

# BGT Representations 2006

## Objective

The object of this document is to highlight the possible problems with the large drop in aggregate NDM SND stated in the recent NDM Profiling Algorithms compared to last year.

## Introduction

It has been observed by BGT that Aggregate NDM SND has dropped from 581.38 TWh (in the 2005/2006 documentation) to 545.91 TWh (in the 2006/2007 documentation). This is approximately a 6% reduction. It is important to note that this is due to an NGT forecast of demand over the system. Seasonal Normal CWVs have not changed (with the exception of WS due to a weather station change).

This representation will identify the impacts of this large drop and the problems that may arise because of it.

Aggregate NDM SND is used in two parts of the 'NDM Deeming Algorithm' the WCF (Weather correction factor) and the DAF (Daily attribution factor).

The calculation of a WCF is as follows:

$$WCF = \frac{\text{forecast or actual aggregate NDM demand in the LDZ}}{\text{seasonal normal aggregate NDM demand in the LDZ}}$$

i.e.

$$WCF = (D-SND)/SND$$

(Where D is demand on a given day and SND is the stated seasonal normal demand on that day)

There for the same day demand a decrease of 6% in demand would have the following effect on the WCF.

$$\begin{aligned} WCF &= (D-SND*0.94)/(SND*0.94) \\ &= ((D-SND)/SND)/0.94 + (1-0.94)/0.94 \end{aligned}$$

I.e. if there is not a drop as predicted by NGT of 6% and SND stays the same WCF on a seasonal normal day would be approximately  $(1-0.94/0.94)=0.06$  and therefore colder

than seasonal normal days would have an increase to WCF of greater than 6% 05/06 compared to 06/07.

DAFs are affected by this SND demand drop as well, DAF is calculated as bellow:

$$DAF_t = \frac{WSENS_t/SND_t \text{ (for EUC)}}{WSENS_t/SND_t \text{ (for aggregate NDM in LDZ)}}$$

Where the SND we see a 6% drop in is the one on the bottom of this equation, this will act to counter the increase in WCF but will act with different strengths in each EUC band. Because of the modelling completed on WSENS (weather sensitivities) and SND in each EUC.

### Analysis

Analysis has been done by BGT to compare the change in deeming, before scaling factors and on a normalised site (i.e. AQ set to 1), between the variables from 2005/2006 and 2006/2007 and correcting WCFs as above. This was done individually for each EUC.

The percentage change in deeming was measured as bellow:

$$\frac{ALP_{0506}(1+WCF_{0607} * DAF_{0607}) - ALP_{0506}(1+WCF_{0506} * DAF_{0506})}{ALP_{0506}(1+WCF_{0506} * DAF_{0506})}$$

Where the Seasonal Normal demand used in the  $WCF_{0506}$  was taken from the 0506 document and Normal demand used in the  $WCF_{0607}$  was taken from the 0607 document.

Actual daily demand was then set at the seasonal normal demand from the 2005/2006 document, and this was run for the whole year period.

So,

WCFs to be put through the 2005/2006 algorithm would be set at 0  
i.e.  $(SND_{0506} - SND_{0506}) / SND_{0506} = 0$

WCFs to be put through the 2006/2007 algorithm would be set at :  
 $(SND_{0506} - SND_{0607}) / SND_{0607}$

## Results

Results of this analysis are shown in the following table:

band	EA_perc	EM_perc	NE_perc	NO_perc	NT_perc	NW_perc	SC_perc	SE_perc	SO_perc	SW_perc	WM_perc	WN_perc	WS_perc
01B	6.1%	5.2%	4.5%	4.9%	8.3%	5.9%	4.3%	7.8%	6.9%	6.7%	7.8%	5.1%	6.2%
02B	5.7%	5.3%	5.2%	5.1%	6.4%	5.4%	4.2%	6.4%	6.2%	7.3%	7.4%	4.7%	6.8%
03B	5.6%	5.1%	4.4%	4.7%	7.1%	5.1%	3.8%	6.7%	5.8%	6.2%	7.5%	4.4%	5.6%
03W01	1.6%	1.6%	1.5%	1.7%	2.4%	2.0%	1.9%	2.2%	1.9%	2.0%	2.3%	1.8%	1.8%
03W02	3.7%	3.6%	3.0%	3.5%	4.8%	4.0%	3.2%	4.3%	3.9%	3.8%	5.0%	3.5%	4.1%
03W03	5.5%	5.5%	4.6%	4.8%	7.3%	6.1%	4.6%	6.4%	5.8%	6.1%	7.6%	5.2%	5.7%
03W04	7.9%	7.1%	5.8%	6.5%	10.2%	8.1%	5.9%	9.2%	8.4%	8.4%	10.1%	6.8%	8.0%
04B	5.2%	5.0%	4.0%	4.2%	6.5%	5.0%	3.6%	5.9%	5.5%	5.3%	6.9%	4.4%	5.4%
04W01	1.6%	1.6%	1.5%	1.7%	2.4%	2.0%	1.9%	2.2%	1.9%	2.0%	2.3%	1.8%	1.8%
04W02	3.7%	3.6%	3.0%	3.5%	4.8%	4.0%	3.2%	4.3%	3.9%	3.8%	5.0%	3.5%	4.1%
04W03	5.5%	5.5%	4.6%	4.8%	7.3%	6.1%	4.6%	6.4%	5.8%	6.1%	7.6%	5.2%	5.7%
04W04	7.9%	7.1%	5.8%	6.5%	10.2%	8.1%	5.9%	9.2%	8.4%	8.4%	10.1%	6.8%	8.0%
05B	4.6%	3.7%	3.4%	3.7%	5.5%	4.1%	3.2%	5.4%	4.8%	4.5%	5.9%	3.6%	4.6%
05W01	1.2%	1.0%	0.8%	1.0%	1.8%	1.3%	1.1%	1.5%	1.2%	1.1%	1.5%	1.1%	0.9%
05W02	3.3%	3.2%	2.7%	3.0%	4.1%	3.5%	2.7%	3.6%	3.3%	3.7%	4.6%	3.1%	3.5%
05W03	4.7%	4.6%	3.9%	4.4%	6.0%	5.2%	3.9%	5.5%	5.1%	5.2%	6.3%	4.4%	5.5%
05W04	7.3%	6.8%	5.8%	6.3%	9.4%	7.7%	5.6%	8.6%	7.9%	8.0%	9.7%	6.6%	7.6%
06B	3.9%	2.7%	2.4%	3.0%	4.9%	3.0%	2.6%	4.1%	4.0%	3.4%	3.9%	2.6%	3.1%
06W01	0.2%	0.2%	0.2%	0.3%	0.3%	0.4%	0.3%	0.3%	0.2%	0.2%	0.4%	0.4%	0.2%
06W02	2.1%	1.7%	1.4%	1.8%	2.8%	2.1%	1.7%	2.5%	2.0%	2.1%	2.4%	1.9%	2.0%
06W03	4.0%	4.1%	3.5%	3.4%	5.3%	4.0%	3.5%	4.6%	4.1%	4.2%	5.4%	3.5%	4.6%
06W04	6.7%	6.3%	5.3%	6.0%	8.7%	7.1%	5.4%	7.7%	6.7%	7.0%	8.9%	6.2%	7.0%
07B	3.0%	2.1%	1.7%	2.1%	3.9%	2.5%	1.9%	3.5%	3.2%	3.6%	3.0%	2.2%	3.5%
07W01	0.3%	0.2%	0.2%	0.2%	0.4%	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	0.2%	0.3%
07W02	1.3%	1.2%	1.0%	1.1%	1.8%	1.3%	1.0%	1.6%	1.4%	1.4%	1.6%	1.1%	1.4%
07W03	3.6%	3.1%	2.6%	2.9%	4.8%	3.4%	2.6%	4.3%	3.8%	3.8%	4.4%	3.0%	3.6%
07W04	5.7%	5.5%	4.6%	5.1%	7.5%	6.2%	4.6%	6.6%	5.9%	6.1%	7.5%	5.3%	6.6%
08B	1.9%	1.5%	1.2%	1.3%	2.5%	1.5%	1.2%	2.2%	2.0%	2.0%	2.1%	1.3%	1.9%
08W01	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
08W02	0.7%	0.6%	0.5%	0.6%	0.9%	0.7%	0.5%	0.8%	0.7%	0.7%	0.8%	0.6%	0.7%
08W03	1.8%	1.6%	1.4%	1.5%	2.4%	1.8%	1.4%	2.2%	1.9%	1.9%	2.3%	1.6%	1.9%
08W04	4.7%	4.6%	3.8%	4.2%	6.1%	5.0%	3.8%	5.4%	4.8%	5.0%	6.4%	4.3%	5.3%
09B	1.3%	1.2%	1.0%	1.1%	1.7%	1.3%	1.0%	1.5%	1.4%	1.4%	1.6%	1.1%	1.4%

