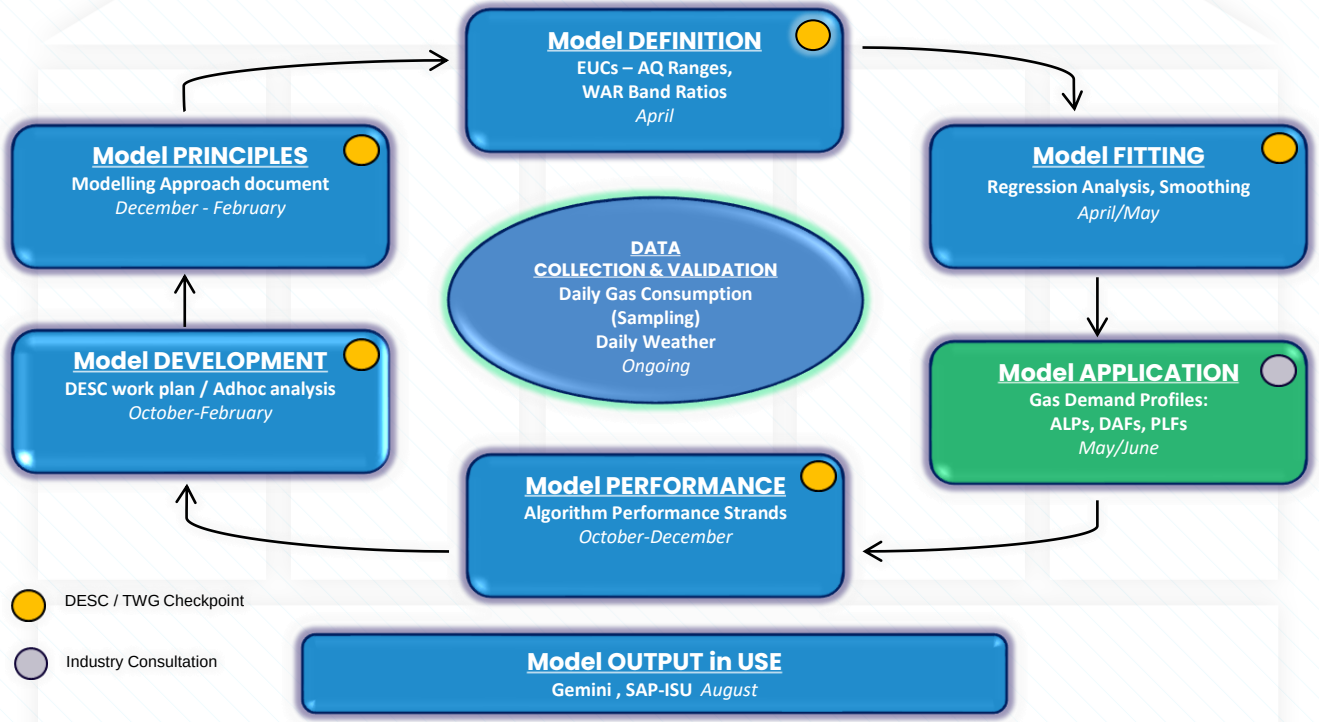
7th July 2022

Contents

Background, Timetable and Objective of Meeting

Demand Estimation: Background

- An overview of the Demand Estimation process and output can be found here
- This presentation relates to the “Model Application” phase of the Demand Model cycle



Demand Estimation Timetable - 2022

High Level View of Demand Estimation Timetable 2022 - Key Checkpoints

PHASE	MILESTONE	CHECKPOINT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1. MODEL PRINCIPLES	Modelling Approach 2022 Approved	DESC Meeting			02-Mar									
2. DATA COLLECTION & VALIDATION	Daily Gas Consumption Data validated	Internal				14-Apr								
3. MODEL DEFINITION	Agree Data Aggregations / WAR Band Limits	TWG Meeting				27-Apr								
4. MODEL FITTING	Gas Demand EUC Modelling review	TWG Meeting					24-May							
5. MODEL APPLICATION	Publication of Draft Gas Demand Profiles	Website						10-Jun						
	Gas Demand Profiles Approved for wider industry	DESC Meeting							07-Jul					
	Final Approval of Gas Demand Profiles	DESC Meeting							19-Jul					
6. MODEL OUTPUT IN USE	SAP-ISU and Gemini updated	Internal								14-Aug				
7. MODEL DEVELOPMENT	Adhoc Work-plan approved	DESC Meeting							19-Jul			05-Oct		
8. MODEL PERFORMANCE	NDM Algorithm Performance - Strands 1 to 3 Review	DESC Meeting												13-Dec

