



DESC TWG

Updated

Shipper Data Validation

17th November 2015

- NDM sample data numbers have been decreasing over time
- UNC allows transporters to acquire NDM sample data from third parties (i.e. smart metered data)
- Action DTW0502 was established to allow us to explore this further
- The analysis is required to review the suitability of the additional data and determine whether it would be possible to use it as part of the sample data.

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- Initial analysis on the British Gas data was presented at TWG meeting on 16th Sep 2015.
- Validation rules needed to be relaxed due to some gaps in the British Gas data and to allow there to be two comparable data sets.
- Initial analysis suggested the data sets were not the same – this could have been due to the gaps in the data and the difference in sample sizes
- Action DTW0901: to normalise the demand using the ALP method and re-analyse the data
- Xoserve to investigate the weather sensitivity between the two data sets.

The logo for Xoserve, featuring the word "Xoserve" in a blue, sans-serif font. The "X" is stylized with two blue arrows pointing outwards from its center.

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British Gas - Analysis

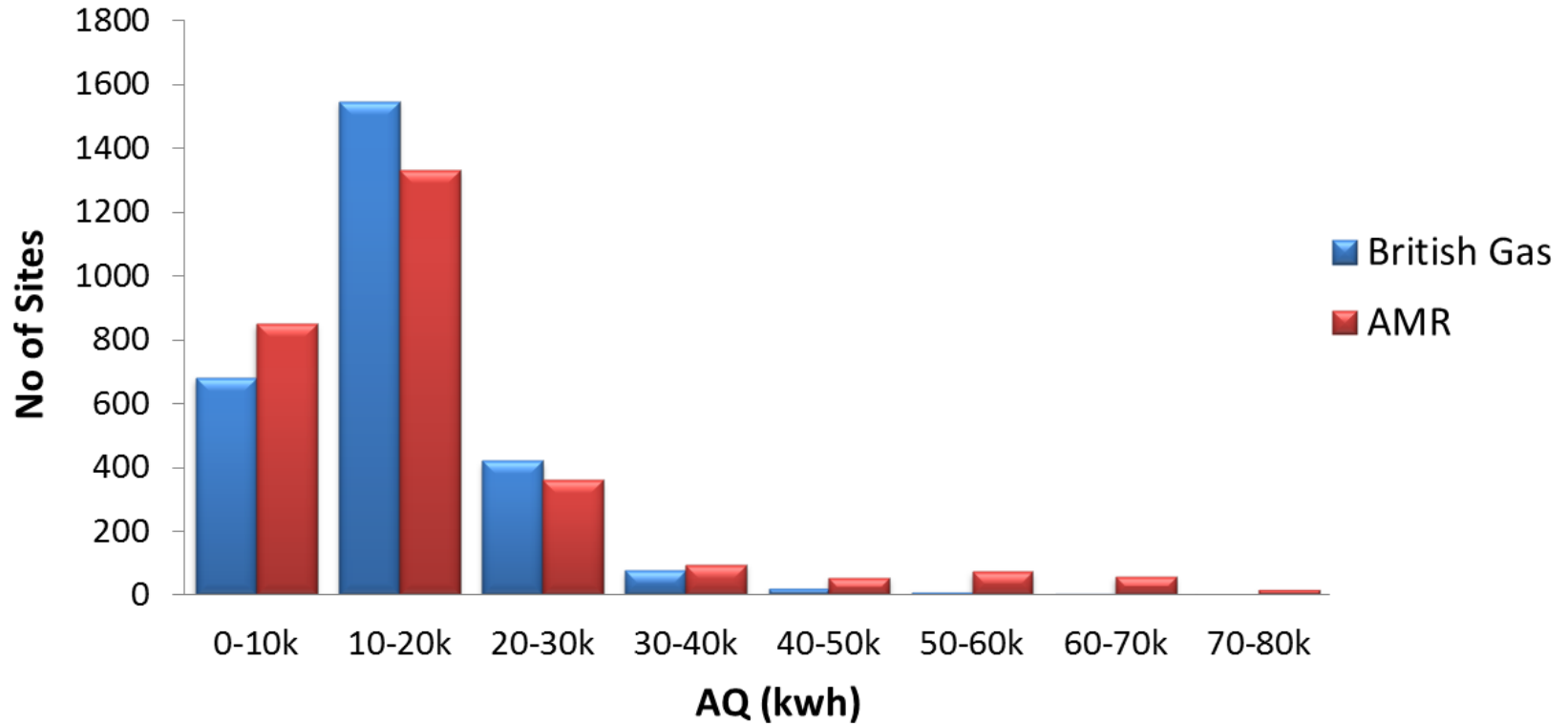
- Data sets used – Xoserve AMR sample data against British Gas data
- Date range = Apr '14 to Mar '15
- Demand data in gas day
- 01B Domestic (residential) sites used in the analysis
- **Aggregated and normalised (using the ALP method) demand by LDZ**
- Validation rules had to be relaxed to allow for the British Gas data to pass validation.
 - Existing rule is to reject those MPRNs from the analysis if they have 15 or more days of missing data over the summer. We had to increase this threshold to 40 days as none of the British Gas data would have passed validation
- AMR = 2,835 MPRNs used in the analysis
- British Gas = 2,749 MPRNs used in the analysis

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AQ distribution of British Gas & AMR sites - Band 1 Domestic



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British Gas - Analysis of Weather Sensitivity

LDZ	AMR			British Gas			Difference
	C1 (intercept)	C2 (Slope)	CWV Intercept	C1 (intercept)	C2 (Slope)	CWV Intercept	
EA	31891.48	-1722.3	18.52	44613.08	-2440.5	18.28	-0.24
EM	25892.73	-1504.4	17.21	29963.71	-1793.8	16.7	-0.51
NE	25683	-1403	18.31	18227.79	-1045.7	17.43	-0.88
NO	21032.1	-1312.5	16.02	13212	-829.5	15.93	-0.09
NT	26370.11	-1463.1	18.02	27471.99	-1507.6	18.22	0.2
NW	22720.62	-1273.7	17.84	26880.6	-1492.6	18.01	0.17
SC	24935.42	-1501.5	16.61	18886.43	-1101.8	17.14	0.53
SE	25436.2	-1436.4	17.71	10605.33	-603.5	17.57	-0.14
SO	31970.16	-1762.7	18.14	15795.82	-897.3	17.6	-0.54
SW	24571.13	-1453.9	16.9	15173.13	-883.5	17.17	0.27
WM	24837.99	-1461.3	17.00	36096.62	-2149.9	16.79	-0.21
WS	25386.45	-1427.9	17.78	14458.18	-811	17.83	0.05

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Warmer




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7 British Gas - F test and T test results (normalised demand)

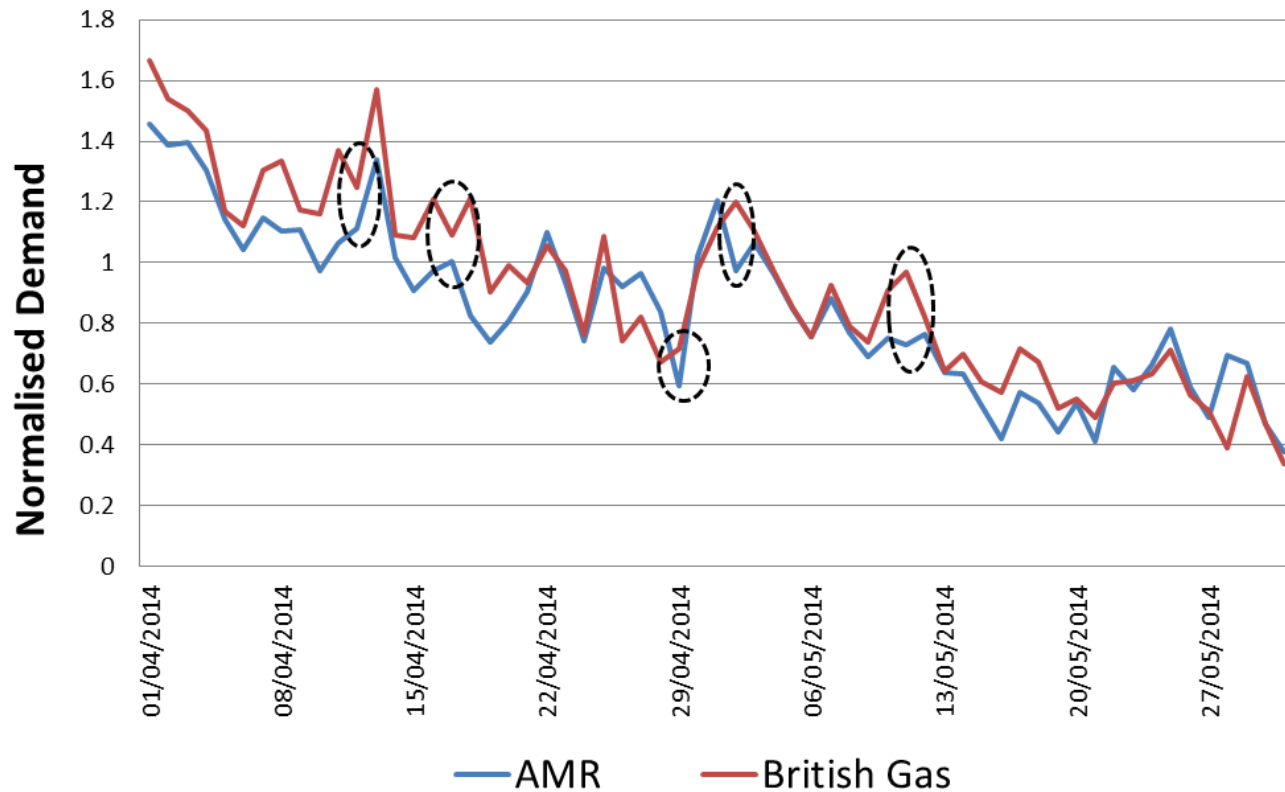
LDZ	F Test Equal Variances	T Test Equal Means	No. of sites AMR	No. of sites BG
EA	✓	✓	261	443
EM	✓	✓	241	329
NE	✓	✓	254	196
NO	✓	✓	221	157
NT	✓	✓	233	244
NW	✓	✓	225	270
SC	✓	✓	224	210
SE	✓	✓	227	89
SO	✓	✓	245	146
SW	✓	✓	234	162
WM	✓	✓	244	370
WS	✓	✓	226	133

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LDZ SC - largest differences investigated



