DEMAND ESTIMATION SUB COMMITTEE

Minutes

Thursday 08 November 2007

31 Homer Road, Solihull B91 3LT

Attendees

Julian Majdanski (Chair)	(JM)	Joint Office
Lorna Dupont (Secretary)	(LD)	Joint Office
Dean Johnson	(DJ)	xoserve
Ed Rains	(ER)	Elf Business Energy
Euan Chisholm	(EC)	Scottish Power
Fiona Cottam	(FC)	xoserve
Hannah McKinney	(HM)	EDF Energy
Julie Round	(JR)	RWE Npower
Mark Linke	(ML)	Centrica
Mark Perry	(MP)	xoserve
Mo Rezvani	(MR)	Scottish & Southern Energy
Sallyann Blackett	(SB)	E.ON
Steve Coles	(SC)	E.ON
Steve Taylor	(ST)	Centrica
Stuart Cameron	(SC1)	Scottish Power

1. Introduction

JM welcomed all attendees and explained the purpose of the meeting.

2. Review of Minutes and Actions from the Previous Meeting

2.1 Minutes

The minutes from the Demand Estimation Sub Committee meeting held on 23 July 2007 were accepted.

2.2 Actions

Outstanding actions were reviewed.

DE1033(TF): xoserve to perform analysis to identify the modelling impacts of splitting the 0 to 73.2MWh band using different sub bands (potentially using only two bands in the analysis).

Update: DJ gave a presentation on the modelling impacts of splitting the EUC Band 1 (0 to 73.2 MWh), describing the background and explaining what the analysis compares and what justification was required for sub band modelling to be appropriate. The analysis was then presented and discussed. (A supporting document containing more detailed analysis has been made available on the Joint Office website.)

- **Analysis 1 Results 0-20 and 20- 73.2**

The differences in sub band ILF values were relatively small and inconsistent; there was no unexpected distinction between ILF for each sub compared to single band. For all LDZs the RMSE showed degradation in model fit when 2 sub bands were applied.

- **Analysis 2 Results 0 – 30 and 30 – 73.2 MWh pa (Individual LDZ)**

Similar results were achieved for this analysis. A single LDZ analysis was not really feasible. Smaller counts >30MWh pa were as reflected in the market population therefore LDZ groupings would be required. The proportion of non domestic supply points included in the 30-73.2 MWh band was approximately 2% which was reflective of market population analysis undertaken as per Market Sector Flag (MSF). Aggregation was undertaken.

The results were then presented by Individual LDZ. As expected there was a lack of consistency in the spread of ILF values in the sub bands and the RMSE indicated a high level of degradation.

The results were then presented by 5 Grouped LDZs. The aggregation showed a lack of consistency in ILF values and a narrower spread of ILF values in each sub band. A high level of degradation in the modelling was indicated by the RMSE.

Both on an Individual and Grouped LDZ basis, the picture was therefore one of inconsistent and narrower ILF results, with degradation in model fit across all LDZs. R^2 values also indicated some degradation when a sub band split was instigated.

DJ concluded that there were no statistical grounds for representing EUC Band 1 by applying 2 sub band splits.

There was a short discussion on the methodology. SB asked whether one would expect the RMS error to degrade anyway. DJ responded that it was done on an equivalent basis. FC commented that it was actually AQ weighted to counteract the impact in order to make it comparable.

NEW Action DE1043: xoserve to confirm the methodology used in the RMSE analysis.

xoserve have confirmed 'EUC Band 1 contains a sample of fixed size. Using this sample we can choose to model the whole band or to model two (or more) sub-bands. The whole band analysis will allow use of larger sample numbers and therefore give "better" models (i.e. smaller RMSE per unit of sample AQ). If we opt for sub-bands (for the same given overall sample size) we get slightly worse models (i.e. larger RMSE per unit sample of AQ).

