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Technical Work Group

Review of EUC Definitions

15th January 2014

Background

- The purpose of this analysis is to review the appropriateness of current EUC definitions for small and large NDMs.
- Band 9 should be dismissed when considering 'bands to be merged' as a band that has daily metered sites will always need to exist and the current boundary can not be changed.
- The data used in this analysis was taken from the Autumn collection (which is used primarily for the performance evaluation).
Analysis has been carried out at national level.
The years that have been analysed are as follows:
 - 2009/10 (Gas year)
 - 2010/11 (Gas year)
 - 2011/12 (Gas year)
- The following slides present the analysis for 2011/12 as the results for all years are fairly consistent.

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Additional Analysis

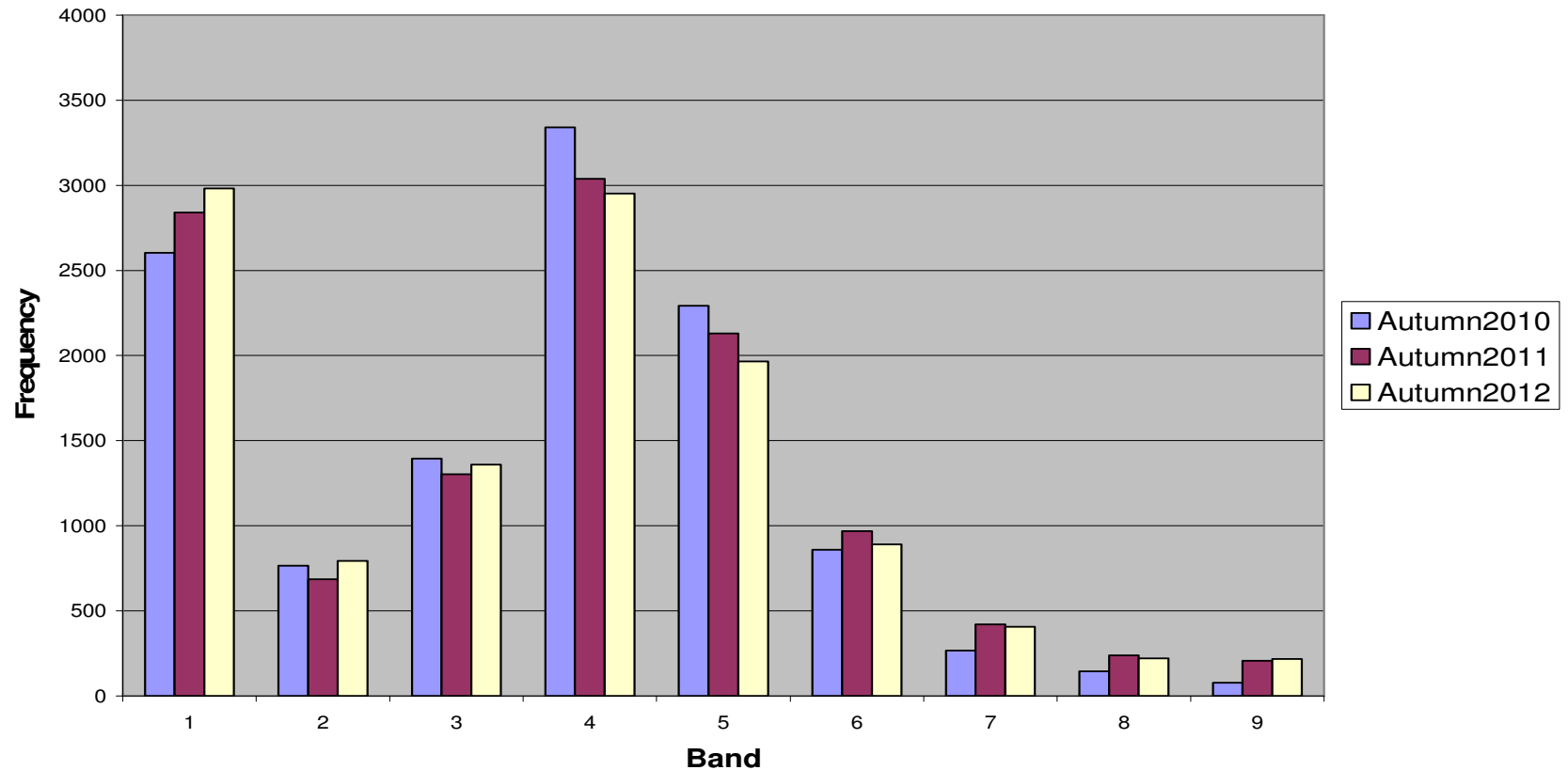
- As requested by TWG (on 27.11.13) the following additional analysis has been carried out:
 - Band 1 has now been included in the analysis
 - The daily average consumption has been calculated for each band
 - The daily standard deviation has been calculated for each band
 - An ALP has been calculated for each band

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Summary of Sample Size



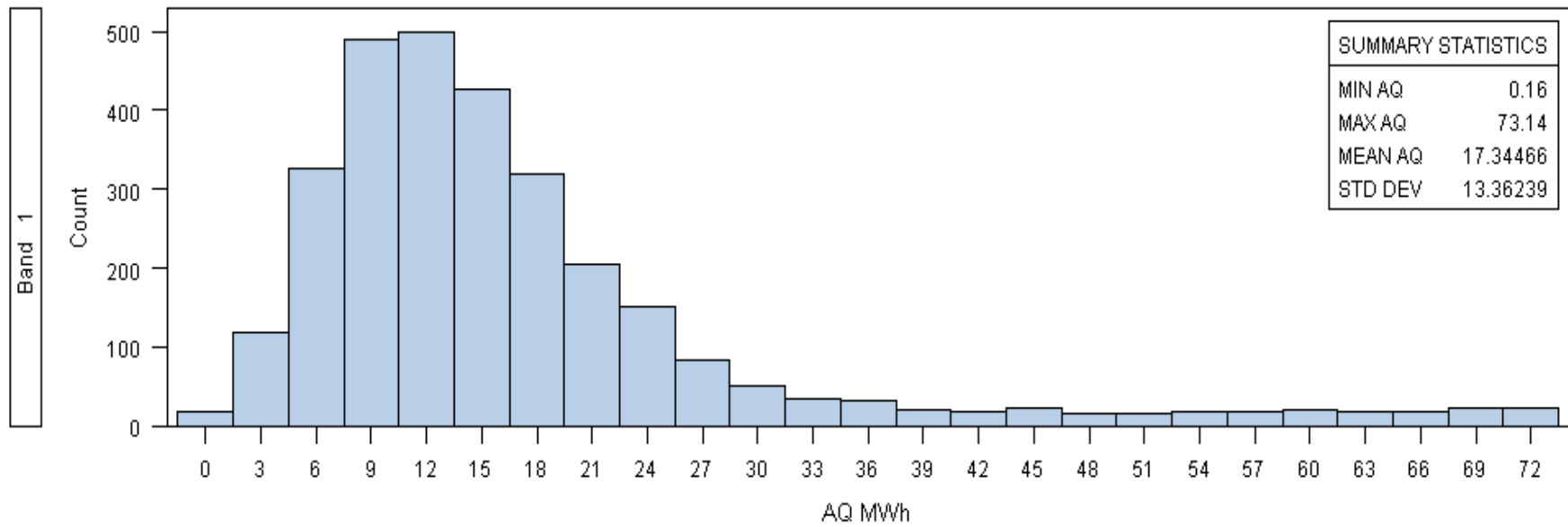
(Updated to include band 1)

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Distribution of Sample within EUC Bands 2011/2012



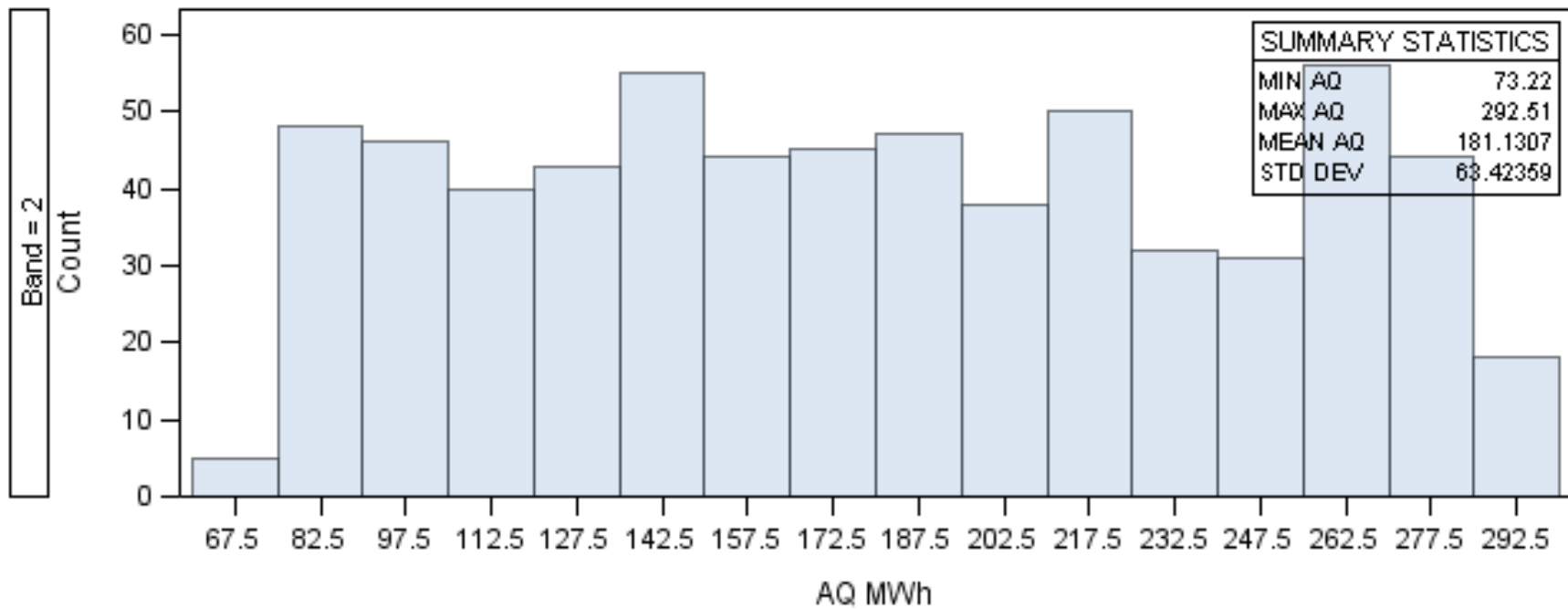
(Updated slide)

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Distribution of Sample within EUC Bands 2011/2012