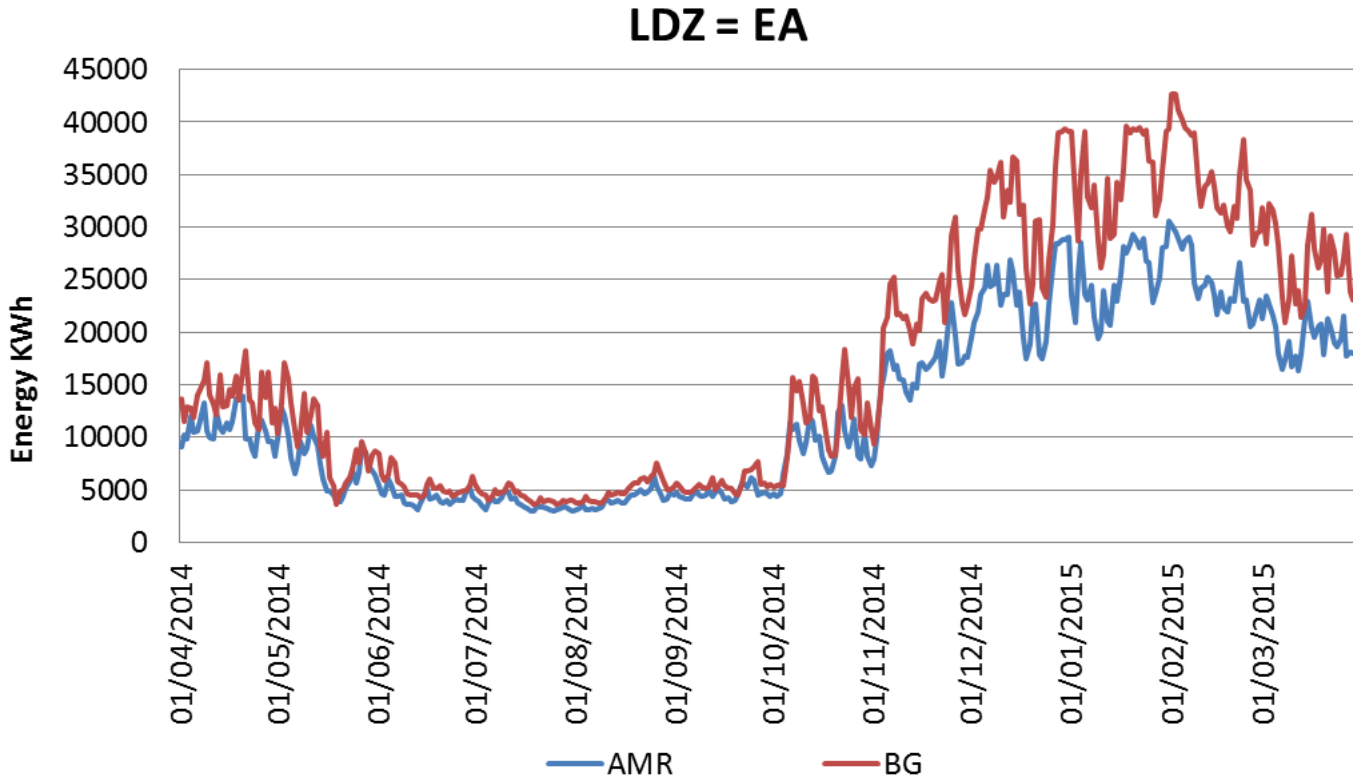
The shape of the British Gas consumption profile appears to have been affected by various days of missing data across all LDZs, which were infilled prior to the comparison being completed.

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Aggregated Demand comparison

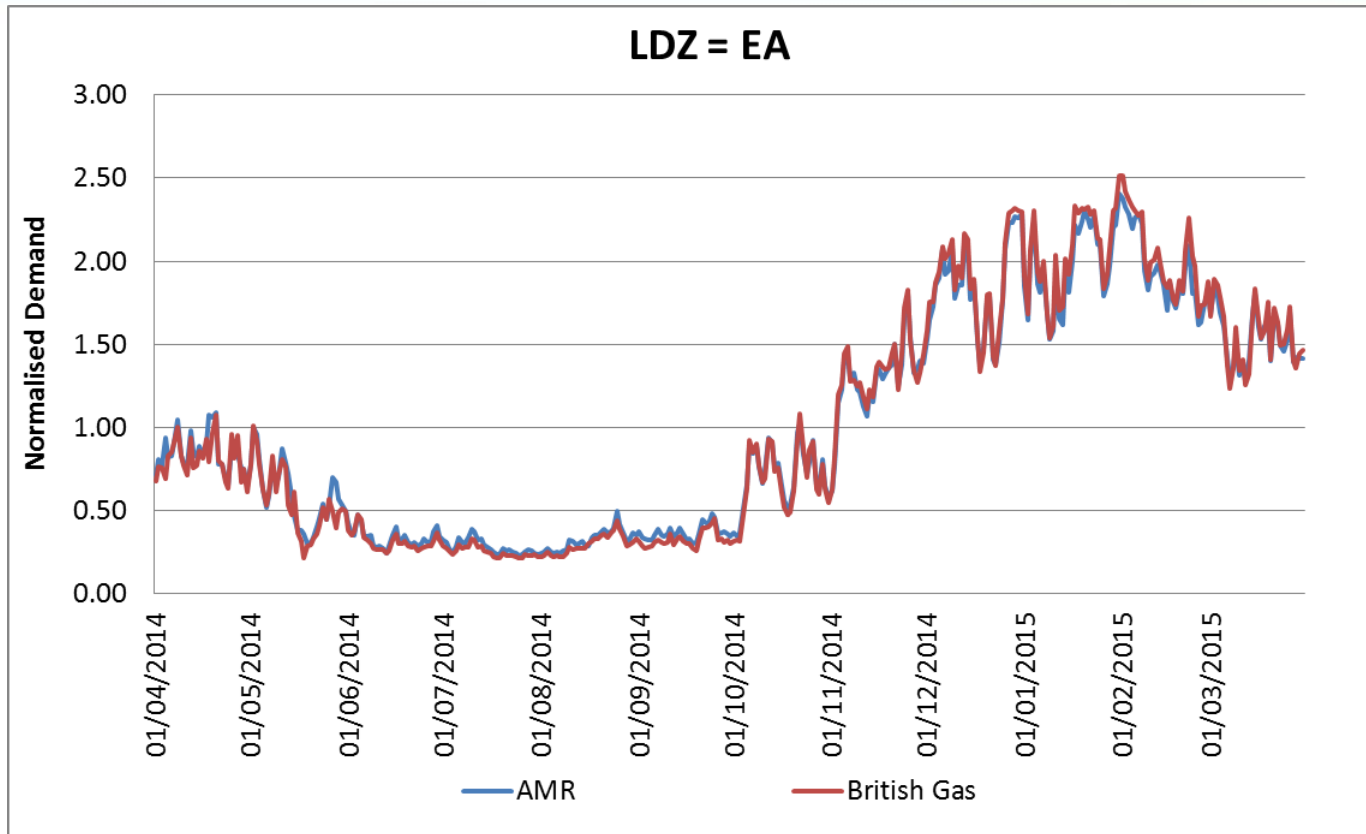


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Normalised Demand Comparison



(Note – Normalised demand graphs for all other LDZs can be found in the appendix)

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- Data sets used – Xoserve Data Logger sample data against E.ON data
- Date range = Apr '14 to Mar '15
- Demand data aggregated in gas day
- **E.ON Band 1** – small I&C sites used in the analysis
- Aggregated and normalised (using the ALP method) demand by LDZ
- Compared against Band 2 Data Loggers as no small I&C sites in 01B sample
- NE and SE are the only LDZs with a suitable number of sites (that passed validation) to analyse
- **E.ON Band 2** – only enough sites to analyse that passed validation in LDZ NE
- Aggregated and normalised (using the ALP method)

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E.ON – Summary of sites that passed validation

	Small				Large				
LDZ	01	02	03	04	05	06	07	08	09
EA	8	6	11	12	4	2	1	0	0
EM	0	2	11	7	3	3	0	0	0
NE	39	55	13	11	1	1	0	0	0
NO	1	11	4	4	0	1	0	0	0
NT	2	6	19	16	5	0	1	0	0
NW	4	14	18	10	3	1	1	0	0
SC	1	7	12	14	1	1	0	0	0
SE	34	12	20	4	2	1	0	0	0
SO	6	7	9	10	2	0	0	0	0
SW	3	11	7	8	1	1	1	0	0
WM	4	5	10	12	2	0	0	0	0
WN	0	2	4	0	0	1	0	0	0
WS	0	4	3	3	0	0	0	0	0
Total	102	142	141	111	24	12	4	0	0

Note: Circled are the LDZs that had a suitable number of sites that passed validation and allow for a fair analysis against Data Loggers

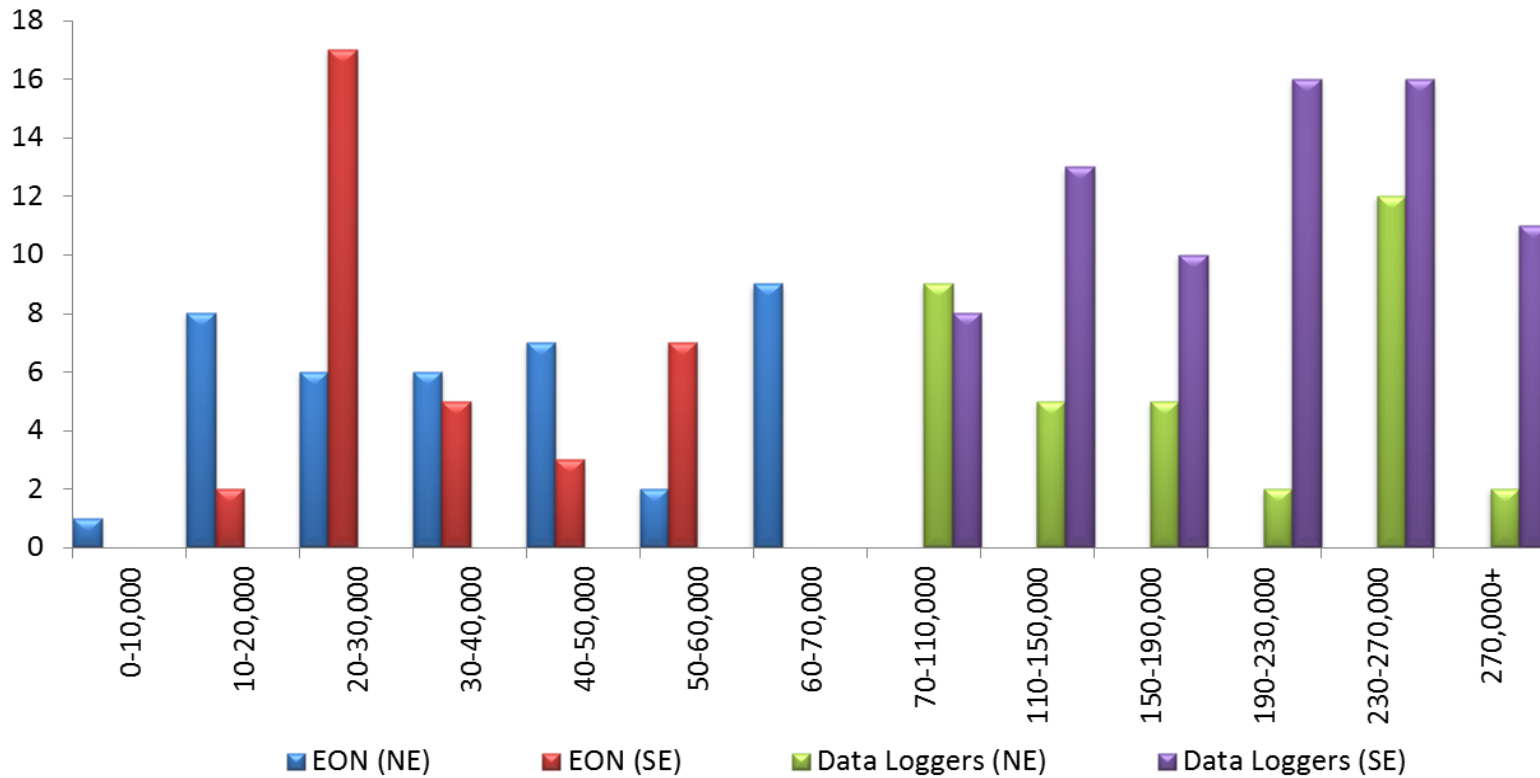
Sites in 01B are small I&C sites.

