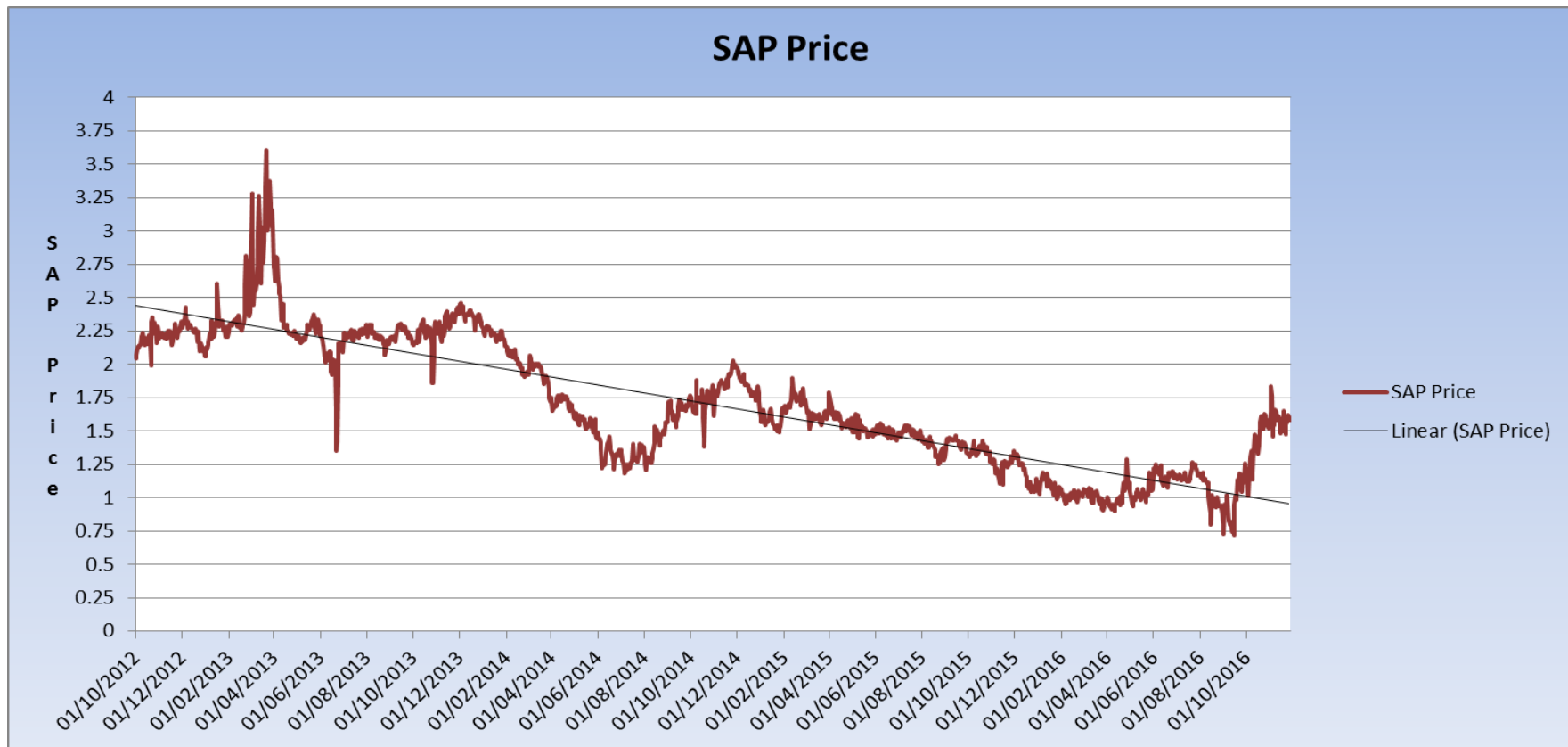


# PAC – Throughput and financial risk

Analysis using historic SAP prices

# Changes to SAP Price – October 2012 to November 2016



Gas prices as demonstrated by System Average Price (SAP) trends in the last four years have fluctuated, while trending towards decreases. The graph above shows daily actuals from Oct 2012 to end of November 2016.

# Financial risk scale – energy values in relation to gas price variations

Rating	Financial	Likelihood
	£m (annual)	
1	[<£1million]	Description – Remote Probability – <10% chance
2	[£1m – £25m]	Description – Less Likely Probability – >10% and < 40% chance
3	[£25m – £50m]	Description – Equally unlikely as likely Probability – >40% and < 60% chance
4	[£50m – £75m]	Description – More likely Probability – >60% and < 90% chance
5	[>£75m]	Description – Almost certain Probability – >90% chance

The fluctuation in gas prices (as demonstrated with SAP) could affect the level of energy underlying any risk scale based on financial values (such as that in the proposed table in the Performance Assurance Framework documentation).

