MODELLING IMPLICATIONS OF SPLITTING EUC BAND 1

1. BACKGROUND

In respect of the consumption range 0-73.2 MWh pa, the finalised NDM proposals for 2007/08 (and for all previous years) apply a single EUC in each LDZ to this whole consumption range. The corresponding sample data sets in each of the three years of data used in derivation of the smoothed EUC model utilise domestic supply points only. Exploratory analyses each spring of sample data sets that include an appropriate proportion of non-domestic supply points have continued to show that the inclusion of non-domestic supply points result in smoothed models with weekend demand reductions and/or depressed weekend demand increases in many LDZs. These alternative models are therefore rejected since they would exacerbate the positive weekend scaling factor offsets invariably observed in all LDZs.

Additionally, analysis of the most recently available year of data (2006/07) at a national level for consumption sub bands within 0-73.2 MWh pa (namely 0-10, 10-20, 20-30 and 30-73.2 MWh pa) and analysis of the whole band broken down by LDZ have shown that the load factor discrimination across the sub-bands is much less than that across LDZs. Indicative load factors (ILFs)[1] in the sub-bands range from 34% to 37% (3 percentage points) while the indicative load factor spread across LDZs is from 30% to 41% (11 percentage points). Thus, for a finite overall size of sample the most appropriate sample sub-division to optimise load factor differentiation was determined and agreed by DESC as being by LDZ rather than by consumption sub-band.

Following the spring 2007 NDM analysis, DESC requested that further analyses of different consumption sub-bands be considered. Transporters proposed that two specific options were investigated for the most recent data set available (2006/07). These are:

- Apply a breakpoint at 20 MWh pa (i.e. 0-20 MWh pa and 20-73.2 MWh pa). This would break up band 1 into two parts with roughly equal numbers of supply points nationally in the population at large. Both sub-bands would be based on domestic only sample data sets and would be modelled on the same basis as the 0-73.2 MWh pa domestic only data set. Under this option individual LDZ analyses would be possible for both sub bands.
- Apply a breakpoint at 30 MWh pa (i.e. 0-30 MWh pa and 30-73.2 MWh pa) on the basis that most non-domestic supply points in the population and almost all non-domestic supply points in the sample fall in to the higher 30-73.2 MWh pa band. The lower sub-band (0-30 MWh pa) would be based on a domestic only sample data set and the upper sub-band (30-73.2 MWh pa) would be based on domestic supply points plus a selection of non-domestic supply points (4 per LDZ). Under this option sample sizes in the upper sub-band would be very small for many individual LDZs and the ensuing results of any individual LDZ analysis of this upper sub-band would not be very reliable. A 5 LDZ group analysis would therefore be necessary for this sub-band. Moreover, the upper sub-band would be modelled on the same basis as applied to modelling all other non-domestic EUCs. The lower-sub band would be a domestic only sample data set and would be modeled on the same basis as the 0-73.2 MWh pa domestic only data set.

2. RESULTS

Table 1 shows the results of the analyses undertaken for the range 0-73.2 MWh pa in spring 2007 as part of the work in formulating the NDM proposals for 2007/08. Individual LDZ analyses for domestic only data sets and for data sets including some non-domestic supply points (typically 4 per data set) are shown. Note that in all cases of individual LDZ analyses reported here, the LDZs NW and WN are always combined. These LDZs are adjacent, share a common CWV definition and there are no sample sites in WN LDZ.

As expected, the results are very similar in both cases in respect of both ILF[1] and R^2 values. The R^2 values are always in the range 97-99% indicating well behaved and adequately sized data sets. Moreover,

1. Indicative Load Factor, ILF = (model derived AQ/365) / model demand corresponding to 1 in 20 CWV (expressed as a percentage) ILFs are used to compare prospective demand models as an aid to making decisions on model choice.

only NO and NE LDZs show a difference in ILF (of just 1 percentage point). As already noted, the adoption of the domestic only model was on the basis of more appropriate weekend demand patterns (weekend factors) in the ensuing smoothed model.

Table 2 shows the results for the two domestic sub-bands 0-20 MWh pa and 20-73.2 MWh pa analysed on an individual LDZ basis. Although sample sizes are adequate for an individual LDZ analysis, not all ensuing R^2 values lie in the previously observed range of 97-99% (i.e. 20-73.2 MWh pa band SW LDZ, 95%).