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AQ Distribution: E.ON sites vs Data Loggers



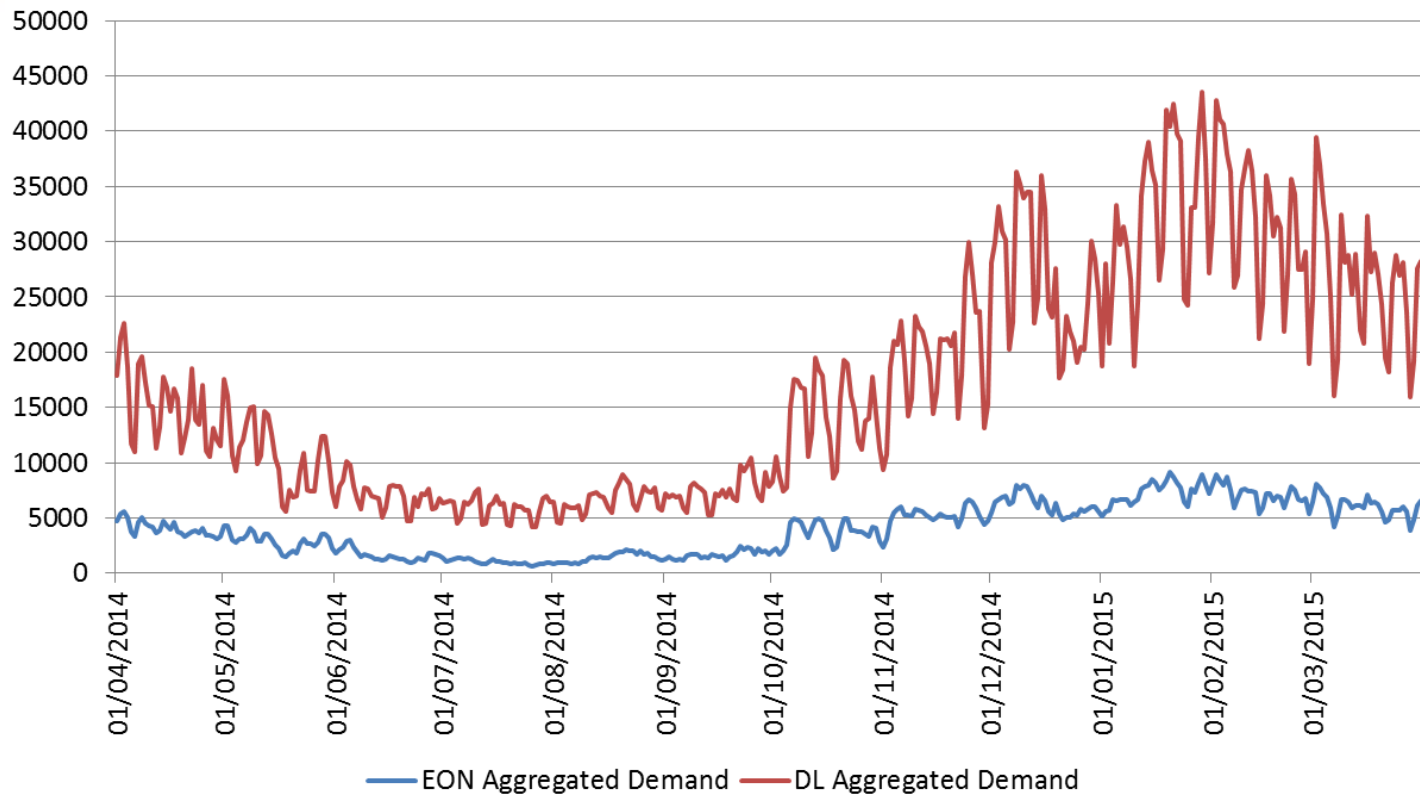
E.ON 01B sites (small I&C) were analysed against Data Loggers in 02B – as Band 1 sites in the sample consist of domestic users only.

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E.ON 01B Small I&C vs Data Loggers 02B – LDZ NE

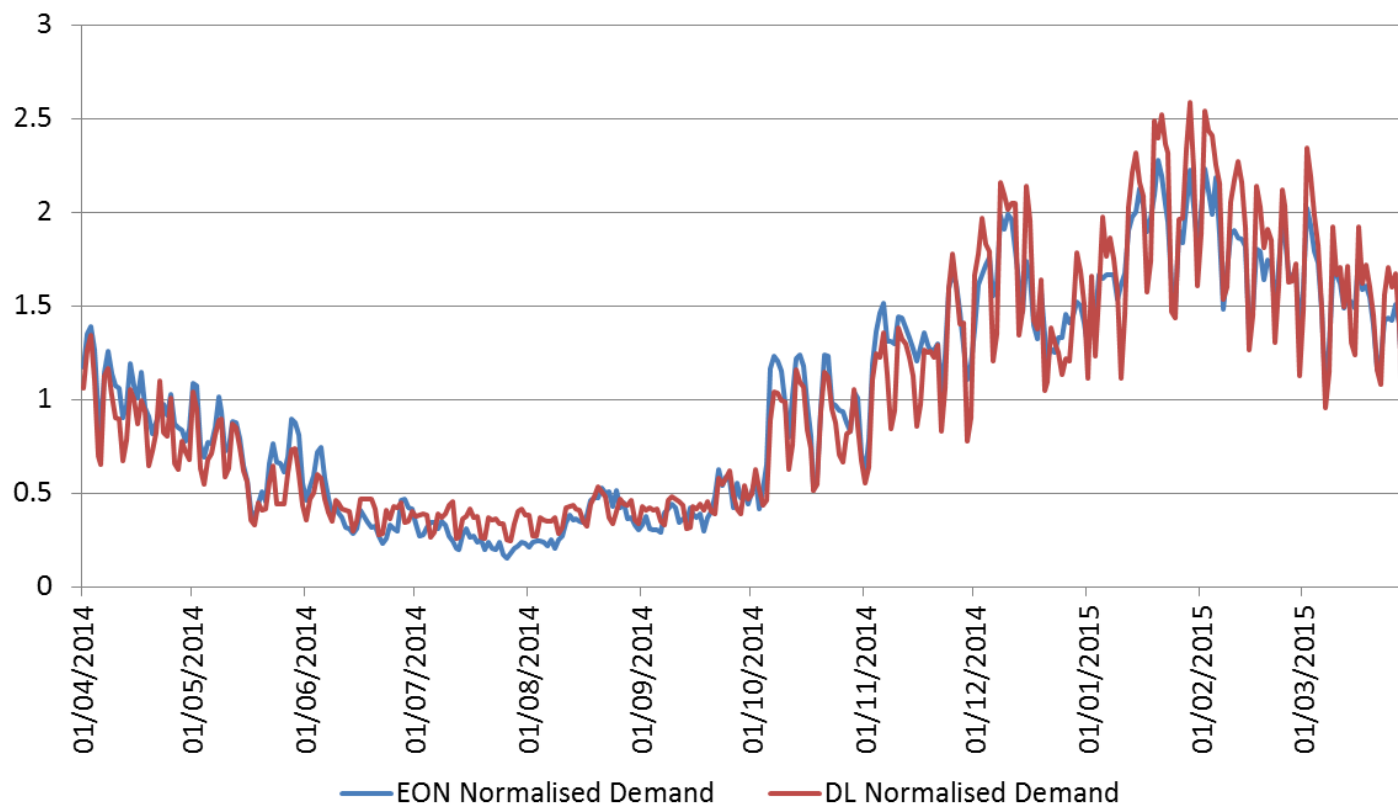


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E.ON 01B Small I&C vs Data Loggers 02B – LDZ NE

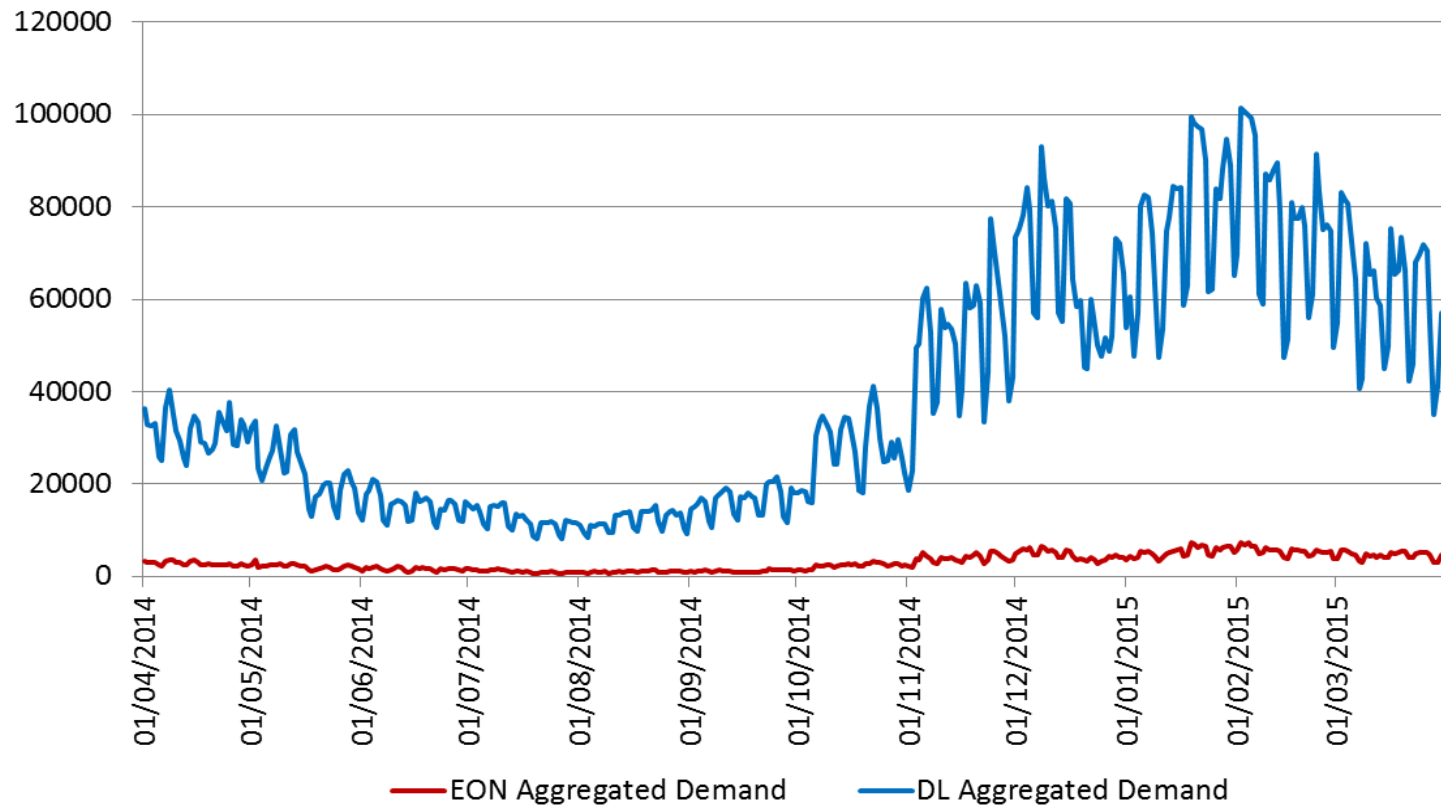


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E.ON 01B Small I&C vs Data Loggers 02B – LDZ SE