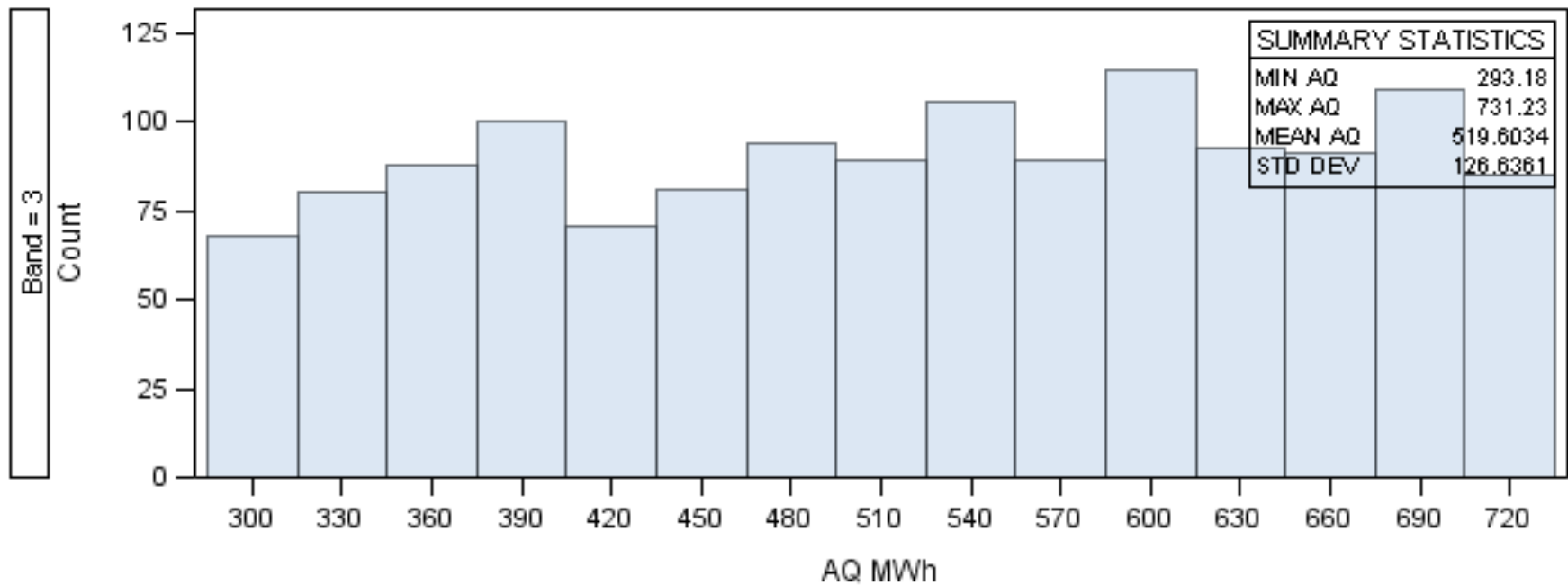


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Distribution of Sample within EUC Bands 2011/2012

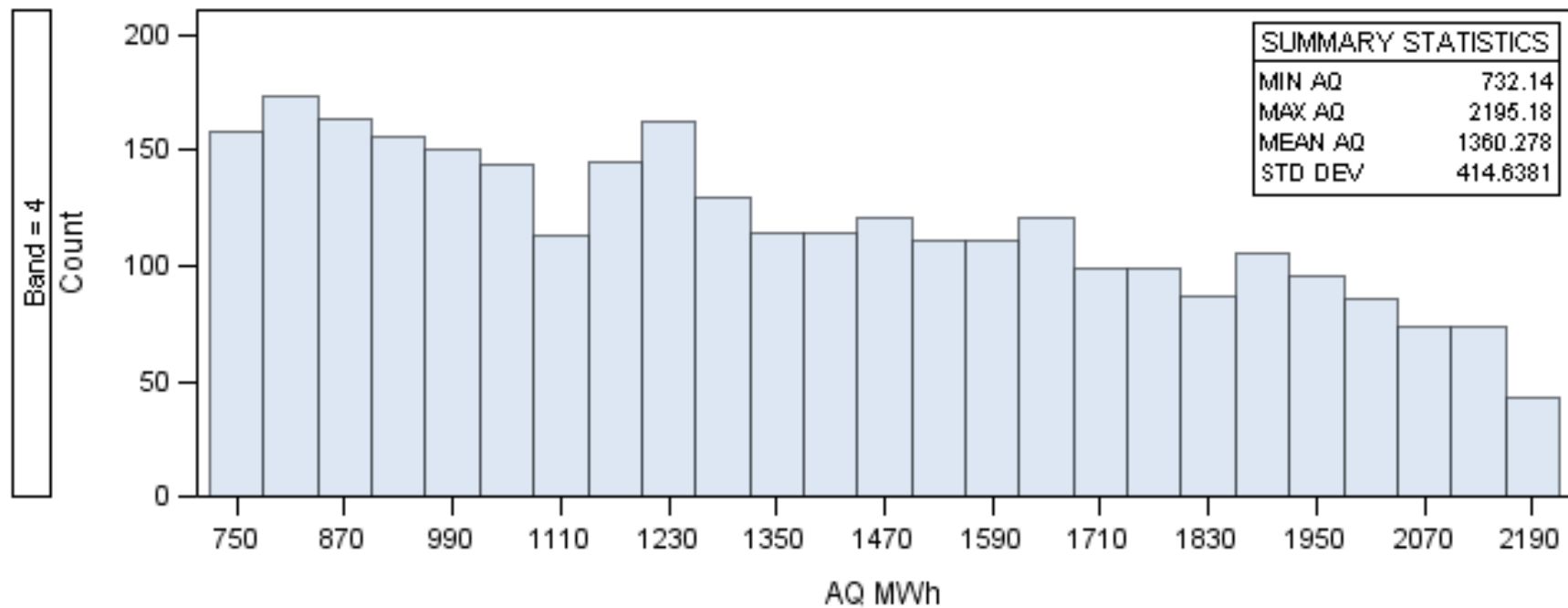


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Distribution of Sample within EUC Bands 2011/2012

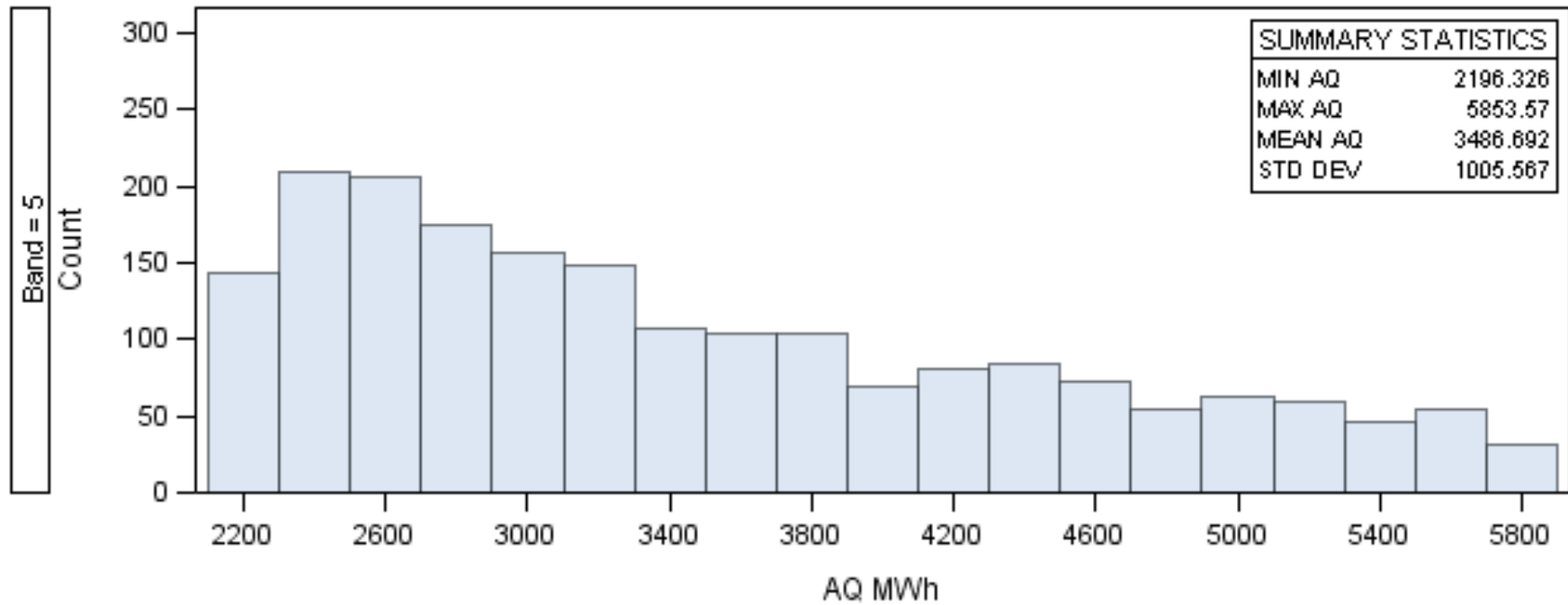


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Distribution of Sample within EUC Bands 2011/2012

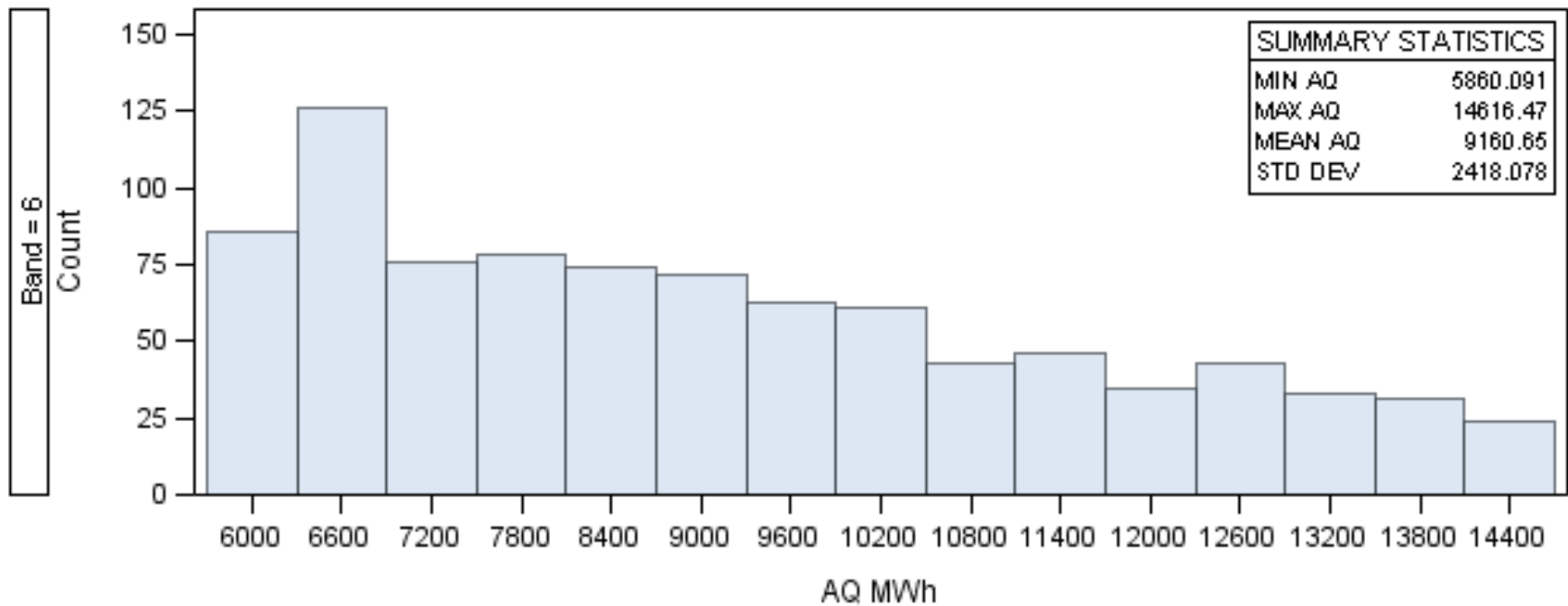


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Distribution of Sample within EUC Bands 2011/2012