Table 3 shows the results for the two sub-bands 0-30 MWh pa (domestic only) and 30-73.2 MWh pa (including some non-domestics) analysed on an individual LDZ basis. In this case sample sizes for the upper sub-band are low in all LDZs except SC. Additionally, some of the ensuing R^2 values lie outside the previously typical range of 97-99% (i.e. 30-73.2 MWh pa band NE, EM, SW LDZs).

Table 4 shows the results for the two sub-bands 0-30 MWh pa (domestic only) and 30-73.2 MWh pa (including some non-domestics) analysed on a 5 LDZ group basis. For appropriate comparison, a 5 LDZ group analysis of the whole band (0-73.2 MWh pa, domestic only) has also been undertaken and these results are also presented in Table 4. In this case sample sizes for the both sub-bands are adequate in each LDZ group.

3. Evaluation of Results

3.1 Sub Bands 0-20 and 20-73.2 MWh pa

Table 5 summarises the indicative load factors (ILFs) for the two sub bands 0-20 and 20-73.2 MWh pa as well as for the whole band 0-73.2 MWh pa. In all cases the data sets are for individual LDZs domestic only.

As might be expected the ILFs for the whole band lie between the two ILFs for the corresponding sub-bands. In most LDZs, the ILF for the overall band usually lies in between the corresponding sub-band ILF values. In a few LDZs (NO, EA, SE) the overall band and lower sub-band ILF values are the same.

For 8 of the 12 LDZs (NW and WN are combined) the ILF difference between the sub-bands is 2 percentage points or less, which is not a very significant differentiation in ILF. In 2 LDZs the difference in ILFs across the sub-bands is 3 percentage points while in 2 further LDZs the difference is 4 percentage points. In all cases the upper sub-band has the larger ILF value as would be expected.

Whether a two sub-band representation improves the “goodness” of fit overall to the range 0-73.2 MWh pa may also be assessed by comparing the population weighted root mean square error (RMSE) values when applying two bands and one overall band. This comparison is presented in Table 8 and shows that for all LDZs the two sub-band representation does not materially improve the fit. Overall across all LDZs the degradation is 7.6%, the range across LDZs is from 2.6 to 13.4% (worse in every case) and 10 of 12 LDZs come out worse by 6% or greater. Note that these are **not** true RMSE values since each model RMSE value has been divided by the applicable aggregate sample AQs and multiplied by the appropriate population AQs in order to derive values that may be legitimately compared.

On the basis of the RMSE results and the limited load factor differentiation, there does not appear to be a compelling case for dividing the 0-73.2 MWh pa consumption band in to two approximately equal sub-bands: 0-20 and 20-73.2 MWh pa (i.e. approximately equal in population numbers).

3.2 Sub Bands 0-30 and 30-73.2 MWh pa

Table 6 summarises the indicative load factors (ILFs) for the two sub bands 0-30 and 30-73.2 MWh pa as well as for the whole band 0-73.2 MWh pa. In all cases the data sets are for individual LDZs; the lower sub-band uses domestic only data sets and the upper sub-band includes some non-domestic supply points in each data set. In the upper band (30-73.2 MWh pa) sample sizes are clearly too small for robust demand modelling (all LDZs except SC have sample sizes less than 40 and in 5 LDZs the sample size is less than 30).

ILF values for the lower sub-band, 0-30 MWh pa are very similar to the results for the previously assessed lower sub-band, 0-20 MWh pa. In NW/WN LDZ, the difference in ILF is 2 percentage points and in all other LDZs the difference in ILF is 1 percentage point or zero. These alternative lower sub bands are therefore not significantly different from one another.

Considering differences in ILF between the lower and upper sub bands, 0-30 and 30-73.2 MWh pa, there is no uniform pattern, although the upper sub-band would be normally expected to have the larger ILF. In 4 LDZs (EM, NT, SE, SO) the two bands have the same ILF, In 2 LDZs (NW/WN, EA) the upper sub-band has a lower ILF than the lower sub-band. In only 3 LDZs (SC, WS and SW) are the ILF differences greater than 2 percentage points.

In 4 LDZs (EM, NT, SE and SO) the ILFs for the overall band (0-73.2 MWh pa) are the same as the ILFs for both sub-bands. In a further 3 LDZs (NO, NE and EA) the overall band ILF and lower sub-band ILF are the same. In the remaining 5 LDZs (SC, NW/WN, WM, WS and SW) the ILF for the overall band usually lies in between the corresponding sub-band ILF values.