2: Objectives of Meeting

- The final objective of the “Model Application” phase is for TWG, DESC and the industry to review the Derived Factors – ALPs, DAFs and PLFs in order to approve final versions to be used in Gemini and SAP-ISU for the new Gas Year

- Objective of today’s meeting is to:

  - For TWG and DESC members to consider and review all representations raised and the responses provided by the CDSP

  - To gain TWG and DESC support for proposals prior to submitting for wider industry review

Modelling Approach

Modelling Approach – Basis of 2022 Modelling (1 of 2)

Key aspects are:

- Daily Gas Consumption Data was validated and, where necessary, selected in line with the stratification method
- Demand modelling runs and any necessary aggregations (following validation and selection) were agreed by TWG in April
- The Composite Weather Variable (CWV) definitions and Seasonal Normal basis (SNCWV), effective from 1st October 2020, will be used
- New Demand modelling rules for defining holiday periods following agreement by DESC at the meeting on 2nd March 2022 were used. These are the first changes to Holiday definitions since the 2012 modelling year
- In line with recent years, holidays have been excluded from the regression models for Domestic EUCs
- All gas demand modelling is data driven – if the modelling results indicate, then Holiday & Weekend Factors, Summer Reductions & Cut-Offs were applied

Modelling Approach – Basis of 2022 Modelling (2 of 2)

- Warm-weather cut-offs:
  - Not applied to EUC models < 293 MWh pa, meaning no cut-off is placed on warm weather demand reduction in EUC models representing nearly 80% of NDM load
  - Any cut-offs are based on modelling results from 3 years
- Summer Reductions:
  - Summer reductions can apply to EUC models over the period from the Sunday before Spring Bank Holiday Monday to last Sunday in September – i.e. 28th May 2023 to 24th September 2023
  - Above applies along with the more general summer holiday period in July and August
  - Any summer reductions are based on modelling results over 3 years
- Modelling methodology in NDM Algorithms Booklet (Sections 3 & 4)
- The Gas Demand Modelling performed this year was the third set of analysis to be performed using the newly implemented Demand Estimation EUC Gas demand modelling system

Summary of Modelling Progress to Date

3: Summary of Modelling Progress to date

- Data Aggregations and WAR Band thresholds for latest single year models agreed at April TWG meeting (27th)
- Single year modelling approved at May TWG meeting (24th)
- Model smoothing process followed along with production of draft Derived Factors (published for review 10th June)
  - Smoothed model outcomes summarised on slides 10 and 11
- Note: All modelling / output parameters have been produced using new holiday code factors as agreed at March DESC Meeting (2nd)
  - Any comparisons to last year's GY21/22 demand profiles are not on the same basis

3: Smoothed Model Outcomes: Small NDM

	2022	2021
Straight Models	30	50
Cut-Off Only	14	12
Summer Reductions Only	178	158
No Slope	0	0
Cut-Off and Reductions	12	14
Total Number of EUCs	234	234

- Small NDM meters are 0 to 2,196 MWh p.a. and represent approx. 88% of current NDM AQ

3: Smoothed Model Outcomes: Large NDM

	2022	2021
Straight Models	152	153
Cut-Off Only	14	6
Summer Reductions Only	69	72
No Slope	33	33
Cut-Off and Reductions	5	9
Total Number of EUCs	273	273

- Large NDM meters are > 2,196 MWh p.a. and represent approx. 12% of current NDM AQ

DESC/TWG Comments and Demand Estimation Responses

4: DESC/TWG Comments and Demand Estimation Responses

- Email sent on 10th June asked TWG representatives and DESC members for feedback by no later than close of play 28th June in order to prepare for today's meeting

- Feedback has been received from 2 parties
  - 1 of these relates specifically to the PPM profiles Topic

- Summary of Representation topics to be covered below:
  - Topic 1: Prepayment Meter Profiles – Demand Estimation
  - Topic 2: October reduction in ALPs – E.ON
  - Topic 3: July/August increase in ALPs – E.ON

Topic 1: Prepayment Meter Profiles

- A slide pack regarding prepayment meters was published on the 21st June and an email outlining the purpose sent to all DESC / TWG members.

