



Analysis on Revised Meter Reading Validation Tolerances proposed by Xoserve for Project Nexus

September 2014

Aim and data

- Aim of analysis:
 - To provide further insight to how the revised proposed read validations affect MPR's across ranges of AQ, compared to the old ones.
- Data used in the analysis – same data set as previously used:
 - MPRNs supplied by British Gas for the whole period 01/10/2012 to 01/10/2013.
 - Single LDZ sampled .
 - AQ's below 293,000 kWh.
 - MPRNs with meter exchanges in this period excluded.
 - All reads where a URS10 flow showing acceptance by Xoserve under the current processing rules were used. No reads that were rejected under the current rules were used.
 - This gave a data set of over 600k MPRNs and over 100k reads per month.

Method

- Simulations were undertaken for the sample and extrapolated up to 23 million meter points (estimate of UK gas market including IGT' s) to assess:
 1. The results from the changes to the read tolerances - Meter Read Validation presentation delivered at the workgroup on 11th August 2014. (<http://www.gasgovernance.co.uk/nexus/110814>)
- Method
 - 15 monthly iterations were run, in line with the monthly AQ timetable.
 - For each month, reads were selected between the 10th of the preceding month and the 10th of the current month.
 - Consumption between the previous accepted read and the current read was calculated and acceptance/rejection calculated based on the Nexus rules without any override flags(see appendix).

Results from previous proposed tolerances

- **Estimated average volumes of reads that would fail previous tolerances (extrapolated for the UK)**

- AQ's of 1 consistently fail.
- 67% of all tolerance failures are due to consumptions decreasing to much.
- Over 50% of all tolerance failures occur to MPR's with an AQ less than 9,000 kWh.
- 25% of all tolerance failures occur to supplies with AQ less than 3,000 kWh

AQ when tolerance failure occurred	% of Average Tolerance Failures per AQ band	Average Tolerance Failures per month for UK	% of UK supplies with reads that failed due to		% Currently accepted reads that failed Tolerance check
			Upper tolerance	Lower tolerance	
above 73200	1%	4,309	4%	96%	0.22%
60001 to 73200	0%	1,579	20%	80%	0.08%
50001 to 60000	0%	1,563	20%	80%	0.08%
40001 to 50000	1%	2612	17%	83%	0.14%
30001 to 40000	2%	6483	16%	84%	0.34%
20001 to 30000	8%	29,633	10%	90%	1.55%
10001 to 20000	31%	122,617	10%	90%	6.40%
9001 to 10000	5%	18,584	15%	85%	0.97%
8001 to 9000	5%	18,253	19%	81%	0.95%
7001 to 8000	5%	18,572	25%	75%	0.97%
6001 to 7000	4%	17,493	31%	69%	0.91%
5001 to 6000	4%	16,865	38%	62%	0.88%
4001 to 5000	4%	16,889	47%	53%	0.88%
3001 to 4000	5%	18,032	55%	45%	0.94%
2001 to 3000	5%	18,979	64%	36%	0.99%
1001 to 2000	6%	23,070	68%	32%	1.20%
501 to 1000	3%	13,514	72%	28%	0.71%
251 to 500	2%	8,193	67%	33%	0.43%
101 to 250	2%	7,04	65%	35%	0.37%
2 to 100	3%	10,469	55%	45%	0.55%
equals 1	4%	16,093	100%	0%	0.84%
Grand Total	100%	390,808	33%	67%	20.39%

Results from revised proposed tolerances

- **Estimated average volumes of reads that would fail new tolerances (extrapolated for the UK)**
 - Reduction of 64% in the number of reads failing without an override flag
 - No reads indicating a reduction in consumption are rejected

