AUG Sub-Committee

2023-2024 Early Engagement Meeting

23rd September 2022

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Early Engagement Meeting: Purpose

In this session we aim to provide

- An overview of the initial assessment process and initial outputs for the Gas Year 2023/2024

- An opportunity to discuss process and initial outputs of our analysis and our progress towards the AUG Weighting Factors for 2023/2024

- A view of next steps and process for the rest of the year

- A brief update on ongoing Advisory activities

- An open forum for feedback and suggestions

AGENDA

1. Welcome
2. Update on 2023/2024 investigations
   1. Dead Sites
   2. Sites with a By-Pass Fitted
   3. Theft: Smart Rollout
   4. Theft: Quality of Read History
3. Repeat contributors and general progress
4. Market considerations
5. Advisory
   1. AUGE PAC issues list
6. Next steps and feedback

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Welcome: AUGE key contacts

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INVESTIGATIONS

New investigation

200 - Dead Sites

Refinement investigations

140 - Meters with By-Pass Fitted

011 - Theft of Gas (Quality of Read History)

012 - Theft of Gas (Smart Rollout)

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200 Dead Sites: Recap

Sites are set to 'Dead' on CDSP system where there is no live service at the site.

▶ **Hypothesis:** Some sites which are recorded as Dead are in fact consuming gas.

▶ Any such consumption will potentially create positive UIG, because allocation does not take place for Dead sites.

▶ This is similar to the potential outcome for Isolated Sites – where often service and meter remain at the site, but the meter has been deliberately physically impaired. We therefore expect to use a similar UIG calculation methodology.

Data inputs are:

1. Dead Sites Portfolio

2. Rejected Reads relating to that portfolio

200 Dead Sites: Initial analysis

Over half of the sites with 'Dead' status appear to be consuming gas

	CLASS			
		1	2	3	4
1ND	-	-	0	11
1PD	-	-	0	2
1NI	-	-	0	1
1PI	-	-	-	-
2ND	-	-	-	0
2PD	-	-	-	-
2NI	-	-	1	0
2PI	-	-	-	-
3	-	-	-	0
4	-	-	-	-
5	-	-	-	3
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-

(EUC BAND label on left side of table)

TABLE: Indicative UIG for Dead Sites by Matrix Position (GWh)

- Taking a recent snapshot of Dead Sites alongside their rejected reads records, we analyse sites with a status update before April 2020

- To assess whether these Dead Sites could in fact be consuming gas, we analyse their associated rejected reads records

- Our initial analysis identifies 1,209 of the 2,329 Dead Sites have an indication of gas consumption

- Assuming (as we do) that the currently recorded AQ is a fair indicator of consumption, our initial estimate of UIG associated with Dead Sites is **18 GWh**. (To compare, Isolated Sites in last year's Statement was 47 GWh.)

200 Dead Sites: Next Steps

Lack of any read data is not confirmation that a site is 'Dead'. How should the methodology cater for this?

▶ Consider whether and how to extrapolate results based on available read rejection data to other Dead Sites with no rejected reads

▶ Consider the trend in Dead Sites portfolio to inform UIG position at the Line in the Sand. (Further snapshot requested from CDSP)

▶ (Issue added to our periodic report to PAC)

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140 Meters with a By-Pass Fitted: Recap

CDSP data shows over 12,000 sites with a by-pass currently in situ.

We're interested in further validating these numbers; and focussing on the in-field operation of by-passes as a basis for assumptions.

▶ **Hypothesis**: Meter by-passes are operated periodically and the gas consumed during such operations is not always recorded and accounted for in settlement. This creates positive UIG.

▶ This is a follow-up to the inconclusive investigation for Gas Year 2022-2023, for which the data available in CDSP systems was insufficient as a basis for modelling assumptions.

▶ This year's approach has two main strands:

Is the portfolio correct?

Further validation of CDSP data; discussion with shippers on their portfolios; GDNs

What might be a normal operating pattern for a meter by-pass?

Operational insights from industry experts; MAMs; supplier siteworks

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140 Meters with a By-Pass Fitted: Initial Analysis

Additional validation of CDSP by-pass portfolio is inconclusive.

Recent industry focus on cleansing 'Open' by-pass statuses was successful but did not address the broader data validity question.

Is the portfolio correct?

▶ We increased the number of supporting data items in our portfolio dataset to show more site and meter characteristics.

▶ We looked at distribution between shippers and MAMs, meter types and historical AQs

97% of by-pass statuses haven't been amended in the last five years

50% of all recorded by-passes sit with 2 shippers

92% of all recorded by-passes sit with 1 MAM

60% of MPRNs with by-passes have all attributes of a domestic meter

What might be a normal operating pattern for a meter by-pass?