Note that the absolute value of RMSEs is actually smaller for the sub band models than for the whole band model because the underlying load comprising the sub-band sample is lower than the underlying load comprising the whole band sample (Note that: RMSE is not a dimensionless quantity). However, the RMSE per unit AQ is smaller for the whole band model than for either sub-band model.

The RMSE analysis would be expected to produce these results due to the primary impact of splitting EUC Band 1 being the reduction in sample numbers available and therefore the sub bands being worse at representing the range.

The RMSE analysis should be reviewed in conjunction with any resultant aggregations, the consistency and spread of ILF's and the R squared analysis to provide a full analysis.'

MR commented that a larger sample would give better results. An alternative would be to break it down into much smaller groupings, eg 0 – 10, 10 -20, etc, which might make it more representative. DJ explained that this analysis had already been undertaken and presented at the June 2007 Technical Forum. Any analysis can result in stratification either geographically as currently, or through AQ bands. Both methods require compromise so the geographical stratification is to be continued at present. Although the band was so wide, I & C sites were only present in the top half. Separation does not show any particular improvement in quality (2% were potentially I & C sites). Any breakdown into 0-30, 30 – 73.2, etc was not necessarily more representative of non-domestic customers, and was potentially a benefit to only a very small section of the market rather than the majority. DJ stated that the volume of commercial sites in that band was the issue, but these were spread throughout the band and was therefore very small compared to domestic sites. An I & C site may behave like a domestic site if it was a heating driven load. Shippers still found the domestic/non domestic split to be an issue – it was not always easy to tell the difference, and there were no flags in the system to aid differentiation. MR thought that the fundamental problem was the sample size; he recognised that there was no easy solution to this but thought perhaps further analysis could be done by increasing the sample sizes through aggressive recruiting to the different bands. DJ reported that the number data recorders in Band 1 were more than adequate to carry out the current modelling and meet sample requirements. If there were to be a change in how the band was modelled then it would need to be reconsidered.

DJ confirmed that the Band 1 sub band split analysis would be undertaken on a two year basis, starting from autumn 2008. If a split was necessary then sample sizes and aggressive recruitment would have to be considered.

NEW Action DE1044: DESC to consider if different types of analysis methods could be applied to the analysis of splitting EUC Band 1.

The Transporters therefore made two recommendations:

1) To retain current approach of representing 0 - 73.2 MWh pa as a single EUC in each LDZ; and

2) To undertake similar analysis on a bi-annual basis, in line with the bi-annual assessment of model smoothing, the results of which would be reported to DESC for consideration.

The DESC agreed to both of these recommendations. **Action closed.**

DE1034(TF): xoserve to perform analysis to identify the impacts of reducing the 0 to 73.2MWh band threshold from 73.2MWh.

Update: Action carried forward.

DE1038: xoserve to provide the numbers of installed new (commissions) and terminated Small and Large NDM sites to the November meeting.

Update: Covered within the presentations at this meeting. **Action closed.**

DE1039: DESC to consider the issue of falling sample counts within Band 8.

Update: DJ gave a presentation analysing the options for modelling EUC Bands 7 and 8. Two issues had been identified. Firstly there was the possibility in Spring 2008 that sample sizes may be too small to undertake WAR band analysis for Band 8. Secondly there may be insufficient supply points in Band 8 to include in a sample. Results from the latest 6 month validation period indicated that Band 8 WAR sample counts will be too low, and that Band 7 sample counts in SC LDZ had also reduced. To resolve these issues the Transporters had identified 5 options and sought the agreement of a preferred option or combination of options. Agreement was required before January 2008 because of the effects on the approach to Spring 2008 modelling.

The presented options and impacts were discussed and agreement was reached. DESC agreed to the implementation of two of the Transporters' recommended options, ie :

Option 1 – To combine Bands 7 and 8 for modelling purposes, and to derive WAR and consumption bands based on aggregated data if sample counts in Spring 2008 were too low; and

Option 5 – To attempt to boost sample counts in Bands 7 and 8.

Action closed.

Action DE1041: xoserve to review and reissue the Work Plan.