- We will now go through the slide pack 01BPD Options DESC_TWG_070722.pdf

- The following options are for DESC to consider (**2. Recommended**):

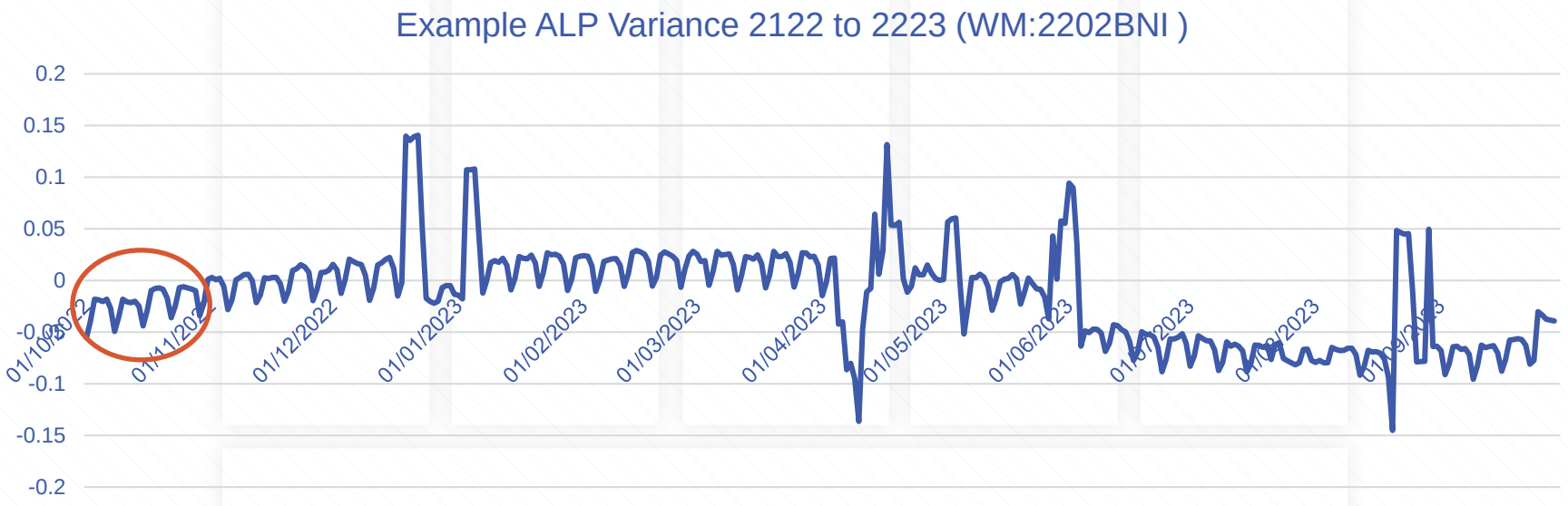
1. Adopt the new values as a single year model (i.e. draft profiles currently published)

2. **Adopt the new values as the 3rd year of a 3 year smoothed model, using the MOD451AV data for the other 2 years (i.e. 66% current / 34% new)**