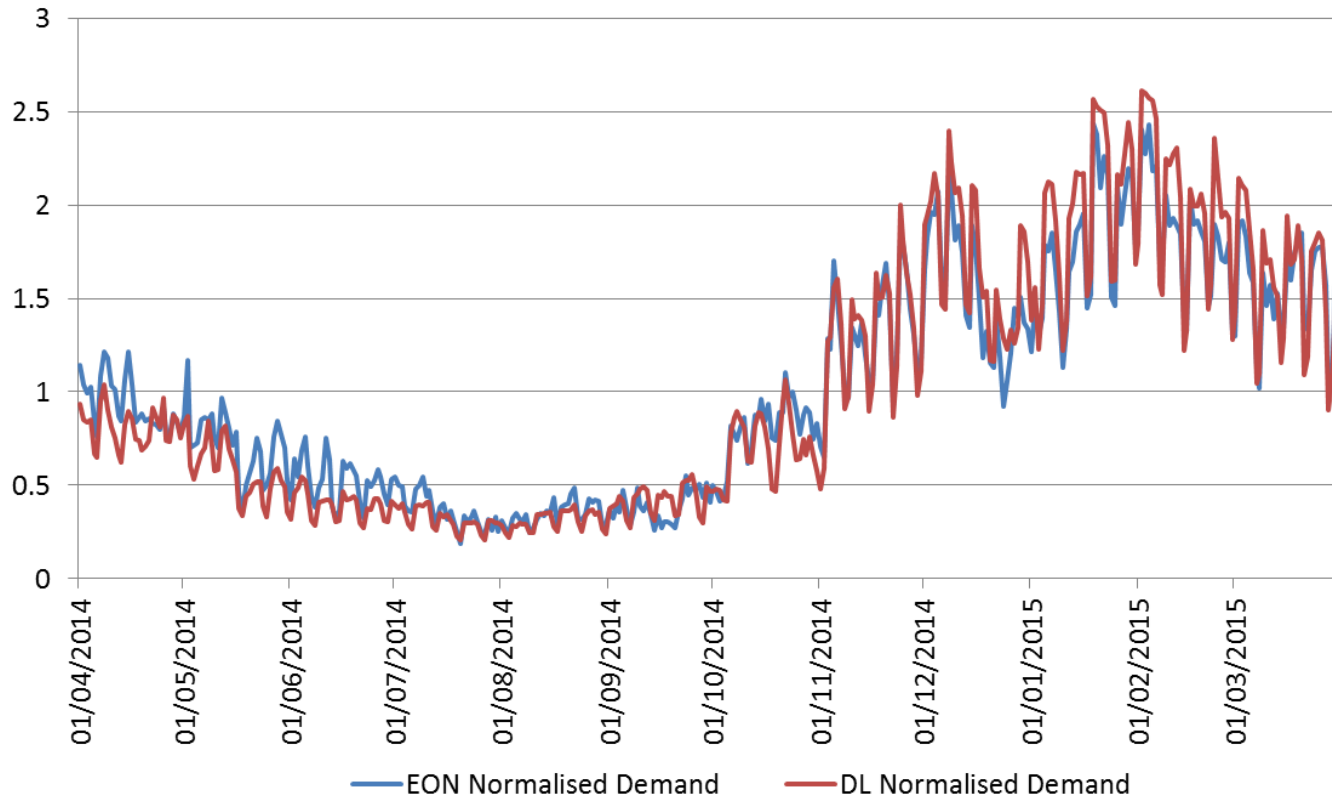


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E.ON 01B Small I&C vs Data Loggers 02B – LDZ SE



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F-test and T-test:

NE:

The results from the F and T tests indicate that when using the normalised demand, E.ON and Data Logger demands have equal variances and their means are not statistically different from one another.

SE:

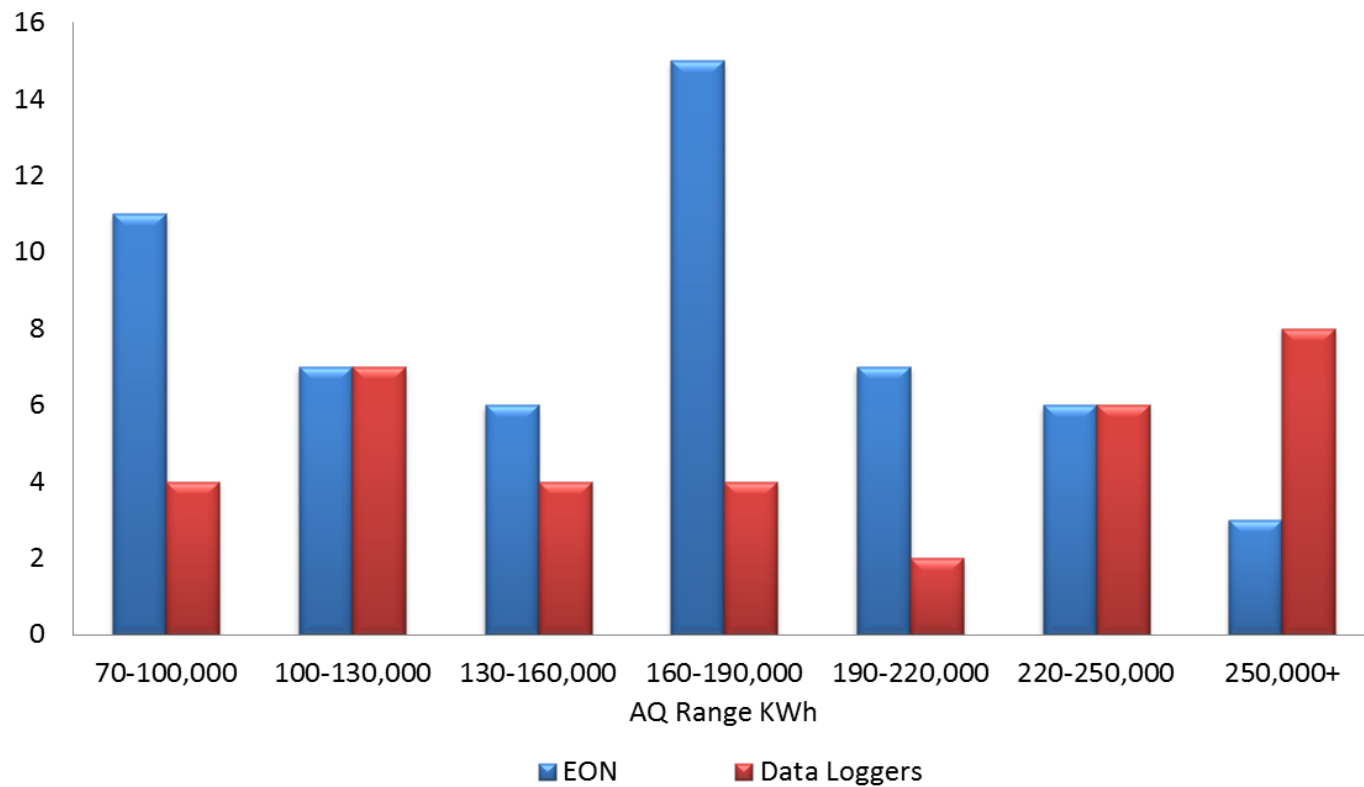
The results from the F and T tests indicate that when using the normalised demand, E.ON and Data Logger demands have unequal variances but their means are not statistically different from one another.

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AQ distribution of E.ON & Data Logger sites - Band 2 LDZ NE

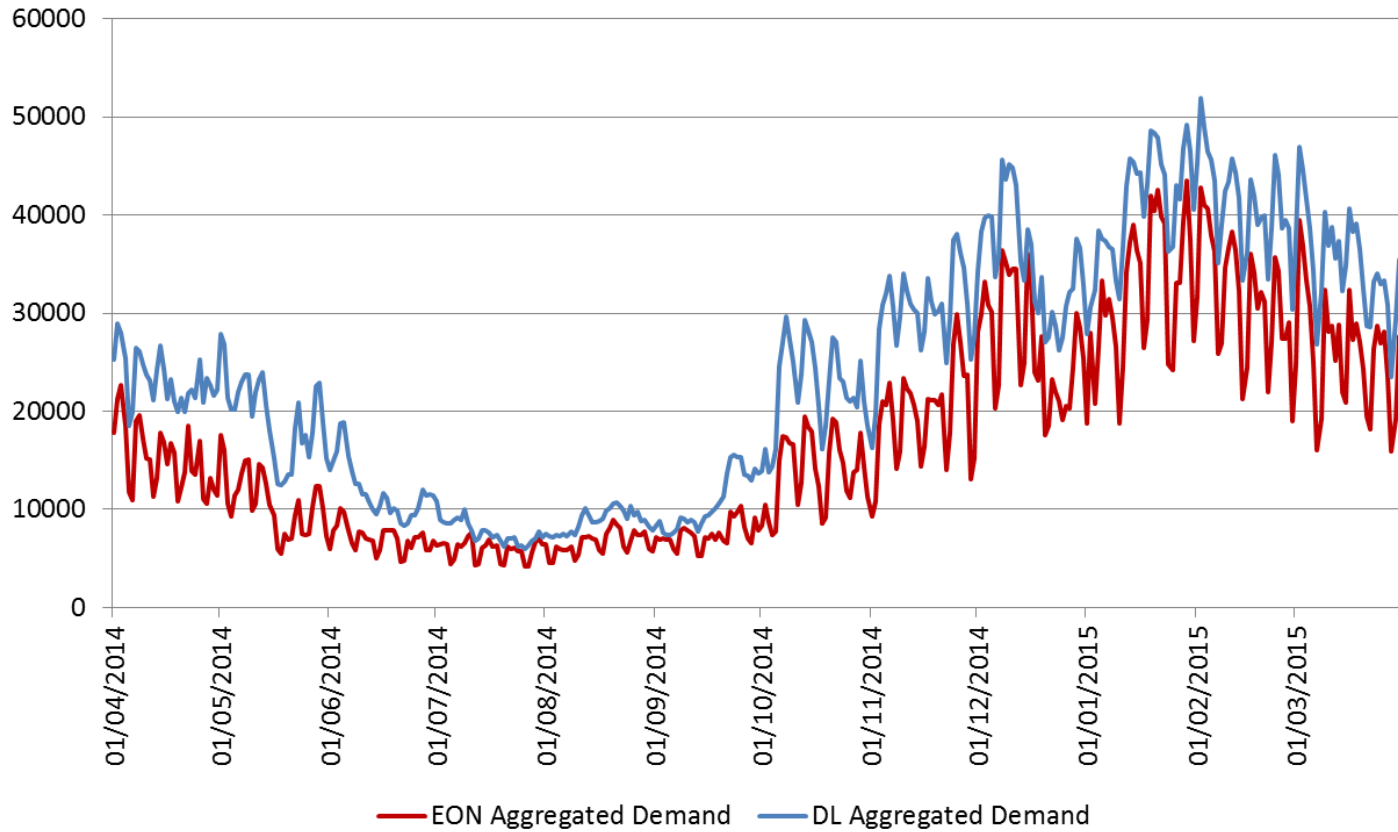


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Aggregated Demand LDZ NE Band 2