Update: Covered at this meeting. **Action closed.**

Action DE1042: xoserve to reconsider/review EUC 1 Non-domestic modelling.

Update: Covered within the presentations at this meeting. **Action closed.**

3. Progress of Work Plan

3.1 Re-evaluation of Model Smoothing

DJ gave a presentation, and stated that analysis presented was the first full assessment of the model smoothing results since September 2005, and informs the decisions made on the approach and application of model smoothing for Spring 2008. The principles of model smoothing were described. DJ explained that the primary purpose of model smoothing was to address the year on year volatility in the EUC models. Its main focus was to provide greater stability and reduce volatility rather than improve the 'predictability' of the model. The basis of the analysis and the tools used were described. The analysis was then presented and discussed. (A

supporting document containing more detailed analysis has been made available on the Joint Office website.)

Analysis 1: Predictive Analysis

- **Consumption Bands – Small NDMs (CWV Intercepts: Predictive accuracy – Smoothed and Single Year Models)**

  This excluded the WAR bands. The smoothed model showed similar CWV Intercept differences, lower RMS values and similar predictive ability for small NDM consumption bands.

- **Consumption Bands – Large NDMs (CWV Intercepts: Predictive accuracy – Smoothed and Single Year Models)**

  This showed similar results to the Small NDMs. The smoothed model showed similar CWV Intercept differences, lower RMS values and similar predictive ability for small NDM consumption bands.

  MR commented that it only showed how predictive in terms of the model. SB responded that it gave the slope of the line, not the spread around the line. It was a compromise between accuracy and smoothing.

- **All EUC Bands – Small NDMs (CWV Intercepts: Predictive accuracy – Smoothed and Single Year Models)**

  A similar trend was noted here also.

- **All EUC Bands – Large NDMs (CWV Intercepts: Predictive accuracy – Smoothed and Single Year Models)**

  A variation was noted here – the smoothed model performance appeared poorer compared to the single model, exhibiting greater CWV Intercept differences, higher RMS values, and thus poorer predictive ability.

It was noted that results were similar to previous years, with a slight improvement in predictive ability for some smoothed models. The WAR band model behaviour was not as predictive in the smoothed model, but this was not deemed to be exceptional.

Analysis 2: Year on Year Volatility Analysis

- **Consumption Bands – Small NDMs (07/08 – 06/07 Single Year Model compared to 07/08 – 06/07 Smoothed Model)**

  The smoothed model showed smaller CWV Intercept differences, lower RMS values and less volatility than the single model.

- **Consumption Bands – Large NDMs (07/08 – 06/07 Single Year Model compared to 07/08 – 06/07 Smoothed Model)**

  A similar picture emerged from this analysis. The smoothed model showed smaller CWV Intercept differences, lower RMS values and less volatility.

- **Consumption Bands – All EUC Bands – Small NDMs (07/08 – 06/07 Single Year Model compared to 07/08 – 06/07 Smoothed Model)**

  Again, this gave a similar picture with the smoothed model showing smaller CWV Intercept differences, lower RMS values and less volatility.

- **Consumption Bands – All EUC Bands - Large NDMs (07/08 – 06/07 Single Year Model compared to 07/08 – 06/07 Smoothed Model)**

  The smoothed model showed similar CWV Intercept differences, similar RMS values and similar volatility year on year, which was not an unexpected result.

These results were as expected, with the smoothed models showing less year on year volatility, and the analysis continuing to support the principles of model smoothing.

Analysis 3: Trend Analysis

The profiles looked for were Up/Up, Down/Down or Flat, and DJ directed the group to full results which would be found within the supporting document made available on the Joint Office website.

- **Trend Analysis – 3 Year Results**

The periods covered were 2004/05, 2005/06, and 2006/07. The most frequently identified pattern was Up/Down (45%), with the reverse Down/Up being the next most frequent (16%). However 30 % of all cases do show either an UP/UP or Down/Down trend with 9% showing as Flat.

