



Profiling Analysis for EUC Bands 01 and 02 - Gas Year 2007/08 Performance Evaluation

DESC 20th January 2009

Profiling Analysis - Background

- Action DE1045:
 - “xoserve to consider carrying out analysis on whether the standard domestic profile is applicable across the whole band”
- Demand Models:
 - The demand models for EUC band 01 (from which the corresponding EUC profiles for band 01 in each LDZ are derived) are based on sample data from domestic supply points only in the sample
 - The demand models for EUC band 02 (from which the corresponding EUC profiles for band 02 in each LDZ are derived) are based on sample data from all available supply points in the sample
- Source data:
 - The NDM sample for band 01 is based on data recorder data
 - The NDM sample for band 02 is based on a combination of data recorder and datalogger data. All domestic supply points in band 02 are based on data recorder data

Profiling Analysis - Background

- The market sector flag is not currently available for all meter points in the population
 - (7.6 million meters not flagged at mid-October 2008)
- However, if domestic and non-domestic supply points can be separately identified in bands 01 and 02 *for the whole population*, then the possibility arises (for each LDZ) to:
 - apply the EUC profile derived for EUC band 02 to non-domestic supply points in EUC band 01
 - apply the EUC profile derived for EUC band 01 to domestic supply points in EUC band 01.

and

- apply the EUC profile derived for EUC band 01 to domestic supply points in EUC band 02
- apply the EUC profile derived for EUC band 02 to non-domestic supply points in EUC band 02.

Profiling Analysis – Approach and Scope

- Gas Year 2007/08 NDM sample consumption data and 2007/08 EUC profiles are available
- “As Used” model applies WCF and SF values used by Gemini and therefore reflects other errors - SND bias and AQ error
- “As Used” model unsuitable for assessing performance of the profiles
- “Best Estimate” model focuses on performance of the EUC profiles themselves: uses EWCF (to mitigate WCF bias) and SF of one.
- “Best Estimate 07” (gas year 2007/08) model applied here to assess suitability of applying different EUC profiles to segments of the population in bands 01 and 02.

Profiling Analysis – Approach and Scope

- “Best Estimate 07” model uses 2007/08 EUC profiles to allocate demand to selected sets of NDM sample supply points and compares allocated -v- actual demand.
- Profiles derived for gas year 2007/08 were based on smoothed EUC demand models in turn based on data sets from 2004/05, 2005/06 and 2006/07
- Actual NDM sample data for gas year 2007/08 did not form any part of the data used to create profiles for GY 2007/08
- Approach is a fair and reasonable one.

Profiling Analysis – Approach and Scope

- The constituent supply points in the NDM sample applicable to bands 01 and 02 can be identified as domestic or non-domestic.
 - No sample in WN LDZ for band 01 and a very small number of supply points (all non-domestic) in WN LDZ in band 02
(Note that WN is usually combined with NW LDZ for EUC demand modelling).
- Analysis deals with only 12 LDZs.
- Analysis compares actual aggregate consumptions (available for the sample) against the aggregate allocations resulting from application of different profiles to the non-domestics in band 01 and to the domestics in band 02.
- Differences in winter/summer percentage errors indicate relative performance of the different profiles applied.

Points to Note: AQs for NDM Sample Data

- In the population of NDM supply points, the AQ of each NDM meter point is determined on the basis of EUC assigned to the supply point which the meter points falls into.
- Any given supply point will have a different resultant AQ if the EUC it is assigned to changes.
- In this analysis as well, the AQs of the various NDM sample data sets analysed are determined in relation to the EUC profile being applied.
- Consistent with the approach that would be taken for the NDM population as a whole - the applicable EUC in part determines the AQ.
- For example if EUC 01B profiles are applied to the non-domestic supply points in band 01, the resulting AQ of this sample data set will be slightly different to the AQ of the same data set if the EUC 02B profiles are applied.

Points to Note: Sample Numbers available

- The numbers of supply points in the NDM sample that are in **band 01** and are **non-domestic** are small: **139 in total** nationally ranging from 5 to 18 in the 12 LDZs
- The numbers of supply points in the NDM sample that are in **band 02** and are **domestic** are small: **161 in total** nationally ranging from 8 to 24 in the 12 LDZs
- Results at an individual LDZ level will not be robust.
- Focus should be on results at an aggregated national level.
- Allocations computed according to the relevant EUC profile (taking in to account the LDZ), but the assessment of winter summer errors considered at aggregate level.