3. Do not use the new values and revert back to the MOD451AV data

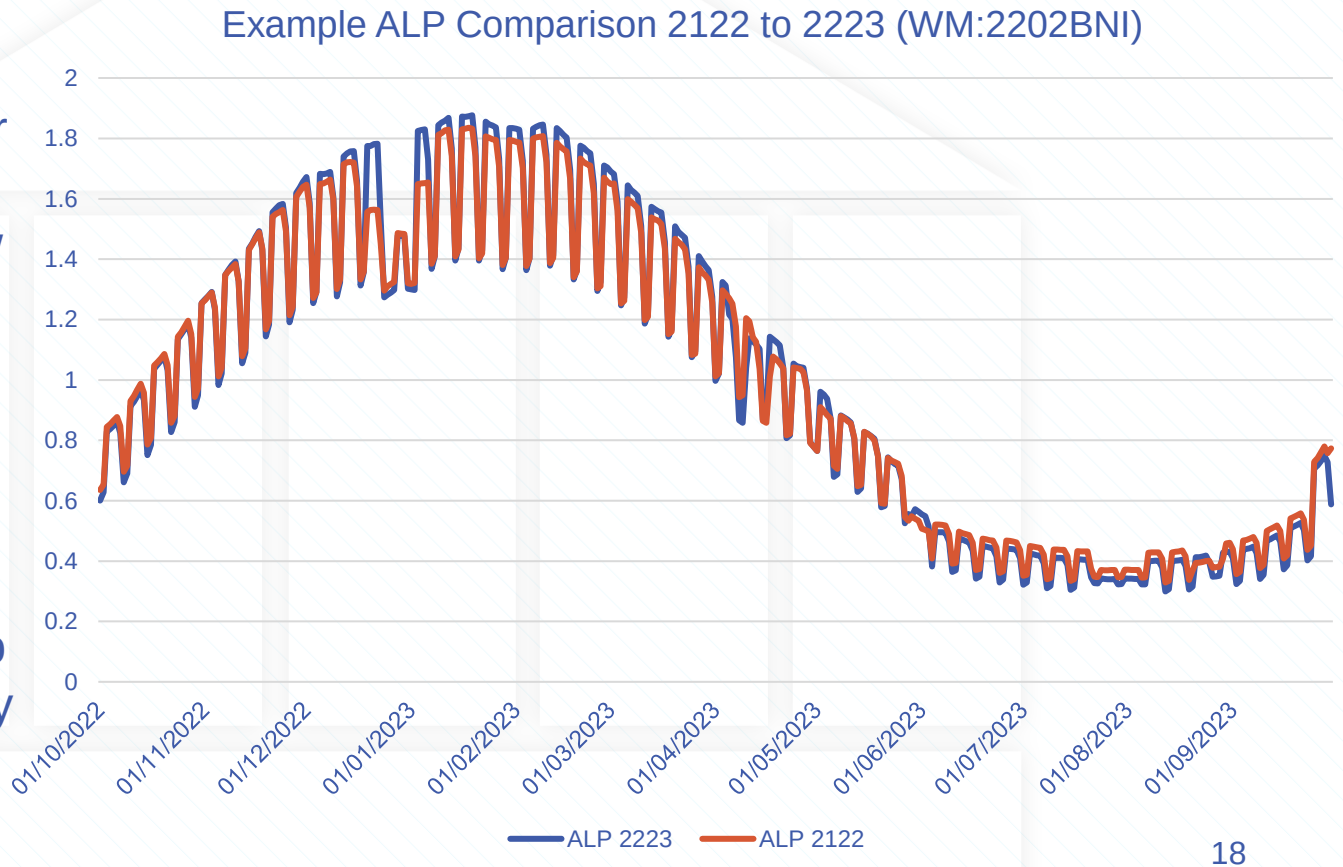
Topic 2: October reduction in ALPs

E.ON comment: *“I notice there is a reduction in October for most profiles, is there an explanation to why we see such a reduction or change in behaviour in this month?”*