DJ pointed out that the occurrences of consistent trend were not necessarily greater than might be expected on a random basis, and that trends this year were also not consistent with previous years. The instances of Up/Up were lower and the Down/Down were higher than in previous analysis. These findings were supported by further analysis which included a 4th Year (2003/04).

- **Trend Analysis – 4 Year Results**

In respect of the CWV Intercept, 82% indicated no consistent trend (similar to previous years). The percentage of EUCs indicating a consistent trend was very small.

DJ reported that this was similar to previous investigations where more than 80% of cases indicated no consistent trend, and any 3 year trends were not reflected when extended to 4 years. This conclusion was further supported by observations on the single year model load factors, where there were no instances of a consistent year on year increase or decrease in load factors. There was therefore no cause to replace the current modelling with single year modelling

MR was surprised that there were no obvious trends or changes in shape of usage as consumption per customer had reduced, but acknowledged that the reasons for this change were hard to identify. FC responded that as xoserve had no individual relationships with the customers sampled there was no way of identifying why consumption behaviour had changed. xoserve was modelling the seasonality and the relationship to weather; some of the effects were so interrelated that it would be very difficult to separate out. Price may potentially change the shape, and a return of demand may be seen if the price drops significantly; conversely there may have been a more permanent change in demand behaviour.

No specific analysis on the levels of volatility had been done, but it was suggested that this might be looked at and presented in the June analysis. This might give a slight indication of any oscillation or trend.

Action DE DE1045: xoserve to consider carrying out analysis on the levels of volatility in the profile of customer usage.

In the meantime the Transporters viewed the current methodology to be appropriate and fit for purpose.

The DESC agreed with the recommendation that model smoothing continues to be applied for the 2008/09 analysis.

3.2 Re-evaluation of NDM Sampling and sizes (Annual Review)

At the previous DESC meeting it had been agreed that an overview of samples would be given. DJ gave a presentation, and stated that this was a full review compared to last year's review.

3.2.1 Data Recorders < 73,200 kWh

NDM Sample: Data Recorders (0 – 73.2 MWh)

- **Difference – Required: Actual Sample: Nov 2006**

  DJ said that there were concerns that the validated sample counts were actually falling, so installations had taken place and it was anticipated that all LDZs would have higher sample counts than previously. In November 2007 there was an excess of installed data recorders in every LDZ.

- **Proportion of the sample by sub band by LDZ compared to proportion of market by sub band for each LDZ**

  There were fewer recorders in the sample in the lower band compared to the market distribution, and more recorders in the sample in the upper band compared to the market distribution. As expected, the AQ Review had resulted in a reduction in AQs highlighted in the shift to smaller bands. Recent Collection terminations had occurred in the lower bands; this finished on 01 November 2007. Following the autumn collection the replacements will focus on sites terminated and the move from '30 to 73.2 MWh' to '1 to 20 MWh' to reflect the current market. A balance will be achieved between maintaining a robust sample and being reflective of market distribution.

- **Domestic/I & C Split: Sample and Market (Market Sector Flag)**

  The balance will be further maintained by using a sample of commercial sites with a consumption of 0-73.2MWh to be reflective of the market population. The site selection will be based on site visits and not MSF. DJ pointed out that the commission of an additional I & C site can have an impact and change percentage ratios.

In conclusion there was currently an excess of installed data recorders in all LDZs, with ongoing replacements to maintain sample numbers. DJ highlighted an issue in respect of 150 terminations where meter exchanges resulted in the loss of equipment and/or data.

3.2.2 Dataloggers > 73,200 kWh

NDM Sample: Datalogger Supply Points (>73.2 MWh)

DJ said that there were concerns in respect of 879 inactive sites where no consumption or read had been received in the last 2 months. This causes fluctuations in the sample counts, and the networks were investigating these to determine whether th

is was due to site closure or faulty equipment. The main deficits appear to be in Bands 4 to 8. Reductions were also occurring in Bands 2 and 3 but these were currently still above requirements, though could be of concern in the future.