Numbers of Supply Points in Sample Sub-Sets

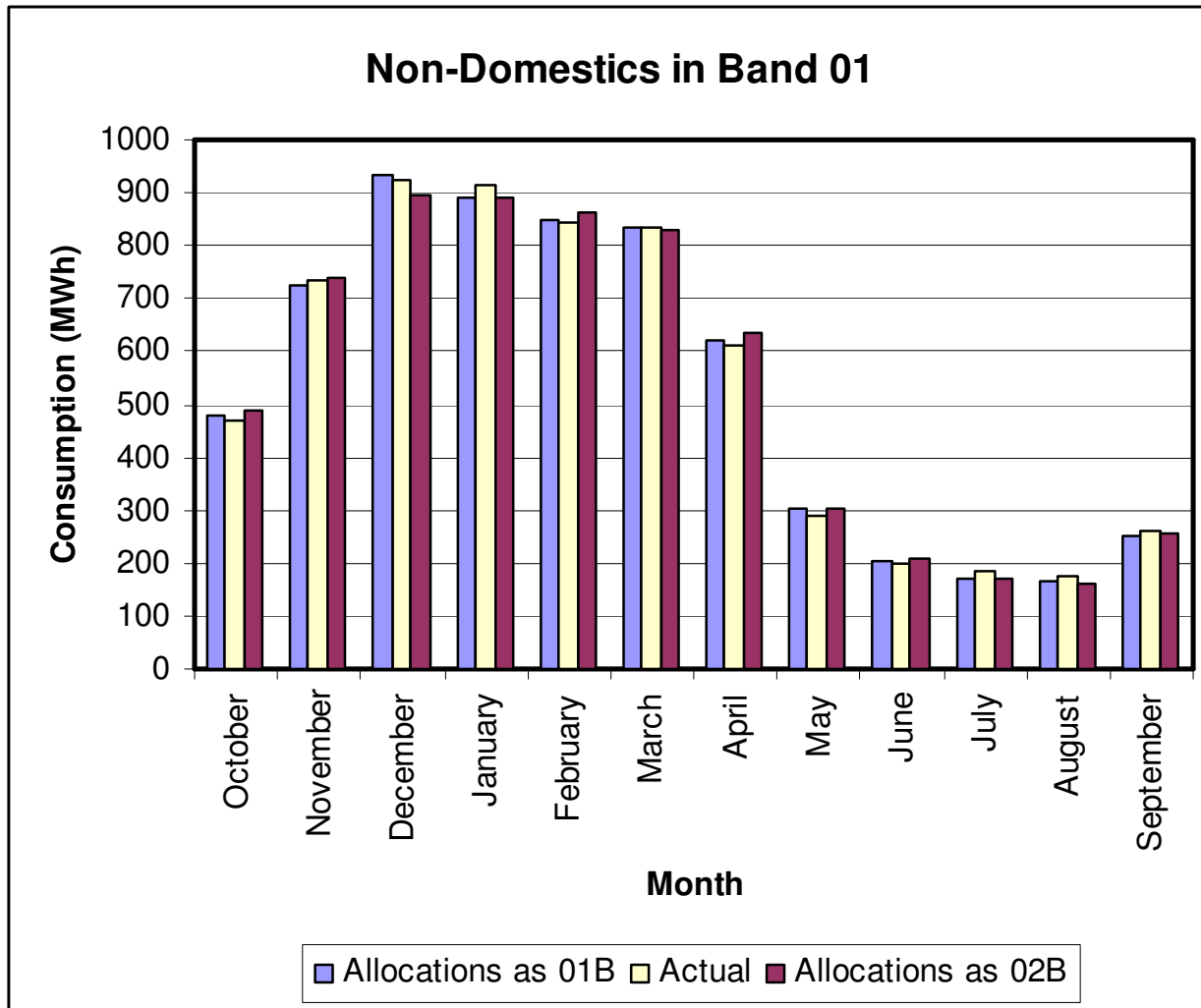
LDZ	NON-DOMESTIC IN BAND 01	DOMESTIC IN BAND 01	DOMESTIC IN BAND 02	ALL SUPPLY POINTS IN BAND 02
SC	11	243	24	76
NO	10	232	13	102
NW	5	229	8	120
NE	9	261	11	91
EM	15	239	10	107
WM	8	247	15	95
WS	18	252	11	76
EA	13	256	8	110
NT	11	227	18	135
SE	13	236	11	109
SO	12	245	14	104
SW	14	248	18	104
TOTAL	139	2915	161	1229