# Financial risk scale – throughput in relation to gas price variations

Gas Year Periods		Oct 12 – Sep 13 12 mths	Oct 13 – Mar 14 6 mths	Apr 14 – Sep 14 6 mths	Oct 14 – Mar 15 6 mths	Apr 15 – Sep 15 6 mths	Oct 15 Mar 16 6 mths	Apr 16 – Sep 16 6 mths	Oct 16 – Nov 16 2 mths
£		Average SAP Price – 2.257p/kWh	Average SAP Price – 2.177p/kWh	Average SAP Price – 1.492p/kWh	Average SAP Price – 1.722p/kWh	Average SAP Price – 1.476p/kWh	Average SAP Price – 1.143p/kWh	Average SAP Price – 1.061p/kWh	Average SAP Price – 1.497p/kWh
<b>Financial Scale</b>		<b>Related Energy</b>							
Low (£)	High (£)	High GWh	High GWh	High GWh	High GWh	High GWh	High GWh	High GWh	High GWh
0	1m	59	46	67	58	68	87	94	67
1m	25m	1,471	1,148	1,676	1,452	1,694	2,187	2,356	1,670
25m	50m	2,943	2,297	3,351	2,904	3,388	4,374	4,713	3,340
50m	75m	4,414	3,445	5,027	4,355	5,081	6,562	7,069	5,010
75m	100m	5,886	4,593	6,702	5,807	6,775	8,749	9,425	6,680

The table above shows how differences in the average SAP price over a number of periods can affect the amount of energy that is required to qualify for a particular band of risk. For example, between Oct 12 and Sep 13, 59 GWh would have become a £1m risk, whereas 94 GWh would have been required to be at risk to qualify for the £1m rating between Apr 16 and Sep 16.

# Potential throughput risk scale based on example

Rating	Low (GWh)	High (GWh)	Likelihood	Cost at average SAP 1.7p for higher threshold (Oct 2012 – Nov 2016)	Cost at current average SAP 1.49p (Oct 2016 – end Nov 2016)
1	0	75	Description – remote Probability - <10% chance	£1.28m	£1.1m
2	75	1,500	Description – less likely Probability - >10% and <40% chance	£25.5m	£22.4m
3	1,500	3,000	Description – equally unlikely as likely Probability - >40% and <60% chance	£51m	£44.9m
4	3,000	4,500	Description – more likely Probability - <60% and <90% chance	£76.5m	£67.3m
5	4,500	6,000 (approx., no theoretical upper limit)	Description – almost certain Probability - >90% chance	£102m (no upper limit)	£89.8m

The table above proposes a theoretical scale based on lower and upper GWh throughput measures. These can be shown tied to financial scales for orientation only (using the average SAP across the entire Oct 12 to Nov 16 period, and current average SAP).

## Version 1 - Engage Settlement Risk Report – Top 15 Industry Settlement Risks

No.	Title	Brief Description	Products Affected				PAF	Allocation risk	Reconciliation risk	Allocation GWh	Reconciliation GWh	Rating (on energy values only)
			1	2	3	4						
1	Theft of Gas	Non identification of theft contributing to unidentified gas	Y	Y	Y	Y	No	£42,218,000	£43,046,000	2,483	2,532	3
2	Use of the AQ Correction Process	Risk AQ correction process used erroneously	N	N	N	Y	Yes	£32,218,000	£32,286,000	1,895	1,899	3
3	Use of Estimated Read for Product 1 & 2	Estimate reads used for DM meters	N	N	Y	Y	Yes	£23,555,000	£47,000	1,386	3	2
4	LDZ Allocation Error - Corrected	Identified offtake errors	Y	Y	Y	Y	Yes	£21,152,000	-	1,244	-	2
5	Incorrect asset data on the supply point register	Meter asset data issues within supply point register	Y	Y	Y	Y	Yes	£13,987,000	£14,073,000	823	828	2
6	Use of WAR for EUC 3-8	Risk of daily settlement of meters without a WAR band	N	N	N	Y	No	£8,908,000	-	524	-	2
7	LDZ Allocation Error - no correction	Offtake errors that aren't identified	Y	Y	Y	Y	No	£7,051,000	£7,051,000	415	415	2
8	Unregistered sites	New connections not registered by shipper	Y	Y	Y	Y	No	£2,481,000	£621,000	146	37	2
9	Shipperless Sites	Sites that previously had a shipper but no longer, but still consume gas	Y	Y	Y	Y	No	£2,326,000	-	137	-	2
10	Meter Read Validation Failure	Risk to AQ's of consistent meter read validation failure	N	N	N	Y	Yes	£1,439,000	-	85	-	2
11	Late Check Reads	Risk of not undertaking check reads on relevant meters	Y	Y	Y	Y	Yes	£1,437,000	£467,000	85	27	2
12	Read Submission Frequency for Product 4	Risk due to not being read as frequently as Product 3	N	N	N	Y	Yes	£1,350,000	-	79	-	2
13	Change of Shipper Estimated Reads	Estimated opening reads not being replaced - or being regularly used	N	N	N	Y	Yes	£408,000	£410,000	24	24	1
14	Failure to Obtain a Meter Reading	Issue of not obtaining a read in the settlement window	N	N	N	Y	Yes	£79,000	£79,000	5	5	1
15	Approach to Retrospective Updates	Consistent approach required	N	N	Y	Y	Yes	-	£5,000	-	0	1