There were also issues with the ability to identify and gain approval of installation at sites in Bands 6, 7, and 8 – the response rate to requests was quite small.

New installation and replacement programmes were taking place (Scotia and National Grid Gas) to try and address issues of missing data and the sample count was viewed as sufficient for modelling for most bands except 7 and 8, but a continuing fall in sample numbers may result in modelling problems. The reduction in the amount of missing data will not filter through until next spring. SB was pleased to see evidence of the new installation programmes. MR asked if there was a way to promote active sites, and wondered if a group initiative might be a good idea. DJ pointed out that there were a number of separate issues, in terms of loss of data, loss of equipment, identification of sites that will allow installation, and consumer questions as to the reasons for installation. FC responded that an initiative was taking place; more publicity was being given to this area on the xoserve website to reassure any customer concerns, and an education sheet was being developed to pass to MRAs to make aware of any 'unusual' equipment (i.e. dataloggers or recorders) that may be in place on a site, in order to minimise loss of equipment and data through ignorance.

In response to a question from MR, FC confirmed that details of this equipment are kept on a list external to Sites and Meters. MR suggested that the list be made available for review and that it may help to inform other initiatives and reduce the cost to industry as a whole. DJ commented that it was expected that inactive status of sites was more likely to be because of site closure rather than faulty equipment. xoserve would continue to monitor and report on the sample at each meeting.

3.2.3 Re-evaluation of EUC definitions and demand model performance Strand 1 – Scaling Factor and WCF Analysis

NDM Algorithm 2007 Performance Evaluation

DJ gave an assessment of the 2006/07 Gas Year NDM Algorithm 2007 Performance and provided 3 LDZ specific examples of SF and WCF- EWCF. Greater detail was provided in the supporting document made available on the Joint Office website.

The analysis presented showed an unsettled picture in comparison to 2006, due to the unique events, e.g. floods, experienced in 2007. The average values of SF in 2006/07 were generally further away from the ideal of 1 compared to 2005/06, and the RMS value showed that SF variability was generally worse than in 2005/06. This may be as a result of the AQs still being too high and thereby driving the SF further away from the ideal of 1, and also the presence of a negative WCF bias, tending to inflate the SF closer to 1. AQs were based on historic demand to predict the future demand so were less accurate in this respect.

There had been an improvement in WCF bias although this still remained negative. SND levels were lower than 05/06 thereby creating an improved WCF bias, but this was still negative and the SND was still too high. Some improved performance had

been demonstrated but the effects of AQ and SND were still impacting WCF and SF values.

DJ then gave a speculative view on SF values for 2007/08. It was thought that aggregated NDM SND would be somewhat greater. The initial October 2007 SF values were mixed, and there were early signs of negative WCF bias inflating some SFs, possibly caused by SND error. The month of October had been warmer than average. There may also be a potential impact on SND depending on the outcome of Review Group 0176.

MR wondered if this indicated more support for the 17 year period. FC responded that Transporters used 17-year SN temperatures to predict SNDs are forecasting for their own purposes, but that those forecasts were also used in demand estimation. Other factors also came into play. MR commented that in the industry everything is relative to the seasonal norm, and if this was over estimated it was not representative.

FC stated that the basis for seasonal normal was to be reviewed next year for implementation by 2010, and there was no evidence to make a change earlier than this in either the industry's or the Transporters' views. This summer had exhibited more volatility rather being trend forming.

SB commented that there was no indication how well the profiles were doing, because SNDs and AQs were still too high for potential demand; the WCF negative will be apparent through another year. DJ agreed the impact of AQ and SND would directly impact the results, but this was why other analysis is performed (to be presented at the January DESC meeting) to provide different strands of analysis. FC reported that AQs were at a seasonal normal level; even if there was no issue of declining demand, it would not be expected to predict much differently as so many other variables/factors came into play. MR agreed that the timetables were very constraining.