AQ when tolerance failure occurred	% of Average Tolerance Failures per AQ band	Average Tolerance Failures per month for UK	% of UK supplies with reads that failed due to		% Currently accepted reads that failed Tolerance check
			Upper tolerance	Lower tolerance	
above 73200	0%	193	100%	0%	0.01%
60001 to 73200	0%	317	100%	0%	0.02%
50001 to 60000	0%	311	100%	0%	0.02%
40001 to 50000	0%	476	100%	0%	0.02%
30001 to 40000	1%	1,079	100%	0%	0.06%
20001 to 30000	2%	3,152	100%	0%	0.16%
10001 to 20000	9%	12,934	100%	0%	0.67%
9001 to 10000	2%	2,959	100%	0%	0.15%
8001 to 9000	3%	3,707	100%	0%	0.19%
7001 to 8000	3%	4,788	100%	0%	0.25%
6001 to 7000	4%	5,699	100%	0%	0.30%
5001 to 6000	5%	6,790	100%	0%	0.35%
4001 to 5000	6%	8,504	100%	0%	0.44%
3001 to 4000	8%	10,859	100%	0%	0.57%
2001 to 3000	9%	13,280	100%	0%	0.69%
1001 to 2000	12%	17,320	100%	0%	0.90%
501 to 1000	8%	11,038	100%	0%	0.58%
251 to 500	5%	6,638	100%	0%	0.35%
101 to 250	4%	5,404	100%	0%	0.28%
2 to 100	5%	7,154	100%	0%	0.37%
equals 1	14%	19,196	100%	0%	1.00%
Grand Total	100%	141,797	100%	0%	7.40%

Comment on the revised proposed tolerances

Previous proposals

Lower AQ band (kWh)	Upper AQ band (kWh)	Tolerances where read will be accepted	Read Accepted if submitted with an Override Flag	'Market Breaker' Read Rejected
0	73,200	10% - 300% of AQ/365 x no. of days	0 - 19% or 301% - 699% of AQ/365 x no. of days	0 - 700% of AQ/365 x no. of days
73,201	732,000	10% - 250% of AQ/365 x no. of days	0 - 19% or 251% - 649% of AQ/365 x no. of days	0 - 650% of AQ/365 x no. of days
732,001	2,196,000	10% - 200% of AQ/365 x no. of days	0 - 19% or 201% - 599% of AQ/365 x no. of days	0 - 600% of AQ/365 x no. of days
2,196,001	29,300,000	10% - 150% of AQ/365 x no. of days	0 - 19% or 151% - 549% of AQ/365 x no. of days	0 - 550% of AQ/365 x no. of days
29,300,001	58,600,000	10% - 100% of AQ/365 x no. of days	0 - 19% or 101% - 499% of AQ/365 x no. of days	0 - 500% of AQ/365 x no. of days
58,600,001	and above	10% - 100% of AQ/365 x no. of days	0 - 19% or 101% - 449% of AQ/365 x no. of days	0 - 450% of AQ/365 x no. of days

New proposals

Tolerances where read will be accepted	Read Accepted if submitted with an Override Flag	'Market Breaker' Read Rejected
0% - 300% of AQ/365 x no. of days	301% - 599% of AQ/365 x no. of days	0 - 600% of AQ/365 x no. of days
0% - 250% of AQ/365 x no. of days	251% - 549% of AQ/365 x no. of days	0 - 550% of AQ/365 x no. of days
0% - 200% of AQ/365 x no. of days	201% - 499% of AQ/365 x no. of days	0 - 500% of AQ/365 x no. of days
0% - 150% of AQ/365 x no. of days	151% - 449% of AQ/365 x no. of days	0 - 450% of AQ/365 x no. of days
0% - 100% of AQ/365 x no. of days	101% - 399% of AQ/365 x no. of days	0 - 400% of AQ/365 x no. of days
0% - 100% of AQ/365 x no. of days	101% - 349% of AQ/365 x no. of days	0 - 350% of AQ/365 x no. of days

1. The proposals have significantly reduced the occasions for an override flag. However 7.4% of currently accepted reads would still not be accepted without one. It is for the industry to decide if these are more acceptable volumes.
2. There is an inconsistent boundary for using the override flag. e.g if the AQ was less than 73,200 kWh, and the increase was 300.5%, would this need an override flag or not? (this highlights the need for the distribution of the functional specification of the process).
3. It should be noted that the Market Breaker upper tolerances have decreased. e.g. For an AQ less than 73,200 kWh, the old market breaker tolerance was 700% but is now 600%. Whilst there is no explanation of reasoning behind this, it must be assumed that this will decrease the use of the override flag and increase the AQ correction process volumes.
4. Increases from an AQ of 1 (or very low AQ) will still, consistently fail the market breaker tolerances, and therefore add to the AQ correction process volumes.

