



## **DESC - Holiday Codes Review**

March 2022

# Modelling Approach 2022 – Holiday Code Rules - Intro

- The current Modelling Approach includes a set of rules for determining holiday periods which are then used to calculate Holiday Factors for each of the EUC demand models

- Appendix 5 of the Modelling Approach document provides the detail of the current Holiday Code Rules

- In summary there are rules for the following periods:

- Christmas/New Year
- Easter (example below)
  - Easter Period:  
Start: Wednesday before Good Friday; End: Friday after Good Friday
  - Easter Codes:  
Code 4 - Easter Saturday/Sunday, Code 5 – Good Friday/Easter Monday, Code 6 – All other days
- First May Bank Holiday
- Late May Bank Holiday
- Summer Holiday
- August Bank Holiday

- The current Holiday Code rules have been in place since 2011 and so are overdue a review

- In recent year's there have been questions raised in DESC's representations on the draft profiles about the suitability/appropriateness of the holiday periods within the ALPs/DAFs, e.g. length of period for Christmas/New Year and/or First May Bank Holiday

# Modelling Approach 2022 – Holiday Codes: Background

- EUC demand models are derived from sample data using regression analysis
- Regression coefficients (C1 and C2) are derived from sample demands for Mondays to Thursdays
- In some EUC demand models a reduction in demand is observed during holiday periods compared with the non-holiday Monday to Thursday demand
- In these cases, it is necessary to carry out modelling of holiday effects by excluding holiday days from the regression
- A multiplicative factor for the days assigned in each holiday period is calculated
- Holiday factors are calculated from the NDM sample data and therefore cannot be specified in advance of the modelling analysis in the Spring, however rules for defining holiday periods can be reviewed

# Modelling Approach 2022 – Holiday Code Review: Scope

- The review of holiday codes will examine holidays and utilise existing model results
- There are currently 16 holiday codes in use which should be sufficient for all scenarios
- When determining the scope we need to be aware of time/resource constraints which means analysis needs to be focused on the main issues as DESC sees them
- It is not intended that the Summer Reduction period from late May to late September will change in this review, as this would unduly complicate the analysis
- The analysis will look to use data and models back from 2017/18 to 2020/21 – these years are the only ones for which models are available using the new CWVs and SN basis
- Two main proposed objectives of analysis:
  - Identify days within or neighbouring existing holiday periods which may need to be reclassified as holidays or non-holidays and reallocate the holiday codes for each period if necessary
  - Review whether it is still appropriate to exclude holiday days within regression analysis for the “domestic” EUC models (e.g. “01BND”)

# Modelling Approach 2022 – Holiday Code Review: Approach

- Review holiday periods performance (modelling error) for Domestic and I&C models across all LDZs and EUCs
- Feedback from DESC:
  - During discussions, it was suggested that both the May Bank Holiday and January New Year (inc. Scottish provision) requirements should be considered further
  - Whole year requirements to also be assessed
- Analysis data – for initial investigation into Holiday Code efficacy
  - Algorithm Performance data for (2016/17, 2017/18, 2018/19 and 2019/20)
  - UIG Data for 2018 to 2021
- Training data – for creating smoothed demand Models for testing
  - Actual demand from sample for recent Analysis Years (2017/18, 2018/19 and 2019/20)
- Testing Data – for testing the efficacy of proposed changes to the Holiday Codes
  - Algorithm Performance data for Gas Years 2019/20 and 2020/21
- Provide recommendations on Holiday Codes, including any changes amongst EUCs/LDZs
  - Recommendations are based on the impact of changes on residuals – more information on Slide 8
  - Recommendations have been presented on the following but all LDZs and EUCs have been used in the analysis
    - 4 LDZs (EA, NW, SW and SC)
    - 3 EUC Bands (01BND, 02BNI and 05B)

# Limitations

Due to moving to the new modelling system in 2019 we are only able to easily run Algorithm Performance data against Gas Years 2019-20 and 2020-21

Both years have some significant periods impacted by COVID restrictions and lockdowns

Easter and both May Holiday periods 2020 - Full National Lockdown

## COVID-19 Impact Timeline



Christmas and New Year 2020/21  
Significant lockdown in SE, NT and EA  
6th Jan 21 onwards – Full National Lockdown

# Holiday Code Factor Calculation

- For all EUCs, days that fall in holiday periods are excluded from the Monday to Thursday regression.
- The Holiday Code multiplier is calculated using Monday to Thursday data from the period to which the Holiday Code is considered to apply:

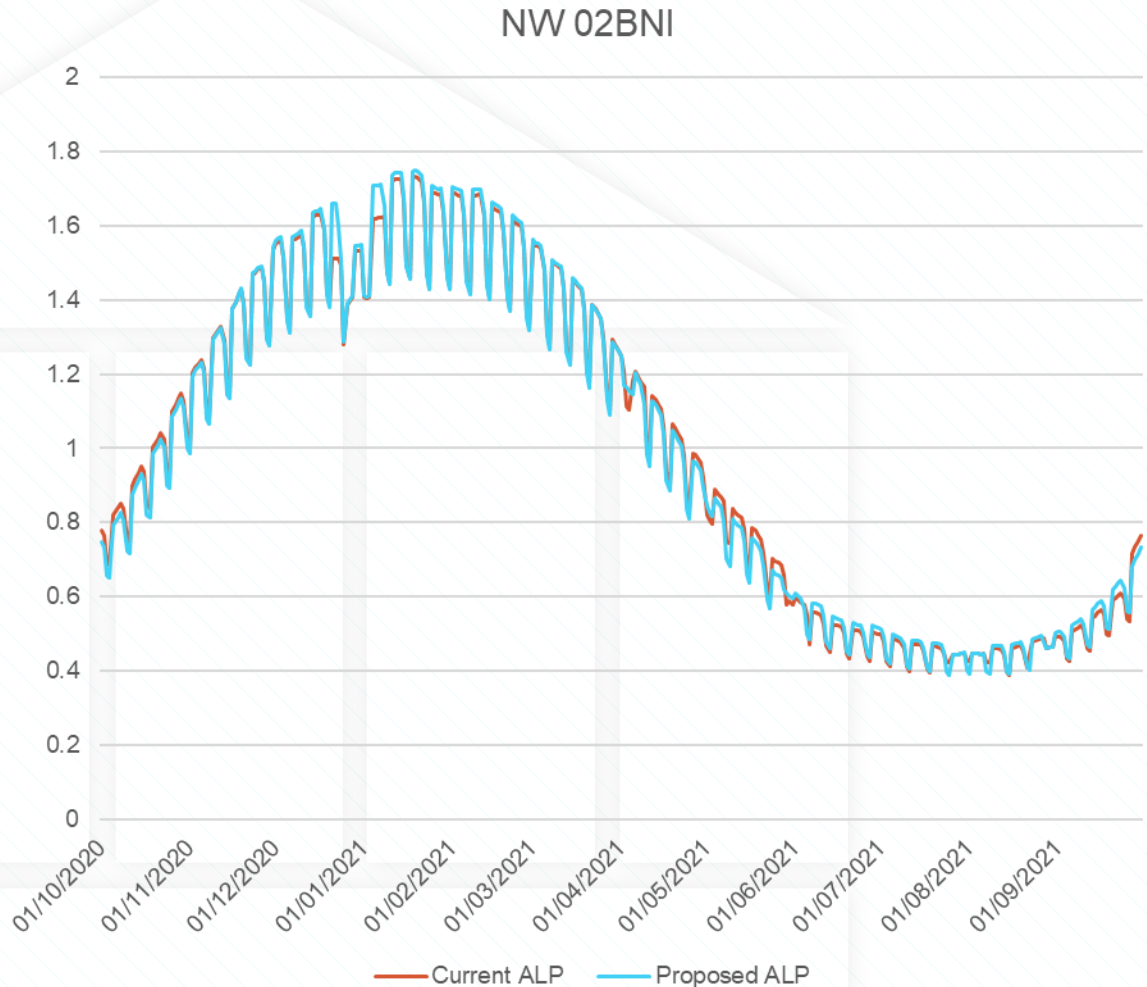
$$\text{Holiday Code multiplier} = \frac{\text{Sum of demands}}{\text{Sum of fitted values}}$$

- A minimum of 0.1 and a maximum of 1.0 are applied to the multiplicative factor for each holiday period, to ensure sensible results.
- This means removing a holiday code from a Monday to Thursday will result in the demand forecast being higher as the reduction will no longer apply.
- If, however the Holiday Code applies to a Friday, Saturday or Sunday, removing the code can result in the demand forecast being higher or lower, depending on the holiday factor and the day of the week factor.

# Potential Impacts of changing the Holiday Codes

Any changes to a holiday period has an effect on the rest of the year.

- ALPs sum to 365 (or 366 in a leap year), so any changes to the holiday periods will result in a change to the rest of the year
- A change to the holiday Period can change the factors used for Friday, Saturday and Sunday as days are included (or excluded from the analysis)
- A change to the holiday periods can also change a model from having a summer reduction or not – see example on the right
  - The changes proposed caused this EUC to change from having a Summer Reduction model to not
  - The largest impact on the ALP was in May and September





# Explanation of Results Presented

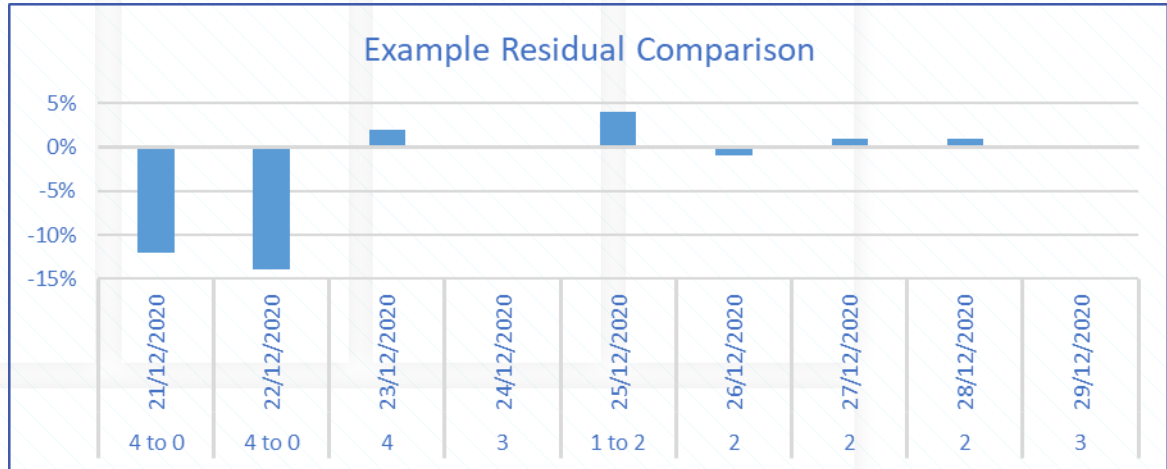
In order to assess the efficacy of the proposed changes, comparisons have been made between the absolute residual volume percentages for the current holiday codes and the proposed holiday codes.

- The percentage residual is calculated as 
$$\frac{\text{Actual Volume} - \text{Forecast Volume}}{\text{Forecast Volume}}$$

therefore a positive residual indicates an under-allocation.

- The table on the right shows an example of current and proposed residuals and the calculated change in absolute residual.
- A negative value means the residual has reduced and is therefore an improvement.**
- The charts on the following slides show the absolute residual change similar to the chart on the right.

Date	21/12/20	22/12/20	23/12/20	24/12/20	25/12/20	26/12/20	27/12/20	28/12/20	29/12/20
Current Holiday Code	4	4	4	3	1	2	2	2	3
Proposed Holiday Code	None	None	4	3	2	2	2	2	3
Current Residual	15%	16%	6%	-5%	-2%	-14%	0%	14%	2%
Proposed Residual	-3%	-2%	8%	-5%	-6%	-13%	1%	15%	2%
Absolute Residual Change	-12%	-14%	2%	0%	4%	-1%	1%	1%	0%





Holiday Code Analysis

# CHRISTMAS AND NEW YEAR

# Focus and Considerations

## Areas of focus

- Holiday Code 5
- Scottish Bank Holiday
- Domestic and I&C EUCs
- Christmas Day

## Changes Considered

- Combining codes 4 and 5
- Dropping code 5
- Shortening periods before and after Christmas
- Different rules for SC LDZ
- Reclassifying Christmas Day as 2 with other Bank Holidays

Following review of all the results a final proposed option was derived and is presented on the following slides.

### Current Holiday Code Rules

Holiday period starts on the Monday before 25th December (but if 25th December falls on a Monday, Tuesday or Wednesday, starts on the Friday before 25th December) and ends on the first Friday on or after the second New Year Bank Holiday in Scotland.

**Holiday code 1:** 25th December

**Holiday code 2:** 26th December, January 1st and any remaining Bank Holidays (except second Scotland New Year Bank Holiday) and any other Saturdays and Sundays in the period

**Holiday code 3:** Any remaining Mondays to Fridays between 24th December and day before second Scotland New Year Bank Holiday inclusive

**Holiday code 4:** Remaining days before 24th December

**Holiday code 5:** Remaining days (will always include second Scotland New Year Bank Holiday)

# Proposed Changes

## Summary of proposed changes:

- Christmas Period to start from 23rd December
- Christmas day reclassified as holiday code 2 – this brings it in line with the other Bank Holidays and means many more data points are available for modelling
- Scottish Bank Holiday is reclassified as a Christmas Weekday
  - Reclassifying as a Bank Holiday did not produce favourable results
- Working weekdays after New Year are only Holidays if there are 3 or fewer before the first Saturday

### Proposed Holiday Code Rules – England and Wales

Holiday period starts on 23rd December and ends on the New Year Bank Holiday if it is a Monday, Sunday 3<sup>rd</sup> if New Years day is Friday, or first Friday in January in all other cases.

**Holiday code 1:** N/A

**Holiday code 2:** 25th, 26th December, January 1st and any remaining Bank Holidays (excludes second Scotland New Year Bank Holiday) and any other Saturdays and Sundays in the period

**Holiday code 3:** Any remaining Mondays to Fridays between 24th December and 1st January

**Holiday code 4:** Remaining weekdays before 24th December and after 1<sup>st</sup> January

**Holiday code 5:** N/A

### Proposed Holiday Code Rules – Scotland

Holiday period starts on 23rd December and ends on the Second New Year Bank Holiday if it is a Monday or Tuesday, or the first Friday in January in all other cases.

**Holiday code 1:** N/A

**Holiday code 2:** 25th, 26th December, January 1st and any remaining Bank Holidays (excludes second Scotland New Year Bank Holiday) and any other Saturdays and Sundays in the period

**Holiday code 3:** Any remaining Mondays to Fridays between 24th December and 1st January

**Holiday code 4:** Remaining weekdays before 24th December and after 1st January including Second Bank Holiday in Scotland only

**Holiday code 5:** N/A

# Examples of changes

Christmas 2018			Christmas 2019			Christmas 2020			Christmas 2021		
Date	Existing Hol Code	Proposed Hol Code	Date	Existing Hol Code	Proposed Hol Code	Date	Existing Hol Code	Proposed Hol Code	Date	Existing Hol Code	Proposed Hol Code
Tue 18/12/2018			Wed 18/12/2019			Fri 18/12/2020			Sat 18/12/2021		
Wed 19/12/2018			Thu 19/12/2019			Sat 19/12/2020			Sun 19/12/2021		
Thu 20/12/2018			Fri 20/12/2019	4		Sun 20/12/2020			Mon 20/12/2021	4	
Fri 21/12/2018	4		Sat 21/12/2019	2		Mon 21/12/2020	4		Tue 21/12/2021	4	
Sat 22/12/2018	2		Sun 22/12/2019	2		Tue 22/12/2020	4		Wed 22/12/2021	4	
Sun 23/12/2018	2	2	Mon 23/12/2019	4	4	Wed 23/12/2020	4	4	Thu 23/12/2021	4	4
Mon 24/12/2018	3	3	Tue 24/12/2019	3	3	Thu 24/12/2020	3	3	Fri 24/12/2021	3	3
Tue 25/12/2018	1	2	Wed 25/12/2019	1	2	Fri 25/12/2020	1	2	Sat 25/12/2021	1	2
Wed 26/12/2018	2	2	Thu 26/12/2019	2	2	Sat 26/12/2020	2	2	Sun 26/12/2021	2	2
Thu 27/12/2018	3	3	Fri 27/12/2019	3	3	Sun 27/12/2020	2	2	Mon 27/12/2021	2	2
Fri 28/12/2018	3	3	Sat 28/12/2019	2	2	Mon 28/12/2020	2	2	Tue 28/12/2021	2	2
Sat 29/12/2018	2	2	Sun 29/12/2019	2	2	Tue 29/12/2020	3	3	Wed 29/12/2021	3	3
Sun 30/12/2018	2	2	Mon 30/12/2019	3	3	Wed 30/12/2020	3	3	Thu 30/12/2021	3	3
Mon 31/12/2018	3	3	Tue 31/12/2019	3	3	Thu 31/12/2020	3	3	Fri 31/12/2021	3	3
Tue 01/01/2019	2	2	Wed 01/01/2020	2	2	Fri 01/01/2021	2	2	Sat 01/01/2022	2	2
Wed 02/01/2019	5	4	Thu 02/01/2020	5	4	Sat 02/01/2021	2	2	Sun 02/01/2022	2	2
Thu 03/01/2019	5	4	Fri 03/01/2020	5	4	Sun 03/01/2021	2	2	Mon 03/01/2022	2	2
Fri 04/01/2019	5	4	Sat 04/01/2020			Mon 04/01/2021	5	4 (SC)	Tue 04/01/2022	5	4 (SC)
Sat 05/01/2019			Sun 05/01/2020			Tue 05/01/2021	5		Wed 05/01/2022	5	
Sun 06/01/2019			Mon 06/01/2020			Wed 06/01/2021	5		Thu 06/01/2022	5	
Mon 07/01/2019			Tue 07/01/2020			Thu 07/01/2021	5		Fri 07/01/2022	5	
Tue 08/01/2019			Wed 08/01/2020			Fri 08/01/2021	5		Sat 08/01/2022		
Wed 09/01/2019			Thu 09/01/2020			Sat 09/01/2021			Sun 09/01/2022		
Thu 10/01/2019			Fri 10/01/2020			Sun 10/01/2021			Mon 10/01/2022		

# Comparison of Holiday Factors – 01BND

The tables show comparisons between the Holiday factors for Christmas/New Year for:

Current – the values which were live for 2020-21 using the current holiday code rules

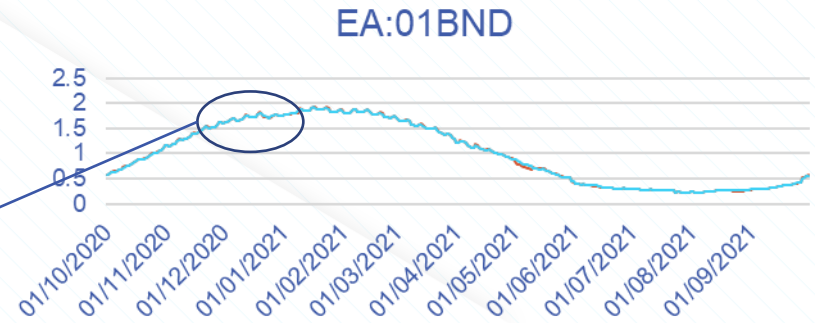
Proposed – The values calculated with the updated codes

01BND		Holiday Code				
		1	2	3	4	5
EA	Current	0.981	0.988	0.977	0.990	0.990
	Proposed	1	0.988	0.977	0.994	1
NW	Current	0.954	0.985	0.987	0.997	0.993
	Proposed	1	0.975	0.986	0.997	1
SC	Current	0.938	0.980	0.978	1	0.976
	Proposed	1	0.963	0.978	0.982	1
SW	Current	0.925	0.980	0.970	0.994	0.975
	Proposed	1	0.962	0.971	0.986	1

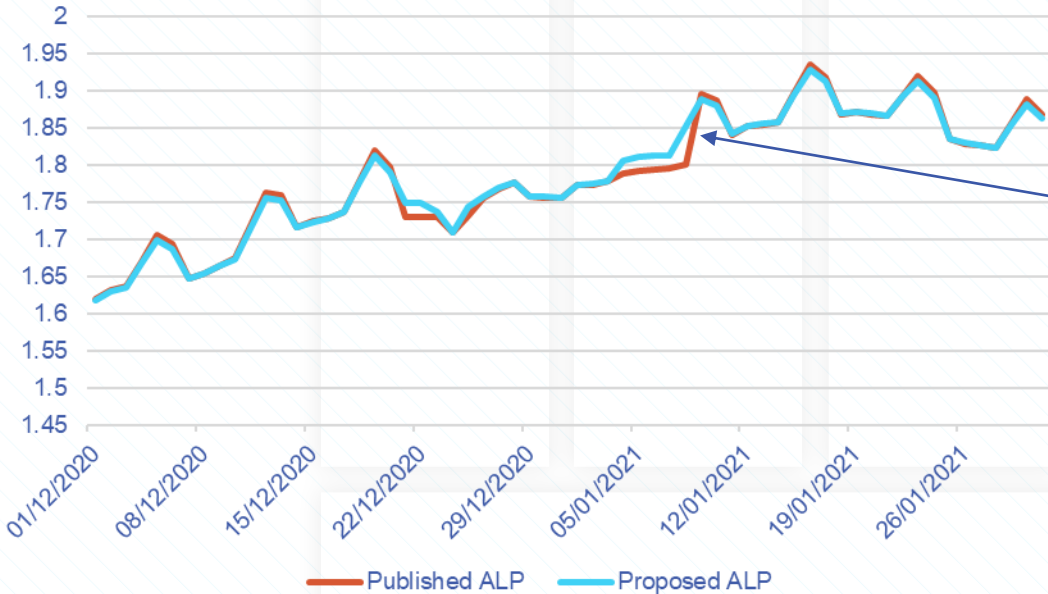
Note, unused Holiday Codes would default to a value of 1 in the output files, but no dates would be assigned.