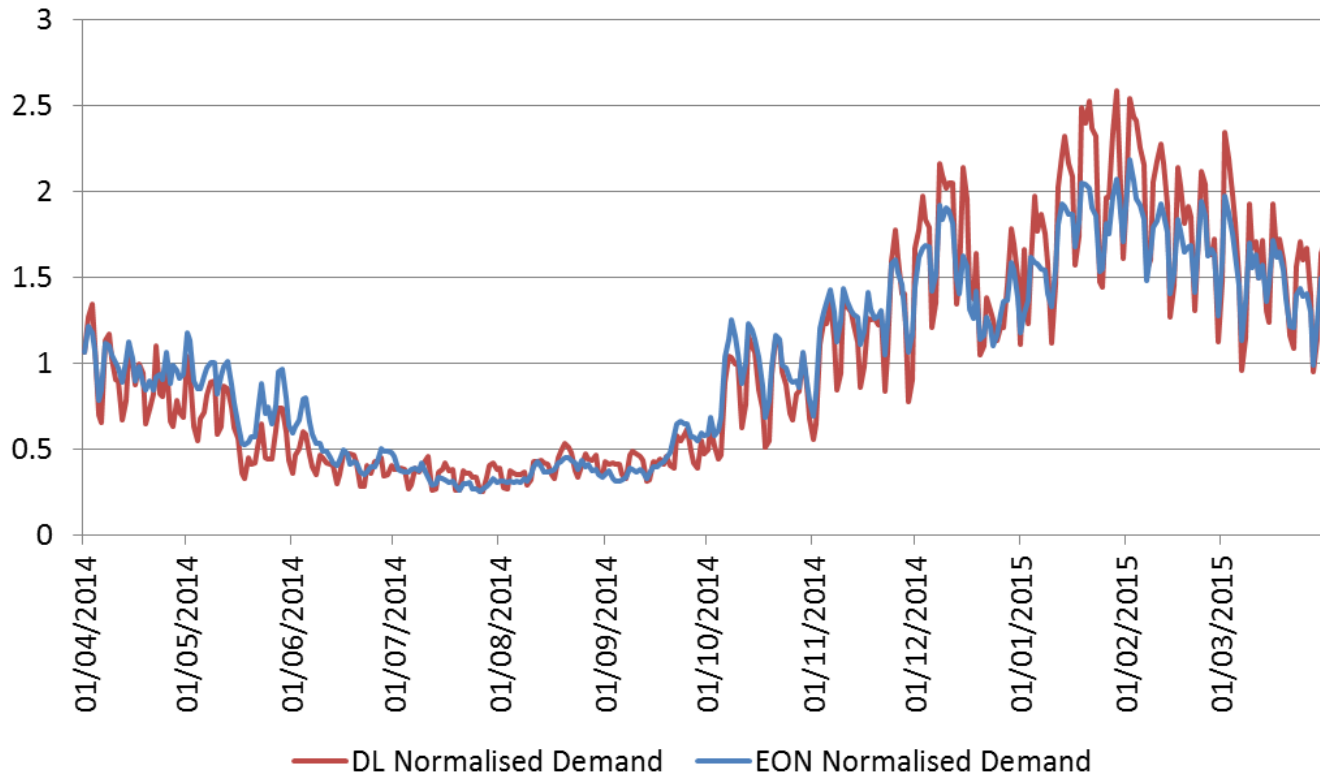


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Normalised Demand LDZ NE Band 2



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LDZ NE Band 2 Analysis

F-test and T-test:

The results from the F and T tests indicate that when using the normalised demand, E.ON and Data Logger demands have unequal variances but their means are not statistically different from one another.

Weather Sensitivity comparisons:

	C1 (intercept)	C2 (Slope)	CWV Intercept
EON	2.08	-0.1	21.58
Data Loggers	2.48	-0.1	17.35
Difference	-0.4	0	4.23

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- Xoserve can utilise 3rd party supplied NDM Sample data provided that:
 - the data is provided in the agreed format
 - data is provided on a frequent basis (preferably monthly)
 - missing consumption data is minimised
- The views of TWG DESC members are sought on the possible inclusion of 3rd party NDM Sample data, for use in future data modelling

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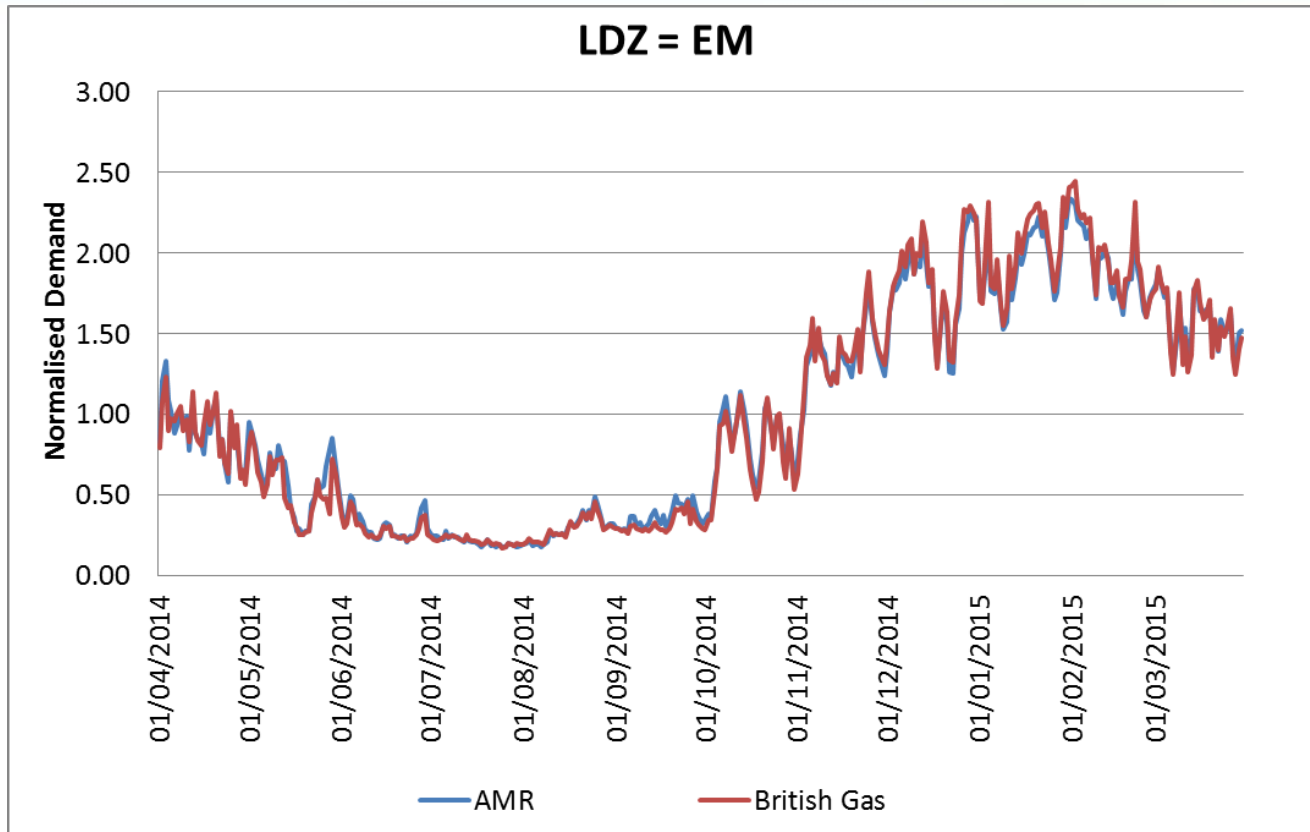