Band 01 Results – Winter/Summer % Errors

LDZ	01B profile applied to <u>Non-domestic</u> NDM sample in 01B band		02B profile applied to <u>Non-domestic</u> NDM sample in 01B band	
	Winter	Summer	Winter	Summer
SC	4.59%	-12.75%	5.12%	-14.83%
NO	-4.53%	10.41%	-6.94%	15.08%
NW	-3.73%	9.11%	-3.22%	7.67%
NE	-2.83%	7.31%	-7.57%	18.07%
EM	2.10%	-5.60%	0.96%	-2.71%
WM	4.57%	-14.25%	2.57%	-8.11%
WS	-0.52%	1.92%	-2.75%	7.24%
EA	1.03%	-2.26%	2.18%	-6.26%
NT	-5.67%	13.71%	-0.79%	1.96%
SE	0.21%	0.06%	2.60%	-7.43%
SO	-0.09%	0.89%	3.57%	-9.61%
SW	2.68%	-7.62%	2.73%	-8.66%
TOTAL	0.21%	0.08%	0.29%	-0.65%

- % Errors for Winter / Summer: (Actual – Allocated) / (Actual)

Non-domestic sample supply points in Band 01



- Overall, both profiles fairly close to actual consumption (of 139 non-domestics in band 01).
- 7 of 12 months better with EUC 01B profile .
- 4 of 6 months better in winter with EUC 01B profile (Oct., Dec., Feb., Mar.).
- 3 of 6 months better in summer with EUC 01B profile (April, June, July).
- Overall both winter and summer better with EUC 01B profile.

Band 01 Results – Key Points

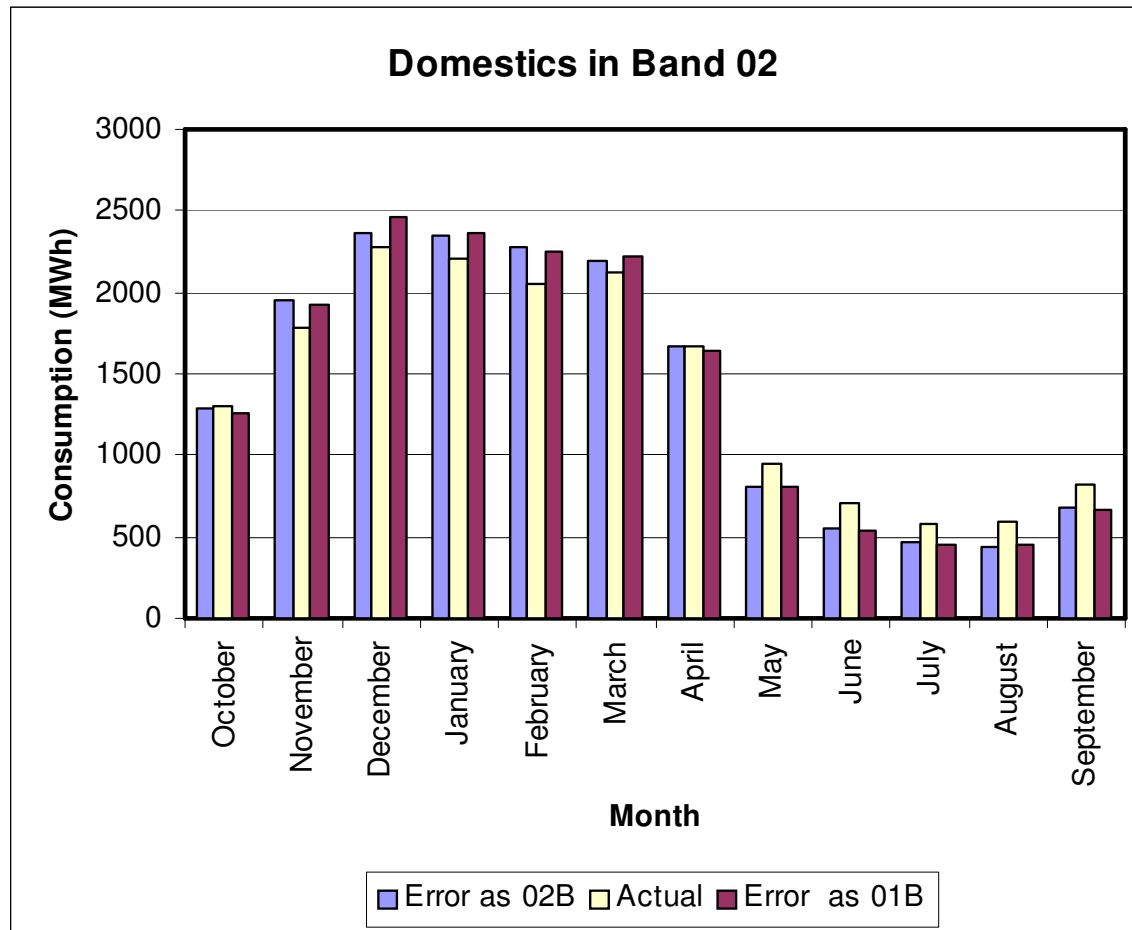
- The EUC 02B profile is marginally worse at representing the non-domestic supply points in band 01 than the EUC01B profile
- This is so nationally overall and in 8 of 12 LDZs (exceptions are NW, EM, WM and NT)
- However, sample numbers are insufficient for reliable assessment at an individual LDZ level
- Overall nationally, the differences are very small indicating that for band 01 the profile applied (whether EUC 01B or EUC 02B) makes little difference to the allocations in aggregate