# ALP Comparison – EA 01BND

The charts show a comparison of the ALPs for EA:01BND focussing in on the Christmas and New Year holiday period



### EA:01BND - Dec and Jan



— Current ALP — Proposed ALP

Whilst most of the Christmas period remains unchanged, there is a clear shortening of the Christmas period.



# Impact on Residuals – 01BND

Tables show the impact on the Residuals as a result of the changes proposed to the Holiday Codes with improved residuals highlighted green

- Where value is zero but green, the residual has been improved by less than 0.5%
- The pre Christmas days that have been changed show improvements to residuals across almost all days and areas

	Dec-19												Jan-20		
	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3
EA	2.7%	-1.7%	3.8%	-0.3%	0.1%	0.7%	0.1%	-0.1%	-0.1%	-0.1%	0.1%	0.1%	-0.1%	0.3%	0.3%
EM	-1.3%	-3.1%	-0.9%	0.3%	0.1%	0.2%	-1.2%	-0.1%	-1.3%	-1.3%	-0.1%	-0.1%	1.0%	0.2%	0.2%
NE	-1.8%	-4.3%	-4.7%	0.0%	0.4%	2.7%	-1.9%	-0.2%	-2.2%	-2.2%	-0.3%	-0.2%	-2.0%	0.1%	0.1%
NO	1.8%	-3.7%	3.4%	0.7%	-0.1%	5.1%	-1.3%	-0.1%	0.8%	1.3%	-0.1%	-0.1%	-1.4%	-0.7%	0.8%
NT	2.6%	-5.6%	4.3%	-2.8%	0.1%	-3.9%	1.2%	0.1%	0.0%	-1.4%	0.1%	0.1%	1.3%	-0.1%	-0.1%
NW	-1.3%	-2.7%	-0.4%	-0.1%	0.0%	0.1%	-1.0%	0.0%	-1.0%	-1.0%	0.1%	0.0%	-1.0%	-0.4%	0.5%
SC	1.4%	-3.6%	-3.4%	1.8%	0.1%	-2.4%	1.8%	0.1%	-1.9%	-1.9%	-0.1%	-0.1%	-0.6%	0.5%	0.5%
SE	3.4%	-4.1%	4.1%	-1.5%	0.2%	1.3%	1.6%	-0.1%	-1.7%	-1.7%	0.0%	0.0%	1.5%	-0.2%	-0.1%
SO	-0.8%	-4.3%	-1.0%	-0.3%	0.1%	-2.6%	0.9%	-0.1%	-1.0%	0.7%	0.1%	0.1%	0.9%	0.2%	0.2%
SW	-1.9%	-4.9%	-4.6%	0.8%	0.0%	4.1%	1.7%	0.0%	0.8%	1.8%	-0.2%	-0.2%	0.2%	-1.0%	1.2%
WM	0.6%	-4.4%	-1.8%	0.5%	0.0%	1.2%	1.3%	0.1%	-1.6%	-1.5%	0.1%	0.0%	1.4%	-0.4%	0.5%
WN	-2.0%	-4.5%	-2.8%	1.2%	0.2%	-1.6%	1.5%	-0.3%	-1.6%	-1.3%	0.2%	0.1%	1.6%	0.1%	-0.2%
WS	-4.8%	-5.3%	-5.0%	-2.5%	0.1%	-1.3%	1.8%	0.1%	1.8%	-2.0%	-0.1%	-0.1%	1.8%	0.0%	0.0%

	Dec-20											Jan-21							
	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8
EA	-0.7%	-0.8%	-0.2%	0.0%	-0.8%	0.0%	-0.1%	-0.1%	-0.1%	-0.1%	-0.2%	0.2%	0.1%	0.1%	0.6%	-1.1%	-1.1%	1.2%	-1.7%
EM	-1.0%	1.1%	0.2%	0.0%	0.1%	1.1%	1.1%	1.1%	0.0%	0.0%	0.0%	1.1%	-0.9%	1.1%	1.7%	0.7%	-1.7%	0.2%	1.3%
NE	-0.5%	-0.8%	-0.5%	-0.3%	0.5%	-0.4%	1.5%	1.3%	-0.5%	-0.5%	-0.5%	1.3%	1.2%	-1.3%	1.5%	1.5%	1.6%	1.8%	1.0%
NO	1.7%	-1.5%	1.5%	-0.1%	4.3%	1.3%	1.3%	-0.2%	-0.1%	-0.1%	-0.1%	-1.5%	-1.4%	-1.5%	4.2%	3.7%	1.5%	-0.9%	3.0%
NT	-3.6%	-3.8%	-2.6%	0.1%	-3.7%	1.2%	1.3%	1.3%	0.1%	0.1%	0.1%	1.3%	1.3%	1.3%	1.0%	-0.9%	-0.9%	0.9%	-1.0%
NW	-0.3%	-0.4%	-0.1%	-0.1%	-1.2%	0.9%	0.8%	0.8%	0.1%	0.1%	0.1%	-0.9%	-0.9%	-0.9%	0.9%	0.9%	0.9%	1.0%	2.7%
SC	-0.1%	0.1%	-0.5%	0.1%	-2.4%	1.1%	1.7%	1.7%	0.1%	0.1%	0.1%	1.8%	1.7%	1.7%	-0.5%	-2.2%	-2.3%	-2.3%	1.8%
SE	-1.3%	1.3%	-1.2%	-0.2%	-5.4%	-0.3%	-1.2%	1.0%	0.6%	0.7%	0.7%	-1.0%	-1.0%	1.0%	0.5%	-0.2%	-0.5%	0.6%	2.6%
SO	-1.9%	2.0%	-0.2%	0.1%	-2.7%	0.9%	0.9%	0.9%	-0.1%	0.1%	-0.1%	-0.9%	-1.0%	-0.9%	2.0%	2.0%	2.0%	2.1%	3.3%
SW	-0.3%	-0.3%	0.9%	-0.3%	-3.9%	1.6%	1.5%	1.4%	-0.5%	-0.4%	-0.5%	1.0%	1.0%	1.3%	1.5%	-2.9%	-2.9%	-3.0%	1.6%
WM	-0.8%	-0.9%	-0.2%	-0.5%	-1.6%	1.2%	1.1%	1.0%	0.6%	0.6%	0.6%	-1.0%	-1.0%	-1.0%	2.6%	2.5%	2.5%	0.1%	3.6%
WN	-0.2%	-0.1%	1.3%	0.3%	1.6%	1.5%	1.5%	1.6%	-0.4%	0.4%	-0.5%	-1.9%	-2.0%	-1.8%	-1.2%	-1.2%	-1.1%	-1.1%	-3.1%
WS	-4.2%	-4.2%	-0.9%	0.1%	-1.2%	1.9%	1.7%	1.6%	0.1%	0.1%	0.1%	1.8%	1.8%	1.8%	1.8%	1.8%	-1.7%	-1.7%	2.6%



# Impact on Residuals – 01BND (1 of 2)

The charts on the right show the residuals for the current holiday period dates for Christmas and New Year. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

## 2019-20

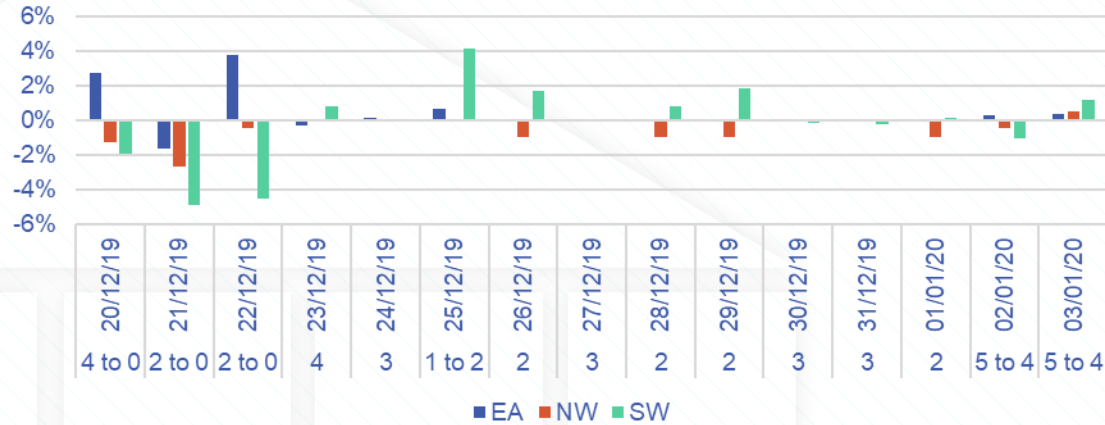
- Fairly good improvements to the residuals prior to Christmas
- Christmas day residuals have increased for some areas

## 2020-21

- Little change prior to Christmas
- Christmas Day residuals improved for all areas
- A lockdown from the 6<sup>th</sup> January 2021 has impacted the post New Year residuals

SC is covered on the following slide as the rules are different.

Selected LDZs 2019-20



Selected LDZs 2020-21



# Impact on Residuals – 01BND (2 of 2)

The charts on the right show the residuals for the current holiday period dates for Christmas and New Year. These are for SC only as the rules are slightly different due to the extra Bank Holiday in Scotland.

**The change in holiday code is shown at the bottom for each day.**

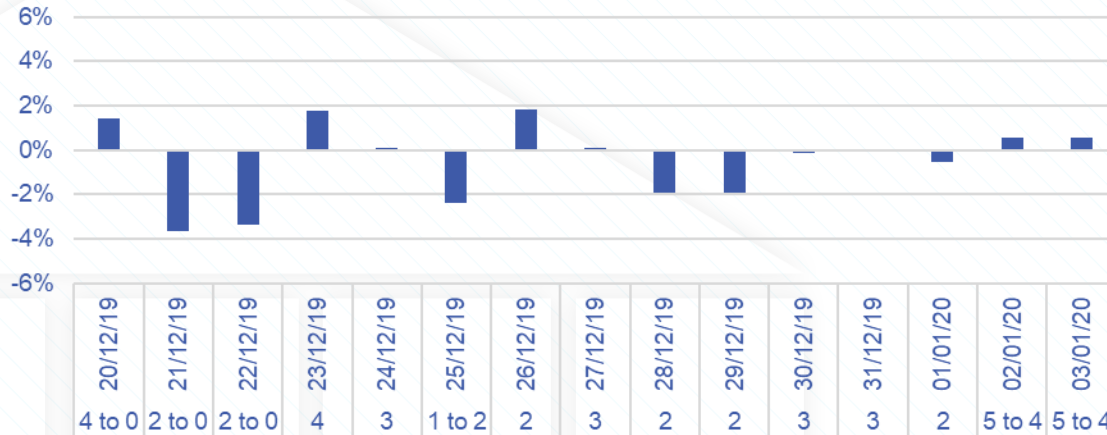
## 2019-20

- Fairly good improvements to the residuals prior to Christmas
- Christmas day residual reduced
- Little variance in New Year residuals

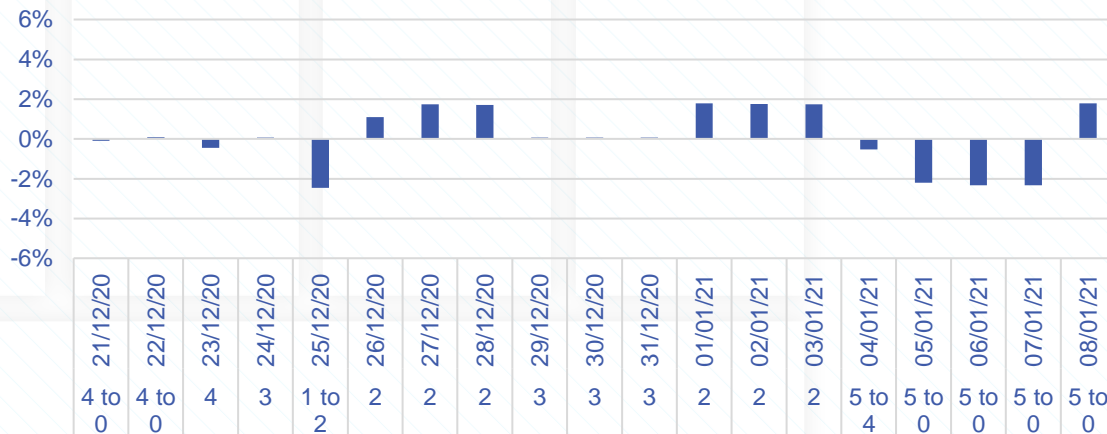
## 2020-21

- Little change prior to Christmas
- Christmas Day residual improved
- Residuals for holiday code 2 slightly deteriorated
- Fairly good residuals for post New Year

SC 2019-20



SC 2020-21



## Comparison of Holiday Factors – 02BNI

The tables show comparisons between the Holiday factors for Christmas/New Year for:

Current – the values which were live for 2020-21 using the current holiday code rules

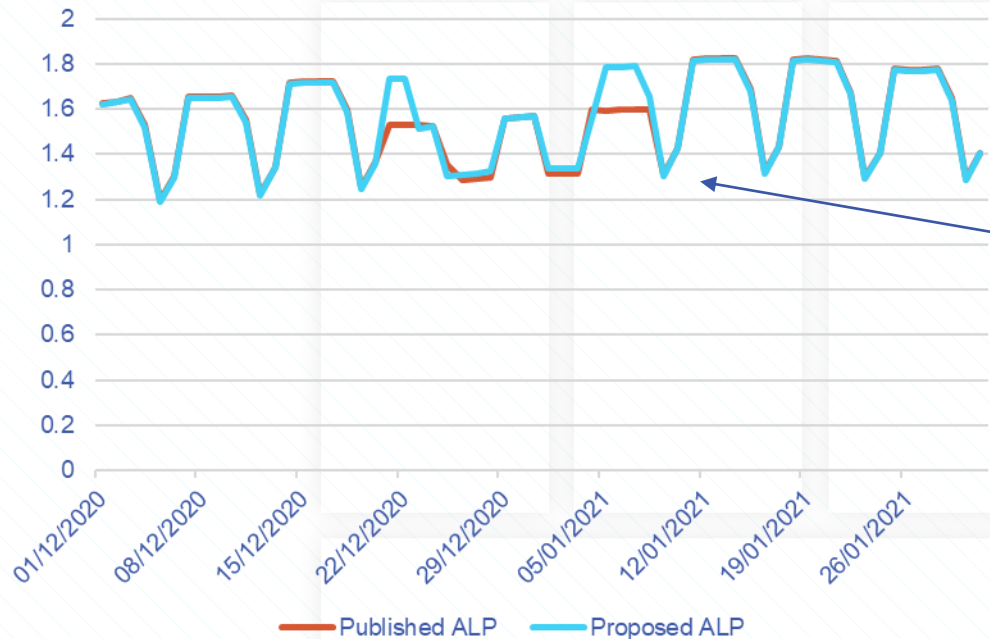
Proposed – The values calculated with the updated codes

02BNI		Holiday Code				
		1	2	3	4	5
EA	Current	0.726	0.657	0.806	0.848	0.929
	Proposed	1	0.679	0.808	0.935	1
NW	Current	0.771	0.832	0.904	0.917	0.957
	Proposed	1	0.818	0.901	0.955	1
SC	Current	0.772	0.731	0.874	0.879	0.89
	Proposed	1	0.747	0.876	0.872	1
SW	Current	0.753	0.792	0.872	0.941	0.939
	Proposed	1	0.783	0.875	0.943	1

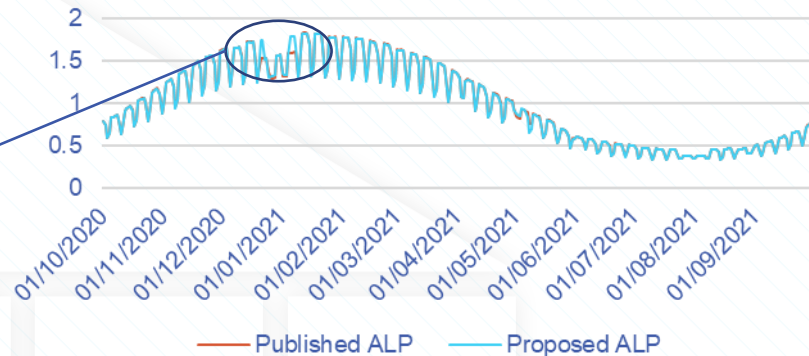
# ALP Comparison – SC 02BNI

The charts show a comparison of the ALPs for SC:02BNI focussing in on the Christmas and New Year holiday period

### SC 02BNI - Dec and Jan



### SC 02BNI



Whilst most of the Christmas period remains unchanged, there is a clear shortening of the Christmas period.