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Appendix

Normalised Demand

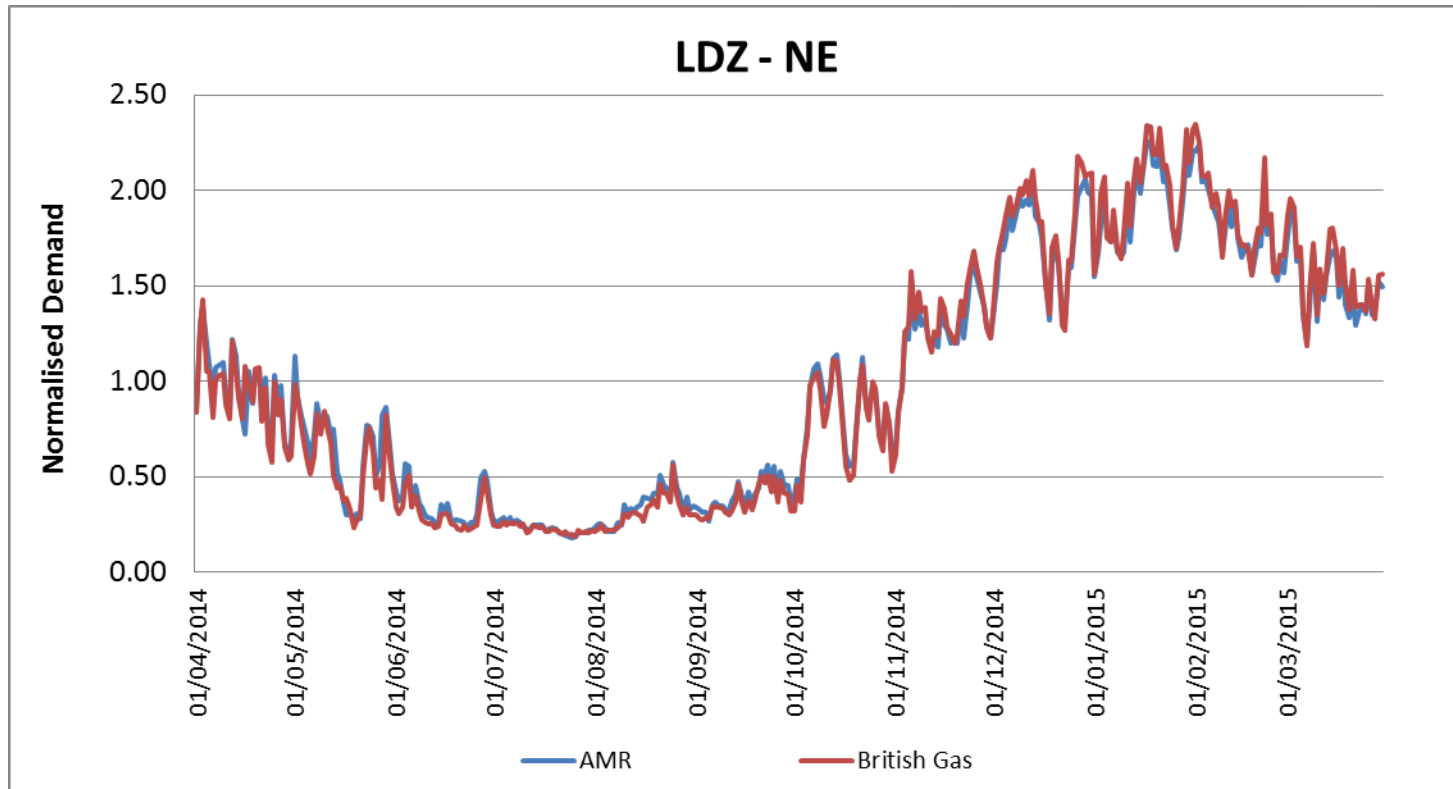


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Normalised Demand

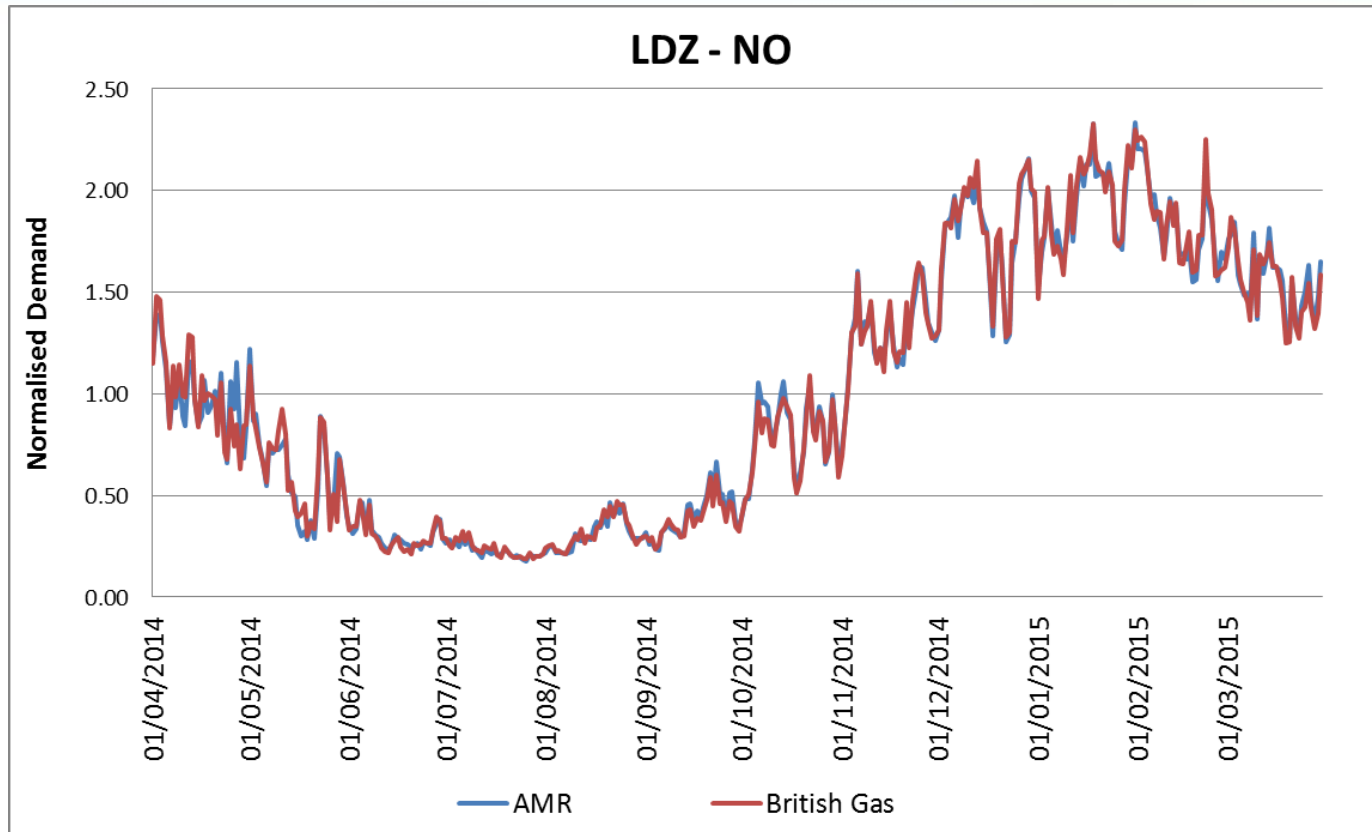


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Normalised Demand

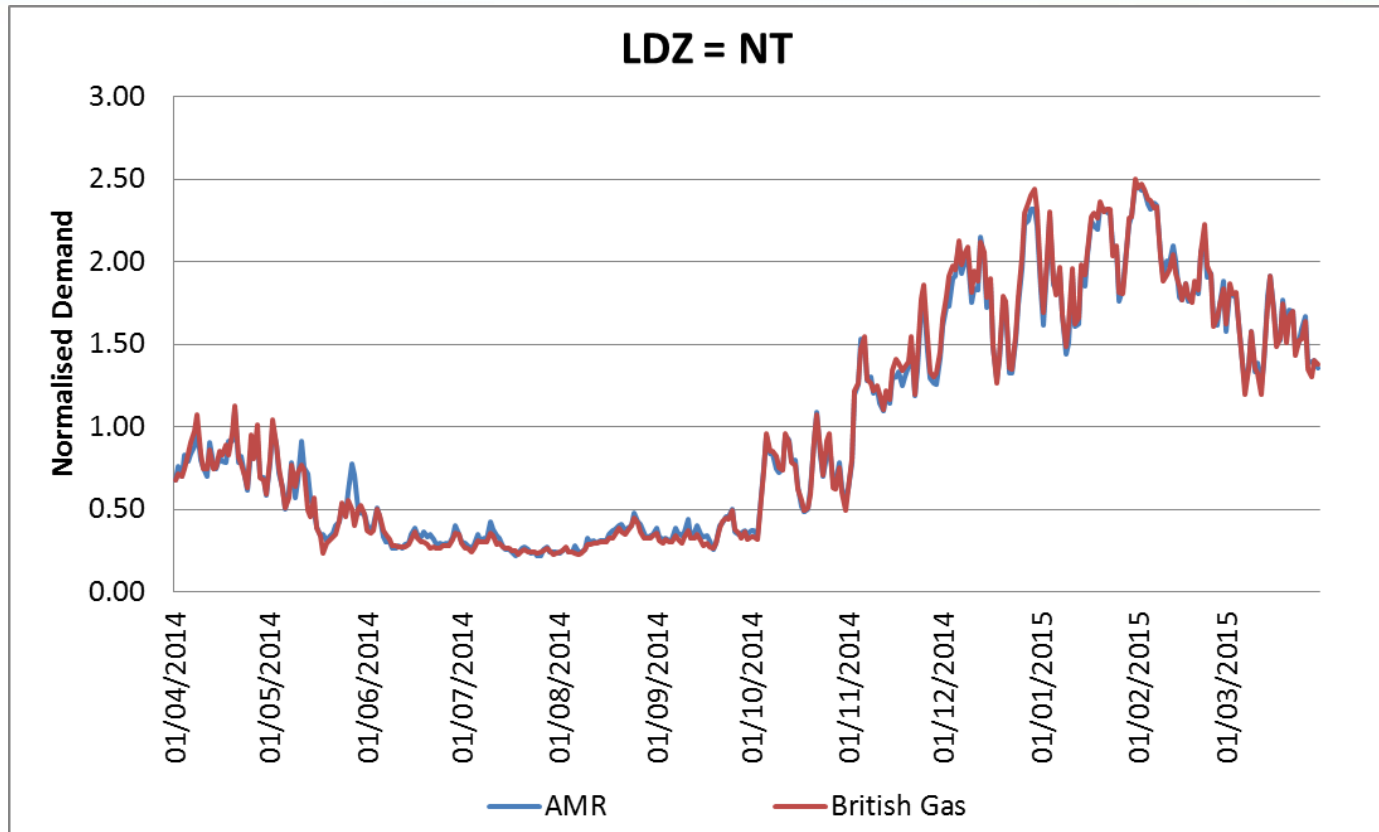


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Normalised Demand