FC observed that these were traditional strands of analysis of performance and that the impact of AQ and SND can detract from analysing the model performance. SB asked whether any consideration had been given to changing this, and questioned whether the situation would be any worse if the ALPs were not revised every year. This would save all the Spring analysis review and revision. MR thought it might be replaced with more useful analysis. Shippers needed to be able to forecast, allocate, and be commercially efficient; all of the annual charges algorithms were focused toward this. JR questioned what benefit was being added by changing the algorithms each year and how this could be measured.

Action DE1046: xoserve to consider what effects/benefit there might be if the algorithm analysis and revisions were not carried out on an annual basis and the parameters were carried forward to the following gas year.

4. Revision of Work Plan

The projected Work Plan for 2007/2008 was presented. DJ commented that there will be a requirement for either a separate December 2008 DESC meeting (or move the November 2008 meeting to December 2008) to allow the CWV Review scheduled analysis to be completed and presented.

5. AOB

Change of xoserve representative

FC announced that Mark Perry would be assisting DJ with a view to eventually taking over from him in the new year, and will therefore be attending future meetings.

6. Date of next meeting(s)

The next meeting will be held at 10:30hrs on Tuesday 15 January 2008, in Conference Room 5 at 31 Homer Road, Solihull B91 3LT. Please note that this meeting will be followed by the third meeting of Review Group 0176.

Meetings have been scheduled for the following dates in 2008:

Monday 02 June 2008

Demand Estimation Technical Forum starting at 10:00 in the Pink Room at Elexon, 350 Euston Road, London NW1 3AW. Please note that this meeting will be followed by the meeting of the Demand Estimation Sub Committee.

Friday 25 July 2008

Solihull – venue/timings to be confirmed nearer the date.

Tuesday 11 November 2008

Starting at 10:00 in the Pink Room at Elexon, 350 Euston Road, London NW1 3AW.

Action Log: UNC Demand Estimation Sub Committee 08 November 2007

Action Ref	Meeting Date(s)	Minute Ref	Action	Owner*	Status Update
DE1033 (TF)	04/06/07	TF2.3	xoserve to perform analysis to identify the modelling impacts of splitting the 0 to 73.2 MWh band using different sub bands (potentially using only two bands in the analysis).	xoserve (FC/DJ)	**Action closed.**
DE1034 (TF)	04/06/07	TF2.3	xoserve to perform analysis to identify the impacts of reducing the 0 to 73.2 MWh band threshold from 73.2 MWh.	xoserve (FC/DJ)	**Action carried forward.**
DE1038 (TF)	04/06/07	TF2.4	xoserve to provide the numbers of installed, new (commissions) and terminated Small and Large NDM sites to the November meeting.	xoserve (FC/DJ)	**Action closed.**
DE1039 (TF)	04/06/07	TF2.4	DESC to consider the issue of falling sample counts within Band 8.	DESC	**Action closed.**
DE1041	23/07/07	4.1	xoserve to review and reissue the Work Plan.	xoserve (FC/DJ)	**Action closed.**
DE1042	23/07/07	4.1	EUC Band 1 Non Domestic Modelling: xoserve to reconsider/review the modelling.	xoserve (FC/DJ)	**Action closed.**
DE1043	08/11/07	2.2	xoserve to confirm the methodology used for EUC Band 1 RMSE analysis.	xoserve (FC/DJ)	**Action closed – see xoserve response.**
DE1044	08/11/07	2.2	DESC to consider if different types of analysis methods could be applied to the analysis of splitting EUC Band 1 in future	DESC	
DE1045	08/11/07	3.1	xoserve to consider carrying out analysis on the levels of volatility in the profile of customer usage	xoserve (FC/DJ)	
DE1046	08/11/07	3.2.3	xoserve to consider what effects/benefit there might be if the algorithm analysis and revisions were not carried out on an annual basis and the parameters were carried forward to the following gas year.	xoserve (FC/DJ)	

TF – Technical Forum * Key to initials of action owner: FC - Fiona Cottam DJ – Dean Johnson