# Impact on Residuals – 02BNI

Tables show the impact on the Residuals as a result of the changes proposed to the Holiday Codes with improved residuals highlighted green

- Where value green but appears to be 0%, the residual has been improved by less than 0.5%

- The pre Christmas days that have been changed show improvements to residuals across most days and areas

- Post New Year days are less consistent, possibly impacted by the lockdown in January 2021

	Dec-19												Jan-20		
	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3
EA	-6.8%	0.2%	-8.3%	1.8%	0.0%	4.5%	-2.6%	0.0%	-2.9%	-2.9%	0.0%	0.0%	-2.6%	0.4%	0.4%
EM	-6.0%	-5.9%	-7.5%	-4.7%	-0.1%	-0.2%	-0.3%	-0.1%	-0.3%	-0.3%	-0.1%	-0.1%	-0.3%	-1.2%	-1.2%
NE	-5.7%	-5.7%	-5.4%	-5.3%	-0.1%	-2.7%	1.3%	-0.2%	1.3%	1.3%	-0.1%	-0.2%	1.2%	-0.2%	-0.2%
NO	-7.4%	-3.4%	-3.5%	-4.2%	0.0%	-3.6%	0.3%	0.2%	0.8%	1.1%	0.5%	-0.1%	-0.2%	-0.7%	-0.9%
NT	-1.7%	-2.7%	-2.7%	1.2%	0.3%	-4.6%	0.7%	0.1%	0.9%	0.7%	0.0%	0.0%	0.5%	-0.2%	-0.3%
NW	-4.8%	-2.7%	-0.6%	-4.0%	0.0%	-5.9%	0.9%	-0.3%	1.1%	1.2%	0.0%	-0.2%	1.0%	-0.2%	-0.4%
SC	-4.5%	-1.2%	5.6%	0.8%	-0.2%	2.9%	-1.9%	0.2%	2.5%	2.3%	-0.2%	-0.2%	-1.9%	-0.2%	2.0%
SE	-5.4%	-4.8%	-3.4%	-2.9%	0.0%	-3.3%	0.9%	-0.1%	1.0%	0.9%	-0.1%	-0.1%	0.8%	-0.4%	-0.5%
SO	-3.7%	-6.4%	-5.9%	0.1%	0.0%	-4.6%	1.2%	-0.2%	1.2%	1.2%	-0.2%	-0.2%	1.2%	-0.7%	-0.7%
SW	-3.6%	-6.6%	-4.8%	0.0%	-0.1%	-3.6%	1.1%	-0.1%	1.3%	1.2%	-0.2%	-0.3%	1.1%	-0.2%	-0.3%
WM	-5.2%	-3.3%	-5.0%	-2.7%	-0.2%	-0.7%	-0.2%	-0.3%	-0.1%	-0.2%	-0.2%	-0.2%	-0.1%	-0.1%	-0.1%
WN	-5.0%	-8.9%	-7.1%	-2.9%	1.9%	-6.9%	-4.8%	2.5%	-2.2%	-5.4%	1.9%	2.2%	-5.1%	4.1%	4.1%
WS	-5.0%	-8.5%	-2.3%	-2.6%	0.0%	-6.7%	1.0%	0.1%	1.1%	1.0%	-0.3%	-0.5%	0.8%	-1.2%	-1.3%

	Dec-20											Jan-21							
	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8
EA	-14.4%	-11.3%	-5.4%	0.2%	-6.2%	3.5%	3.2%	-2.7%	-0.1%	-0.1%	-0.1%	-0.1%	3.4%	3.0%	7.4%	7.4%	5.6%	7.6%	-0.7%
EM	6.3%	14.4%	5.8%	0.0%	0.1%	0.2%	0.2%	-0.2%	0.1%	0.1%	0.1%	-0.3%	0.3%	0.3%	1.7%	6.5%	6.7%	9.7%	3.0%
NE	-9.1%	4.7%	6.1%	0.2%	3.1%	-1.5%	-1.4%	1.2%	0.3%	0.3%	0.3%	-1.3%	-1.4%	-1.4%	5.0%	5.0%	5.0%	5.2%	1.1%
NO	7.7%	4.0%	5.3%	0.6%	5.7%	0.0%	0.2%	-0.3%	0.7%	0.9%	0.8%	0.5%	0.5%	0.5%	6.5%	8.8%	0.2%	4.3%	5.5%
NT	3.3%	3.3%	-2.2%	0.4%	6.3%	-0.4%	-0.2%	-0.2%	1.2%	1.2%	1.5%	0.6%	0.4%	0.2%	4.0%	1.6%	-0.2%	7.2%	5.5%
NW	-8.2%	-3.4%	1.5%	0.9%	7.7%	-0.9%	-0.7%	0.4%	1.3%	1.3%	1.5%	-0.1%	0.0%	-0.2%	6.6%	6.4%	6.7%	7.0%	2.7%
SC	-11.0%	-11.6%	1.1%	-0.1%	-3.6%	2.2%	1.9%	-1.6%	-0.1%	-0.1%	-0.1%	-1.7%	1.9%	-0.8%	2.3%	-10.7%	-9.2%	1.4%	2.3%
SE	-6.6%	-5.3%	-3.0%	-0.1%	-3.7%	-1.2%	-1.1%	0.9%	0.2%	0.2%	0.2%	-0.9%	-1.0%	-1.0%	-4.6%	-4.5%	-4.5%	-4.7%	-2.3%
SO	-5.2%	-5.4%	0.3%	-0.3%	-5.3%	-1.3%	-1.3%	1.0%	0.6%	-0.5%	0.7%	-0.9%	-1.1%	-1.1%	3.0%	4.0%	8.1%	8.6%	5.7%
SW	-4.8%	-4.9%	0.2%	-0.2%	-3.6%	-1.2%	1.2%	0.9%	-0.4%	-0.4%	0.6%	-0.9%	-1.0%	-1.0%	7.0%	6.6%	4.8%	7.0%	5.3%
WM	-5.1%	6.3%	3.2%	0.3%	-0.7%	0.1%	0.1%	-0.2%	0.4%	0.4%	0.4%	0.3%	0.3%	0.3%	8.8%	8.7%	8.6%	9.0%	3.4%
WN	-5.6%	-7.9%	-2.5%	-0.7%	6.9%	5.3%	5.1%	-4.0%	-4.4%	-4.2%	-4.1%	-1.5%	4.6%	4.8%	-0.6%	0.6%	-0.8%	-1.0%	-3.7%
WS	7.5%	7.5%	3.3%	0.5%	6.1%	-0.8%	-0.7%	0.4%	-0.9%	-1.0%	1.2%	-0.1%	0.1%	-0.1%	7.5%	3.6%	-1.9%	0.3%	5.3%

# Impact on Residuals – 02BNI (1 of 2)

The charts on the right show the residuals for the current holiday period dates for Christmas and New Year. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

## 2019-20

- Good improvements to the residuals prior to Christmas
- Christmas Day residuals improved for most areas

## 2020-21

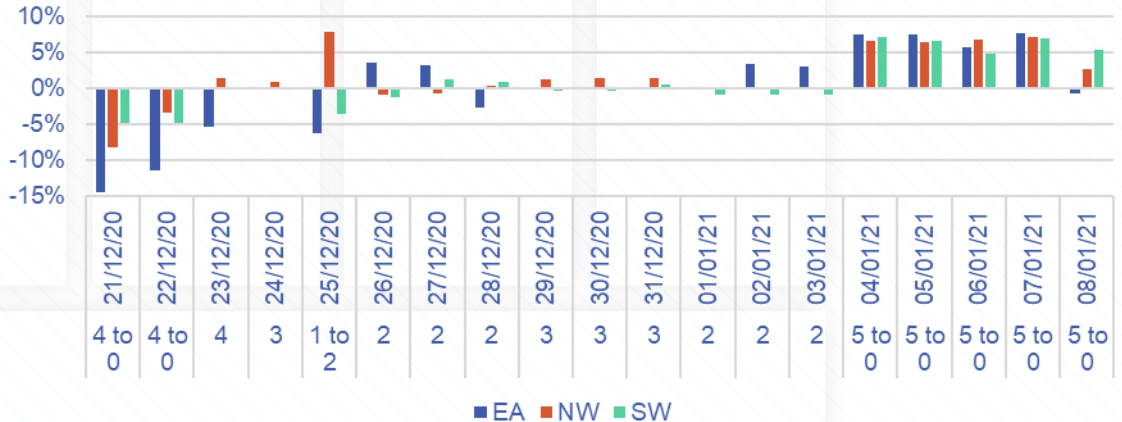
- Little change prior to Christmas
- Christmas Day residuals improved for most areas
- A lockdown from the 6th January has impacted the post New Year residuals

SC is covered on the following slide as the rules are different.

Selected LDZs 2019-20



Selected LDZs 2020-21





# Impact on Residuals – 02BNI (2 of 2)

The charts on the right show the residuals for the current holiday period dates for Christmas and New Year. These are for SC only as the rules are slightly different due to the extra Bank Holiday in Scotland.

The change in holiday code is shown at the bottom for each day.

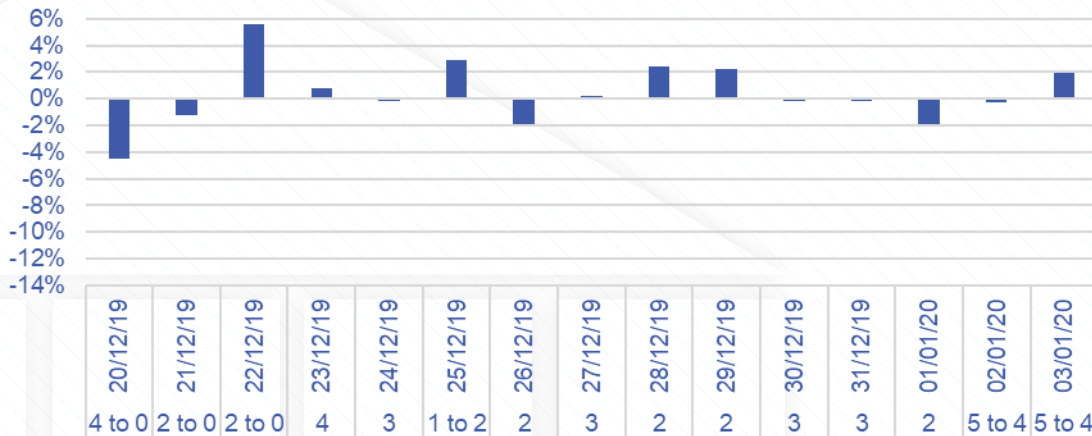
## 2019-20

- Fairly good improvements to the residuals prior to Christmas with the exception of Sunday 22<sup>nd</sup>
- Christmas day residual increased slightly
- Little variance in New Year residuals

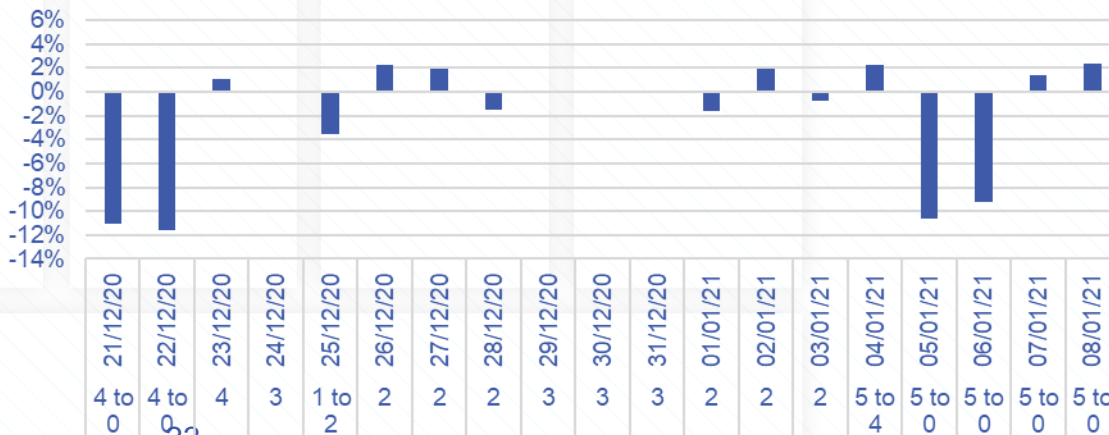
## 2020-21

- Good results prior to Christmas
- Christmas Day residual improved
- Residuals for holiday code 2 slightly deteriorated
- Fairly good residuals for post New Year

SC 2019-20



SC 2020-21



## Comparison of Holiday Factors – 05B

The tables show comparisons between the Holiday factors for Christmas/New Year for:

Current – the values which were live for 2020-21 using the current holiday code rules

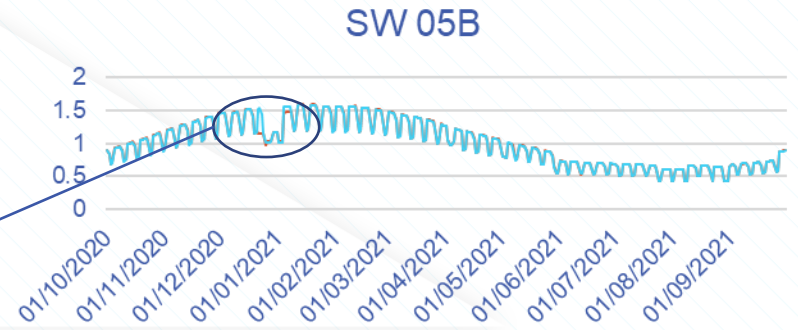
Proposed – The values calculated with the updated codes

05B		Holiday Code				
		1	2	3	4	5
EA	Current	0.708	0.710	0.812	0.879	0.969
	Proposed	1	0.709	0.814	0.971	1
NW	Current	0.579	0.607	0.686	0.765	0.912
	Proposed	1	0.602	0.687	0.899	1
SC	Current	0.720	0.734	0.848	0.862	0.866
	Proposed	1	0.731	0.850	0.847	1
SW	Current	0.636	0.664	0.749	0.751	0.942
	Proposed	1	0.657	0.750	0.943	1

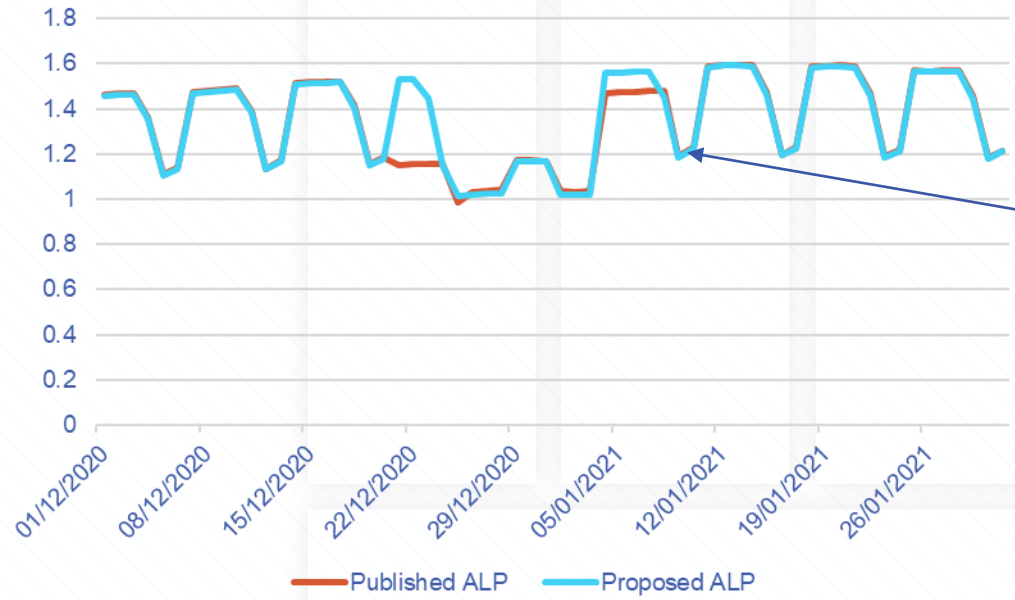


# ALP Comparison – SW 05B

The charts show a comparison of the ALPs for SW:05B focussing in on the Christmas and New Year holiday period



SW 05B - Dec and Jan



Published ALP Proposed ALP

Whilst most of the Christmas period remains unchanged, there is a clear shortening of the Christmas period.

# Impact on Residuals – 05B

Tables show the impact on the Residuals as a result of the changes proposed to the Holiday Codes with improved residuals highlighted green

- Where value green but appears to be 0%, the residual has been improved by less than 0.5%

- The pre Christmas days that have been changed show improvements to residuals across almost all days and areas

- Post New Year is also looking quite good, with either improved residuals or little change

	Dec-19											Jan-20			
	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3
EA	-6.0%	-4.3%	-4.6%	-8.5%	0.0%	0.0%	0.3%	0.0%	0.3%	0.3%	0.0%	-0.1%	0.3%	0.0%	0.0%
EM	-14.3%	-4.4%	-8.2%	-3.4%	0.1%	-1.2%	0.7%	0.1%	-0.8%	0.7%	0.1%	0.0%	0.7%	-0.7%	-0.8%
NE	-6.9%	-4.8%	-6.6%	-2.6%	0.0%	-5.0%	1.9%	0.0%	-2.0%	1.2%	0.0%	0.0%	1.7%	1.4%	-0.7%
NO	-4.7%	-8.5%	-10.0%	-4.4%	-0.1%	-2.5%	0.7%	-0.1%	0.8%	0.8%	-0.1%	-0.1%	0.7%	-0.9%	0.9%
NT	-2.4%	-2.2%	-1.4%	-1.1%	0.0%	-1.8%	0.6%	-0.1%	0.7%	0.6%	-0.1%	-0.1%	0.6%	-0.3%	-0.3%
NW	-10.8%	-7.9%	-9.0%	5.4%	0.0%	-3.3%	0.8%	0.0%	0.9%	0.9%	0.0%	0.0%	0.9%	1.5%	0.2%
SC	-5.8%	-3.0%	-6.7%	1.7%	-0.1%	-1.2%	0.5%	0.1%	-0.5%	0.5%	-0.1%	-0.1%	0.5%	-2.4%	2.2%
SE	-4.4%	-3.5%	-3.5%	-5.6%	0.0%	-1.6%	0.8%	0.0%	0.8%	0.8%	-0.1%	-0.1%	0.7%	-0.1%	-0.1%
SO	-4.9%	-4.2%	-6.1%	-6.3%	0.1%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SW	-12.9%	-10.2%	-12.4%	2.3%	0.2%	-2.8%	1.2%	-0.2%	1.3%	1.2%	0.1%	0.1%	1.1%	0.2%	0.1%
WM	-16.9%	-8.4%	-10.3%	1.2%	0.0%	-2.3%	0.4%	0.0%	-0.5%	0.5%	0.0%	0.0%	0.4%	1.5%	1.4%
WN	-13.1%	-10.3%	-11.8%	-5.9%	-1.7%	-9.0%	-4.4%	-3.3%	-4.3%	-4.1%	-2.9%	-3.4%	-4.3%	-0.1%	0.3%
WS	-7.3%	-4.0%	-8.7%	3.9%	-0.2%	-0.4%	-1.8%	-0.3%	-2.0%	-1.9%	0.1%	0.0%	1.4%	0.6%	0.6%

	Dec-20											Jan-21							
	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8
EA	-3.9%	-11.5%	10.3%	0.0%	-0.1%	-0.5%	-0.4%	-0.4%	0.0%	0.0%	0.1%	-0.4%	-0.4%	-0.4%	3.2%	3.1%	1.9%	3.1%	-3.2%
EM	10.7%	12.8%	25.8%	-0.3%	1.3%	-1.2%	-1.0%	0.9%	0.2%	0.2%	0.2%	0.9%	0.9%	0.8%	-2.0%	-9.6%	-9.5%	-2.7%	-0.8%
NE	-20.6%	-8.5%	3.9%	-0.2%	2.9%	-2.7%	-2.3%	2.0%	0.2%	0.2%	-0.2%	2.2%	2.0%	2.1%	-8.3%	-8.4%	-8.7%	-2.1%	-0.3%
NO	-7.8%	-8.9%	7.9%	0.1%	-2.4%	-1.1%	1.0%	0.9%	0.1%	0.1%	-0.1%	-1.0%	1.0%	1.0%	-4.9%	-4.6%	-8.4%	-4.9%	-0.3%
NT	-3.6%	-3.6%	-0.9%	-0.2%	-2.1%	0.5%	0.5%	0.3%	-0.4%	-0.4%	-0.5%	0.3%	0.3%	0.4%	-3.4%	-3.2%	-3.2%	-3.4%	-2.1%
NW	-4.2%	6.1%	17.9%	-0.2%	3.7%	-1.2%	1.2%	1.2%	-0.3%	-0.3%	-0.3%	-1.3%	-1.2%	1.1%	9.3%	-3.5%	-3.8%	8.6%	-6.2%
SC	-13.0%	-12.9%	1.9%	0.1%	-1.1%	-0.8%	0.8%	0.7%	0.2%	0.1%	-0.2%	0.7%	0.8%	0.8%	2.3%	-12.3%	-12.1%	-12.8%	-4.8%
SE	-6.9%	-6.0%	-5.2%	-0.1%	-1.8%	-0.8%	0.8%	0.7%	-0.3%	-0.3%	-0.3%	0.6%	0.7%	0.7%	-2.7%	-2.7%	-2.7%	1.2%	0.8%
SO	-9.7%	-10.2%	-6.1%	0.0%	2.0%	-0.1%	-0.1%	-0.2%	-0.2%	-0.2%	-0.3%	-0.3%	0.3%	-0.3%	-4.4%	-4.3%	-4.4%	-4.5%	0.9%
SW	-0.8%	11.6%	25.6%	-0.2%	3.5%	-2.0%	-1.6%	-1.3%	-0.1%	-0.1%	-0.1%	-1.5%	-1.5%	-1.3%	6.7%	6.1%	6.0%	6.4%	-2.4%
WM	5.4%	4.6%	30.4%	0.2%	-2.5%	-0.7%	0.7%	0.6%	-0.1%	-0.1%	-0.1%	-0.7%	-0.6%	0.6%	8.5%	8.1%	4.2%	1.8%	-8.9%
WN	9.7%	29.1%	4.4%	-3.8%	-0.7%	-4.9%	-4.7%	-5.0%	-1.2%	-3.0%	4.3%	-5.6%	-5.7%	-5.4%	8.9%	-0.5%	3.5%	3.2%	1.4%
WS	6.4%	15.1%	13.0%	-0.1%	-0.4%	-2.2%	-1.8%	-1.5%	0.0%	0.1%	0.1%	-1.6%	-1.4%	0.3%	-5.5%	-5.1%	-5.1%	-5.2%	-3.9%