This translates to a straight line average in **1B of c6.1%**, in **02B-04B c5.5%** and in **05B-09B c2.7%** (ignoring war bands, these were ignored as BGT does not hold any information to the market weighted demand in each WAR band).

Weighting these using the percentage population AQ given in last months Desk meeting:

Consumption Range	% of Total NDM	
	Total AQ	Total Count
0 – 73.2 MWh pa	72%	98%
0 – 2,196 MWh pa	89%	99.96%
>2,196 MWh pa	11%	0.04%

This gives an overall increase in initial deeming of c5.6% (I.E. before SF).

## **Conclusions**

The NGT Forecast of c6% reduction in demand would reduce the Scaling factor equilibrium observed in 2005/06 by c5.6% if AQs stay at a consistent level with last year. It is stated in Apendix 13 table A13.13 that most EUCs had a scaling factor equilibrium value being very close to 1 the only exception being WN which is well known to be a troublesome LDZ. (Table on next page).

The problem with this now is how the scaling factor will correct the over deeming in each EUC. SF spreads over the whole market using the same factor for each EUC.

As it was shown in the results above the over deeming increase is not consistent in each end user categories I.E. the scaling will re-distribute energy into the different EUC differently from last year.

This year if current proposals go ahead deeming after scaling factor will in fact push proportionally more energy into the SSP market than the LSP market compared to last year. Assuming percentage movements in AQ in the SSP market and LSP market are consistent which will not be known until after the current proposals are agreed or rejected.