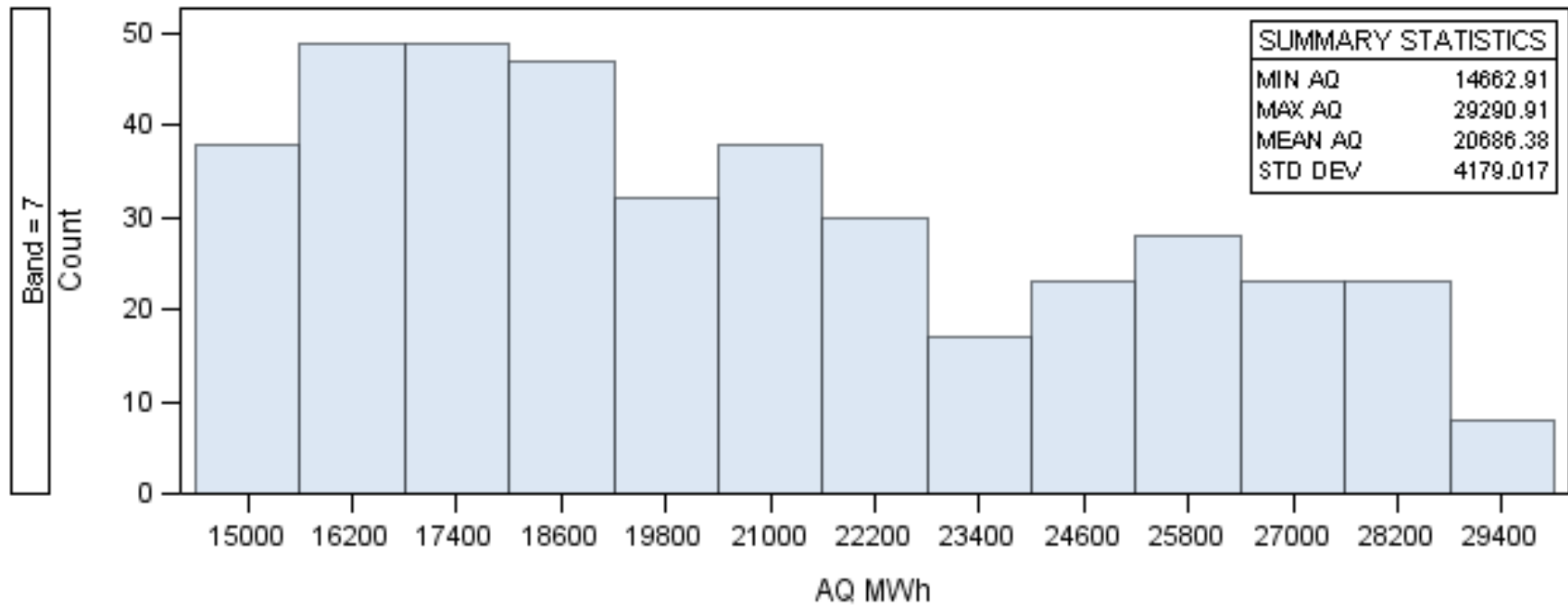


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Distribution of Sample within EUC Bands 2011/2012

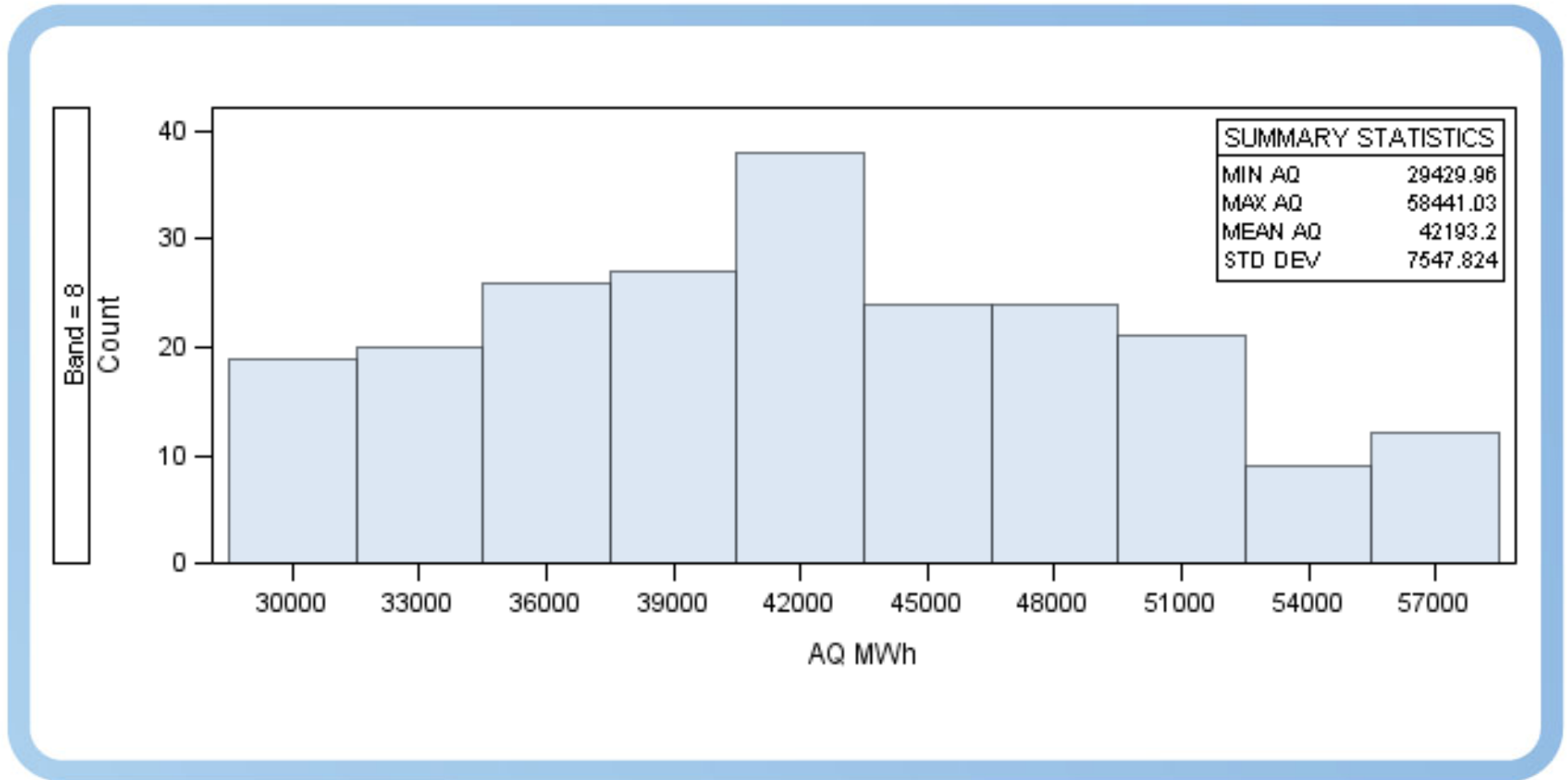


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Distribution of Sample within EUC Bands 2011/2012



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Current EUC Boundaries and considerations

EUC	MWh	
	Lower	Upper
01	-	73.20
02	73.20	293.00
03	293.00	732.00
04	732.00	2,196.00
05	2,196.00	5,860.00
06	5,860.00	14,650.00
07	14,650.00	29,300.00
08	29,300.00	58,600.00
09	58,600.00	

Some considerations need to be made when deciding which bands could possibly be merged:

- Cut offs are tested for only bands 3 and above (as agreed by DESC in Dec '03, with a view to mitigating summer scaling factor instability)
- Upper limit of band 3 cannot be changed due to the pricing structure (a separate pricing structure which incorporates bands 2 and 3)
- Bands 4 and above have the same pricing structure so merges could be possible within these bands.