# Impact on Residuals – 05B (1 of 2)

The charts on the right show the residuals for the current holiday period dates for Christmas and New Year. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

## 2019-20

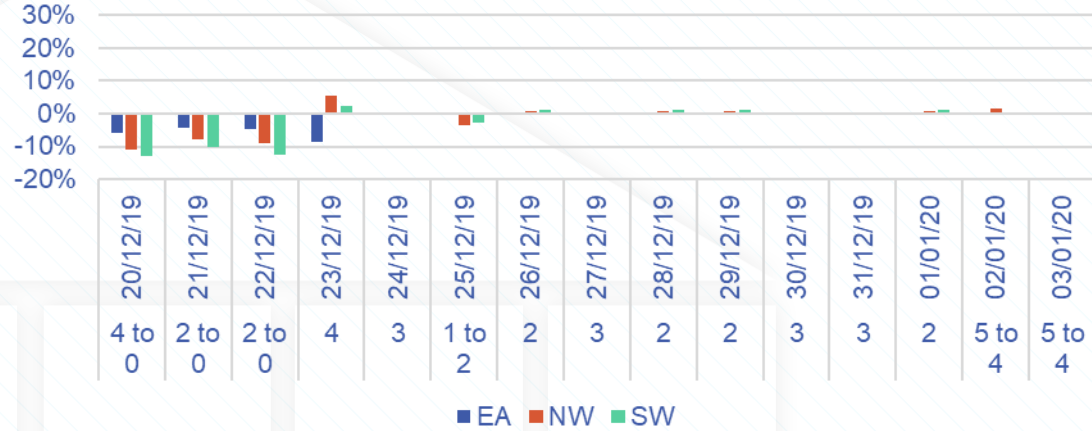
- Good improvements to the residuals prior to Christmas
- Very little change to the residuals for all other days

## 2020-21

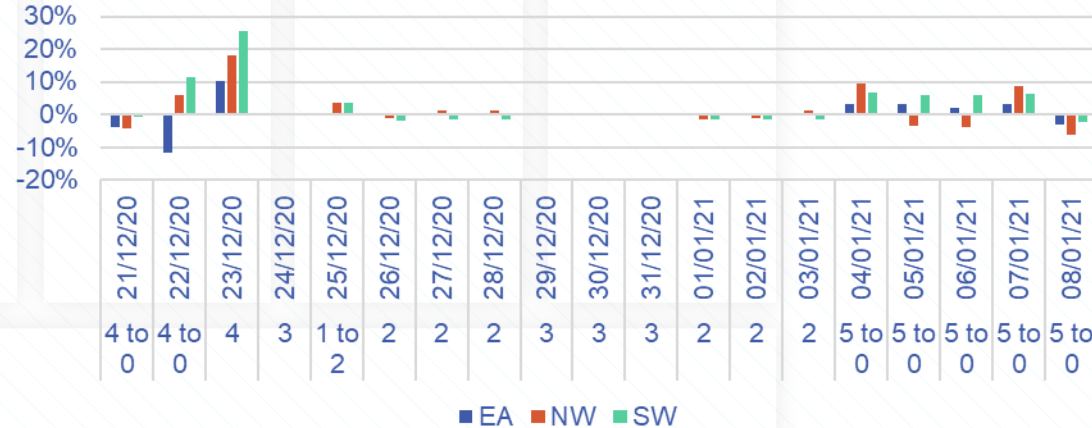
- Residuals prior to Christmas have show significant deterioration
- A lockdown from the 6th January has impacted the post New Year residuals

SC is covered on the following slide as the rules are different.

Selected LDZs 2019-20



Selected LDZs 2020-21



# Impact on Residuals – 05B (2 of 2)

The charts on the right show the residuals for the current holiday period dates for Christmas and New Year. These are for SC only as the rules are slightly different due to the extra Bank Holiday in Scotland.

The change in holiday code is shown at the bottom for each day.

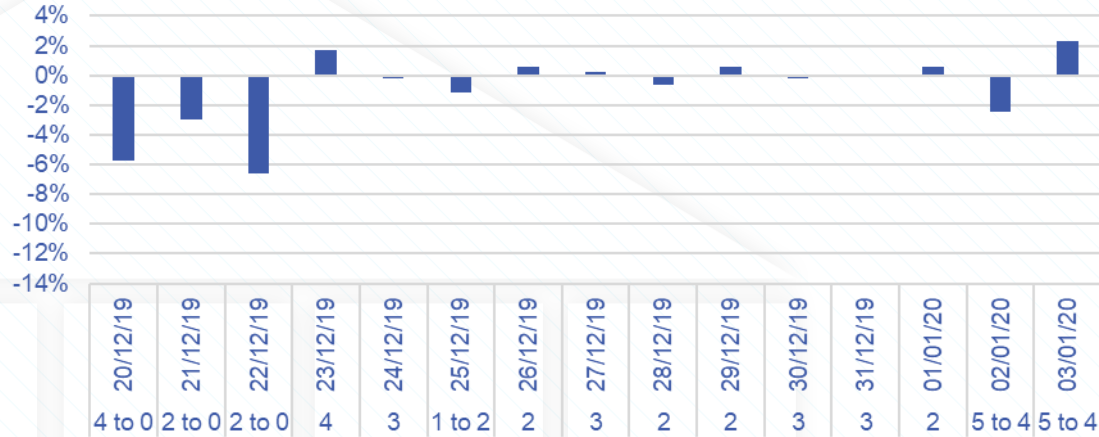
## 2019-20

- Fairly good improvements to the residuals prior to Christmas
- Christmas day residual reduced
- Mixed variance in New Year residuals

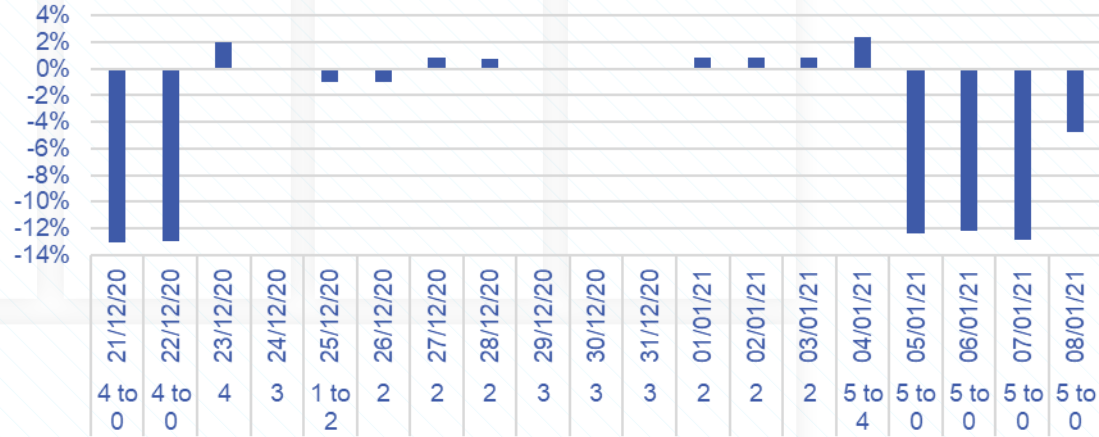
## 2020-21

- Significant improvements to residuals prior to Christmas
- Christmas Day residual improved
- Significant improvements to New Year residuals

SC 2019-20



SC 2020-21





Holiday Code Analysis

**EASTER**

# Focus and Considerations

## Areas of focus

- Domestic and I&C EUCs
- Working days over period

## Changes Considered and Tested

- Removal of Code 8
- Combining days for codes 6 and 7
- Removing code 7 for SC (as not a Bank Holiday in Scotland)
- Removing codes for Domestic EUCs

## Recommendation

- Results were inconclusive and the recommendation is to not change the holiday codes for Easter at this time

### Current Holiday Code Rules

From Wednesday before Good Friday to the Friday after Good Friday (10 days).

**Holiday code 6:** Easter Saturday and Easter Sunday

**Holiday code 7:** Good Friday and Easter Monday

**Holiday code 8:** All other days in the period above.

# Impact on Residuals – 02BNI (1 of 2)

The charts on the right show the residuals for the current holiday period dates for the Easter holiday period. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

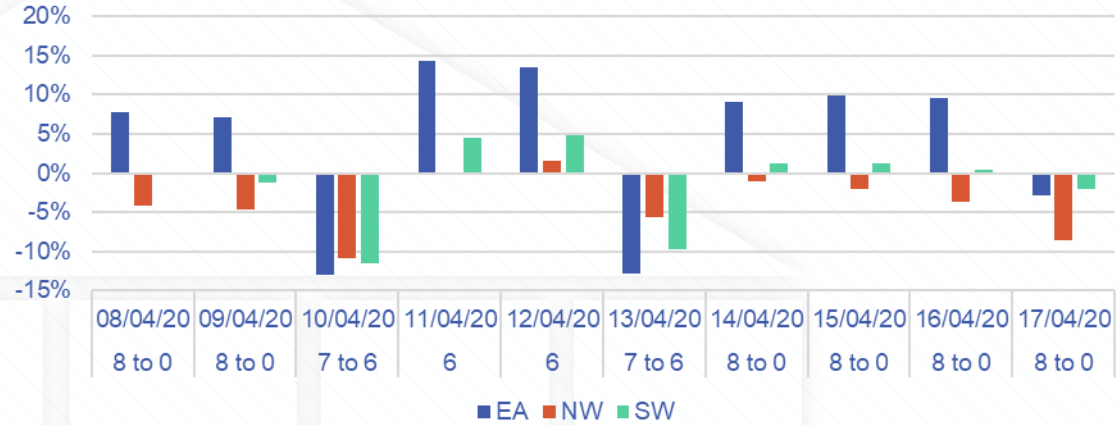
These show the impact on the residuals of

- Removing holiday code 8
- Reclassifying 7 as 6

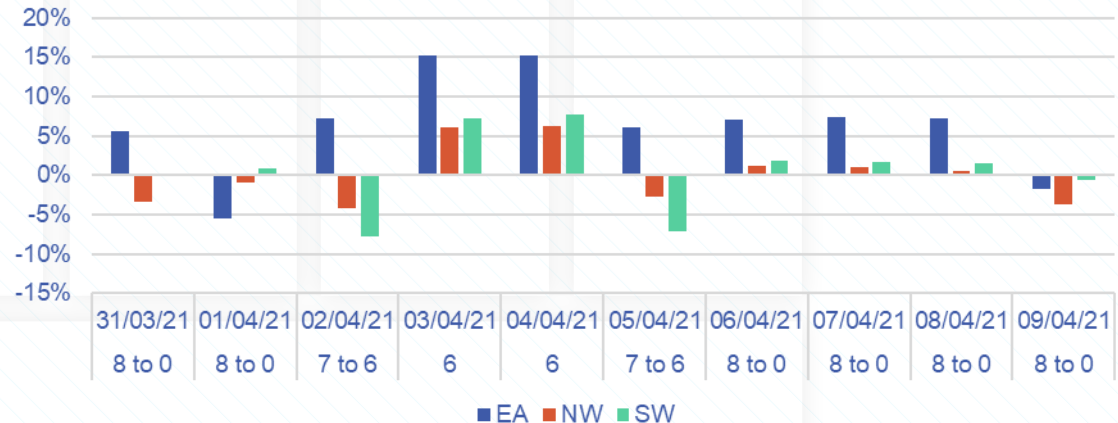
The impact on the residuals is largely detrimental and therefore the change was rejected

SC is covered on the following slide as the rules are different.

Selected LDZs 2019-20



Selected LDZs 2020-21





# Impact on Residuals – 02BNI (2 of 2)

The charts on the right show the residuals for the current holiday period dates for the Easter holiday period. These are for SC only as the rules are slightly different due to the extra Bank Holiday in Scotland.

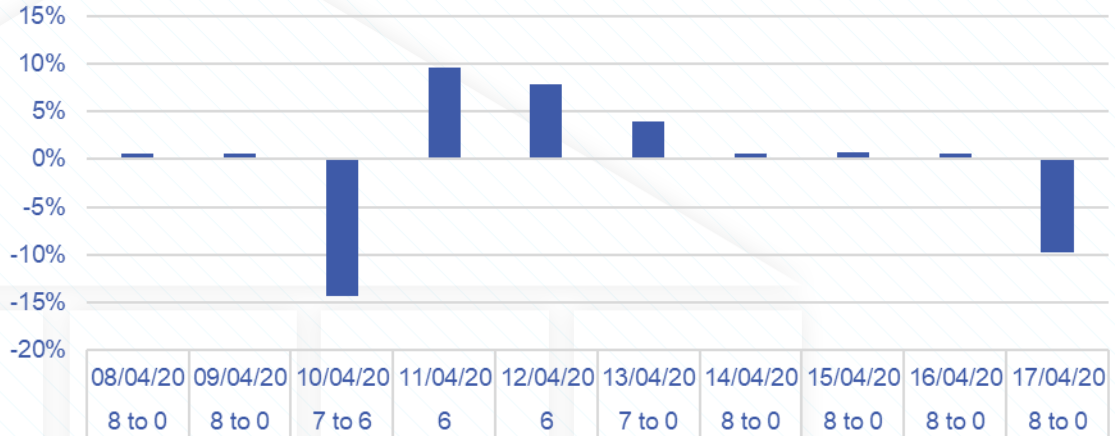
**The change in holiday code is shown at the bottom for each day.**

These show the impact on the residuals of

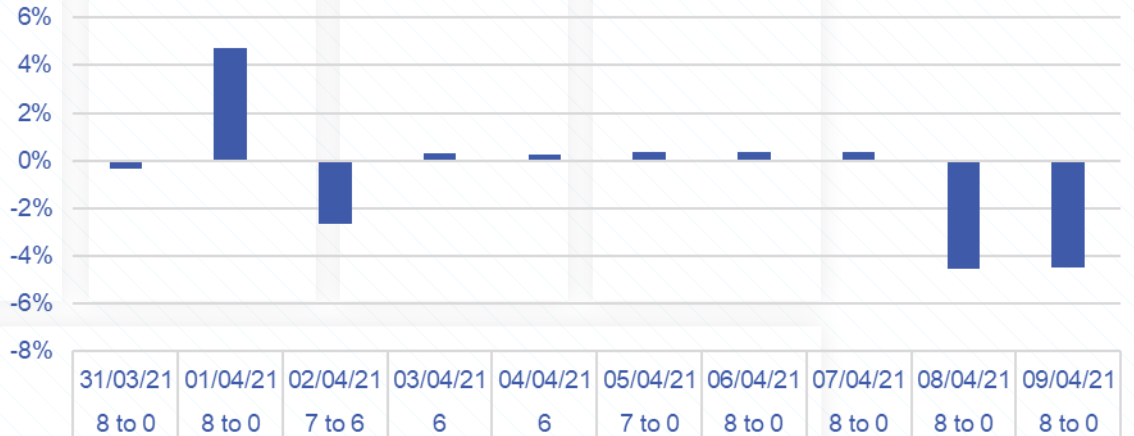
- Removing holiday code 8
- Reclassifying 7 as 6
- Removing the Easter Monday as it is not a Bank Holiday in Scotland

The impact on the residuals is mixed and therefore the change was rejected

SC 2019-20



SC 2020-21







Holiday Code Analysis

**EARLY MAY**

# Focus and Considerations

## Areas of focus

- Length of Holiday period after Bank Holiday
- Domestic and I&C EUCs

## Changes Considered

- Shortening period
- Dropping code 10
- Reclassification of weekends and Bank Holidays

### Current Holiday Code Rules

From Saturday immediately preceding Bank Holiday, for 9 days in total. (Holiday runs from Saturday to Sunday).

**Holiday code 9:** First Bank Holiday in May; Saturdays and Sundays in period above.

Note Friday 8th May 2020 (VE Bank Holiday) was be treated as Holiday Code 9 as per DESC agreement

**Holiday code 10:** All other days in period above.

# Proposed Changes

## Summary of proposed changes:

- Early May Bank Holiday period shortened to just the Bank Holiday Weekend
- No Holiday codes for Domestic EUCs for the period

### Proposed Holiday Code Rules

From Saturday immediately preceding Bank Holiday, for 3 days in total.

**Holiday code 9 Domestic:** N/A

**Holiday code 9 I&C:** First Bank Holiday in May; Saturday and Sunday immediately prior.

**Holiday code 10:** N/A

**Note:** In 2020 when the Bank Holiday was moved to Friday 8<sup>th</sup> for VE day, the dates used for testing code 9 were 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> May.

# Comparison of Holiday Factors – 01BND

The tables show comparisons between the Holiday factors for the Early May Bank Holiday period for:

Current – the values which were live for 2020-21 using the current holiday code rules

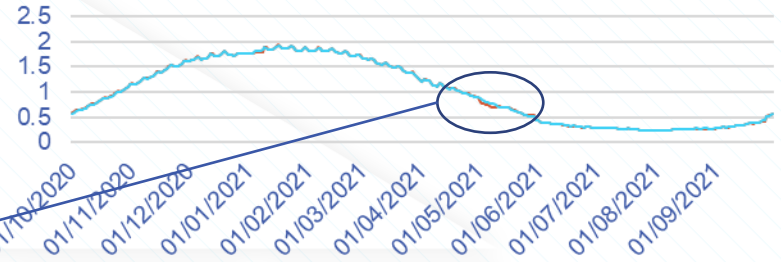
Proposed – The values calculated with the updated codes

01BND		Holiday Code	
		9	10
EA	Current	0.936	0.930
	Proposed	1	1
NW	Current	0.931	0.933
	Proposed	1	1
SC	Current	0.915	0.942
	Proposed	1	1
SW	Current	0.943	0.904
	Proposed	1	1

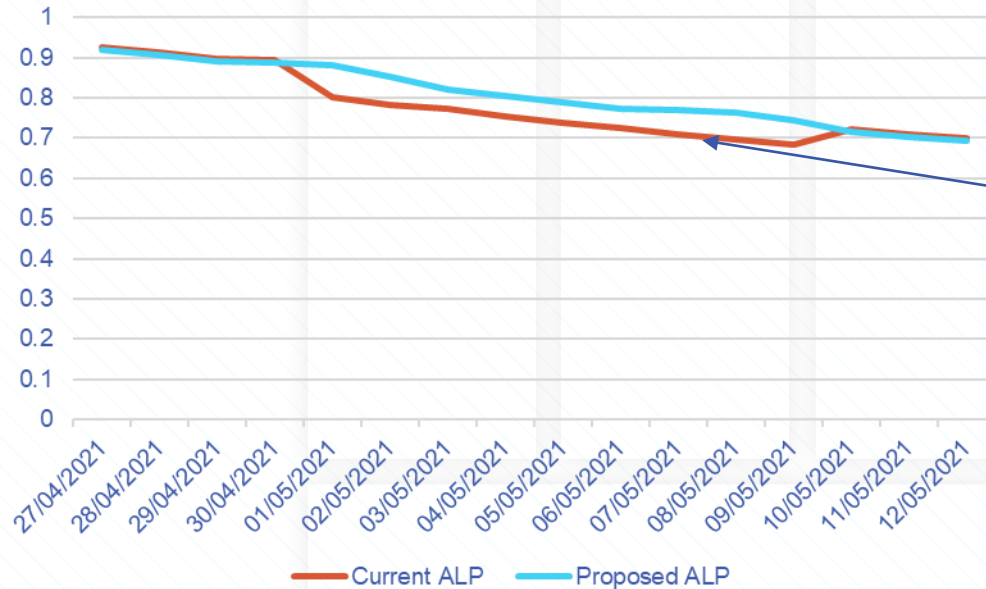
# ALP Comparison – EA 01BND

The charts show a comparison of the ALPs for EA:01BND focussing in on the Early May Bank Holiday period

EA:01BND



EA:01BND - May Bank Holiday



Removal of Holiday period has put forecast in line with surrounding weeks.