LDZ	Equilibrium SF		WCF bias and SF				Comments
	Month	SF value	Winter Only Mon-Thu Values		Winter Only All Days values		
			WCF bias	SF	WCF bias	SF	
SC	Nov, Mar	0.991(N) 0.996(M)	-0.013	0.993	-0.012	0.996	<ul style="list-style-type: none"> <li>WCF bias would usually tend to increase SF (by ~ 1 %pt.) from its equilibrium value; therefore Aqs could be too high.</li> <li>Observed winter SFs are very similar to equilibrium SF.</li> <li>Equilibrium SF suggests Aqs are okay.</li> </ul>
NO	Nov	0.995	0.005	0.992	0.002	0.999	<ul style="list-style-type: none"> <li>Very little evidence of WCF bias.</li> <li>Observed winter SFs are very similar to equilibrium SF.</li> <li>Equilibrium SF suggests that Aqs are okay.</li> </ul>
NW	Oct, Mar	0.983(O) 1.019(M)	-0.012	1.002	-0.017	1.013	<ul style="list-style-type: none"> <li>Equilibrium SF value is not clear-cut : two possible cases lie either side of ideal value of 1.</li> <li>WCF bias would usually tend to increase SF (by ~ 1-2 %pts.) from its equilibrium value.</li> <li>On this basis Aqs are probably okay or a little too high (perhaps by ~ 1%).</li> </ul>
NE	Mar	1.002	-0.014	0.986	-0.019	1.000	<ul style="list-style-type: none"> <li>WCF bias would usually tend to increase SF (by ~ 2 %pts.) from its equilibrium value; therefore Aqs could be too high.</li> <li>Observed winter all-days SF is very similar to equilibrium SF.</li> <li>Equilibrium SF suggests Aqs are okay.</li> </ul>
EM	Nov	1.004	-0.018	1.003	-0.022	1.011	<ul style="list-style-type: none"> <li>WCF bias would usually tend to increase SF (by ~ 2 %pts.) from its equilibrium value; therefore Aqs could be too high.</li> <li>Observed winter weekday SF is very similar to equilibrium SF.</li> <li>Equilibrium SF suggests Aqs are okay.</li> </ul>
WM	-	cannot establish	-0.041	0.996	-0.041	1.003	<ul style="list-style-type: none"> <li>Unable to establish "equilibrium level" of SF (no winter month has appropriate combination of circumstances).</li> <li>Observed winter SFs are close to 1.</li> <li>WCF bias would usually tend to increase SF (by ~ 4 %pts.) from its equilibrium value.</li> <li>On this basis Aqs could be too high.</li> </ul>
WN	Oct, Mar	1.057(O) 1.081(M)	-0.031	1.063	-0.033	1.076	<ul style="list-style-type: none"> <li>WCF bias would usually tend to increase SF (by ~ 3 %pts.) from its equilibrium value; this suggests Aqs are too low by ~ 3-4%.</li> <li>Equilibrium SF also indicates Aqs are too low (but by 6-8%).</li> <li>Aqs are too low due to portfolio error - supply points incorrectly assigned to other adjacent LDZs.</li> </ul>
WS	Mar	1.013	-0.022	1.011	-0.023	1.010	<ul style="list-style-type: none"> <li>WCF bias would usually tend to increase SF (by ~ 2 %pts.) from its equilibrium value; i.e. Aqs could be a little too high.</li> <li>Observed winter SFs are similar to equilibrium SF.</li> <li>Equilibrium SF conversely indicates Aqs are too low by ~1%.</li> </ul>
EA	-	cannot establish	-0.041	0.993	-0.043	1.000	<ul style="list-style-type: none"> <li>Unable to establish "equilibrium level" of SF (no winter month has appropriate combination of circumstances).</li> <li>Observed winter SFs are close to 1.</li> <li>WCF bias would usually tend to increase SF (by ~ 4 %pts.) from its equilibrium value.</li> <li>On this basis Aqs could be too high.</li> </ul>
NT	-	cannot establish	-0.044	0.988	-0.045	0.998	<ul style="list-style-type: none"> <li>Unable to establish "equilibrium level" of SF (no winter month has appropriate combination of circumstances)</li> <li>Observed winter all-days SF is very close to 1.</li> <li>WCF bias would usually tend to increase SF (by ~ 4 %pts.) from its equilibrium value.</li> <li>On this basis Aqs could be too high.</li> </ul>
SE	-	cannot establish	-0.036	0.991	-0.036	0.998	<ul style="list-style-type: none"> <li>Unable to establish "equilibrium level" of SF (no winter month has appropriate combination of circumstances).</li> <li>Observed winter SFs are close to 1.</li> <li>WCF bias would usually tend to increase SF (by ~ 3-4 %pts.) from its equilibrium value.</li> <li>On this basis Aqs could be too high.</li> </ul>
SO	Oct	0.995	-0.040	1.027	-0.039	1.032	<ul style="list-style-type: none"> <li>WCF bias would usually tend to increase SF (by ~ 4 %pts.) from its equilibrium value; Aqs could therefore be too high.</li> <li>Observed winter SFs are ~ 3 %pts. greater than equilibrium SF.</li> <li>Equilibrium SF suggests that Aqs are okay.</li> </ul>
SW	Mar	1.014	-0.031	1.000	-0.030	1.007	<ul style="list-style-type: none"> <li>WCF bias would usually tend to increase SF (by ~ 3 %pts.) from its equilibrium value; Aqs could therefore be too high.</li> <li>Observed winter SFs are close to 1.</li> <li>Equilibrium SF conversely suggests Aqs are too low by ~1%.</li> </ul>

In summary, BGT do not believe the current proposals should be implemented for the 2006/7 Gas Year for as shown above, for the following reasons –

- The assumed drop in consumption does not appear to have a sound basis and is not consistent with historical data.
- There have been reductions in consumption previously but these have not been sustained.
- Although we concur with a recent year reduction (that is not of a magnitude of 6%), we believe this should be monitored for a further gas year at least before assuming a new pattern has emerged.
- If the SND volumes are significantly understated (which we believe may be the case), a material volume of energy will be misallocated in the market.
- Scaling Factors could not be used to indicate market issues