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Data used in analysis

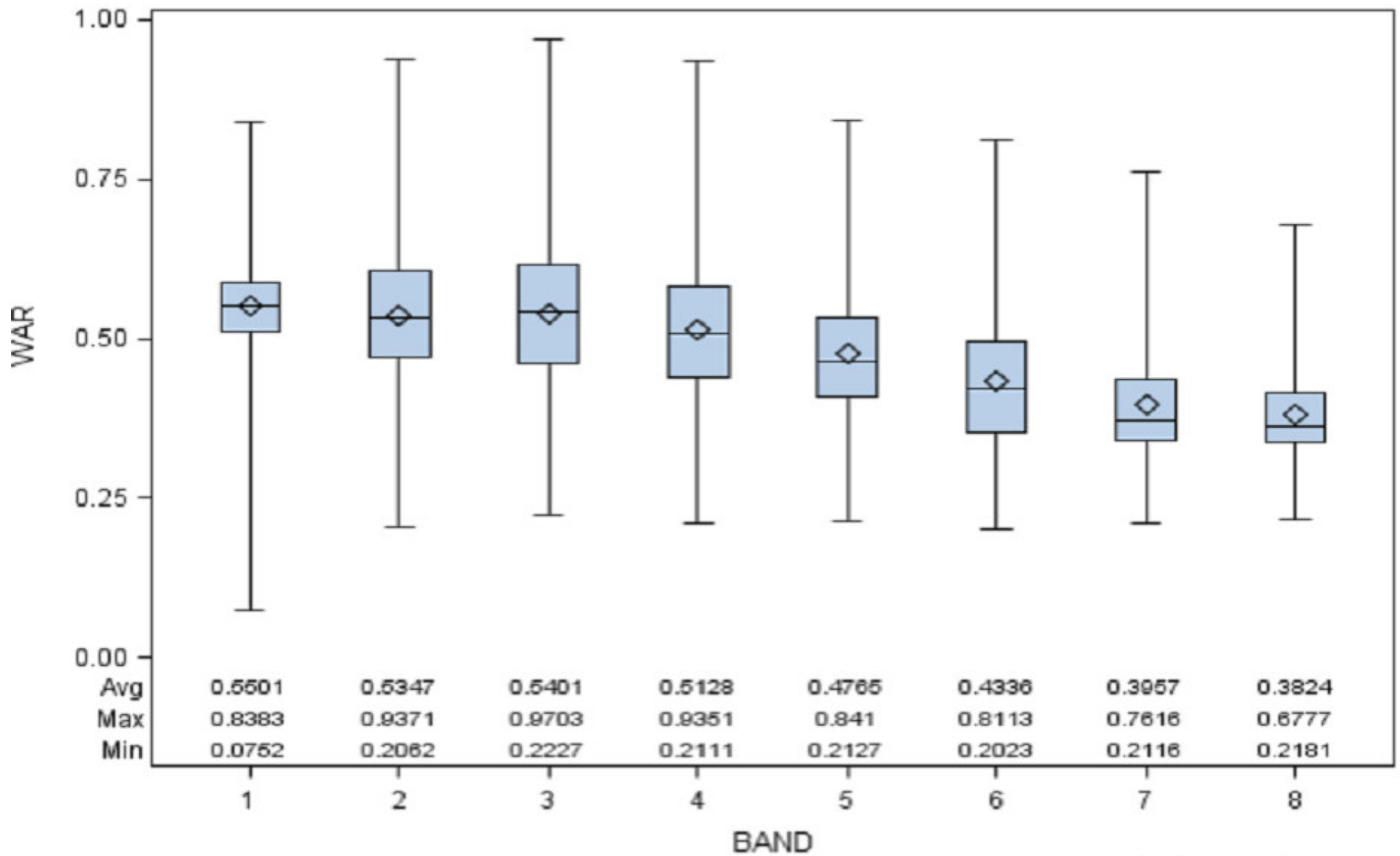
- The data available that is not dependent on current EUCs:
 - Daily Consumption
 - LDZ
 - LDZ CWV
- The first piece of analysis that was carried out was the assessment of the Winter Annual Ratio (WAR). WAR provides a quick indicator of differences within the sample. The WAR for each site has been calculated to assess how much of the annual consumption is used in the winter months (1st Dec – 31st Mar) and how this varies within the current bands (See Box Plot).
- WAR has also been plotted on scatter plots by combining EUCs to see if there was a “step change” which indicated a different break point.

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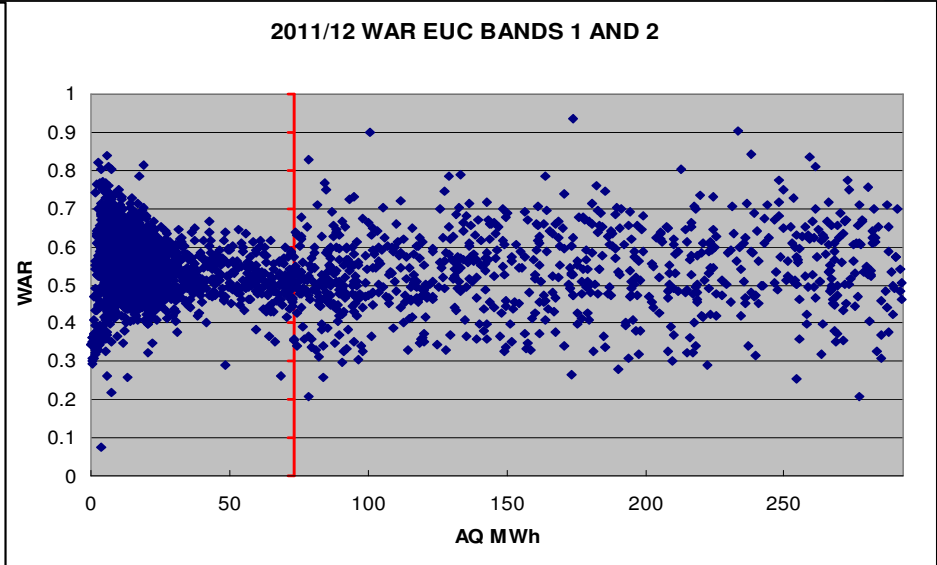
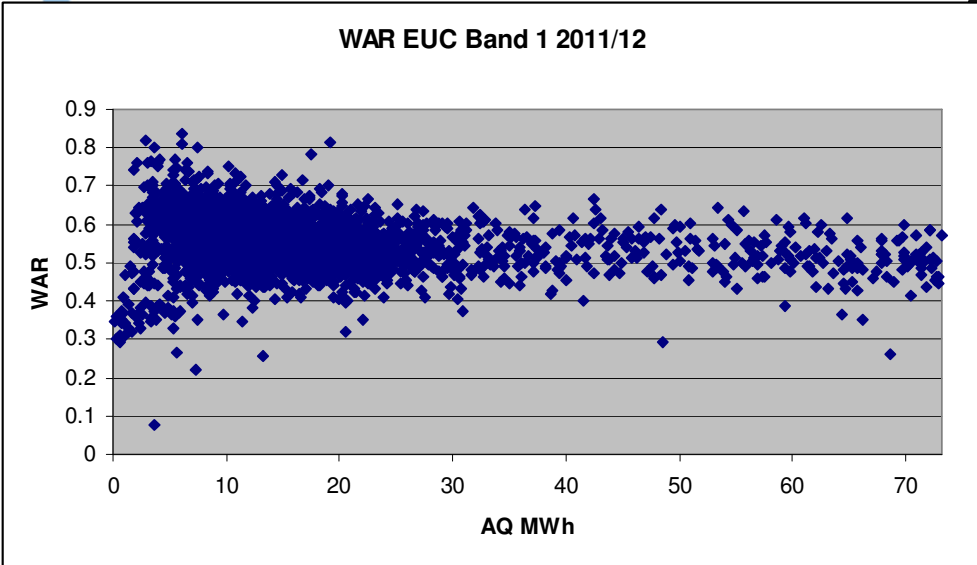


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Box Plot of WAR across the EUC Bands (2011/12)

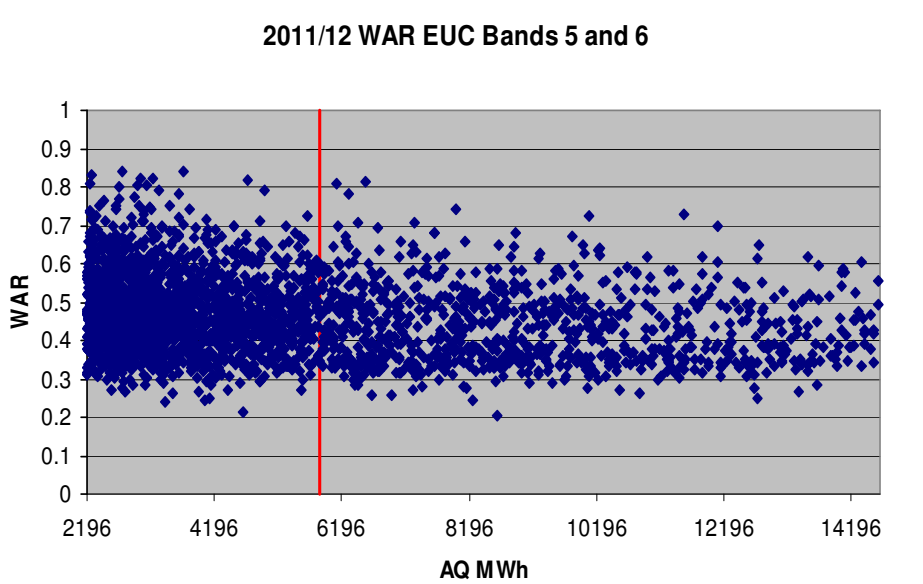
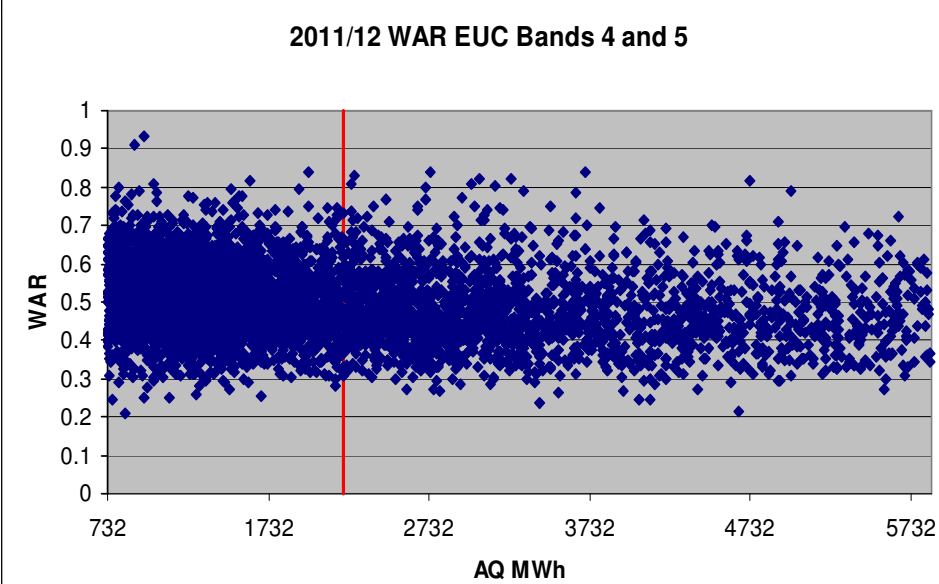
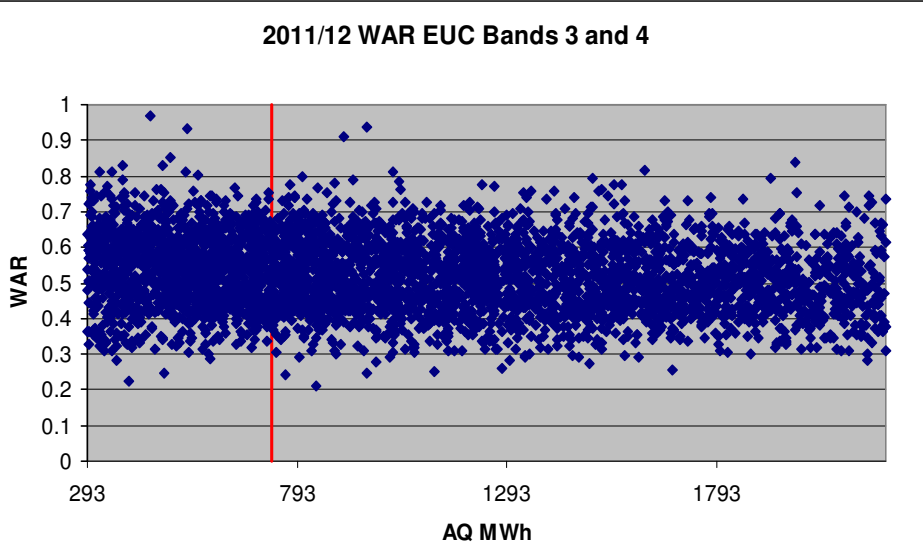
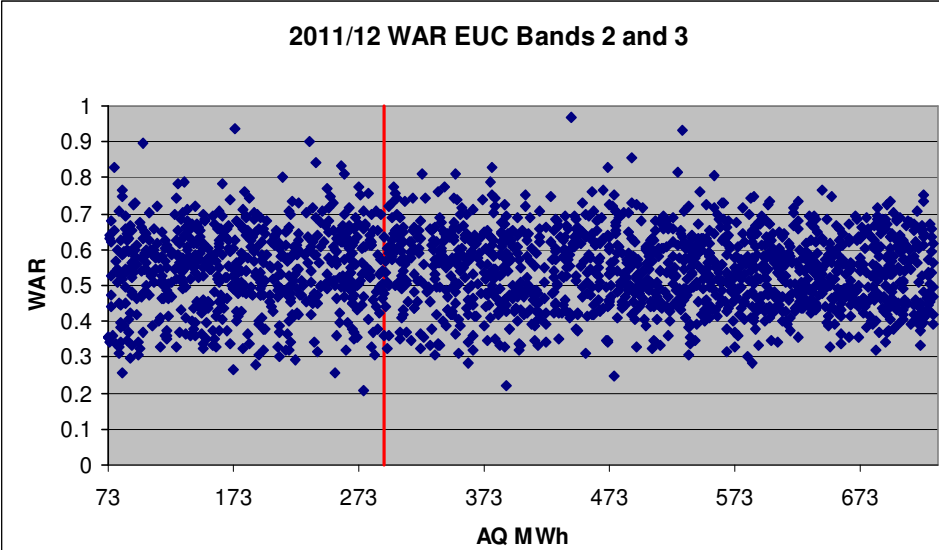