# Impact on Residuals – 01BND

Tables show the impact on the Residuals as a result of the changes proposed to the Holiday Codes with improved residuals highlighted green

- Where value is zero but green, the residual has been improved by less than 0.5%
- The second May weekend is showing the best improvement
- A lockdown in 2020 has muted any improvement to the residuals

	May-20									
	2	3	4	5	6	7	8	9	10	
EA	10.3%	-0.6%	-6.0%	7.1%	7.2%	6.0%	4.5%	-7.1%	-6.3%	
EM	5.4%	-4.4%	3.3%	8.8%	9.5%	8.1%	2.9%	-2.5%	-4.3%	
NE	9.7%	9.0%	3.0%	15.8%	16.1%	12.8%	-0.7%	1.7%	-7.7%	
NO	8.3%	8.0%	11.0%	11.3%	11.7%	10.6%	6.2%	-6.6%	4.7%	
NT	7.1%	4.1%	4.6%	6.8%	6.8%	3.6%	-4.4%	-6.1%	-5.7%	
NW	12.2%	9.9%	7.3%	8.1%	9.3%	7.5%	9.0%	-7.7%	10.0%	
SC	11.6%	4.2%	-3.2%	6.3%	6.6%	6.2%	-9.6%	-8.3%	-2.0%	
SE	1.4%	-2.8%	-4.9%	-5.8%	-5.5%	-2.8%	2.1%	1.5%	-0.8%	
SO	-3.9%	0.4%	-5.0%	-10.5%	7.8%	12.1%	-9.1%	-9.5%	-8.4%	
SW	8.3%	-2.5%	-6.2%	-7.8%	2.2%	-5.7%	-2.5%	-3.3%	-4.6%	
WM	6.7%	-4.0%	3.5%	5.8%	5.9%	3.2%	-1.0%	-0.2%	-3.1%	
WN	11.3%	9.3%	6.8%	8.5%	8.9%	7.7%	11.1%	-8.8%	0.3%	
WS	11.0%	5.0%	-3.8%	-4.0%	4.7%	-4.0%	-7.7%	-5.3%	-7.0%	

	May-21								
	1	2	3	4	5	6	7	8	9
EA	-0.6%	-8.1%	-5.5%	-6.0%	-5.7%	-1.3%	-3.2%	-8.1%	-4.9%
EM	2.3%	-4.2%	-3.3%	-7.3%	-3.3%	8.4%	-6.3%	-4.6%	-3.8%
NE	-7.3%	-8.5%	-7.2%	-14.3%	2.2%	3.1%	-8.0%	-8.4%	-5.8%
NO	8.9%	-7.3%	-4.3%	-8.2%	-8.7%	-7.7%	-9.6%	-1.0%	-7.2%
NT	7.0%	-5.9%	-4.5%	-5.9%	6.7%	4.3%	6.8%	-6.1%	-5.9%
NW	1.5%	-9.0%	-6.2%	-5.9%	4.7%	7.5%	6.6%	-9.7%	-7.9%
SC	0.3%	-9.6%	-7.4%	-5.5%	-5.6%	-5.5%	-6.6%	-9.9%	-9.7%
SE	4.1%	-4.2%	2.1%	-0.6%	8.0%	0.5%	4.6%	3.8%	-1.4%
SO	-4.7%	-10.7%	-8.8%	-10.5%	-9.3%	-10.5%	-8.8%	-9.3%	-9.7%
SW	10.0%	0.2%	-5.2%	-3.9%	-2.6%	5.9%	7.0%	-7.6%	-6.0%
WM	5.0%	-4.6%	-3.6%	-5.8%	-6.0%	-3.5%	-6.3%	-5.5%	-2.4%
WN	5.6%	-6.6%	-4.7%	-5.1%	-3.6%	6.5%	-7.3%	2.3%	-7.3%
WS	2.4%	-8.9%	-8.0%	-3.9%	4.5%	-3.1%	-4.8%	-8.3%	-7.9%

# Impact on Residuals – 01BND

The charts on the right show the residuals for the current holiday period dates for the early May Bank Holiday. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

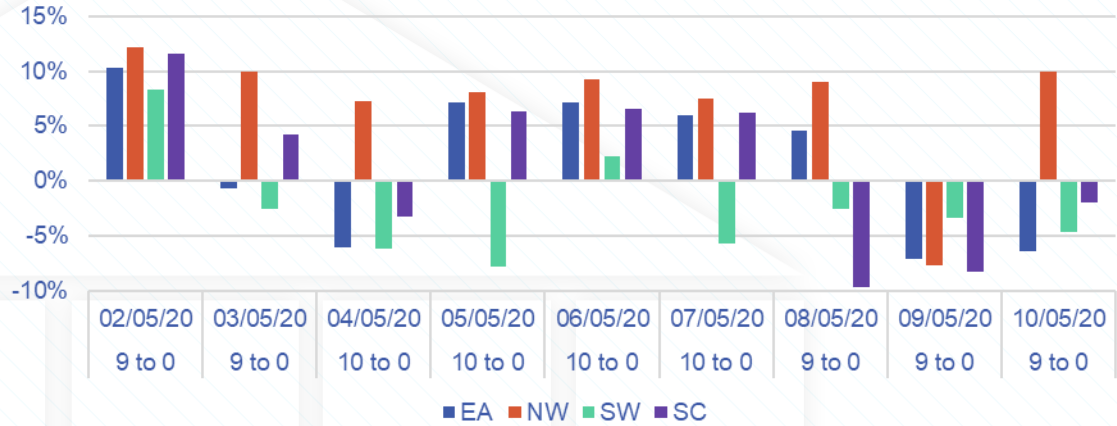
## 2019-20

- Benefit to the changes isn't very clear due to lockdown
- Unusually warm weather in April and May 2020 may have impacted the residuals

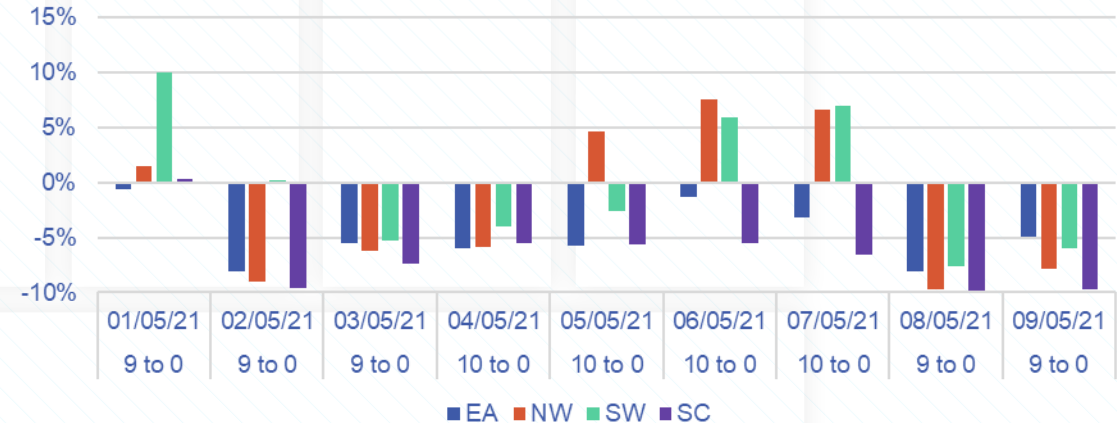
## 2020-21

Good improvements to residuals for almost all days

Selected LDZs 2019-20



Selected LDZs 2020-21



# Comparison of Holiday Factors – 02BNI

The tables show comparisons between the Holiday factors for early May for:

Current – the values which were live for 2020-21 using the current holiday code rules

Proposed – The values calculated with the updated codes

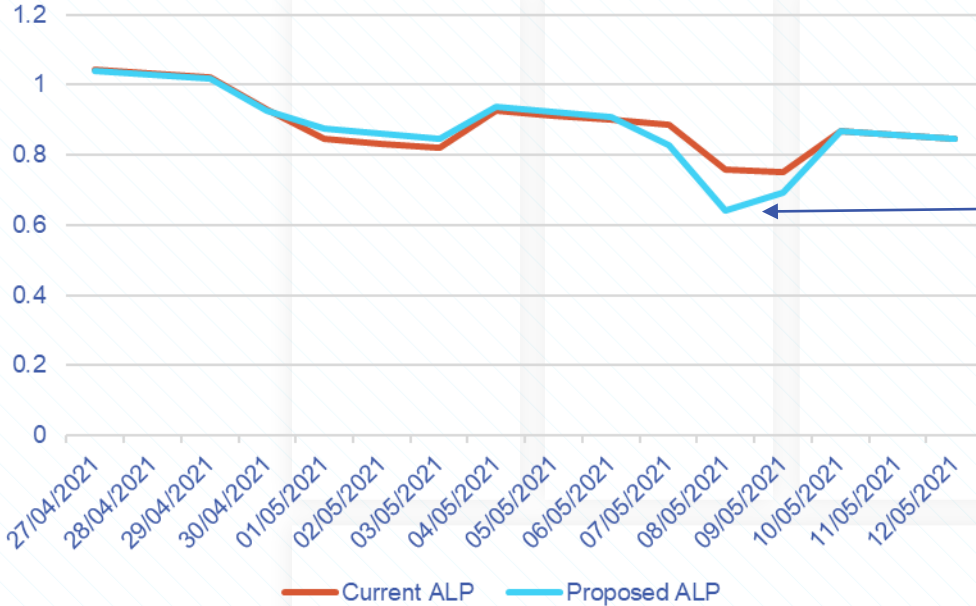
02BNI		Holiday Code	
		9	10
EA	Current	0.721	0.942
	Proposed	0.769	1
NW	Current	0.880	1.000
	Proposed	0.929	1
SC	Current	0.856	0.986
	Proposed	0.886	1
SW	Current	0.846	0.934
	Proposed	0.886	1



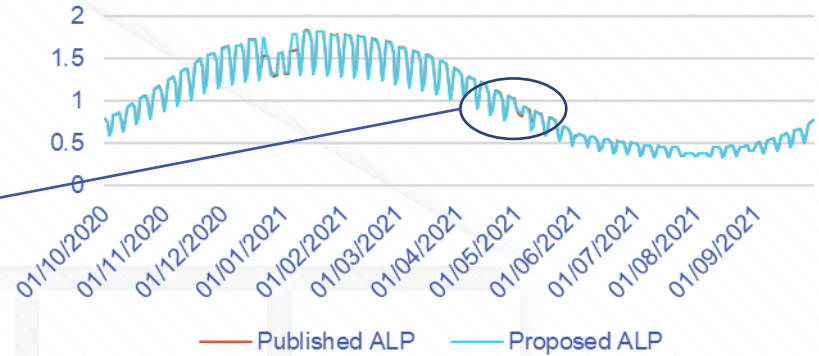
# ALP Comparison – SC 02BNI

The charts show a comparison of the ALPs for SC:02BNI focussing in on the early May Bank Holiday period

SC 02BNI - May Bank Holiday



SC 02BNI



Removing the Weekdays and the second weekend has put the forecast in line with a normal working week

As holiday factors are calculated as a ratio to a normal Monday to Thursday this has actually reduced the forecast for the second weekend.

# Impact on Residuals – 02BNI

Tables show the impact on the Residuals as a result of the changes proposed to the Holiday Codes with improved residuals highlighted green

- Where value is zero but green, the residual has been improved by less than 0.5%
- The first weekend has seen improved residuals for both years
- Midweek dates have shown a widespread improvement for 2021
- A lockdown in 2020 has muted any improvement to the residuals

	May-20									
	2	3	4	5	6	7	8	9	10	
EA	-14.8%	-1.2%	7.2%	7.6%	7.7%	7.2%	6.4%	7.6%	6.6%	
EM	-12.8%	-9.2%	5.3%	5.8%	5.8%	5.2%	6.0%	6.3%	7.5%	
NE	-5.6%	-6.6%	6.0%	6.4%	6.1%	5.4%	2.6%	2.4%	4.3%	
NO	-6.6%	-7.8%	0.5%	0.6%	-0.1%	-3.1%	0.6%	-1.2%	6.0%	
NT	-7.6%	-8.2%	-2.3%	-1.2%	-2.2%	-5.3%	-0.4%	-1.5%	2.5%	
NW	-7.9%	-12.6%	-4.8%	-4.1%	-4.7%	-7.8%	-0.3%	-3.6%	3.9%	
SC	-24.3%	-10.8%	1.7%	1.8%	1.9%	2.1%	4.3%	5.2%	4.5%	
SE	-2.7%	-5.0%	2.1%	2.2%	2.2%	1.6%	1.6%	1.6%	2.0%	
SO	1.6%	0.3%	5.0%	4.8%	4.8%	4.8%	1.1%	0.7%	1.3%	
SW	-1.1%	-3.9%	6.8%	6.9%	7.1%	6.7%	3.0%	3.1%	3.6%	
WM	-6.5%	-4.2%	5.3%	5.4%	5.7%	4.7%	5.3%	5.8%	6.3%	
WN	5.8%	1.6%	0.3%	-0.5%	-0.3%	3.9%	25.8%	31.5%	16.1%	
WS	-3.1%	-13.9%	-3.8%	-2.9%	-4.2%	-6.5%	-2.5%	-5.0%	0.3%	

	May-21								
	1	2	3	4	5	6	7	8	9
EA	6.1%	-1.2%	-4.2%	-4.0%	-4.6%	-4.5%	2.1%	8.7%	1.0%
EM	-1.5%	-2.0%	-4.5%	-3.3%	-3.4%	-3.5%	2.4%	4.4%	5.3%
NE	-3.4%	-3.2%	-3.2%	-4.1%	-4.1%	-4.4%	-0.8%	3.5%	3.8%
NO	-5.7%	-0.7%	-4.8%	-1.3%	-1.2%	-1.5%	1.8%	2.4%	4.7%
NT	5.5%	4.9%	-4.3%	-0.5%	-1.0%	-0.9%	1.3%	3.9%	5.7%
NW	4.8%	5.3%	-4.9%	0.3%	0.6%	-0.2%	2.3%	4.2%	7.4%
SC	3.8%	3.5%	-2.7%	-1.0%	-1.0%	-0.9%	5.9%	-8.3%	7.9%
SE	-0.2%	-2.1%	-1.9%	-1.6%	-1.7%	-1.6%	-0.3%	1.7%	3.1%
SO	-2.5%	-2.4%	-2.1%	-3.4%	-3.5%	-3.5%	-1.3%	-0.8%	0.1%
SW	-3.9%	-3.7%	-3.4%	-5.0%	-4.9%	-4.9%	-3.6%	0.3%	2.1%
WM	-3.5%	-4.7%	-4.2%	-3.4%	-3.3%	-3.4%	1.3%	3.8%	2.5%
WN	-7.5%	-7.5%	-6.2%	2.9%	2.5%	3.0%	4.4%	-1.9%	-1.0%
WS	-4.3%	-3.2%	-4.4%	0.2%	-0.1%	0.1%	2.1%	1.6%	7.9%

# Impact on Residuals – 02BNI

The charts on the right show the residuals for the current holiday period dates for the early May Bank Holiday. These are for a few selected LDZs with a geographical spread.

The change in holiday code is shown at the bottom for each day.

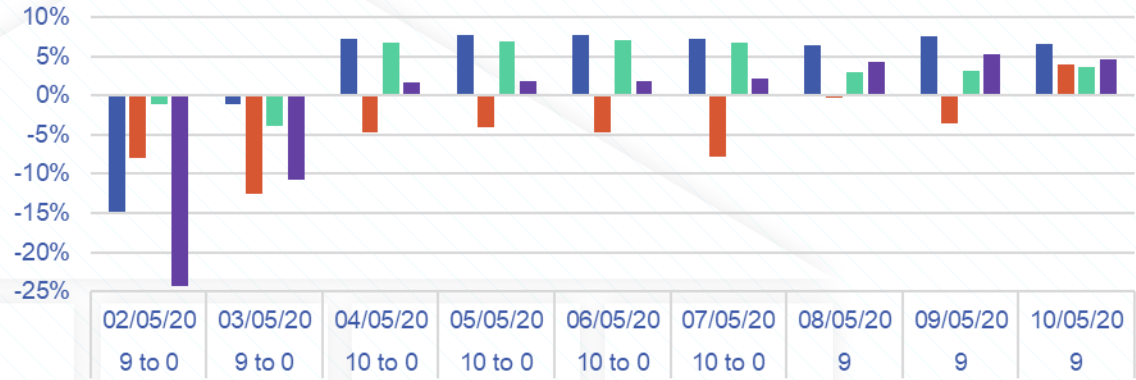
## 2019-20

- Benefit to the changes for midweek aren't very clear due to lockdown
- The removal of the additional weekend has shown improvement to residuals

## 2020-21

- Midweek changes have shown a better improvement than weekends

Selected LDZs 2019-20



Selected LDZs 2020-21



# Comparison of Holiday Factors – 05B

The tables show comparisons between the Holiday factors for Easter for:

Current – the values which were live for 2020-21 using the current holiday code rules

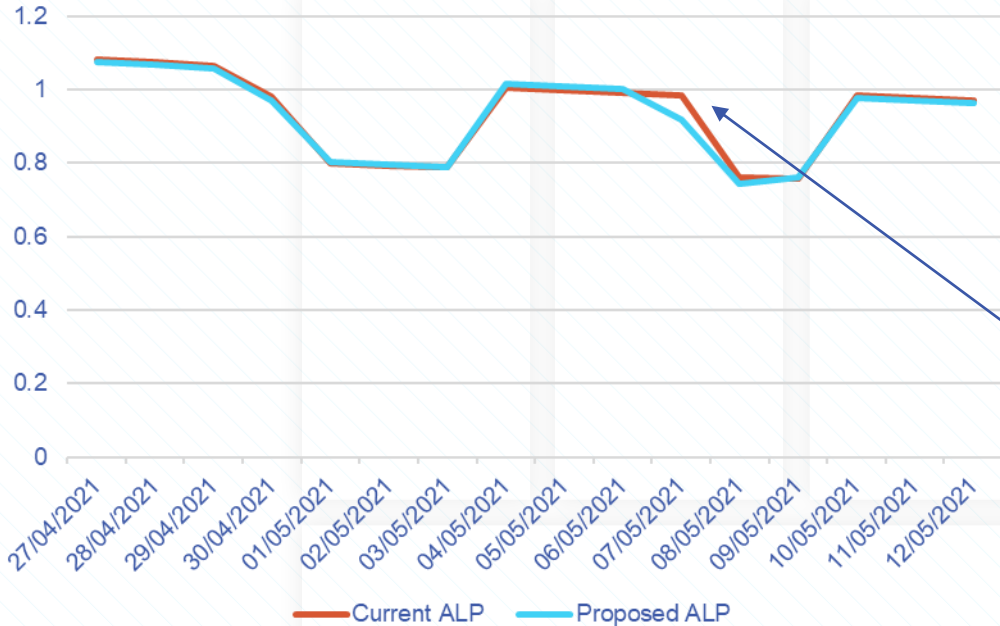
Proposed – The values calculated with the updated codes

05B		Holiday Code	
		9	10
EA	Current	0.760	0.975
	Proposed	0.764	1
NW	Current	0.687	0.995
	Proposed	0.716	1
SC	Current	0.816	0.987
	Proposed	0.834	1
SW	Current	0.765	0.983
	Proposed	0.772	1