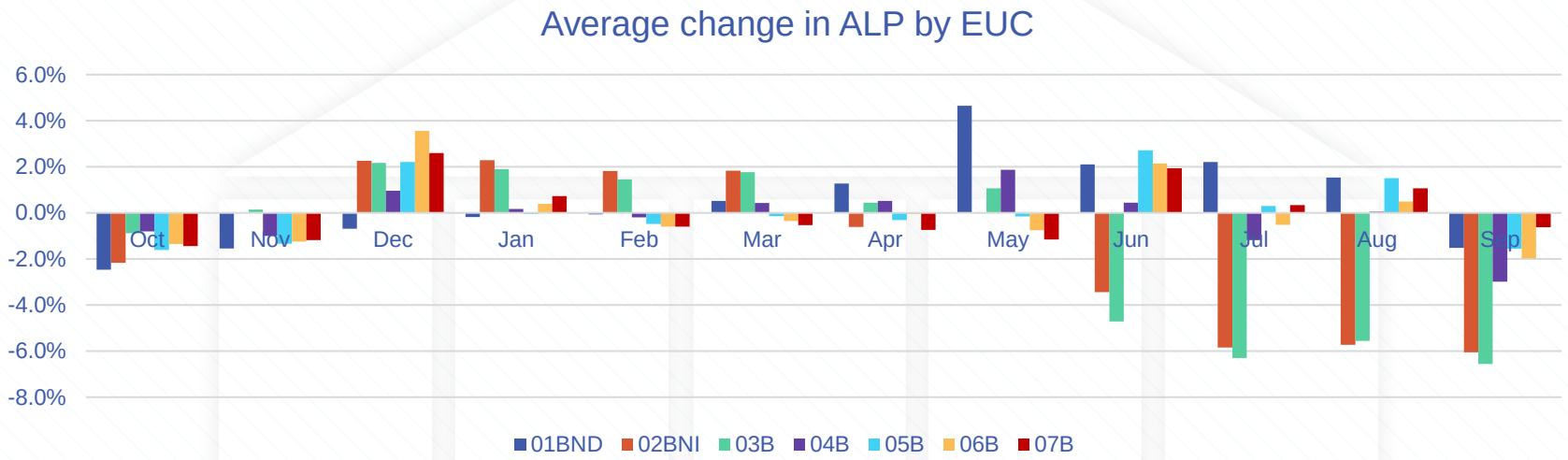


Topic 2: October reduction in ALPs

- There is a small variance in the ALP values across the year
- Winter values are now higher
- Autumn and Summer values have lower
- More significant changes are related to the changes in Holiday Codes



Topic 2: October reduction in ALPs



- When comparing ALPs year on year, it appears that there has been a reduction in volume forecast for October, November and September
- There are a number of drivers to this reduction which are covered in more detail on the following slides

Topic 2: October reduction in ALPs

- There are 2 main drivers to these reductions in volume

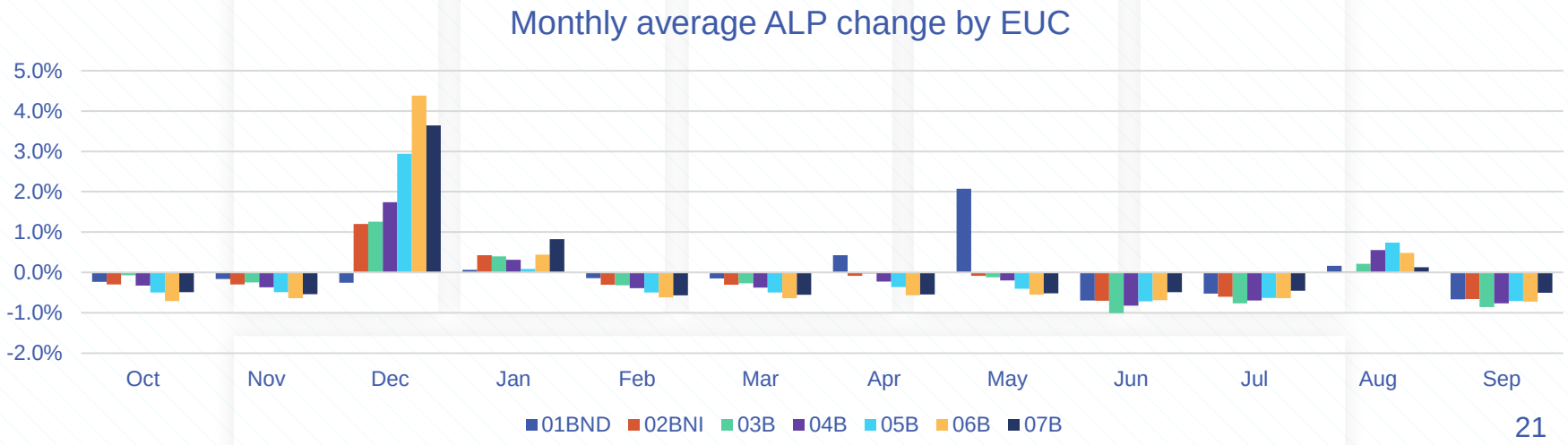
1. Change in Holiday Codes following the review
   This is an additional change this year which is the main cause of the change in profiles