# Alternative potential throughput risk scale?

Rating	Low (GWh)	High (GWh)	Likelihood	Cost at average SAP 1.7p for higher threshold (Oct 2012 – Nov 2016)	Cost at current average SAP 1.49p (Oct 2016 – end Nov 2016)
1	0	50	Description – remote Probability - <10% chance	£850,000	£748,000
2	50	250	Description – less likely Probability - >10% and <40% chance	£4.25m	£3.7m
3	250	500	Description – equally unlikely as likely Probability - >40% and <60% chance	£8.5m	£7.4m
4	500	1,000	Description – more likely Probability - <60% and <90% chance	£17m	£14.9m
5	1,000	2,500 (approx., no theoretical upper limit)	Description – almost certain Probability - >90% chance	£42.5m (no upper limit)	£37.4m

The table above proposes a second theoretical scale based on lower and upper GWh throughput measures. These can be shown tied to financial scales for orientation only (using the average SAP across the entire Oct 12 to Nov 16 period, and current average SAP).

## Version 2 - Engage Settlement Risk Report – Top 15 Industry Settlement Risks

No.	Title	Brief Description	Products Affected				PAF	Allocation risk	Reconciliation risk	Allocation GWh	Reconciliation GWh	Rating (on energy values only)
			1	2	3	4						
1	Theft of Gas	Non identification of theft contributing to unidentified gas	Y	Y	Y	Y	No	£42,218,000	£43,046,000	2,483	2,532	5
2	Use of the AQ Correction Process	Risk AQ correction process used erroneously	N	N	N	Y	Yes	£32,218,000	£32,286,000	1,895	1,899	5
3	Use of Estimated Read for Product 1 & 2	Estimate reads used for DM meters	N	N	Y	Y	Yes	£23,555,000	£47,000	1,386	3	5
4	LDZ Allocation Error - Corrected	Identified offtake errors	Y	Y	Y	Y	Yes	£21,152,000	-	1,244	-	5
5	Incorrect asset data on the supply point register	Meter asset data issues within supply point register	Y	Y	Y	Y	Yes	£13,987,000	£14,073,000	823	828	4
6	Use of WAR for EUC 3-8	Risk of daily settlement of meters without a WAR band	N	N	N	Y	No	£8,908,000	-	524	-	4
7	LDZ Allocation Error - no correction	Offtake errors that aren't identified	Y	Y	Y	Y	No	£7,051,000	£7,051,000	415	415	3
8	Unregistered sites	New connections not registered by shipper	Y	Y	Y	Y	No	£2,481,000	£621,000	146	37	2
9	Shipperless Sites	Sites that previously had a shipper but no longer, but still consume gas	Y	Y	Y	Y	No	£2,326,000	-	137	-	2
10	Meter Read Validation Failure	Risk to AQ's of consistent meter read validation failure	N	N	N	Y	Yes	£1,439,000	-	85	-	2
11	Late Check Reads	Risk of not undertaking check reads on relevant meters	Y	Y	Y	Y	Yes	£1,437,000	£467,000	85	27	2
12	Read Submission Frequency for Product 4	Risk due to not being read as frequently as Product 3	N	N	N	Y	Yes	£1,350,000	-	79	-	2
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14	Failure to Obtain a Meter Reading	Issue of not obtaining a read in the settlement window	N	N	N	Y	Yes	£79,000	£79,000	5	5	1
15	Approach to Retrospective Updates	Consistent approach required	N	N	Y	Y	Yes	-	£5,000	-	0	1



## Summary

- In the last 4 years, SAP prices have peaked at above 3p and below 1p at specific times.
- Fluctuations in gas prices mean a financially scaled risk model is vulnerable to changes in how much underlying energy makes up a risk 'event'.
- A throughput scale would offer stability to the amount of energy required when measuring a settlement risk.

## For consideration

- Throughput or financial?
- Revisiting of the selected scale periodically in any event.
- Does the selected scale allow for the potential consideration of non settlement energy based issues?