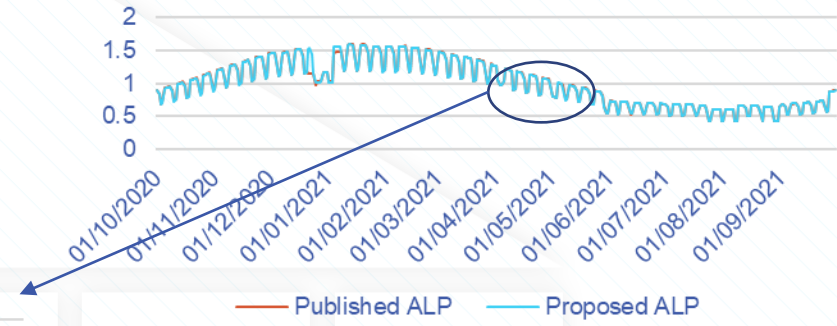
# ALP Comparison – SW 05B

The charts show a comparison of the ALPs for SW:05B focussing in on the early May Bank Holiday period

### SW 05B - May Bank Holiday



### SW 05B



Holiday codes are calculated as a ratio against a normal Monday to Thursday as a result in cases where there are Fridays included this can result in a 'Holiday' forecast higher than a normal forecast

The main difference seen is the Friday is now a 'normal' Friday (for I&C forecasts this would be lower than a normal Monday to Thursday) and not uplifted by the holiday factor calculation

# Impact on Residuals – 05B

Tables show the impact on the Residuals as a result of the changes proposed to the Holiday Codes with improved residuals highlighted green

- Where value is zero but green, the residual has been improved by less than 0.5%
- Very little change to the residuals for 2020, in either direction
- A lockdown in 2020 has muted any improvement to the residuals
- Midweek dates have shown a widespread improvement for 2021

	May-20									
	2	3	4	5	6	7	8	9	10	
EA	-2.7%	-2.2%	2.8%	2.8%	2.9%	3.0%	0.1%	0.1%	0.1%	
EM	-1.9%	3.9%	2.3%	2.3%	2.2%	2.5%	2.2%	2.6%	1.9%	
NE	0.9%	3.7%	2.5%	2.5%	2.6%	3.0%	1.9%	2.0%	1.4%	
NO	-6.6%	-0.2%	1.2%	1.1%	1.1%	1.3%	3.0%	2.9%	2.4%	
NT	1.5%	0.3%	2.6%	2.7%	2.7%	2.2%	1.8%	1.7%	2.0%	
NW	-5.2%	-3.6%	0.6%	0.6%	0.6%	0.7%	6.0%	5.9%	5.3%	
SC	-9.4%	-4.1%	1.5%	1.5%	1.6%	1.8%	2.7%	2.9%	2.4%	
SE	-1.4%	-1.6%	2.3%	2.4%	2.3%	2.0%	-0.2%	-0.3%	0.1%	
SO	-0.5%	2.1%	4.4%	4.3%	4.4%	4.5%	-0.6%	-0.8%	-0.3%	
SW	-2.8%	0.7%	1.2%	1.3%	1.3%	1.2%	0.1%	0.0%	0.2%	
WM	1.6%	4.4%	2.8%	2.6%	2.8%	2.9%	1.5%	1.9%	1.7%	
WN	0.7%	1.7%	-3.3%	-3.4%	-3.5%	-4.5%	3.5%	2.6%	5.2%	
WS	1.2%	7.4%	5.7%	5.8%	5.5%	5.8%	0.5%	0.1%	0.8%	

	May-21								
	1	2	3	4	5	6	7	8	9
EA	-0.2%	-0.2%	-0.2%	-1.7%	-1.9%	-1.9%	3.5%	1.7%	1.7%
EM	1.6%	-0.7%	-1.3%	-1.6%	-1.6%	-1.6%	-5.3%	-1.5%	-2.6%
NE	1.0%	1.0%	-0.8%	-1.4%	-1.5%	-1.4%	10.0%	-0.4%	-2.3%
NO	2.0%	2.0%	-1.7%	-0.6%	-0.6%	-0.7%	3.7%	4.7%	-0.4%
NT	-2.6%	-2.5%	-2.4%	-2.3%	-2.5%	-2.5%	-1.2%	-1.1%	0.1%
NW	0.6%	0.8%	-3.3%	-0.1%	-0.2%	-0.2%	4.7%	3.8%	2.4%
SC	1.9%	1.9%	-1.5%	-0.9%	-0.9%	-0.9%	6.7%	0.0%	-3.7%
SE	-0.7%	-0.6%	-0.6%	-2.0%	-2.1%	-2.1%	1.3%	1.0%	1.4%
SO	-0.7%	-0.6%	-0.5%	-3.3%	-3.3%	-3.4%	1.7%	0.3%	-1.1%
SW	0.6%	0.5%	-0.2%	-1.1%	-1.1%	-1.1%	-7.3%	-2.2%	-0.4%
WM	-1.2%	-1.2%	-1.0%	-1.7%	-1.7%	-1.7%	6.2%	-0.8%	-2.2%
WN	-4.4%	-4.6%	-3.8%	1.1%	1.3%	1.1%	10.3%	-0.6%	-0.8%
WS	1.9%	1.8%	-1.7%	-4.2%	-4.3%	-4.6%	4.2%	0.9%	-5.4%



Holiday Code Analysis

**LATE MAY**

# Focus and Considerations

## Areas of focus

- Domestic and I&C EUCs
- Working days over period

## Changes Considered and Tested

- Removal of Code 12
- Removal of both 11 and 12
- Removing codes for Domestic EUCs

## Recommendation

- Results were inconclusive and the recommendation is to not change the holiday codes for Late May at this time

### Current Holiday Code Rules

From Sunday immediately preceding Bank Holiday, for a week.

**Holiday code 11:** Spring Bank Holiday; Saturdays and Sundays in period above

**Holiday code 12:** All other days in period above.



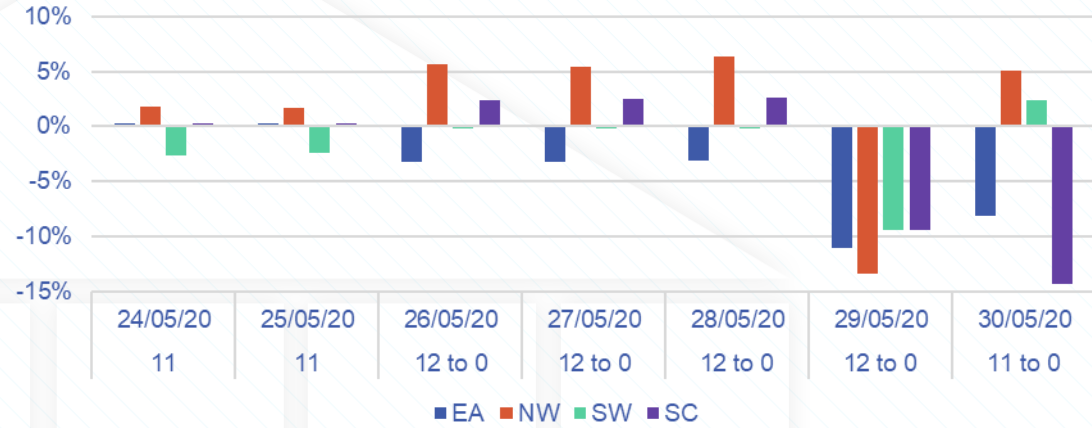
# Impact on Residuals – 05B

The charts on the right show the residuals for the current holiday period dates for the Late May Bank Holiday period. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

- These show the impact on the residuals of removing holiday code 12
- The impact on the residuals is mixed and therefore the change was rejected

Selected LDZs 2019-20



Selected LDZs 2020-21





Holiday Code Analysis

**GENERAL SUMMER HOLIDAY**

# Focus and Considerations

## Areas of focus

- Domestic and I&C EUCs
- Working days over period

## Changes Considered and Tested

- Removal of Code 13
- Removal of Code 14
- Reclassifying Some 13 and 14 code days in SC as 15 for earlier August Bank Holiday

## Recommendation

- Results were inconclusive and the recommendation is to not change the holiday codes for summer at this time

### Current Holiday Code Rules

#### General Summer Holiday (Holiday codes 13 and 14)

17 days from first Friday on or after 19th July.

**Holiday code 13:** Saturdays and Sundays in period above.

**Holiday code 14:** All other days in period above.

# Impact on Residuals – 02BNI (1 of 2)

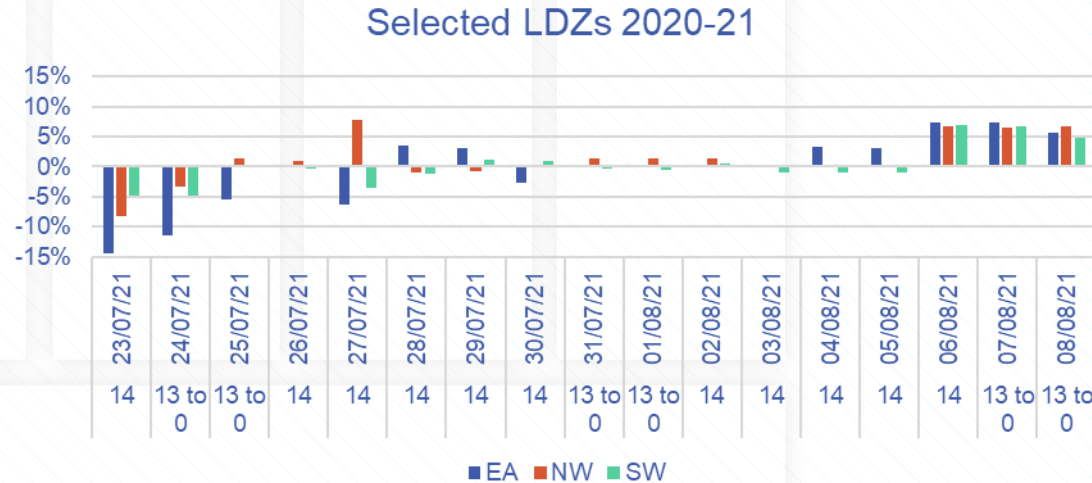
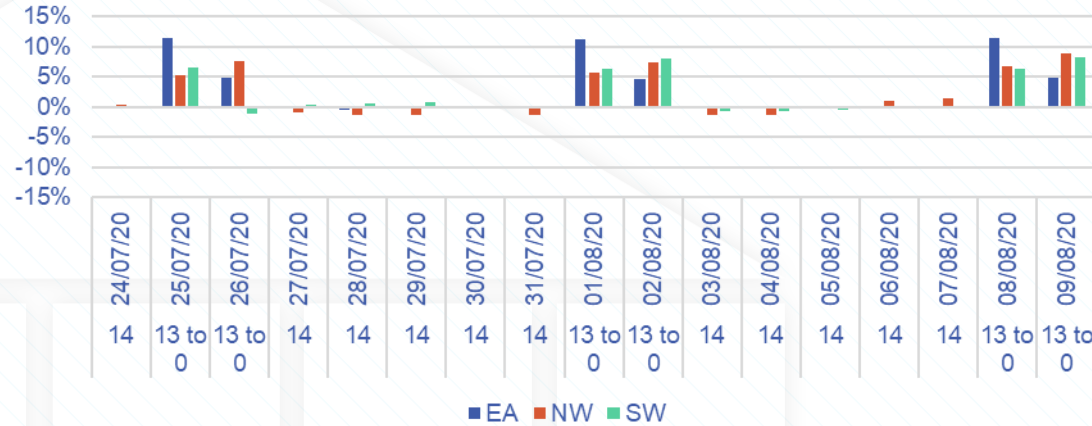
The charts on the right show the residuals for the current holiday period dates for the General Summer Holiday period. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

- These show the impact on the residuals of removing holiday code 13
- The impact on the residuals is mixed and largely detrimental and therefore the change was rejected

SC is covered on the following slide as the rules tested

Selected LDZs 2019-20



# Impact on Residuals – 02BNI (2 of 2)

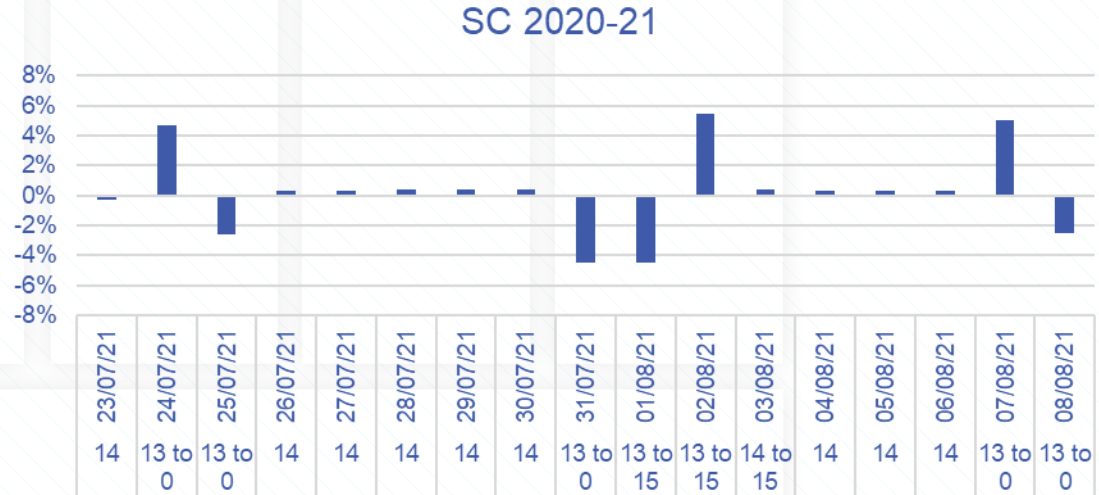
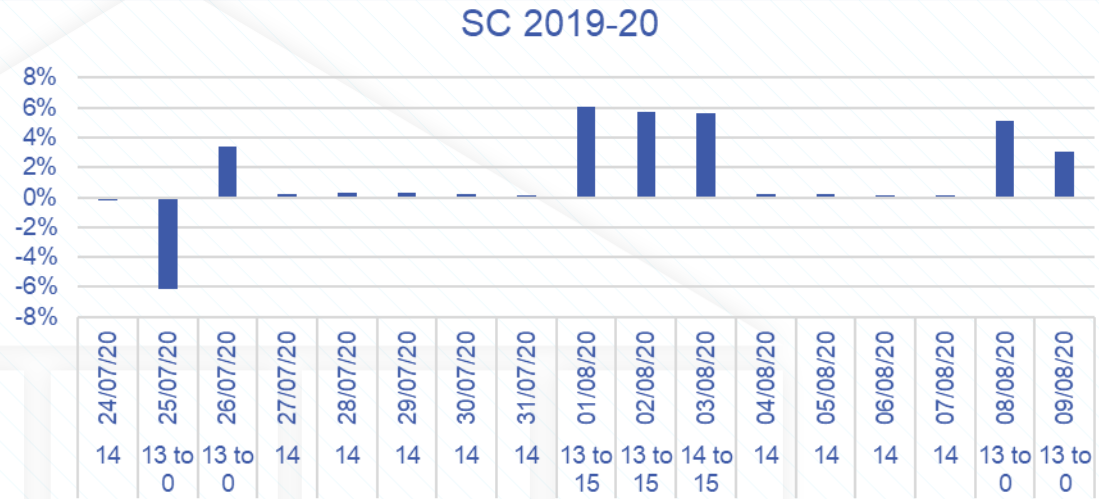
The charts on the right show the residuals for the current holiday period dates for the General Summer Holiday period.

The change in holiday code is shown at the bottom for each day.

These show the impact on the residuals of

- Removing holiday code 13
- Reclassifying the SC August Bank Holiday dates as 15 in line with the England and Wales Bank Holiday

The detrimental impact on the residuals is mixed and therefore the change was rejected





Holiday Code Analysis

# **AUGUST BANK HOLIDAY**

# Focus and Considerations

## Areas of focus

- Domestic and I&C EUCs
- Working days over period

## Changes Considered and Tested

- Removal of Code 16
- Shortening of the period for code 15 to 3 day weekend only
- Different dates for Code 15 in Scotland to reflect the different Bank Holiday

### Current Holiday Code Rules

#### **August Bank Holiday (Holiday codes 15 and 16)**

From Sunday 8 days before Bank Holiday to Tuesday immediately after Bank Holiday.

**Holiday code 15:** August Bank Holiday; Saturdays and Sundays in period above.

**Holiday code 16:** All other days in period above.

# Proposed Changes

## Summary of proposed changes:

- Shorten Bank Holiday Period to 3 day Weekend only
- Remove code 16 in all LDZs
- Remove code 15 in SC

### Proposed Holiday Code Rules England and Wales

From Saturday immediately preceding Bank Holiday, for 3 days in total.

**Holiday code 15:** August Bank Holiday in May; Saturday and Sunday immediately prior

**Holiday code 15 Scotland Only:** N/A

**Holiday code 16:** N/A

### Proposed Holiday Code Rules Scotland

**Holiday code 15:** N/A

**Holiday code 16:** N/A



# Comparison of Holiday Factors – 01BND

The tables show comparisons between the Holiday factors for the August Bank Holiday period for:

Current – the values which were live for 2020-21 using the current holiday code rules

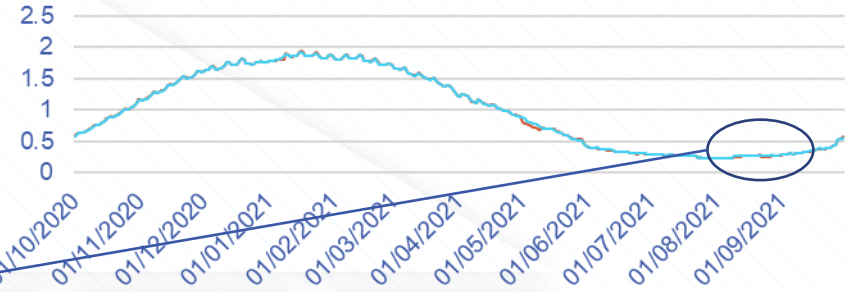
Proposed – The values calculated with the updated codes

01BND		Holiday Code	
		15	16
EA	Current	0.771	0.764
	Proposed	0.792	1
NW	Current	0.979	0.996
	Proposed	0.965	1
SC	Current	0.979	0.92
	Proposed	1	1
SW	Current	0.851	0.802
	Proposed	0.897	1

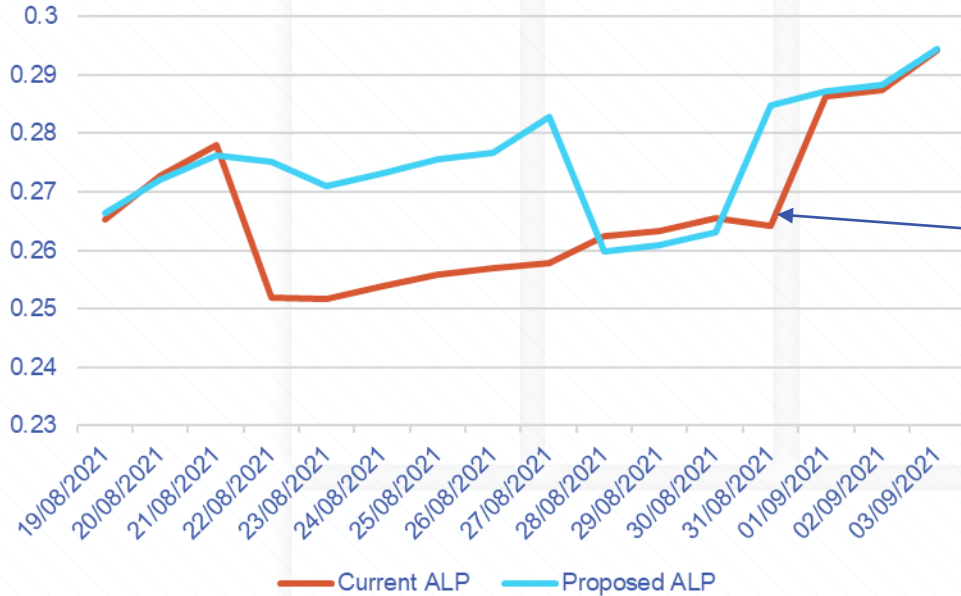
# ALP Comparison – EA 01BND

The charts show a comparison of the ALPs for EA:01BND focussing in on the August Bank Holiday period