2. Normal year-on-year changes
   a. Change in Holiday periods year-on-year
   b. Change in consumption patterns

Topic 2: October reduction in ALPs

1. Change in Holiday Codes following the review

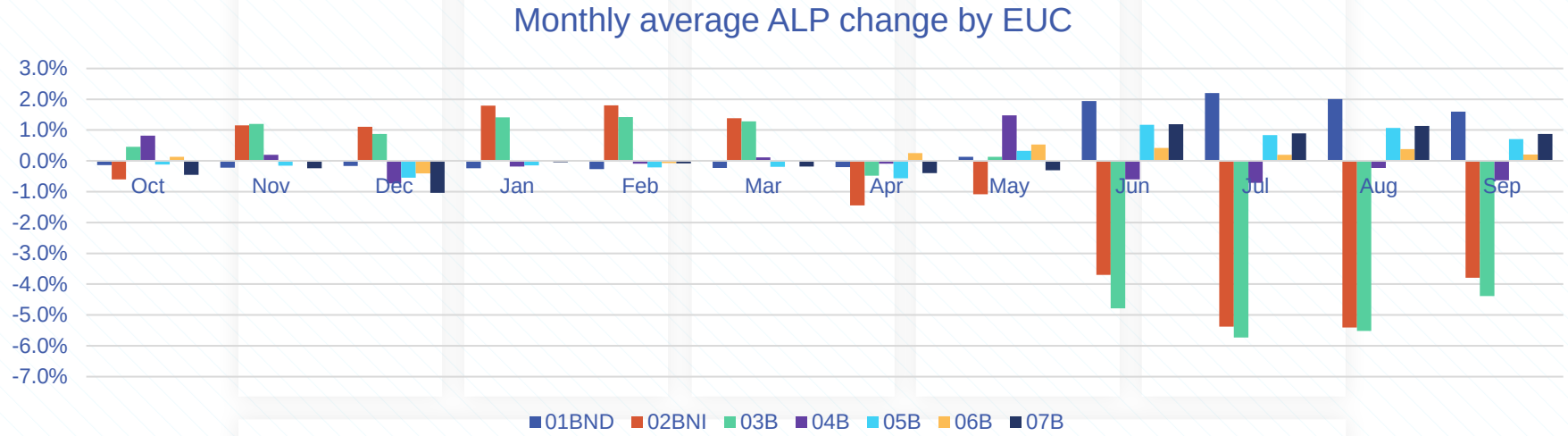
- The chart below shows the impact of just the change in holiday codes in on the ALPs.
- For months where the number of holidays has reduced the ALP has increased (as there is now less of a reduction)
- Any months with either no Holiday Codes or no changes to the Holiday Codes have reduced as a result of balancing the annual figure.
- The number of days classed as “holidays” in Gas Year 22-23 is now between 46 and 51 (depending on the LDZ / Market Sector) whilst previously there would have been 72, this means between 21 and 26 days will have potentially seen an increased ALP



Topic 2: October reduction in ALPs

2. a. Change in Holiday periods year-on-year
   b. Change in consumption patterns

These are the year-on-year ALP changes in isolation, and show much smaller changes both positive and negative for October.



Topic 2: October reduction in ALPs

- We are satisfied the changes observed are in line with expectations given the change in methodology agreed as part of the Modelling Approach

- For more information on the holiday code changes see
  2.1 Holiday Code Review_020322_Pres_v1.pdf

- For more information on this year's and previous year's Holiday Factors, these are available in the EUCHOLyyS.txt and EUCHOLyyL.txt files in the secure document folder
  18. NDM Profiling and Capacity Estimation Algorithms / yyyy-yy Gas Year /
  3 Demand Estimation Parameters / b Demand Model Supporting Files

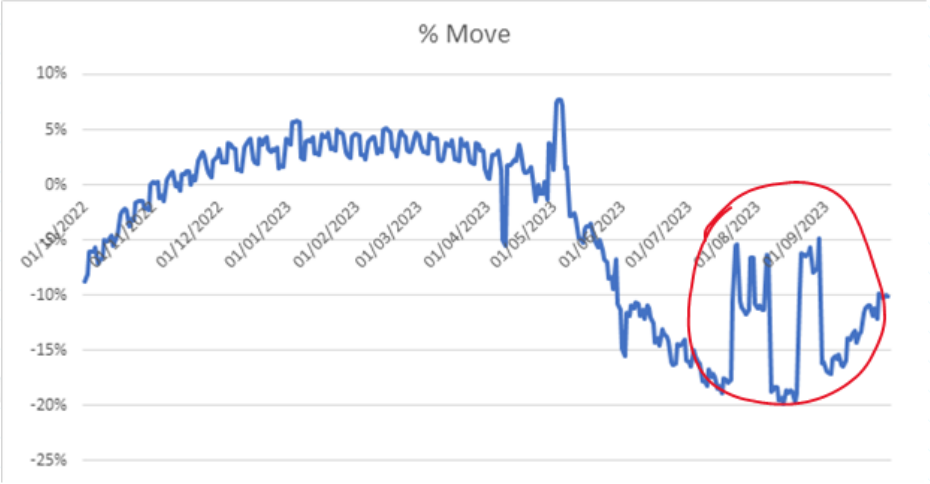
- In the same folder, the WKHOLDEF file lists all the dates in the gas year and the Holiday Code that applies (0 if no code applies)