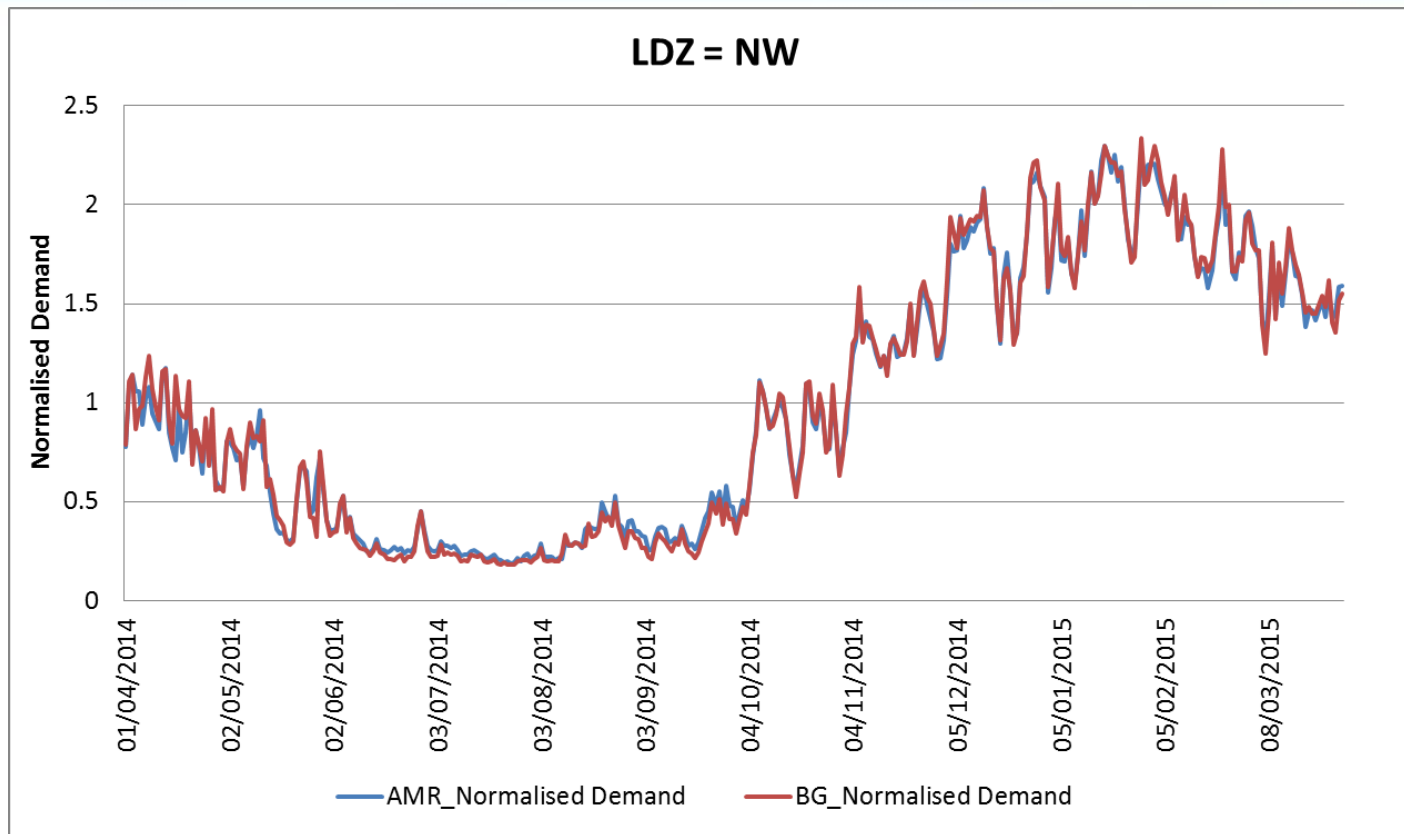


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Normalised Demand

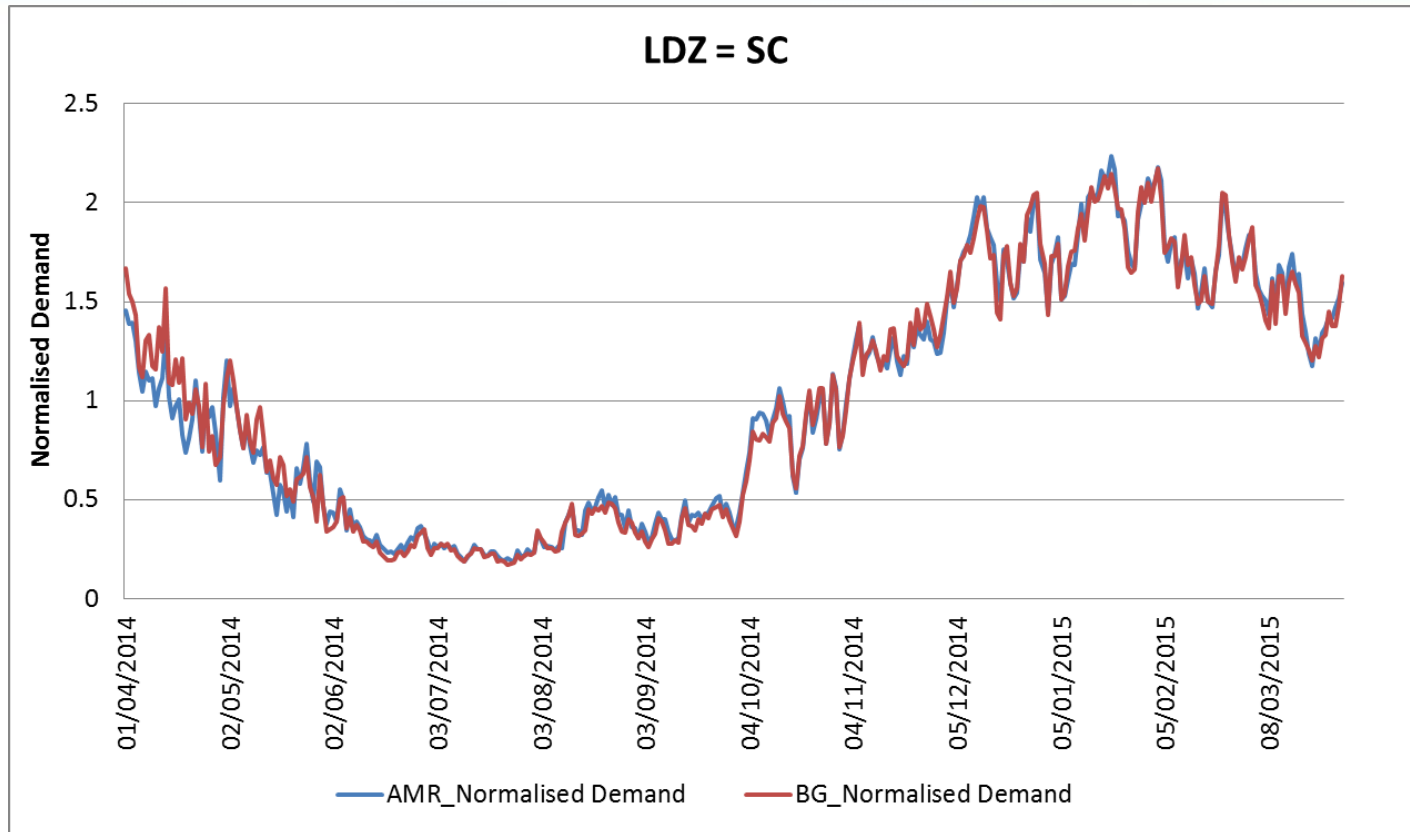


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Normalised Demand

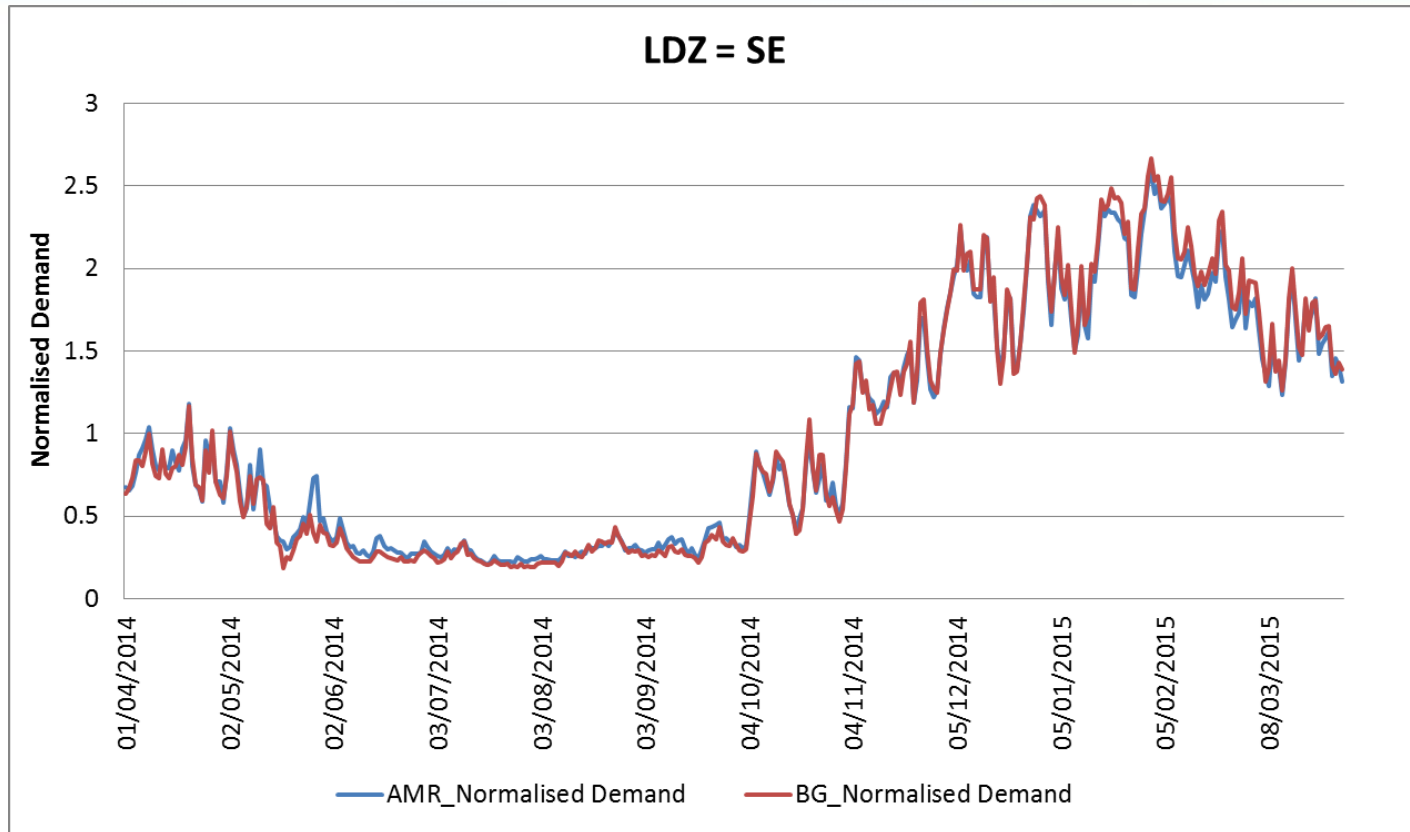


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Normalised Demand

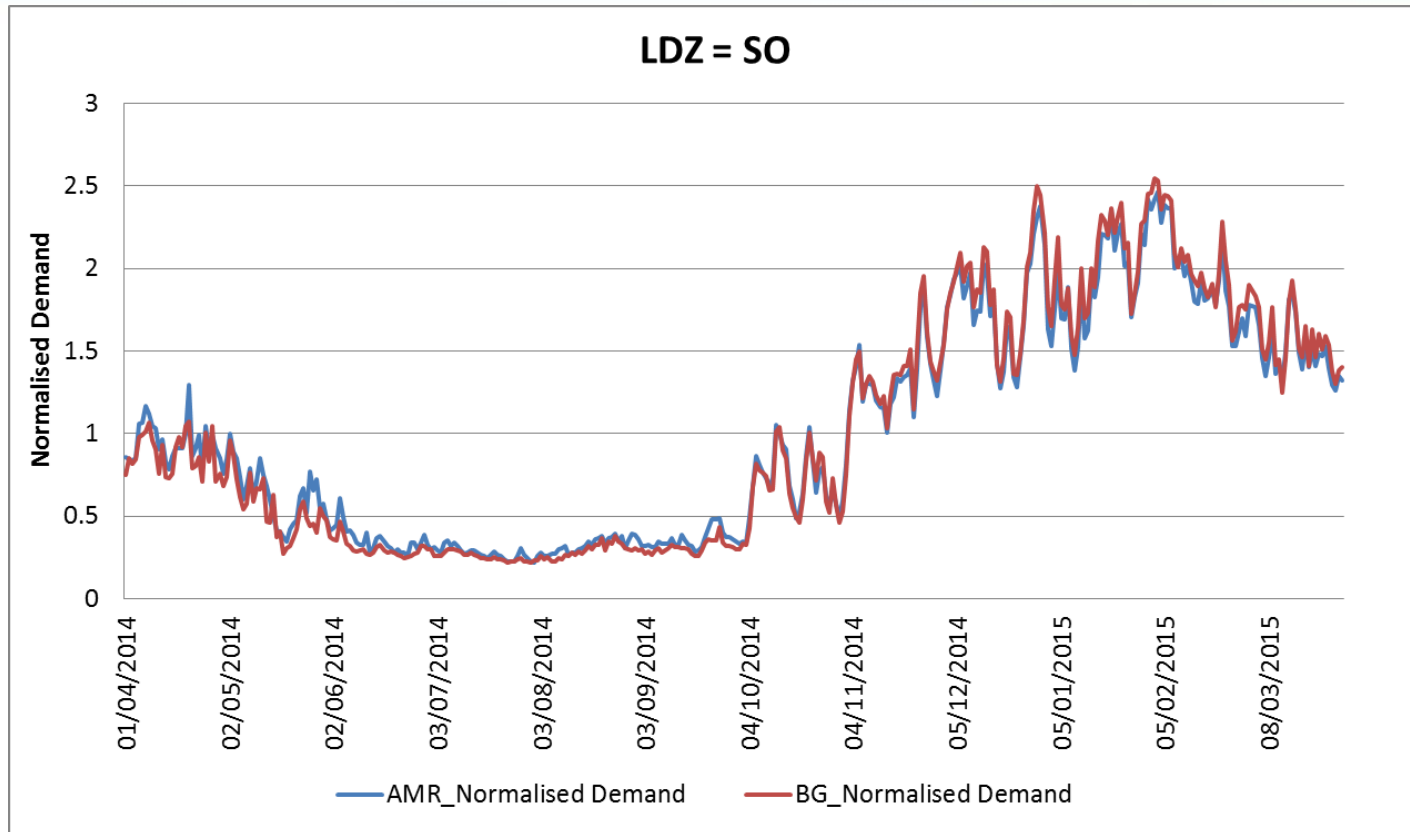


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Normalised Demand