These inconsistent ILF results with a sub-band split at 30 MWh pa, are undoubtedly in part due to the less robust models arising from the small sample sizes available in the upper sub-band. In addition the upper sub band samples include some non-domestic supply points (since this was the basis for evaluating this option: within the 0-73.2 MWh pa range most non-domestic supply points in the population at large lie in the 30-73.2 MWh pa sub-band).

Table 7 summarises the indicative load factors (ILFs) for the two sub bands 0-30 and 30-73.2 MWh pa when the analysis is undertaken on a 5 LDZ group basis to overcome the deficiencies in sample size in the upper sub-band. The 5 LDZ groups are SC (on its own), NO/NW/WN, NE/EM/WM, EA/NT/SE and WS/SO/SW.

One important consideration with analysis by LDZ group is that the spread of ensuing load factor values gets narrower across the LDZs. The 5 group overall band (0-73.2 MWh pa) analysis has a ILF spread of 8 percentage points while the individual LDZ analysis of the whole band gives a 11 percentage point spread in ILF values. If the outlier of SC LDZ is excluded, since SC LDZ is not grouped in the 5 LDZ group analysis, the ILF spread is 4 percentage points for the 5 LDZ group analysis and 8 percentage points (double) for the individual LDZ analysis. Given adequate sample strength it is therefore preferable to utilise data sets based on individual LDZs.

With the 5 LDZ group analysis, in only SC LDZ (which is the same individual LDZ data set model) is there a significant ILF difference between the upper and lower sub-bands. Two LDZ groups show no difference in ILF (NO/NW/WN and EA/NT/SE) and the other two LDZ groups show small differences of 1 and 2 percentage points (in NE/EM/WM and WS/SO/SW) respectively.

When the whole band is analysed with 5 LDZ groups the ensuing overall band ILF values lie between the corresponding sub band values in two groups: SC and WS/SO/SW. For the NO/NW/WN group overall and both sub-band ILF values are the same. For the groups EA/NT/SE and NE/EM/WM, the overall band ILF is no more than one percentage point different from both of the corresponding sub-band ILF values. For group EA/NT/SE the overall band ILF is one percentage point greater than both sub-band ILFs (which are equal).

These inconsistent and generally small ILF differences are comparatively weak grounds for instituting a consumption band split at 30 MWh pa. However, as with the possible split at 20 MWh pa, a RMSE analysis has also been undertaken.

Whether a two sub-band representation split at 30 MWh pa improves the “goodness” of fit overall to the range 0-73.2 MWh pa is assessed by comparing the population weighted root mean square error (RMSE) values when applying two sub-bands and one overall band. This comparison is presented in Table 9. These results are from the models ensuing from individual LDZ data sets for the overall band and the sub-bands. Note here that the RMSE values for the overall band are obviously the same as those set out in Table 8.

The RMSE values for two sub-bands shows that for all LDZs the two sub-band representation does not materially improve the fit. Overall across all LDZs the degradation is 9.2% which is worse than the overall degradation for the two sub-bands split at 20 MWh pa (Table 8). The range across LDZs is from 2.0 to 15.3% (worse in every case) and 10 of 12 LDZs come out worse by 4.5% or greater. In every LDZ there is a degradation in fit and although in 7 of 12 LDZs the degradation is less bad than the degradation with a 20 MWh pa split, it is much worse in 5 LDZs and consequently overall the degradation in fit is worse than for the 20 MWh pa split.

Table 10 provides the results of the equivalent RMSE analysis (for each LDZ and overall) based on the models derived using the 5 LDZ group data sets. Note that the results for SC LDZ in this table are identical to the corresponding results in Table 9. Note also that RMSE values are data set size dependent and therefore any comparison of RMSEs must utilise models derived on the same basis for both sub-bands and for the overall band. In Table 10 the data set basis is 5 LDZ groups (in Table 9 the basis was individual LDZ data sets).

Where LDZs are grouped (NE/EM/WM, EA/NT/SE and WS/SO/SW) the degree of fit improves as a result of the larger sample sizes that apply to each model because data has been aggregated across LDZs. However, for all LDZs and overall the outcome is still a degradation in fit when a sub-band split is applied.