Topic 3: July/August Increase in ALPs

E.ON comment: *“There is also a 2 week increase over the end of July to beginning of August, is there a reason for this? This aligns with the start of school holidays, do we see a big jump up here historically compared to the rest of the holiday? I notice there is then a week of reduction in profile and then an increase again. I have added some charts comparing previous to current profiles to show this below.”*

EA: E01BND

WM: E01BPD



Topic 3: July/August Increase in ALPs

- Note that the 01BPD chart on the previous slide was produced prior to the production of the alternative proposal for 01BPD, therefore this analysis focusses on 01BND only.

- The two increases are driven by two different Holiday periods
  1. The General Summer Holiday period
  2. The August Bank Holiday

- These are covered separately on the following slides

Topic 3: July/August Increase in ALPs

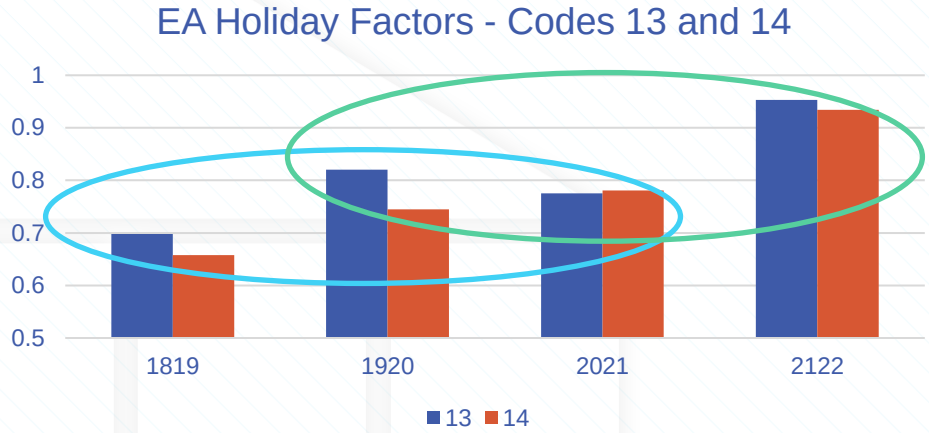
- The General Summer Holiday period (codes 13 and 14, unchanged in the recent review) starts on the first Friday on or after the 19th July and runs for 17 days (sometimes referred to as ‘Factory Fortnight’).

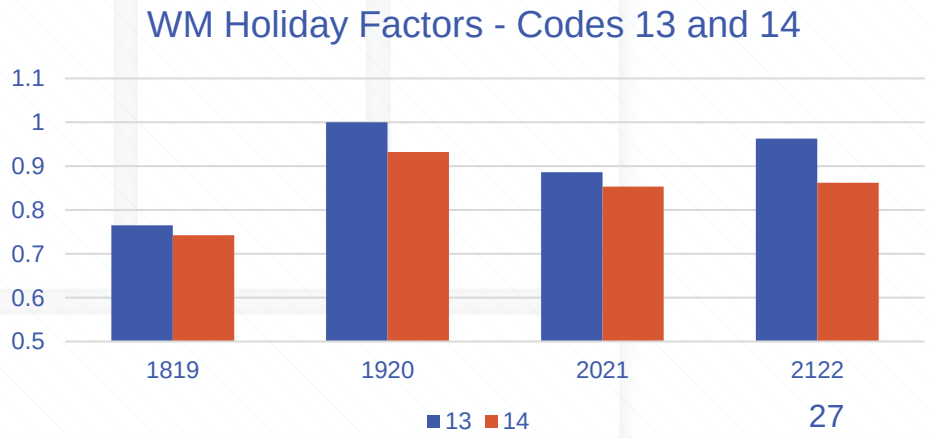
- We expect holiday factors to change year on year as a new year of data is added and an older year is dropped from the smoothed model.