Scatter Plots of WAR by Band 2011/12

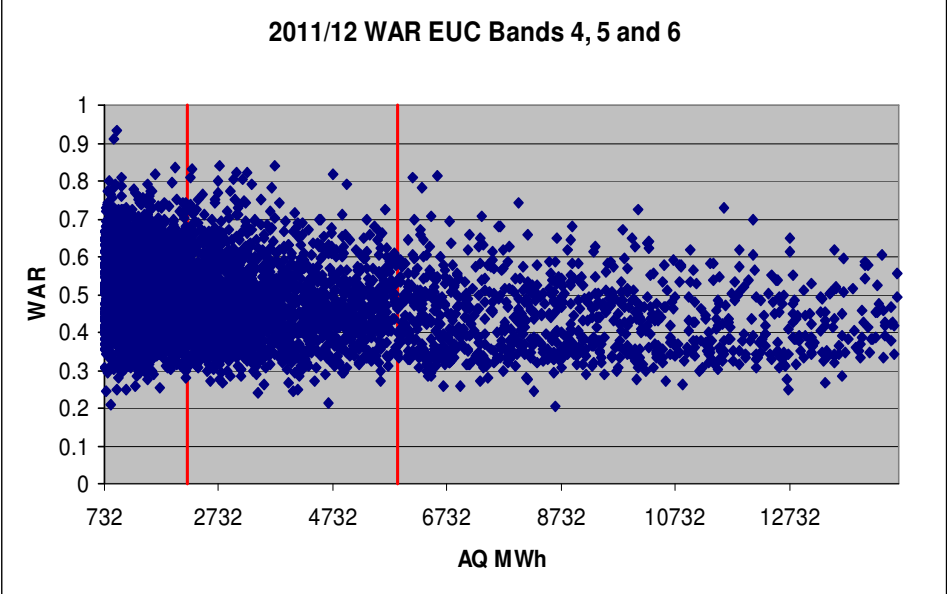
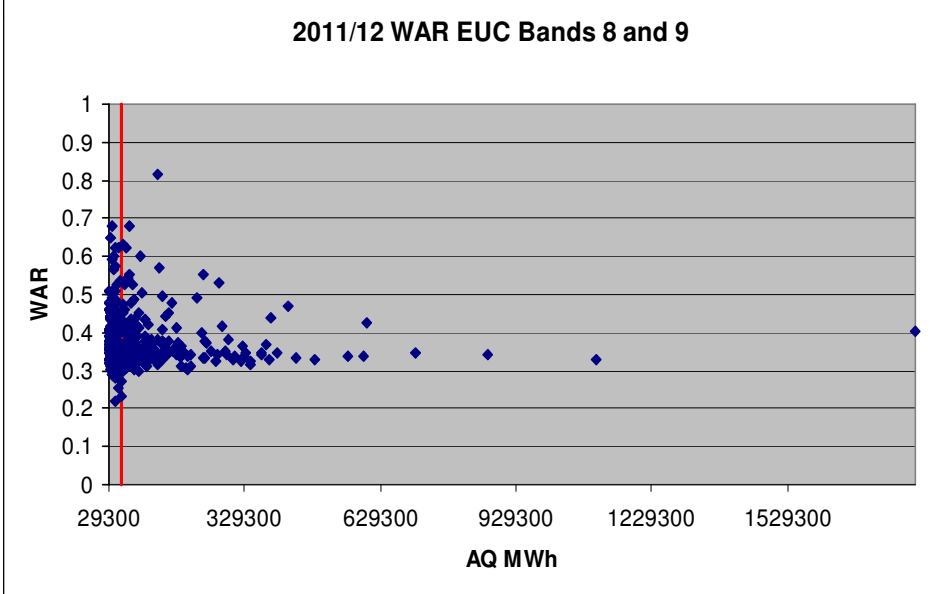
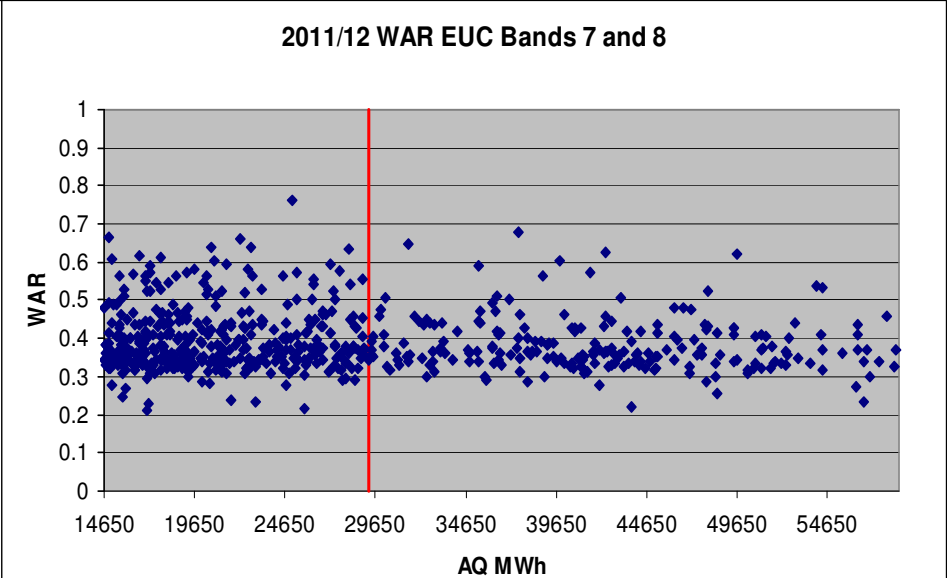
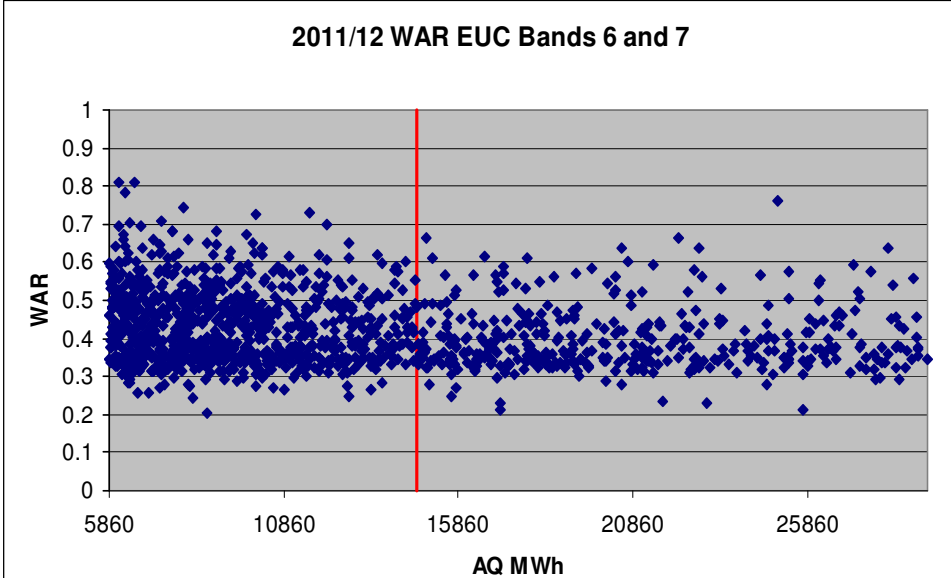


(Updated slide)

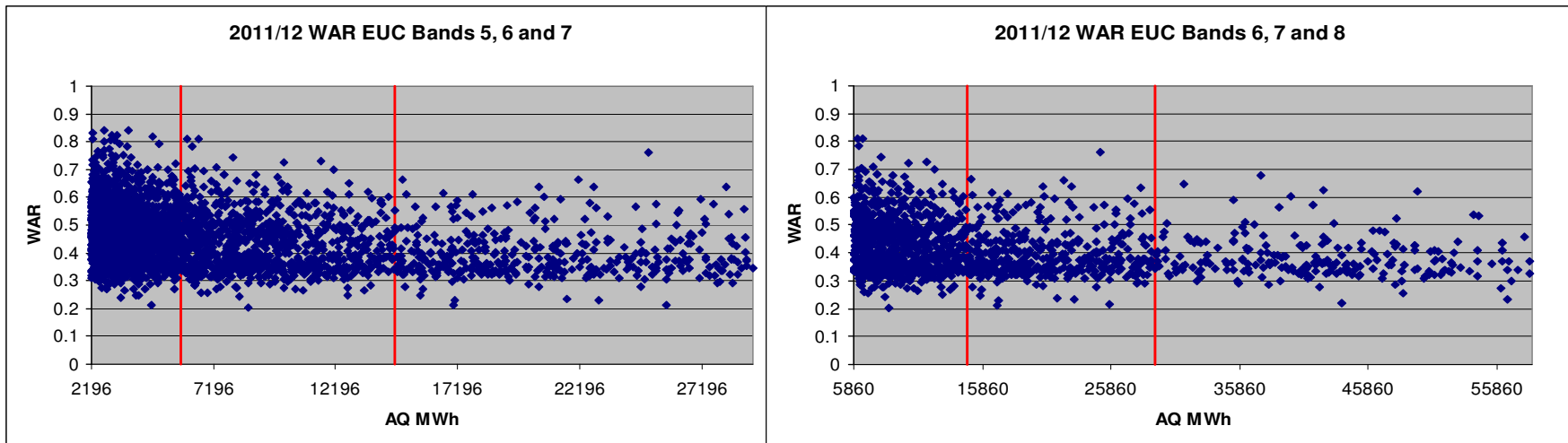
Scatter Plots of WAR by Band 2011/12



Scatter Plots of WAR by Band 2011/12



Scatter Plots of WAR by Band 2011/12



From observing the WAR across the current bands, it appears that there are clear similarities between Band 2 & 3 and Band 3 & 4.