Moreover, this "less bad" degradation is achieved at the expense of a much reduced differentiation in load factors across LDZs. Excluding SC LDZ because it is not grouped, the lower sub-band (0-30 MWh pa) shows an ILF spread of 5 percentage points in the grouped analysis and 9 percentage points in the individual LDZ analysis. Similarly the upper sub-band (30-73.2 MWh pa) shows an ILF spread of 5 percentage points in the grouped analysis and 10 percentage points in the individual LDZ analysis. As already noted, the corresponding ILF spreads for the overall band are 4 and 8 percentage points for the grouped and individual LDZs respectively. So, the grouped analysis broadly halves the load factor differentiation that may otherwise be achieved.

Therefore, on the basis of the RMSE results and the ensuing poor load factor differentiation, there does not appear to be a compelling case for dividing the 0-73.2 MWh pa consumption band into two sub-bands: 0-30 and 30-73.2 MWh pa (i.e. with the lower band based on domestic only data sets and with the upper bands using data sets with some non-domestic supply points and with a grouped analysis applied).

4. Conclusions

The results presented here confirm that there are no compelling statistical grounds for representing the 0-73.2 MWh pa consumption range by applying two sub-bands (whether split at 20 or 30 MWh pa).

Therefore, with respect to representation of the 0-73.2 MWh pa consumption range for UNC demand estimation purposes Transporters propose to continue with current practice - i.e. to derive and propose underlying demand models and EUC derived factors (ALPs, DAFs, load factors) applicable to the range 0-73.2 MWh pa on the basis of a single EUC in each LDZ for this consumption range.

Given the evidence presented, overall and across all LDZs, of no benefit in splitting the 0-73.2MWh pa band, Transporters do not propose to repeat this analysis as part of the time constrained spring 2008 NDM analysis. However, there is merit in undertaking this analysis from time to time as a check. Therefore, in line with the bi-annual assessment of model smoothing, Transporters propose to undertake this more detailed investigation of sub-bands within the 0-73.2 MWh pa range every two years and will report the results to DESC for consideration.

TABLE 1 : INDIVIDUAL LDZ ANALYSIS, 0-73.2 MWH PA (2006/07 DATA SET)

LDZ	0 – 73.2 MWH PA DOMESTIC SUPPLY POINTS	0 – 73.2 MWH PA INCLUDING SOME NON-DOMESTIC SUPPLY POINTS
SC		
INDICATIVE LF	41	41
R^2 (%)	98	98
SAMPLE SIZE	228	232
NO		
INDICATIVE LF	34	35
R^2 (%)	98	98
SAMPLE SIZE	208	212
NW & WN		
INDICATIVE LF	38	38
R^2 (%)	98	98
SAMPLE SIZE	196	200
NE		
INDICATIVE LF	38	39
R^2 (%)	97	97
SAMPLE SIZE	208	212
EM		
INDICATIVE LF	37	37
R^2 (%)	98	98
SAMPLE SIZE	200	204
WM		
INDICATIVE LF	34	34
R^2 (%)	99	98
SAMPLE SIZE	187	191
EA		
INDICATIVE LF	33	33
R^2 (%)	98	98
SAMPLE SIZE	223	227
NT		
INDICATIVE LF	32	32
R^2 (%)	99	99
SAMPLE SIZE	228	232
SE		
INDICATIVE LF	32	32
R^2 (%)	98	98
SAMPLE SIZE	202	206
WS		
INDICATIVE LF	34	34
R^2 (%)	98	98
SAMPLE SIZE	217	221
SO		
INDICATIVE LF	30	30
R^2 (%)	98	98
SAMPLE SIZE	220	224
SW		
INDICATIVE LF	33	33
R^2 (%)	98	98
SAMPLE SIZE	204	208

TABLE 2 : INDIVIDUAL LDZ ANALYSIS, 0-20 AND 20-73.2 MWH PA (2006/07 DATA SET)