- For 01BND, in some LDZs (EA and WM in particular) the year being dropped from the analysis (2018/19 for 01BND) had holiday factors quite a bit lower than the most recent year. This has resulted in the holiday factor getting closer to 1 and therefore having less of an impact on the ALP for the days in question.

Topic 3: July/August Increase in ALPs

- The Holiday Factor is calculated on an average of the 3 years in the smoothed model
- The blue outline shows the values that were used to calculate the Holiday Factor for Gas Year 21-22
- The green outline shows the values that were used to calculate the Holiday Factor for Gas Year 22-23
- Whilst this was significant for EA and WM, other LDZ have either seen little difference or the Holiday Factor reducing year-on-year





Topic 3: July/August Increase in ALPs

- The second increase in ALPs around July/August is down to the Holiday Code changes for the August Bank Holiday period (Codes 15 and 16)

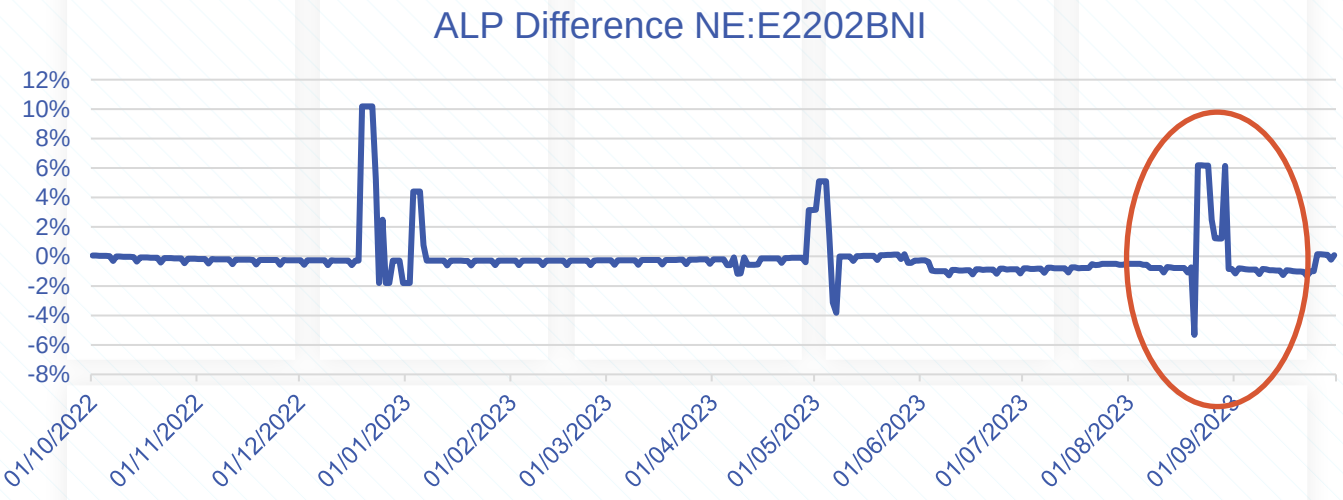
- In summary, the changes were
  - The August Bank Holiday period was shortened from 8 days to 3 days
  - Holiday Code 16 (Weekdays) was removed
  - Holiday code 15 (Weekends and the Bank Holiday) was removed for Scotland and limited to just the Bank Holiday Weekend

- This means all EUCs will see some increase to the ALPs in late July / Early August as a result of the changes.

Topic 3: July/August Increase in ALPs

- The chart below shows an example of the impact of the Holiday Code changes using the 21-22 Gas Year recalculated using the new Codes

- The circled area shows the change to the August Bank Holiday period (the other changes were to Christmas/New Year and the May Bank Holiday)



Conclusions and Next Steps

6: Conclusions and Next Steps

Conclusions

- Are DESC happy to approve the smoothed EUC demand models for wider industry review (ahead of finalising the profiles)?

- If not, need to confirm actions required to progress, ahead of wider industry consultation period (5 day window)

Next Steps

- w/c 11th July the wider industry consultation of 5 business days on the draft profiles will commence

- The DESC meeting on 19th July will consider any further comments received with the aim of finalising the profiles for Gas Year 2022/23 at the meeting