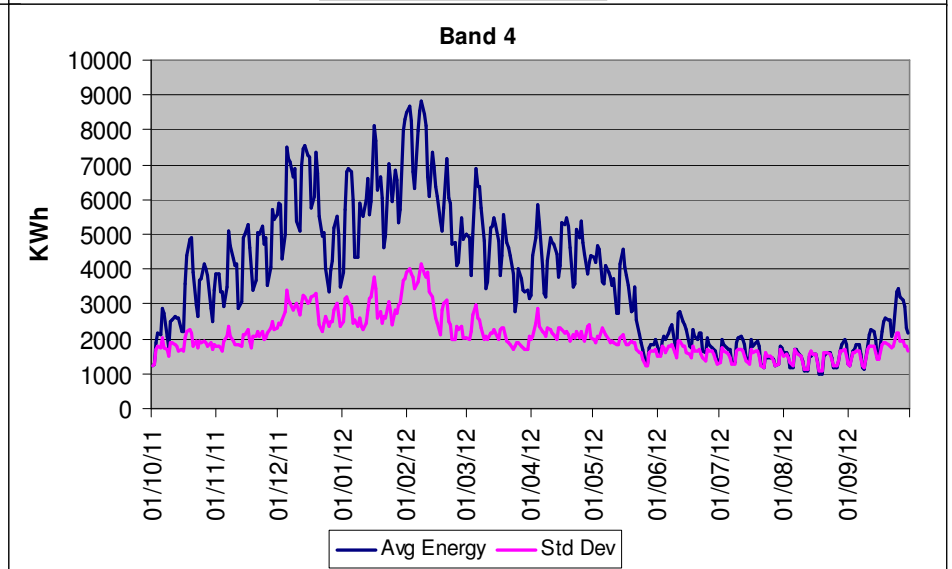
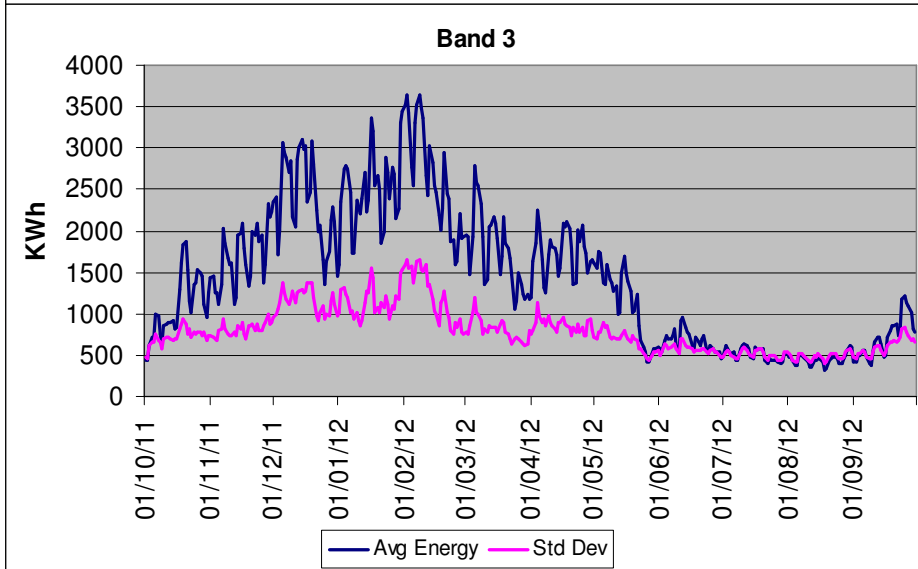
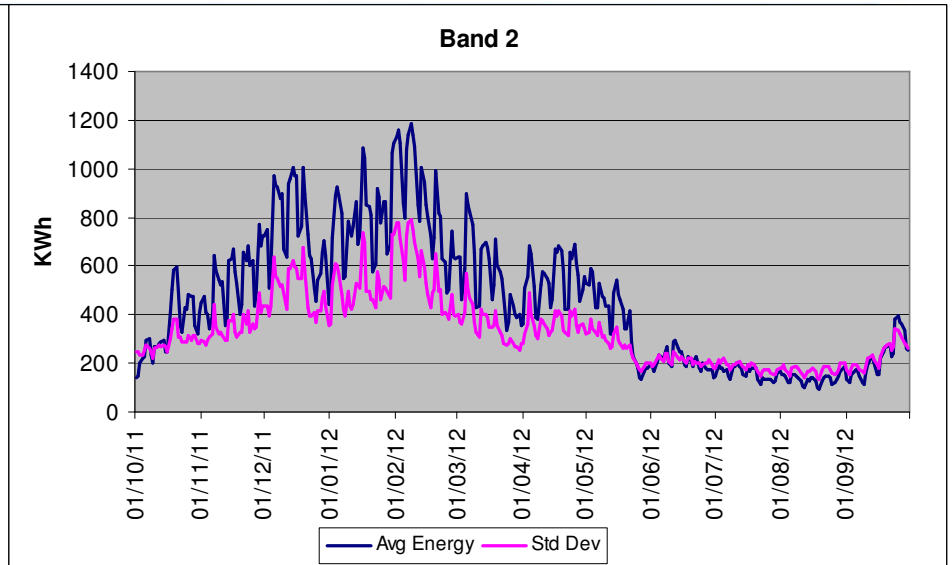
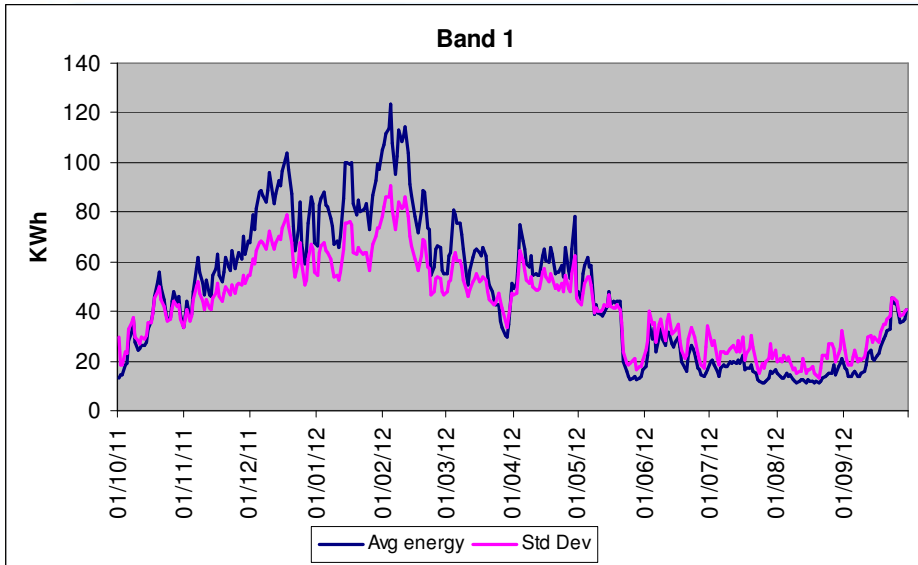
There are also possible similarities between Band 4 & 5 and Band 7 & 8.