EA:01BND



EA:01BND - August Bank Holiday



Removal of weekdays from Holiday period has put forecast in line with surrounding weeks

# Impact on Residuals – 01BND

Tables show the impact on the Residuals as a result of the changes proposed to the Holiday Codes with improved residuals highlighted green

- Where value is zero but green, the residual has been improved by less than 0.5%
- Both years are generally showing good improvements to the residuals

	Aug-20										Sep-20
	23	24	25	26	27	28	29	30	31	1	
EA	-8%	2%	7%	-4%	1%	-9%	0%	0%	0%	-8%	
EM	-4%	4%	-6%	-6%	-7%	-6%	1%	2%	2%	-7%	
NE	-2%	9%	-7%	-8%	-8%	-14%	-3%	-3%	3%	14%	
NO	-6%	6%	-4%	-5%	-5%	-5%	0%	0%	0%	-6%	
NT	-1%	4%	4%	4%	4%	4%	0%	0%	0%	-1%	
NW	-3%	1%	1%	1%	1%	-1%	-2%	-2%	-2%	0%	
SC	3%	2%	-6%	-7%	-6%	-8%	-3%	-3%	-2%	-7%	
SE	-7%	-6%	-7%	-7%	9%	14%	-3%	-3%	-4%	-10%	
SO	-1%	-1%	-1%	0%	-1%	-2%	0%	0%	0%	-1%	
SW	1%	-1%	-1%	-3%	-7%	-6%	-3%	2%	5%	10%	
WM	-6%	5%	-5%	-6%	-8%	-9%	1%	0%	-1%	-4%	
WN	8%	7%	-5%	0%	0%	7%	-1%	-1%	-1%	6%	
WS	0%	-3%	-2%	-3%	-3%	4%	-3%	-4%	-4%	4%	

	Aug-21									
	22	23	24	25	26	27	28	29	30	31
EA	-8%	-1%	0%	-3%	-7%	-9%	0%	0%	0%	-7%
EM	-5%	-5%	-6%	-3%	-7%	5%	3%	3%	2%	-6%
NE	5%	5%	9%	10%	11%	14%	-3%	-2%	1%	11%
NO	-7%	-5%	-5%	-5%	-6%	8%	1%	1%	1%	-6%
NT	-1%	2%	4%	-3%	4%	5%	-1%	-1%	1%	0%
NW	-3%	2%	1%	2%	-2%	1%	-3%	-3%	2%	1%
SC	-2%	-6%	-6%	-6%	-6%	-8%	-3%	-3%	-1%	-7%
SE	-7%	1%	0%	-7%	8%	14%	3%	3%	4%	12%
SO	-1%	-1%	0%	0%	0%	-2%	1%	0%	0%	-1%
SW	-1%	6%	4%	5%	3%	13%	4%	4%	3%	0%
WM	-5%	-3%	-3%	-4%	-3%	-3%	-5%	-4%	3%	-8%
WN	9%	-7%	-6%	-6%	-6%	10%	2%	2%	1%	6%
WS	0%	-3%	-3%	3%	-3%	5%	-4%	-2%	3%	-3%

# Impact on Residuals – 01BND (1 of 2)

The charts on the right show the residuals for the current holiday period dates for the August Bank Holiday period. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

## 2019-20

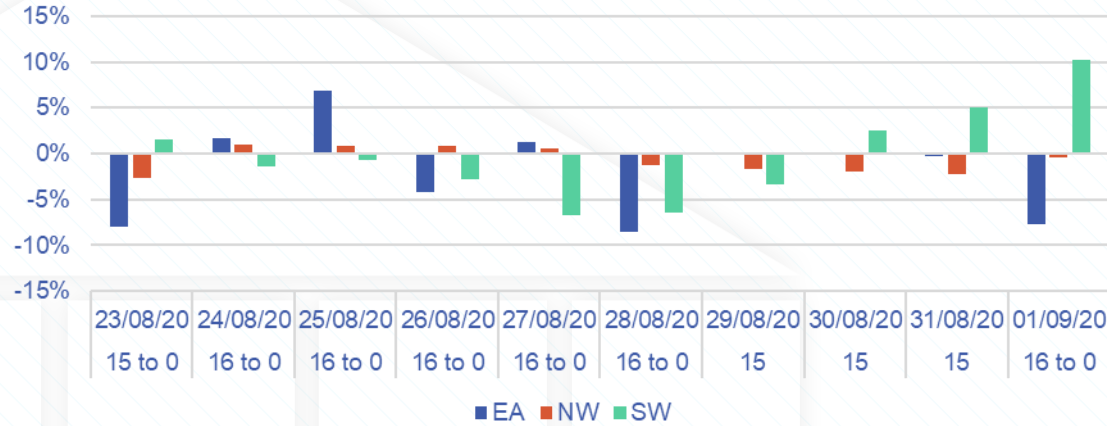
- Removal of code 16 is beneficial to almost all days
- Shortening of the period for code 15 has had mixed results

## 2020-21

- Removal of code 16 is beneficial to most days
- Shortening of the period for code 15 has had mixed but largely good results

SC is shown on the following slide

Selected LDZs 2019-20



Selected LDZs 2020-21



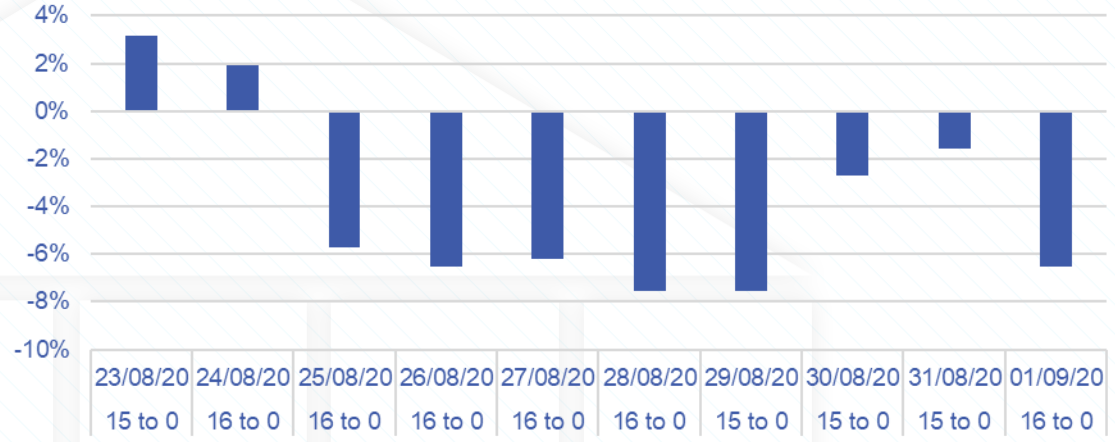
# Impact on Residuals – 01BND (2 of 2)

The charts on the right show the residuals for the current holiday period dates for the General Summer Holiday period.

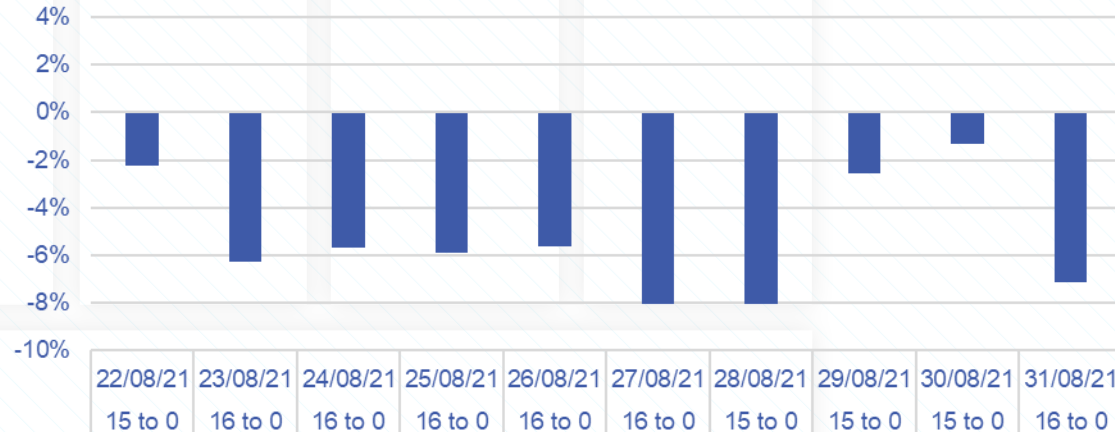
The change in holiday code is shown at the bottom for each day.

Significant improvements to the residuals have been seen across both years.

SC 2019-20



SC 2020-21



# Comparison of Holiday Factors – 02BNI

The tables show comparisons between the Holiday factors for the August Bank Holiday period for:

Current – the values which were live for 2020-21 using the current holiday code rules

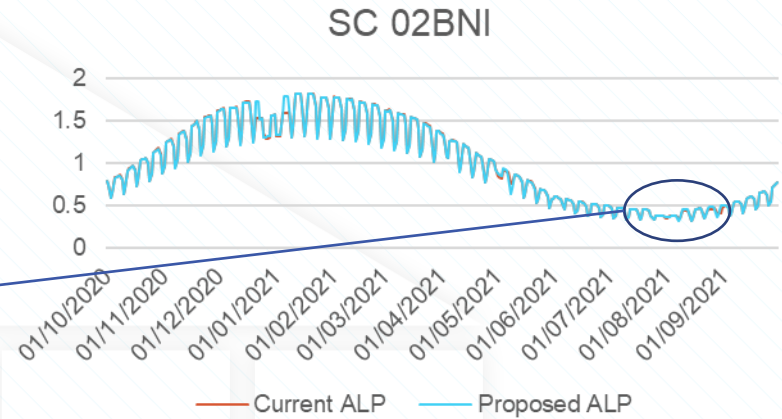
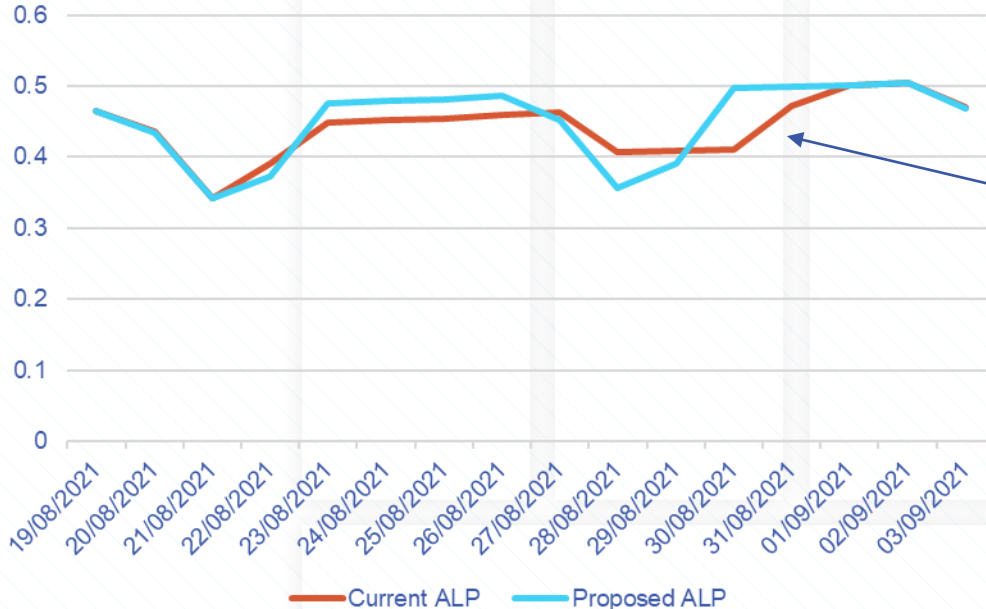
Proposed – The values calculated with the updated codes

02BNI		Holiday Code	
		15	16
EA	Current	0.626	0.718
	Proposed	0.652	1
NW	Current	0.852	0.908
	Proposed	0.928	1
SC	Current	0.825	0.944
	Proposed	1	1
SW	Current	0.769	0.807
	Proposed	0.805	1

# ALP Comparison – SC 02BNI

The charts show a comparison of the ALPS for SC:02BNI focussing in on the August Bank Holiday period

### SC 02BNI - August Bank Holiday



The main difference is seen where the Bank Holiday has been removed and the following day. Scotland does not have a bank holiday at the end of August

# Impact on Residuals – 02BNI

Tables show the impact on the Residuals as a result of the changes proposed to the Holiday Codes with improved residuals highlighted green

- Where value is zero but green, the residual has been improved by less than 0.5%
- Significant improvements cross both years, with the exception of the first day in the period for each year (Sunday, 8 days before the Bank Holiday)

	Aug-20										Sep-20
	23	24	25	26	27	28	29	30	31	1	
EA	4%	-11%	-11%	-11%	-13%	-5%	-1%	-2%	-1%	-13%	
EM	12%	-5%	-5%	-5%	-6%	0%	-2%	-2%	-2%	-6%	
NE	4%	-6%	-5%	-5%	-6%	-3%	-2%	-2%	-2%	-6%	
NO	4%	-6%	-5%	-6%	-7%	-4%	-5%	-6%	-5%	-7%	
NT	-1%	8%	8%	8%	9%	8%	-2%	-2%	-2%	10%	
NW	9%	-2%	-2%	-2%	-3%	-1%	1%	6%	5%	5%	
SC	-5%	-6%	-5%	-5%	-5%	2%	-4%	-2%	-16%	-5%	
SE	2%	-6%	-7%	-7%	3%	2%	-1%	-1%	-1%	-1%	
SO	9%	-1%	-1%	-1%	-1%	1%	-1%	-1%	-1%	-1%	
SW	10%	-2%	-2%	-2%	-3%	-1%	-2%	-2%	-2%	-2%	
WM	6%	-9%	-8%	-9%	-9%	-5%	-2%	-2%	-2%	-11%	
WN	5%	-2%	-2%	-1%	0%	3%	3%	3%	3%	-1%	
WS	6%	-3%	-2%	-3%	-4%	-3%	-3%	-3%	-3%	-4%	

	Aug-21									
	22	23	24	25	26	27	28	29	30	31
EA	3%	-10%	-10%	-10%	-10%	-4%	-1%	-1%	-1%	-11%
EM	11%	-4%	-5%	-5%	-5%	0%	-1%	-1%	-1%	-5%
NE	3%	-5%	-5%	-5%	-5%	-2%	-1%	-1%	-1%	-5%
NO	4%	-4%	-4%	-4%	-6%	-3%	-2%	-3%	-3%	-7%
NT	0%	-7%	-7%	-7%	-7%	-6%	-1%	-1%	-1%	-8%
NW	9%	0%	0%	0%	0%	2%	0%	-1%	-1%	-3%
SC	4%	-5%	-5%	-5%	-5%	2%	11%	4%	-16%	-5%
SE	2%	-6%	-6%	-6%	-6%	-5%	-1%	-1%	-1%	-6%
SO	7%	-1%	-1%	-1%	-1%	1%	0%	0%	0%	-1%
SW	7%	-2%	-2%	-2%	-2%	-1%	-2%	-2%	-2%	-2%
WM	5%	-9%	-9%	-9%	-9%	-5%	-1%	-1%	-1%	-9%
WN	3%	-3%	-2%	-2%	-2%	0%	-5%	-5%	-4%	0%
WS	6%	-2%	-2%	-3%	-3%	-2%	-1%	-1%	-2%	-4%



# Impact on Residuals – 02BNI (1 of 2)

The charts on the right show the residuals for the current holiday period dates for the August Bank Holiday period. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

## 2019-20

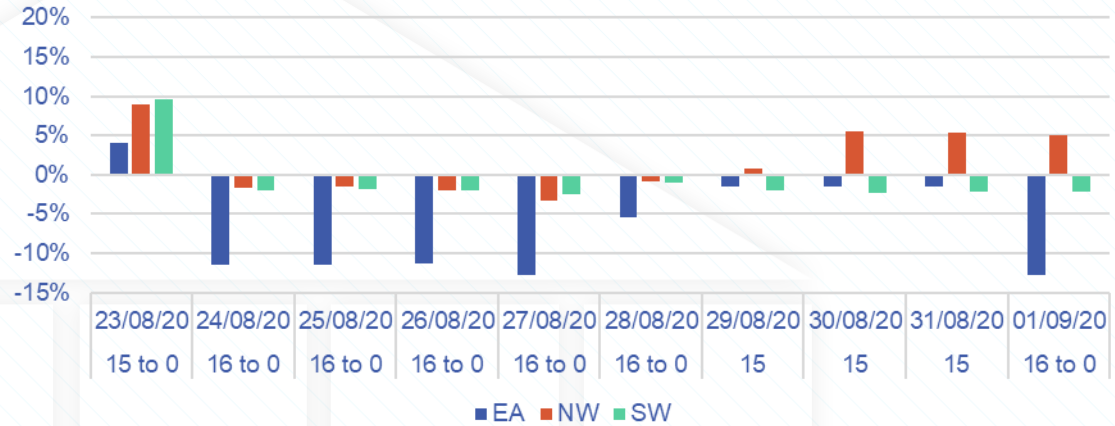
- Removal of code 16 is beneficial to almost all days and LDZs
- Shortening of the period for code 15 has had mixed results

## 2020-21

- Removal of code 16 is beneficial to almost all days and LDZs
- Shortening of the period for code 15 has had mixed but largely good results

SC is shown on the following slide

Selected LDZs 2019-20



Selected LDZs 2020-21



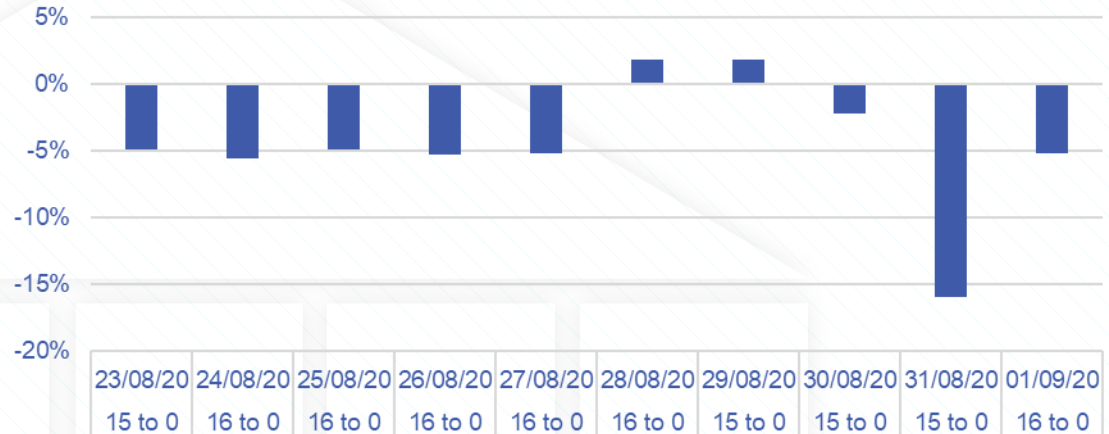
# Impact on Residuals – 02BNI (2 of 2)

The charts on the right show the residuals for the current holiday period dates for the General Summer Holiday period.

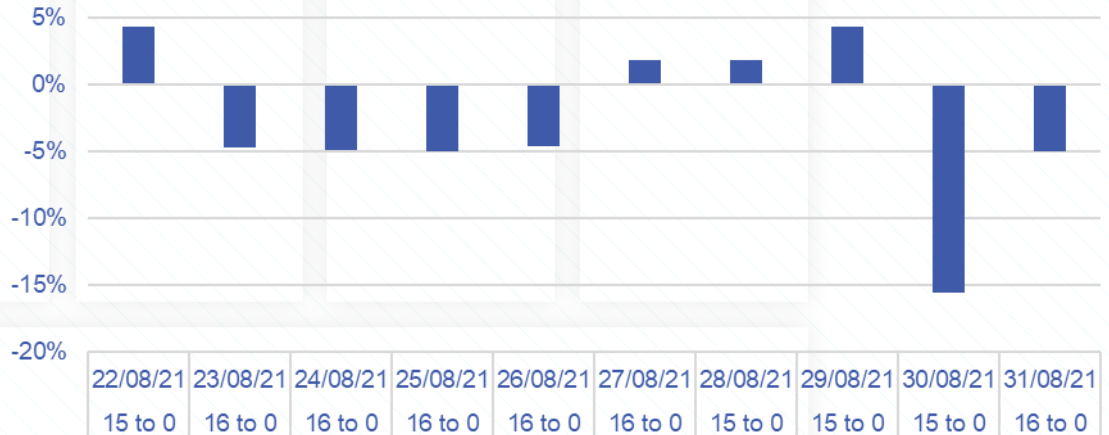
The change in holiday code is shown at the bottom for each day.