LDZ	0 – 20 MWH PA DOMESTIC SUPPLY POINTS	20 – 73.2 MWH PA DOMESTIC SUPPLY POINTS
SC		
INDICATIVE LF	39	42
R^2 (%)	98	98
SAMPLE SIZE	122	106
NO		
INDICATIVE LF	34	35
R^2 (%)	97	98
SAMPLE SIZE	109	99
NW & WN		
INDICATIVE LF	37	39
R^2 (%)	98	97
SAMPLE SIZE	117	79
NE		
INDICATIVE LF	37	39
R^2 (%)	97	97
SAMPLE SIZE	124	84
EM		
INDICATIVE LF	36	38
R^2 (%)	98	97
SAMPLE SIZE	128	72
WM		
INDICATIVE LF	32	36
R^2 (%)	98	98
SAMPLE SIZE	110	77
EA		
INDICATIVE LF	33	34
R^2 (%)	98	97
SAMPLE SIZE	151	72
NT		
INDICATIVE LF	31	33
R^2 (%)	98	99
SAMPLE SIZE	141	87
SE		
INDICATIVE LF	32	33
R^2 (%)	98	98
SAMPLE SIZE	126	76
WS		
INDICATIVE LF	33	36
R^2 (%)	98	98
SAMPLE SIZE	123	94
SO		
INDICATIVE LF	29	31
R^2 (%)	98	98
SAMPLE SIZE	143	77
SW		
INDICATIVE LF	31	35
R^2 (%)	98	95
SAMPLE SIZE	137	67

Table 3 : Individual LDZ Analysis, 0-30 and 30-73.2 MWh pa (2006/07 data set)

LDZ	0 – 30 MWh pa Domestic Supply Points	30 – 73.2 MWh pa Including Some Non-Domestic Supply Points
SC		
Indicative LF	39	44
R^2 (%)	98	97
Sample Size	180	52
NO		
Indicative LF	34	35
R^2 (%)	97	97
Sample Size	180	32
NW & WN		
Indicative LF	39	37
R^2 (%)	98	96
Sample Size	163	37
NE		
Indicative LF	38	40
R^2 (%)	97	96
Sample Size	181	31
EM		
Indicative LF	37	37
R^2 (%)	98	96
Sample Size	176	28
WM		
Indicative LF	33	35
R^2 (%)	99	98
Sample Size	158	33
EA		
Indicative LF	33	31
R^2 (%)	98	97
Sample Size	204	23
NT		
Indicative LF	32	32
R^2 (%)	99	99
Sample Size	196	36
SE		
Indicative LF	32	32
R^2 (%)	98	98
Sample Size	178	28
WS		
Indicative LF	33	37
R^2 (%)	98	97
Sample Size	186	35
SO		
Indicative LF	30	30
R^2 (%)	98	97
Sample Size	195	29
SW		
Indicative LF	32	35
R^2 (%)	98	96
Sample Size	179	29

TABLE 4 : 5 LDZ GROUP ANALYSIS, 0-30, 30-73.2 AND 0-73.2 MWH PA (2006/07 DATA SET)

LDZ	0 – 30 MWH PA DOMESTIC SUPPLY POINTS	30 – 73.2 MWH PA INCLUDING SOME NON-DOMESTIC SUPPLY POINTS	0 – 73.2 MWH PA DOMESTIC SUPPLY POINTS
SC			
INDICATIVE	39	44	41
R^2 (%)	98	97	98
SAMPLE	180	52	228
NO/NW /WN			
INDICATIVE	37	37	37
R^2 (%)	97	97	98
SAMPLE	343	69	404
NE/EM/WM			
INDICATIVE	36	37	36
R^2 (%)	98	98	98
SAMPLE	515	92	595
EA/NT/SE			
INDICATIVE	32	32	33
R^2 (%)	99	99	99
SAMPLE	578	87	653
WS/SO/SW			
INDICATIVE	32	34	33
R^2 (%)	98	97	98
SAMPLE	560	93	641

TABLE 5 - INDICATIVE LOAD FACTORS
0-73.2 MWH PA, 0-20 MWH PA, 20-73.2 MWH PA : DOMESTIC ONLY DATA SETS

LDZ	0-20 MWh pa	20-73.2 MWh pa	0-73.2 MWh pa
SC	39	42	41
NO	34	35	34
NW/WN	37	39	38
NE	37	39	38
EM	36	38	37
WM	32	36	34
EA	33	34	33
NT	31	33	32
SE	32	33	32
WS	33	36	34
SO	29	31	30
SW	31	35	33

TABLE 6 - INDICATIVE LOAD FACTORS
0-73.2 MWH PA, 0-30 MWH PA, 30-73.2 MWH PA : INDIVIDUAL LDZS

LDZ	0-30 MWh pa (domestic)	30-73.2 MWh pa (with some non-domestic)	0-73.2 MWh pa (domestic)
SC	39	44	41
NO	34	35	34
NW/WN	39	37	38
NE	38	40	38
EM	37	37	37
WM	33	35	34
EA	33	31	33
NT	32	32	32
SE	32	32	32
WS	33	37	34
SO	30	30	30
SW	32	35	33