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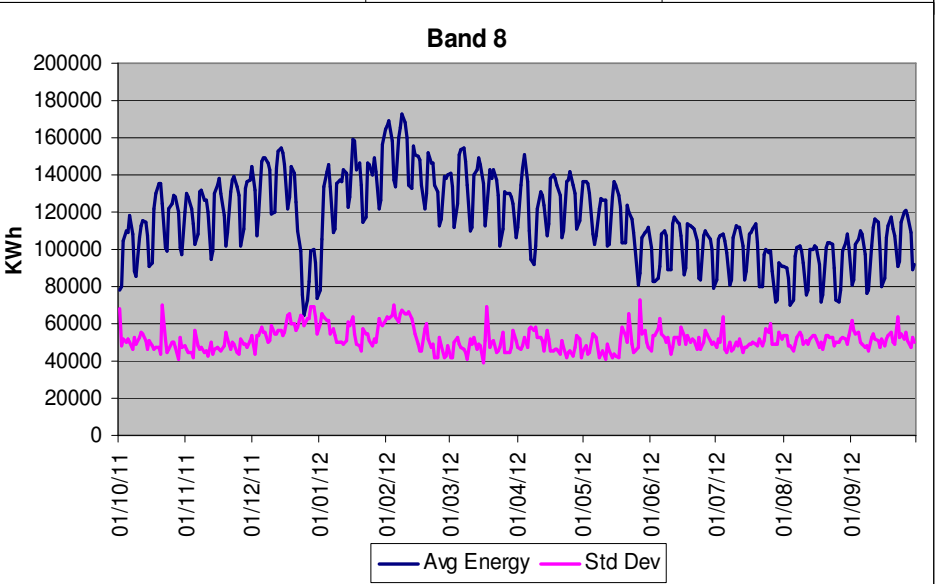
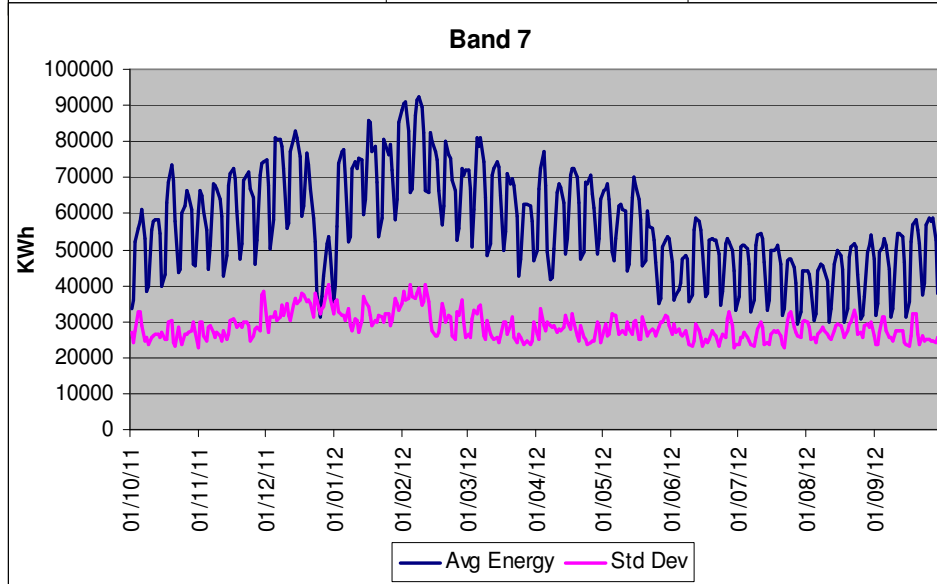
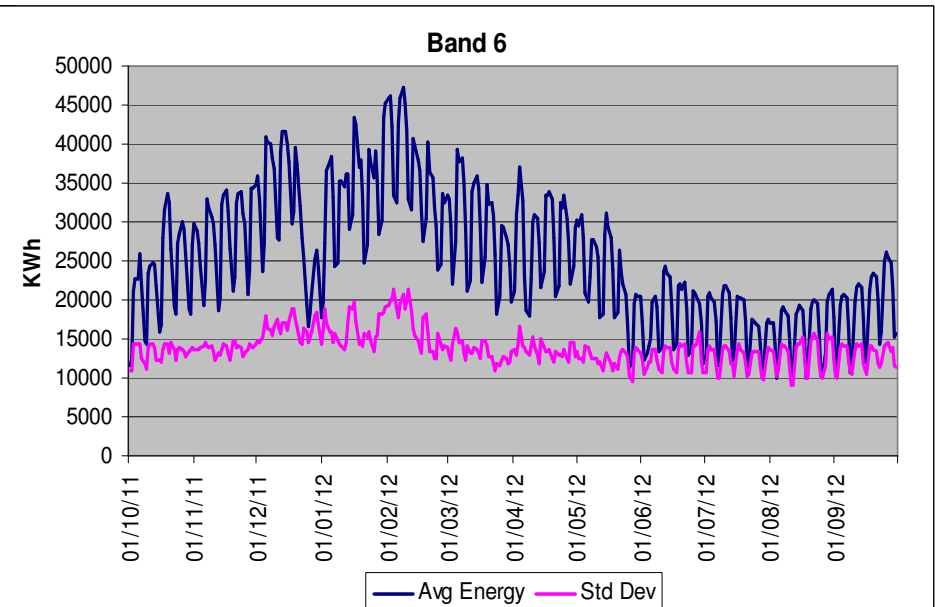
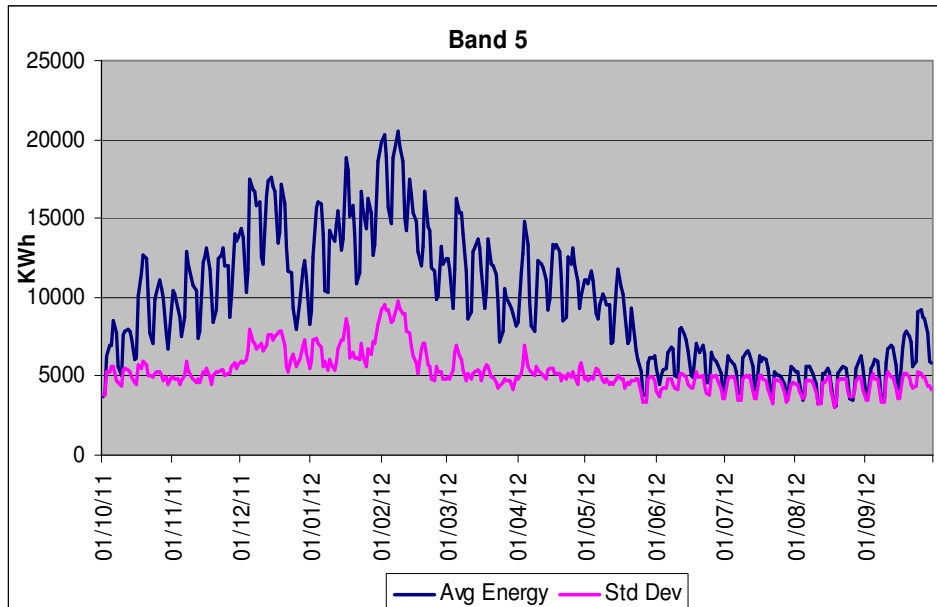


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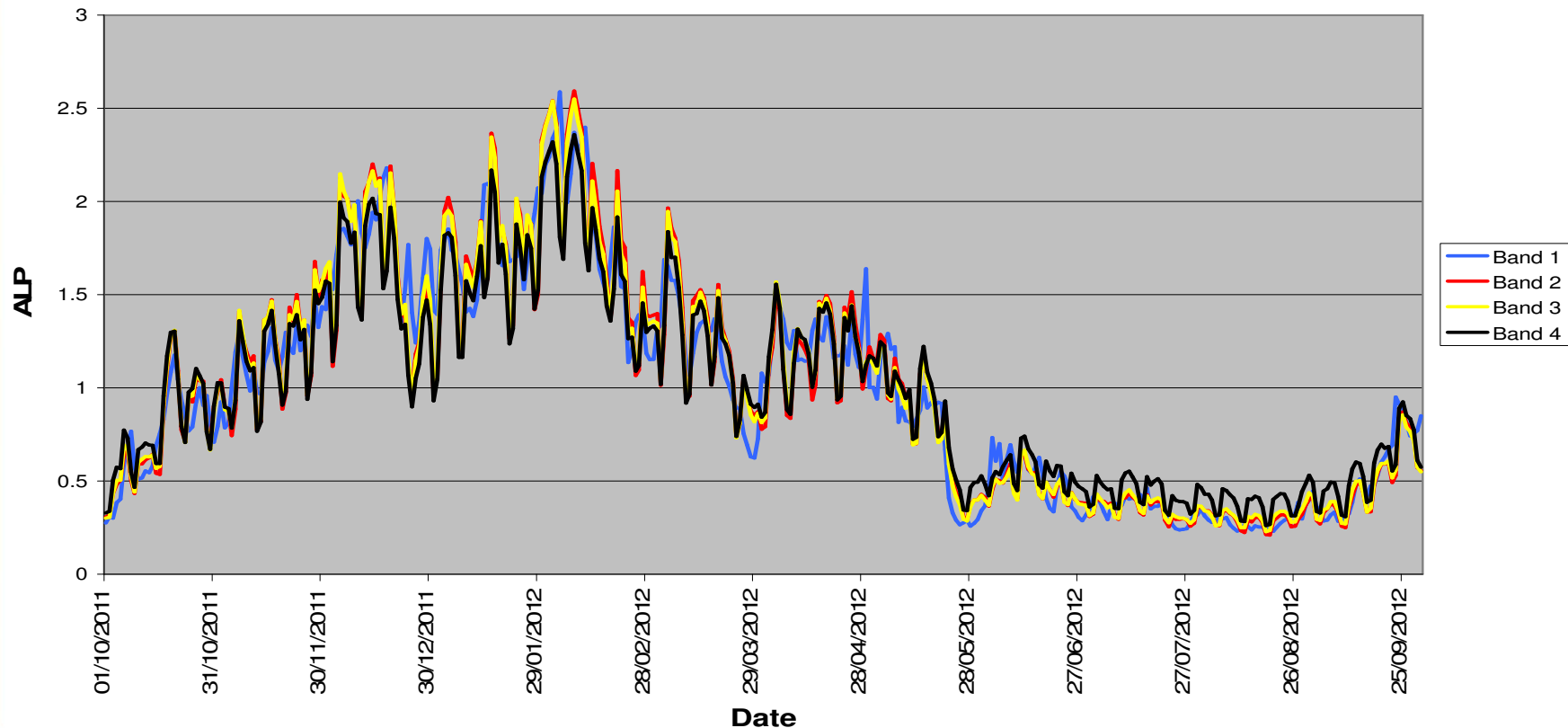
Daily Average Energy Consumption 2011/12