Additional Analysis on market breaker tolerances.

The following analysis is based on a simulation using the previous proposed market breaker tolerances. The new proposed market breaker tolerances can only increase these expected volumes. (not that these are volumes or reads, e.g. An MPR with an AQ of 1 may keep having reads rejected).

Expected volumes of currently accepted reads that will fail the new market breaker tolerance proposals

AQ When read assessed	% of RMQ to AQ (breach of Market Breaker Tolerances)				Grand Total
	more than 10000%	900% to 1000%	800% to 900%	700% to 800%	
60001-73200	132	2	6	6	146
50001-60000	161	6	2	14	183
40001-50000	236	10	6	8	260
30001-40000	685	14	14	18	730
20001-30000	1780	31	28	26	1864
10001-20000	4953	104	132	152	5341
9001-10000	579	26	14	41	659
8001-9000	691	20	12	37	760
7001-8000	591	18	51	45	705
6001-7000	593	45	51	57	746
5001-6000	532	39	59	83	713
4001-5000	610	65	112	187	974
3001-4000	768	112	183	311	1374
2001-3000	1429	270	402	561	2662
1001-2000	3805	628	673	677	5784
501-1000	3961	317	327	362	4967
251-500	3148	114	122	136	3520
101-250	2784	73	57	114	3028
2-100	4274	69	69	94	4506
=1	14180	41	45	47	14314
Grand Total	45890	2004	2364	2977	53235
	35490		7345		

From experience its reasonable to expect that the majority of these are good reads

Maximum possible resulting AQ per MPR if read was accepted

AQ When read assessed	% of RMQ to AQ (breach of Market Breaker Tolerances)			
	more than 10000%	900% to 1000%	800% to 900%	700% to 800%
60001-73200	N/A	805,200	732,000	658,800
50001-60000	N/A	660,000	600,000	540,000
40001-50000	N/A	550,000	500,000	450,000
30001-40000	N/A	440,000	400,000	360,000
20001-30000	N/A	330,000	300,000	270,000
10001-20000	N/A	220,000	200,000	180,000
9001-10000	N/A	110,000	100,000	90,000
8001-9000	N/A	99,000	90,000	81,000
7001-8000	N/A	88,000	80,000	72,000
6001-7000	N/A	77,000	70,000	63,000
5001-6000	N/A	66,000	60,000	54,000
4001-5000	N/A	55,000	50,000	45,000
3001-4000	N/A	44,000	40,000	36,000
2001-3000	N/A	33,000	30,000	27,000
1001-2000	N/A	22,000	20,000	18,000
501-1000	N/A	11,000	10,000	9,000
251-500	N/A	5,500	5,000	4,500
101-250	N/A	2,750	2,500	2,250
2-100	N/A	1,100	1,000	900
=1	N/A	11	10	9

Additional Analysis on market breaker tolerances (continued).

To increase transparency of the number of MPR's involved in the tables on the previous slide. Below is a look at just the subset where the current AQ was 1

Unique MPR's with an AQ of 1	6894
Number or failed reads for these MPR's	14341

From this it is clearly apparent that multiple reads are failing for individual MPR's as the AQ is "Stuck" at 1 even though there is consumption.

Whilst the AQ Correction Process has been suggested as a remedy for this, are the volumes acceptable? Not just for the AQ's of 1 but for a significant proportion of currently small AQ's that should increase.