Significant improvements to the residuals have been seen across both years.

SC 2019-20



SC 2020-21



# Comparison of Holiday Factors – 05B

The tables show comparisons between the Holiday factors for the August Bank Holiday period for:

Current – the values which were live for 2020-21 using the current holiday code rules

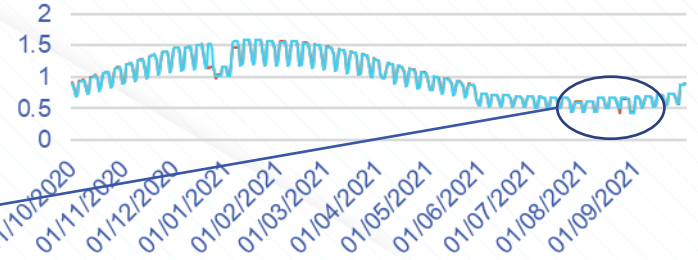
Proposed – The values calculated with the updated codes

02BNI		Holiday Code	
		15	16
EA	Current	0.570	0.812
	Proposed	0.567	1
NW	Current	0.559	0.952
	Proposed	0.561	1
SC	Current	0.771	0.949
	Proposed	1	1
SW	Current	0.553	0.814
	Proposed	0.546	1

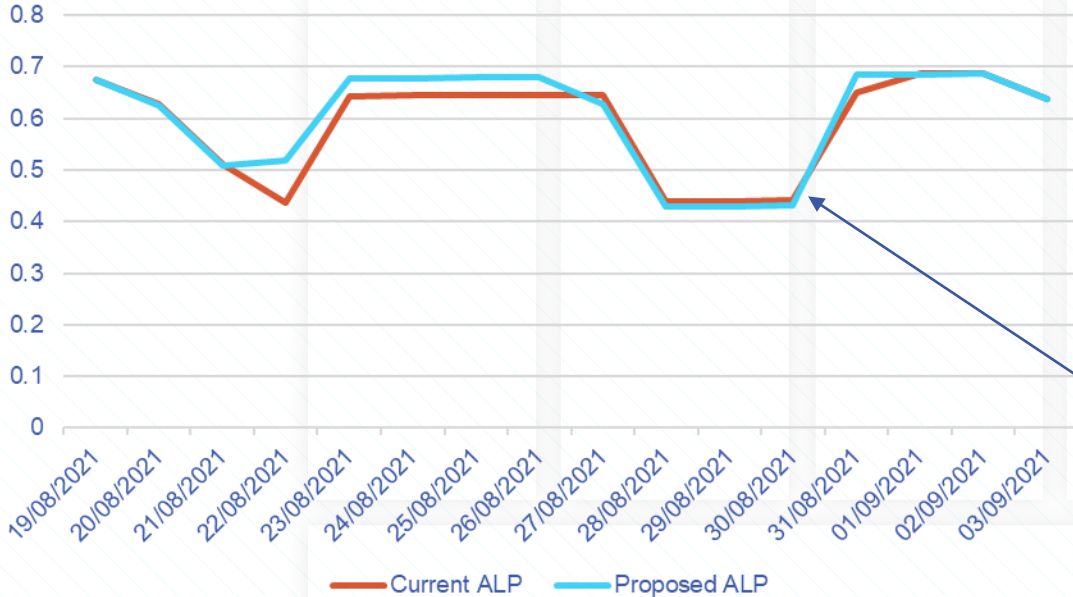
# ALP Comparison – SW 05B

The charts show a comparison of the ALPs for SW:05B focussing in on the August Bank Holiday period

SW 05B



SW 05B - August Bank Holiday



The removal of Holiday Code 16 hasn't made a significant impact on the ALP as the adjustments were fairly small

# Impact on Residuals – 05B

Tables show the impact on the Residuals as a result of the changes proposed to the Holiday Codes with improved residuals highlighted green

- Where value is zero but green, the residual has been improved by less than 0.5%

- Residual changes for August 2020 are fairly small, with the exception of the first day

- Widespread improvement seem in August 2021

	Aug-20										Sep-20
	23	24	25	26	27	28	29	30	31	1	
EA	11%	9%	7%	8%	8%	2%	1%	1%	1%	1%	
EM	27%	6%	-3%	-1%	6%	-12%	3%	-3%	2%	6%	
NE	21%	-1%	4%	-4%	-4%	-9%	-1%	-1%	1%	1%	
NO	21%	9%	9%	9%	10%	-2%	-1%	-1%	1%	10%	
NT	9%	8%	8%	7%	8%	3%	1%	1%	1%	0%	
NW	21%	5%	5%	5%	6%	-12%	0%	0%	0%	6%	
SC	2%	6%	-5%	3%	-3%	-4%	-2%	2%	-5%	5%	
SE	11%	9%	8%	9%	8%	5%	1%	1%	1%	8%	
SO	13%	3%	3%	3%	3%	-3%	1%	1%	1%	3%	
SW	13%	-3%	-5%	-5%	-5%	-3%	1%	-2%	2%	-5%	
WM	13%	4%	3%	4%	4%	-15%	2%	-2%	2%	4%	
WN	-10%	1%	0%	1%	1%	-9%	-8%	-2%	-9%	2%	
WS	22%	8%	5%	8%	9%	-2%	1%	1%	1%	-7%	

	Aug-21									
	22	23	24	25	26	27	28	29	30	31
EA	-12%	-7%	-6%	-6%	-7%	-2%	1%	1%	1%	-6%
EM	-16%	-5%	-5%	-5%	5%	-12%	-2%	3%	2%	-5%
NE	23%	4%	4%	4%	4%	-10%	-1%	-1%	0%	4%
NO	3%	-7%	-7%	-7%	-7%	-2%	2%	2%	1%	-7%
NT	-8%	-7%	-7%	-7%	-7%	-6%	1%	1%	1%	-7%
NW	-5%	-4%	-4%	-4%	-5%	-12%	0%	0%	0%	-4%
SC	2%	-5%	-5%	-5%	-5%	-1%	-2%	2%	-22%	-5%
SE	-5%	6%	3%	2%	-1%	0%	1%	1%	1%	-6%
SO	11%	0%	3%	3%	3%	-3%	0%	0%	0%	0%
SW	18%	-5%	-5%	-4%	-5%	-3%	-3%	-3%	-1%	-5%
WM	-16%	-3%	-3%	-3%	-3%	3%	2%	2%	2%	-3%
WN	-15%	-1%	0%	0%	0%	-12%	-7%	-7%	-7%	1%
WS	21%	-6%	-6%	-7%	-3%	-3%	0%	0%	0%	-7%

# Impact on Residuals – 05B (1 of 2)

The charts on the right show the residuals for the current holiday period dates for the August Bank Holiday period. These are for a few selected LDZs with a geographical spread.

**The change in holiday code is shown at the bottom for each day.**

## 2019-20

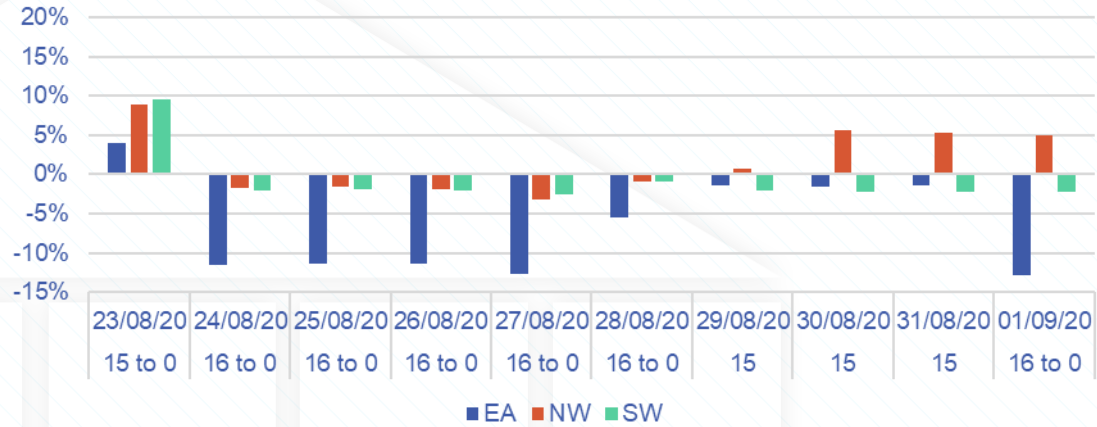
- Removal of code 16 is beneficial to almost all days
- Shortening of the period for code 15 has had mixed results

## 2020-21

- Removal of code 16 is beneficial to all days
- Shortening of the period for code 15 has had mixed but largely good results

SC is shown on the following slide

Selected LDZs 2019-20



Selected LDZs 2020-21

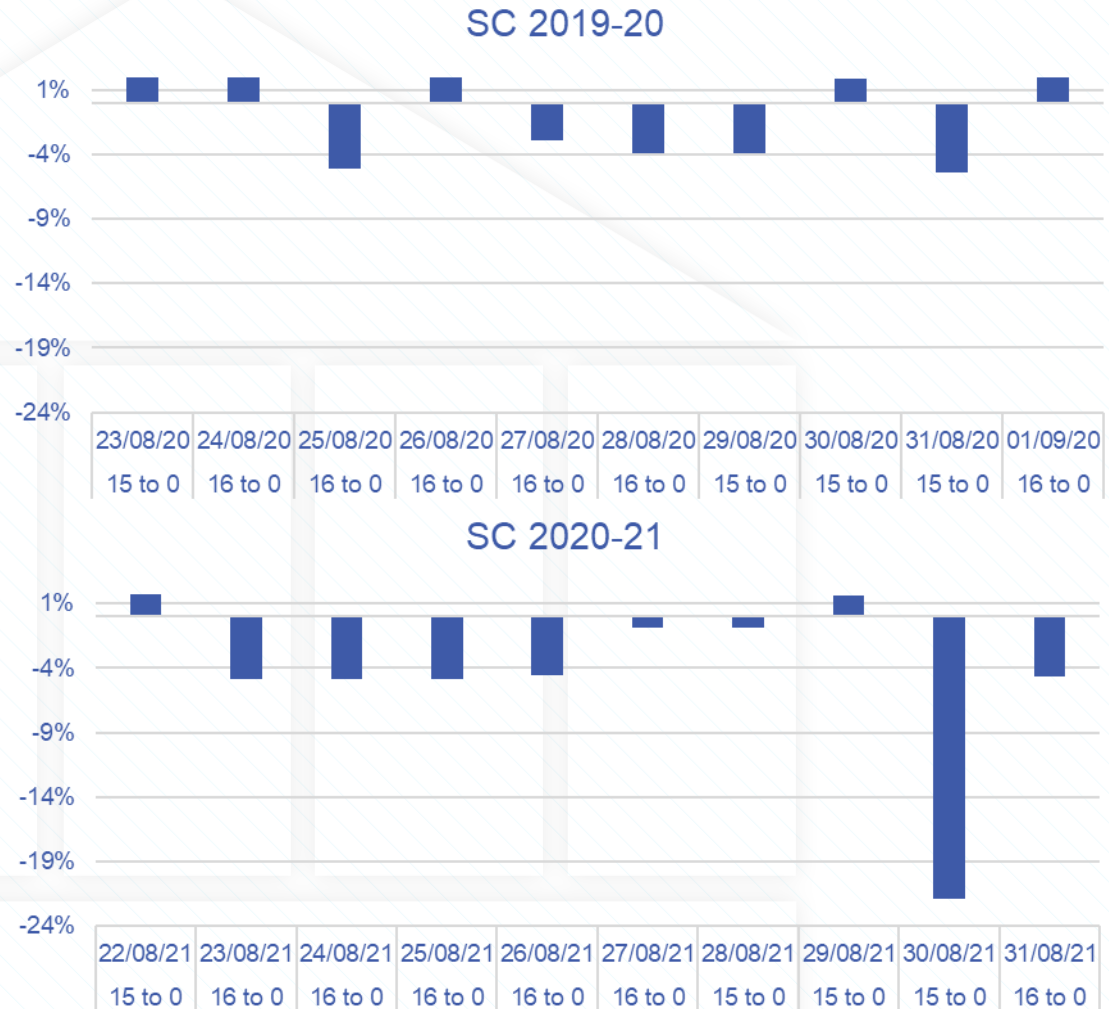


# Impact on Residuals – 05B (2 of 2)

The charts on the right show the residuals for the current holiday period dates for the August Bank Holiday period.

The change in holiday code is shown at the bottom for each day.

Significant improvements to the residuals have been seen across both years.





Holiday Code Analysis

# ST ANDREWS DAY



# Focus and Considerations

## Areas of focus

- Different Bank Holidays in Scotland

### Current Holiday Code Rules

N/A

## Changes Considered and Tested

- Adding a code for the St Andrew's day Bank Holiday in SC
  - 30<sup>th</sup> November or following Monday if a weekend

<b>Residual Comparison</b>	<b>No Code</b>	<b>With Holiday Code</b>
2 <sup>nd</sup> December 2019	2.4%	6.5%
30 <sup>th</sup> November 2020	4.2%	8.6%

## Recommendation

- Results showed the holiday code had a detrimental impact on the residual and the recommendation is to not change the holiday codes for summer at this time
- Lack of data (due to only one day in period) is likely to make this unpredictable



Holiday Code Analysis

# DOMESTIC CODES

# Focus and Considerations

## Areas of focus

- Do Domestic EUCs still need Holiday Codes?

## Changes Considered and Tested

- Removal of all codes for Domestic EUCs

The table on the right shows the impact on the MAPE (Mean Absolute Percentage Error) of removing the Holiday Codes from 01BND. Whilst some Holiday Code dates show an improvement, overall the removal of the codes had a negative impact on the MAPE.

## Recommendation

- Results showed removal of the Holiday codes for Domestic EUCs had a detrimental impact on the MAPEs

### Current Holiday Code Rules

N/A

Holiday Code	2019			2020		
	Number of Days	Current MAPE	MAPE with no Holiday Codes	Number of Days	Current MAPE	MAPE with no Holiday Codes
0	298	7.7%	8.0%	293	7.3%	7.4%
1	1	3.1%	4.4%	1	5.4%	3.5%
2	6	4.3%	4.6%	6	3.5%	4.2%
3	4	3.6%	3.6%	4	4.5%	3.5%
4	2	3.2%	2.5%	3	5.4%	4.7%
5	2	3.4%	4.4%	5	2.6%	2.9%
6	2	28.8%	26.6%	2	4.0%	5.7%
7	2	14.7%	15.2%	2	5.7%	5.7%
8	6	11.4%	12.3%	6	6.8%	6.3%
9	5	13.8%	12.6%	5	14.0%	8.4%
10	4	9.1%	11.4%	4	8.3%	4.8%
11	3	17.2%	16.4%	3	8.2%	8.9%
12	4	19.3%	18.2%	4	13.0%	12.1%
13	6	15.8%	11.1%	6	7.2%	8.3%
14	11	16.2%	11.3%	11	8.7%	10.4%
15	4	14.4%	11.9%	4	9.6%	8.9%
16	6	13.6%	10.9%	6	9.7%	8.0%



Holiday Code Analysis

# **CONCLUSIONS & OPTIONS FOR DESC**

# Conclusions

- Reminder of 2 main objectives of analysis:
  - Identify days within or neighbouring existing holiday periods which may need to be reclassified as holidays or non-holidays and reallocate the holiday codes for each period if necessary – **ACHIEVED** (plus additional analysis of the St Andrews day Bank Holiday in Scotland)
  - Review whether it is still appropriate to exclude holiday days within regression analysis for the “domestic” EUC models (e.g. “01BND”) – **ACHIEVED**
- Conclusions:
  - Holiday periods remain a difficult aspect of the modelling process due to lack of available data points and less predictable behaviour patterns
  - There have been limitations to the analysis due to only having 2 years of data to measure against and holiday periods in both years being impacted by COVID periods and unusual weather events
  - Despite this, there do appear to be some improvements available with the proposed changes to the Christmas and New Year Holiday period, Early May Bank Holiday period and the August Bank Holiday period
  - Domestic EUC (01BND) should continue to be modelled with “Holidays Excluded”
  - Holiday Code analysis is unlikely to always provide conclusive results and so is sometimes also a ‘judgement call’
  - Regardless of the decision taken by DESC the recommendation is to revisit the Holiday Codes in 2-3 years when there is more ‘clean’ data available

# Gas Year 2022/23 Proposal Summary

Proposed changes to the holiday codes for this year's EUC Demand Modelling for the 2022/23 Gas Year are shown below, all other holiday codes would remain unchanged.

Christmas 2022			
Date	Existing Hol Code	Proposed EW Hol Code	Proposed SC Hol Code
Sun 18/12/2022			
Mon 19/12/2022	4		
Tue 20/12/2022	4		
Wed 21/12/2022	4		
Thu 22/12/2022	4		
Fri 23/12/2022	4	4	4
Sat 24/12/2022	2	2	2
Sun 25/12/2022	1	2	2
Mon 26/12/2022	2	2	2
Tue 27/12/2022	2	2	2
Wed 28/12/2022	3	3	3
Thu 29/12/2022	3	3	3
Fri 30/12/2022	3	3	3
Sat 31/12/2022	2	2	2
Sun 01/01/2023	2	2	2
Mon 02/01/2023	2	2	2
Tue 03/01/2023	5		4
Wed 04/01/2023	5		
Thu 05/01/2023	5		
Fri 06/01/2023	5		
Sat 07/01/2023			
Sun 08/01/2023			

Early May 2023			
Date	Existing Hol Code	Proposed Domestic Hol Code	Proposed I&C Hol Code
Fri 28/04/2023			
Sat 29/04/2023	9		9
Sun 30/04/2023	9		9
Mon 01/05/2023	9		9
Tue 02/05/2023	10		
Wed 03/05/2023	10		
Thu 04/05/2023	10		
Fri 05/05/2023	10		
Sat 06/05/2023	9		
Sun 07/05/2023	9		
Mon 08/05/2023			

Aug-23			
Date	Existing Hol Code	Proposed EW Hol Code	Proposed Scotland Hol Code
Sat 19/08/2023			
Sun 20/08/2023	15		
Mon 21/08/2023	16		
Tue 22/08/2023	16		
Wed 23/08/2023	16		
Thu 24/08/2023	16		
Fri 25/08/2023	16		
Sat 26/08/2023	15	15	
Sun 27/08/2023	15	15	
Mon 28/08/2023	15	15	
Tue 29/08/2023			

# Options for 2022/23 Gas Year Modelling – DESC Decision

## Christmas and New Year

1. Accept all proposed changes:
  1. Shorten leading period of Holiday code 4s
  2. Shorten trailing period in January and reclassify remaining days
  3. Reclassify 2<sup>nd</sup> SC Bank Holiday
  4. Reclassify Christmas as Holiday Code 2
2. Accept some but not all proposed changes
3. Leave holiday codes for Christmas and New Year unchanged

## August Bank Holiday

1. Accept all proposed changes:
  1. Shorten period to 3 days (Removing Holiday Code 16)
  2. Remove Code 15 for Scotland
2. Accept some but not all proposed changes
3. Leave holiday codes for August Bank Holiday unchanged

## Early May Bank Holiday

1. Accept all proposed changes:
  1. Shorten period to 3 days (Removing Holiday Code 10)
  2. Remove Code 9 for Domestic
2. Accept some but not all proposed changes
3. Leave holiday codes for Early May Bank Holiday unchanged

### DESC Decision:

DESC to confirm (vote) on preferred option to be used in 2022/23 demand modelling for each of the Holiday periods

Welcome views on how these proposals align with your own understanding/results from your demand forecasting processes