Daily Average Energy Consumption 2011/12



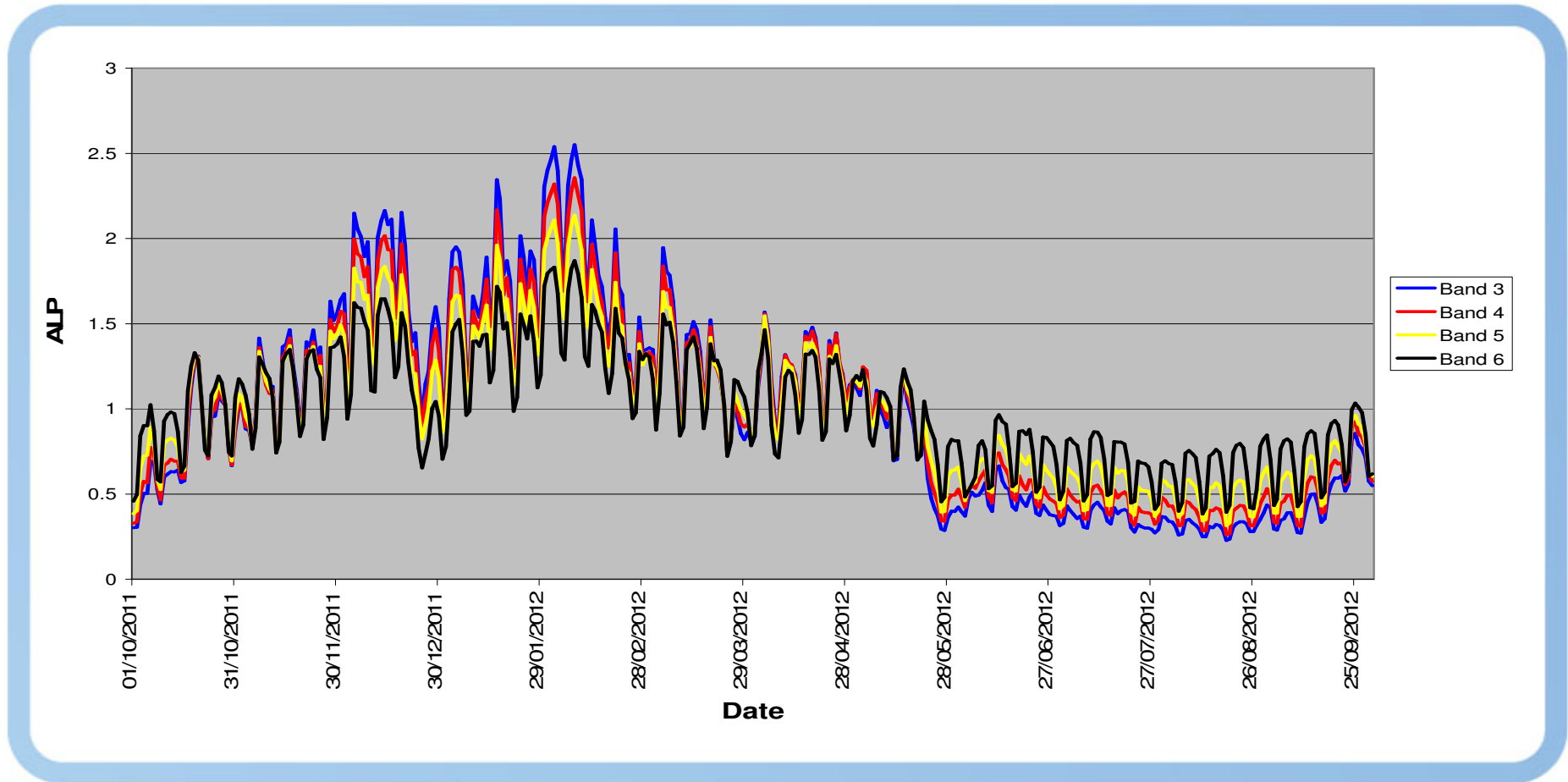
ALPs 2011/12



The ALP has been calculated by calculating the sum of the energy for the day (by band) and dividing that by the average of the sum for the whole year (by band).



ALPs 2011/12

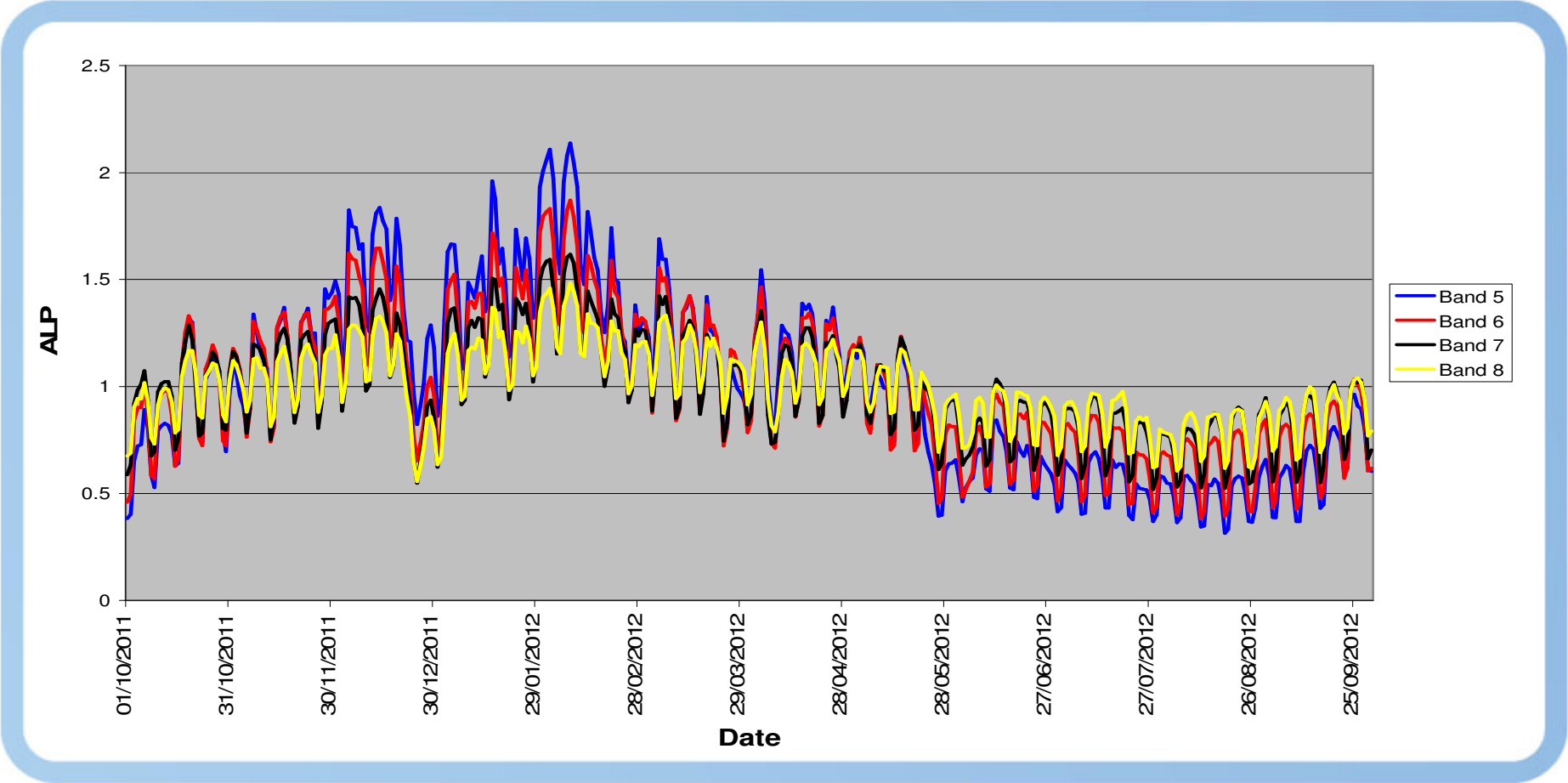


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ALPs 2011/12



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Intercept Analysis

The next piece of analysis carried out was based on the cwv (x) intercept across the current EUC bands i.e. what the cwv is when demand (y) is zero – and how this varies across the bands.

To do this, regressions were calculated by:

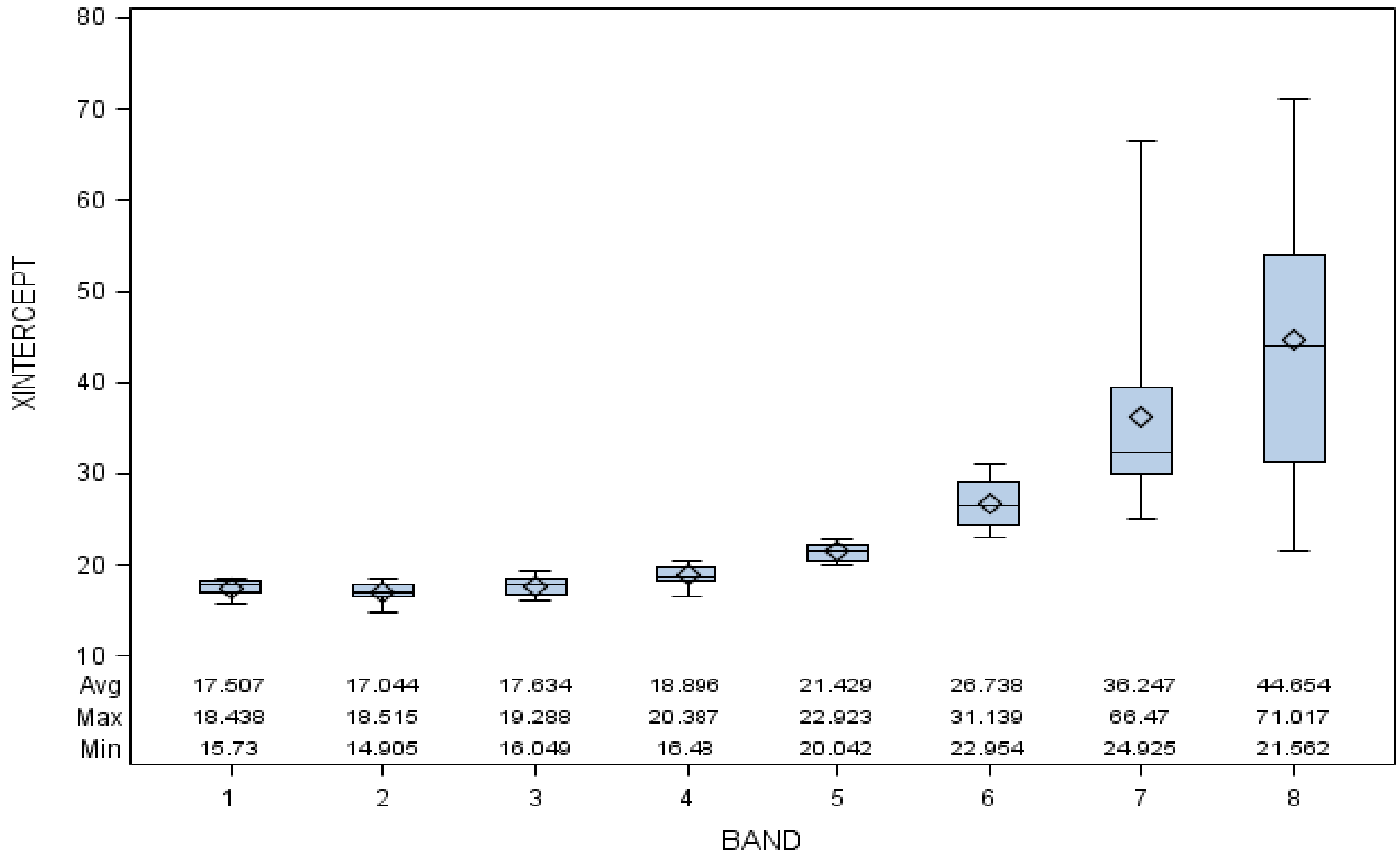
- aggregating demand at LDZ level
- using the LDZ cwv
- Mon – Thu (excluding holidays)

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Box plot of cwv (x) intercept 2011/12



Intercept Analysis

From observing the cwv intercept across the current bands, it appears that there are similarities in the relationship between energy consumption and cwv for Bands 1, 2, 3 and possibly Band 4.

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Updated Recommendations / Conclusions

- No strong evidence of better break points from the data
- Daily average consumption shapes suggest the following:
 - Band 3, 4 and 5 (and possibly band 2) look very similar
 - Band 7 and 8 (and possibly band 6) look very similar
- ALP shapes also suggest that bands 2 & 3 and bands 7 & 8 look very similar
- Possible scope to rationalise Bands 3 to 5 and 6 to 8
- Simpler solution is use of more aggregation in modelling
- More complex change is to alter EUC Bands and/or reduce number of bands

TWG views now invited

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