TABLE 7 - INDICATIVE LOAD FACTORS
0-73.2 MWH PA, 0-30 MWH PA, 30-73.2 MWH PA : 5 LDZ GROUPS

LDZ	0-30 MWH PA (DOMESTIC ONLY)	30-73.2 MWH PA (WITH SOME NON-DOMESTIC)	0-73.2 MWh pa (domestic)
SC	39	44	41
NO/NW/WN	37	37	37
NE/EM/WM	36	37	36
EA/NT/SE	32	32	33
WS/SO/SW	32	34	33

TABLE 8 - POPULATION AQ WEIGHTED "RMSE" VALUES (INDIVIDUAL LDZ DATA SETS)
0-73.2 MWH PA AND SUB-BANDS 0-20 & 20-73.2 MWH PA MODELS BASED ON 2006/07 DATA SET

LDZ	ONE BAND	TWO SUB-BANDS	IMPROVEMENT(+) OR DEGRADATION(-) USING TWO BANDS
SC	5,971,343,744	6,496,256,525	-8.8%
NO	5,080,241,734	5,283,652,955	-4.0%
NW/WN	11,301,582,066	11,978,690,816	-6.0%
NE	6,124,844,609	6,286,487,717	-2.6%
EM	8,290,109,281	8,900,893,719	-7.4%
WM	6,525,570,595	7,400,998,581	-13.4%
EA	7,228,928,347	7,667,916,822	-6.1%
NT	7,410,969,168	8,020,576,953	-8.2%
SE	9,759,366,159	10,553,251,730	-8.1%
WS	3,196,519,414	3,441,242,628	-7.7%
SO	5,417,316,441	5,740,541,096	-6.0%
SW	5,489,818,462	6,064,546,877	-10.5%
OVERALL	6,909,671,467	7,434,614,161	-7.6%

TABLE 9 - POPULATION AQ WEIGHTED "RMSE" VALUES (INDIVIDUAL LDZ DATA SETS)
0-73.2 MWH PA AND SUB-BANDS 0-30 & 30-73.2 MWH PA MODELS BASED ON 2006/07 DATA SET

LDZ	ONE BAND	TWO SUB-BANDS	IMPROVEMENT(+) OR DEGRADATION(-) USING TWO BANDS
SC	5,971,343,744	6,728,016,686	-12.7%
NO	5,080,241,734	5,227,988,331	-2.9%
NW/WN	11,301,582,066	12,336,034,747	-9.2%
NE	6,124,844,609	6,249,006,491	-2.0%
EM	8,290,109,281	9,053,343,600	-9.2%
WM	6,525,570,595	7,238,181,112	-10.9%
EA	7,228,928,347	7,943,939,214	-9.9%
NT	7,410,969,168	7,798,109,204	-5.2%
SE	9,759,366,159	10,203,980,925	-4.6%
WS	3,196,519,414	3,397,114,990	-6.3%
SO	5,417,316,441	6,248,813,973	-15.3%
SW	5,489,818,462	5,754,310,314	-4.8%
OVERALL	6,909,671,467	7,546,018,583	-9.2%

TABLE 10 - POPULATION AQ WEIGHTED "RMSE" VALUES (5 LDZ GROUP DATA SETS)
0-73.2 MWH PA AND SUB-BANDS 0-30 & 30-73.2 MWH PA MODELS BASED ON 2006/07 DATA SET

LDZ	ONE BAND	TWO SUB-BANDS	IMPROVEMENT(+) OR DEGRADATION(-) USING TWO BANDS
SC	5,971,343,744	6,728,016,686	-12.7%
NO	4,934,126,199	5,123,574,514	-3.8%
NW/WN	11,323,172,901	11,549,400,278	-2.0%
NE	4,745,192,643	4,880,303,752	-2.8%
EM	7,904,315,857	8,019,412,209	-1.5%
WM	7,237,333,204	7,335,027,889	-1.3%
EA	6,165,390,788	6,271,169,729	-1.7%
NT	7,684,866,914	7,883,319,188	-2.6%
SE	8,624,642,859	8,731,451,668	-1.2%
WS	3,146,712,755	3,278,286,661	-4.2%
SO	5,919,986,678	6,025,763,797	-1.8%
SW	5,109,080,563	5,281,563,923	-3.4%
OVERALL	6,911,353,930	7,091,544,156	-2.6%