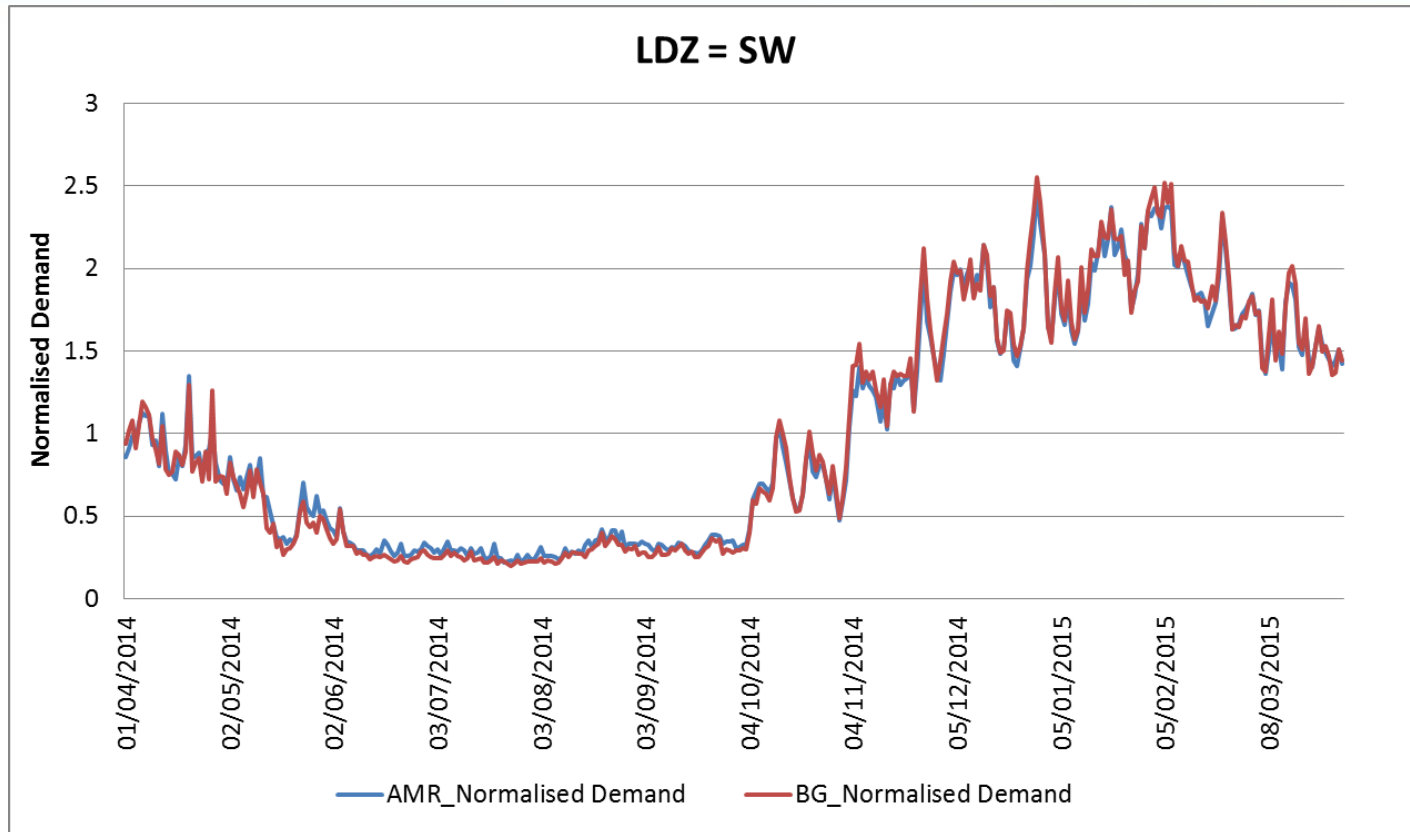


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Normalised Demand

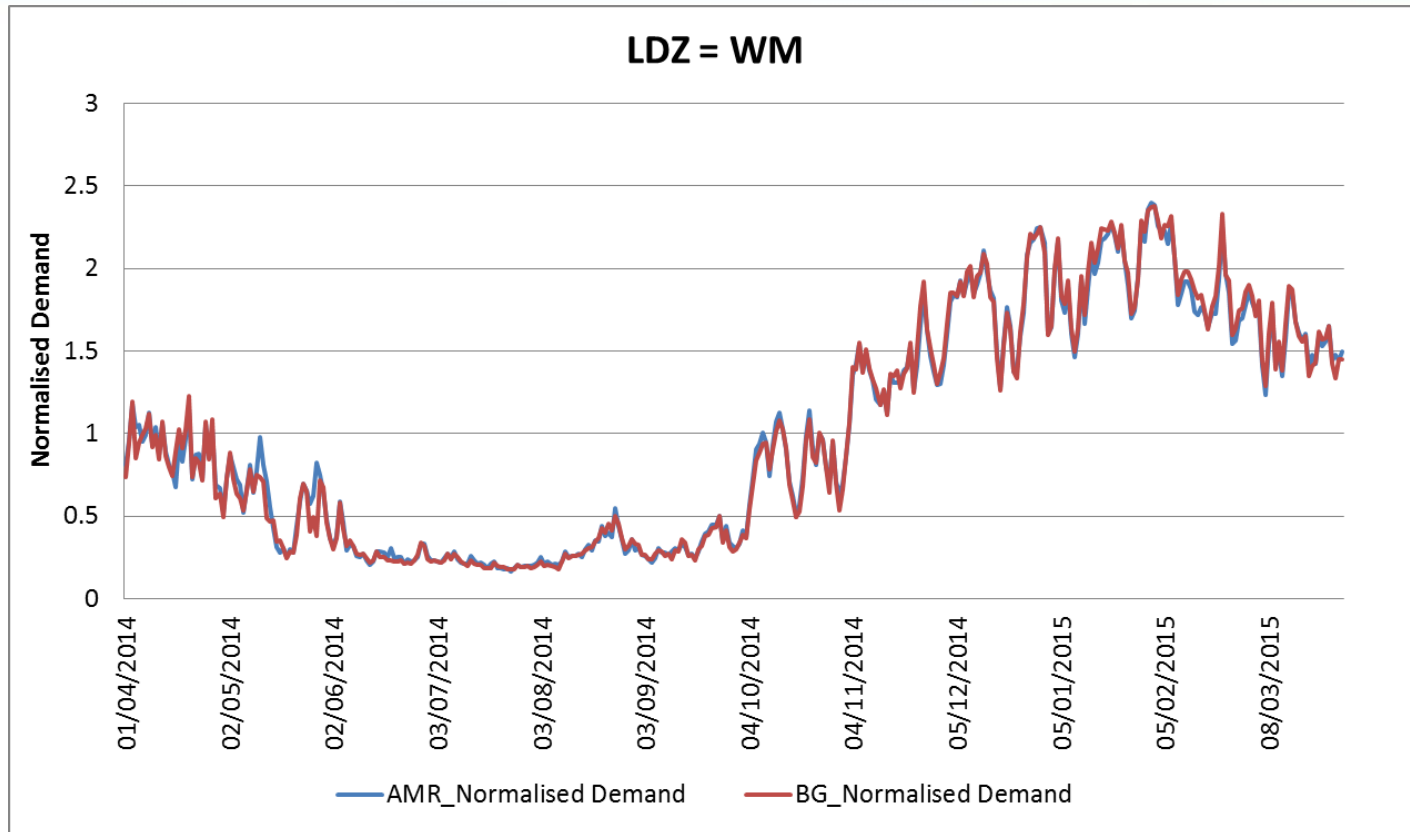


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Normalised Demand

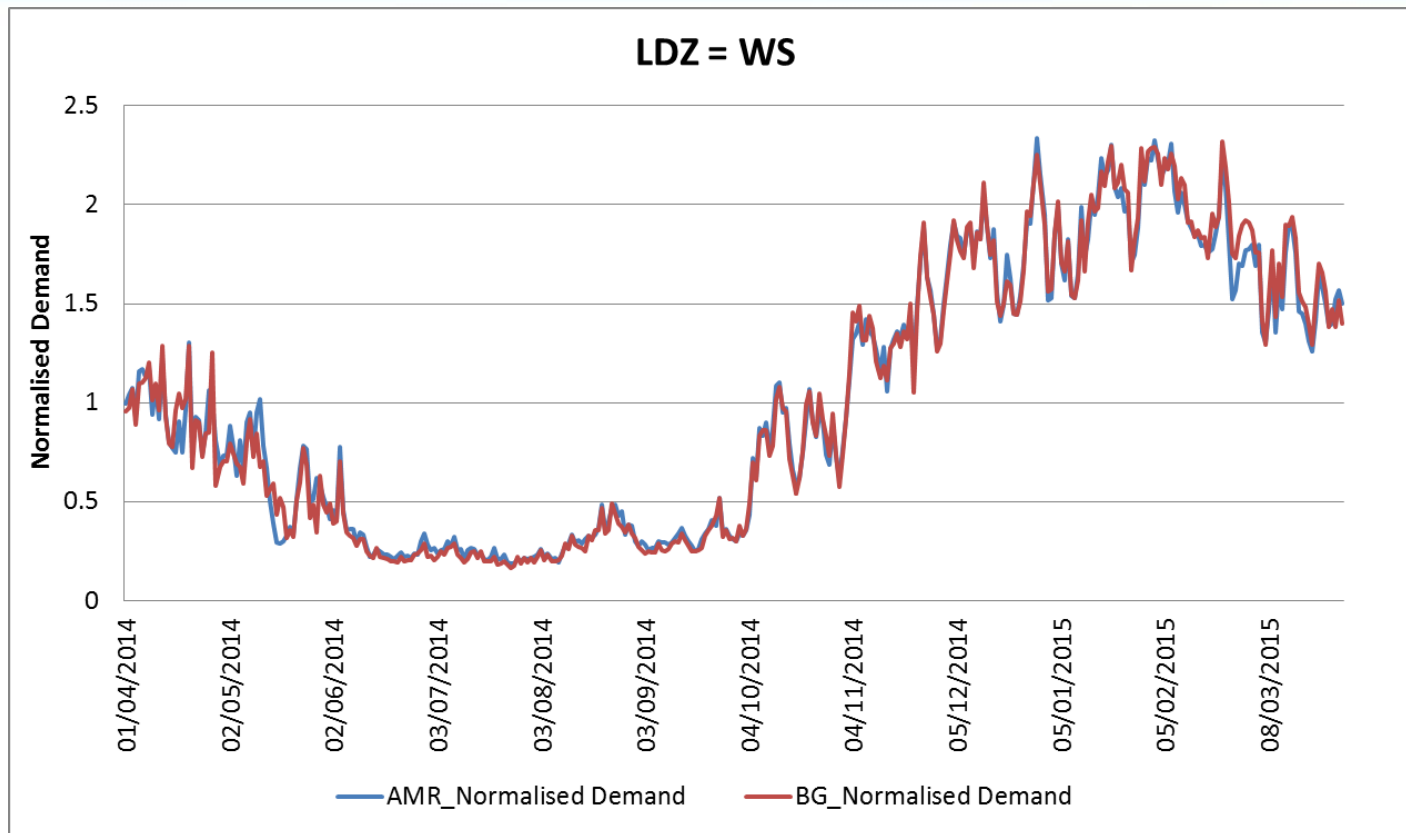


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Normalised Demand



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