Band 02 Results – Winter/Summer % Errors

LDZ	02B profile applied to Domestic NDM sample in 02B band		01B profile applied to Domestic NDM sample in 02B band	
	Winter	Summer	Winter	Summer
SC	-4.57%	9.57%	-5.15%	11.21%
NO	-6.78%	14.79%	-4.39%	10.14%
NW	-4.44%	10.06%	-4.95%	11.47%
NE	-10.00%	22.14%	-5.25%	12.14%
EM	-3.53%	8.94%	-2.34%	6.42%
WM	-6.55%	15.62%	-4.34%	10.81%
WS	-10.47%	21.47%	-8.09%	17.01%
EA	-8.77%	17.90%	-10.04%	20.99%
NT	-3.33%	7.26%	-8.32%	18.35%
SE	-5.56%	12.24%	-8.16%	18.36%
SO	-2.92%	7.19%	-6.83%	16.02%
SW	-6.80%	15.85%	-6.84%	16.65%
TOTAL	-5.86%	13.09%	-6.22%	14.29%

- % Errors for Winter / Summer: (Actual – Allocated) / (Actual)

Domestic sample supply points in Band 02



- Both profiles peakier than actual consumption (of 161 domestic supply points in sample in band 02).
- 9 of 12 months better with EUC 02B profile
- 4 of 6 months better in winter with EUC 01B profile (Oct., Dec., Jan., Mar.).
- 5 of 6 months better in summer with EUC 01B profile (except August).
- Overall both winter and summer better with EUC 02B profile.

Band 02 Results – Key Points

- The EUC 01B profile is marginally worse at representing the domestic supply points in band 02 than the EUC02B profile
- This is so nationally overall and in 7 of 12 LDZs (exceptions are NO, NE, EM, WM and WS)
- However, sample numbers are insufficient for reliable assessment at an individual LDZ level
- Overall nationally, the differences are small indicating that for band 02 the profile applied (whether EUC 02B or EUC 01B) makes little difference to the allocations in aggregate.

Overall Conclusions – Results of Analysis

- Based on NDM sample data and assessment of the EUC profiles for gas year 2007/08 there is no benefit nationally overall in applying:
 - EUC 02B profile to non-domestic supply points in band 01
 - EUC 01B profile to domestic supply points in band 02
- While sample numbers are insufficient for robust conclusions at individual LDZ level, these conclusions apply to the majority of individual LDZs as well in both instances.
- This analysis could be repeated for future gas years if considered worthwhile.

Overall Conclusions – Impacts

- Results of analysis had to produce a compelling case for changing to EUC profiles based on market sector flag due to impacts on following :
 - System enhancements – EUC allocation process
 - RbD – underlying principle of homogeneity undermined
 - SPA processes – Flow of MSF updates to EUC and AQ
 - Invoicing – potential file format changes due to use of 2 profiles