▶ Ongoing discussions with industry experts including MAMs

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140 Meters with a By-Pass Fitted: Next Steps

We may again be unable to achieve the required combination of:

1. Justifiable assumption on frequency of by-pass operation

2. Credible portfolio to which those assumptions can be applied

▶ We have now concluded data validation work.

▶ We are continuing to engage with industry experts on in-field by-pass activities.

    ▶ Suggestions/contacts always welcomed.

▶ Likely outcome for this year's statement will depend on usefulness of operational insights.

▶ Regardless of outcomes, our approach and conclusions will be recorded in full in the Statement.

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011 Theft: Smart Rollout: Recap

The data-led assumptions used in the AUGE's theft allocation methodology are not yet reflecting the expected impact of smart rollout.

Our methodology allocates undetected theft to Matrix Positions based on meter type.

Are there alternatives to this approach which might allow us to reflect the assumed benefits of smart meters?

▶ **Hypothesis**: The continued rollout of smart meters should already be having a material impact on theft at smart-enabled Supply Meter Points, but the lagging indicators provided by available detected theft data mask this expected impact.

▶ Proposed on the back of last year's impactful refinement for AMR meter populations

▶ RECCo theft estimation methodology expected H2 2022

▶ APPROACH:

  ▶ Desk-based review of allocation methodology, alternative assumptions and data sources (including the RECCo output expected in the summer)

  ▶ Impact assessment of alternative approaches (if identified)

  ▶ Assumed no change to the methodology to calculate total theft level

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011 Theft: Smart Rollout: Initial Analysis

Any change to the methodology would need to be a justifiable alternative based on credible assumptions

- Two questions form the core of this investigation:

  - In the absence of data, are we convinced that smart meters reduce gas theft?

  - Can we propose a credible alternative set of assumptions?

- Each question can be addressed in isolation.

Does smart reduce theft?

- Gathering operational insights:

  - Shippers, TRAS, DCC (alerts) usage

- Further exploration of available AMR theft data

On what should we base our assumptions?

- BEIS data and business case

- Application of a data lag model – e.g. one based on AMR impacts

- New credible assumptions e.g. RECCo / CapGemini

- Water sector

011 Theft: Smart Rollout: Next Steps

Outputs

▶ TBC – investigations and engagement ongoing.

▶ Full write-up of process and findings as part of Statement production, regardless of methodology outcome

Ongoing considerations

▶ Working from detected theft data will always be problematic, but it's the best we have.

▶ Focus of this investigation is on **allocation** of total theft UIG.

▶ Link to the total theft calculations is intrinsic, which will need addressing IF any material reduction in theft is demonstrable for smart meters.

▶ Debate would also open up questions relating to the impact of cost of living crisis on theft.

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012 Theft: Quality of Read History: Recap

We are investigating the suggestion that gas theft may go hand-in-hand with low read submission – making it much easier for theft to occur and endure, and deliberate withholding of reads as a possible correlation to theft propensity.

▶ **Hypothesis**: Sites at which there is a good/full read history recorded on CDSP systems are less likely to have been subject to theft than sites for which there is patchy or no read history

▶ If this is true, then we might be able to use the completeness of read history as a proxy for likelihood for theft to take place

▶ APPROACH:

   ▶ Analyse complete read history for detected theft sites

   ▶ Determine the best proxy for quality of read history

   ▶ If robust correlation identified, determine how to reflect this in existing allocation methodology (i.e. replacing what we have vs. adding an additional step)

   ▶ NOTE Potential overlap with 011 Theft of Gas (Smart Rollout)

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012 Theft: Quality of Read History: Initial Analysis (1)

Questions Considered

- For sites on the TRAS and TOG dataset
  - Do they have a read leading up to the recorded start date?
  - Do they have a read following the recorded start date?
  - How many reads in the 2 years before the recorded start date?
  - How many reads in the 2 years following the recorded start date?
  - Is there a better alternative to the start date?

- Can we compare the read history to the full meter population?
- Does the lead type (e.g. tip-off vs. supplier data) introduce any bias into the detected theft read set?

Data inputs

- TOG dataset
- Accepted Reads for TOG and TRAS dataset (complete set for the 1st April 2014 onwards)
- Rejected Reads for TOG and TRAS dataset (complete set for the 1st April 2014 onwards)
- Last Read data for full meter population

012 Theft: Quality of Read History: Initial Analysis (2)

Read history quality does not provide a indicator of propensity for theft – at least in the data available to us

- ▶ Most sites on our theft dataset have a read within the year of the assumed start date.

- ▶ We looked at the average number of reads submitted for the TRAS and TOG dataset.

  - ▶ In the 2 years before theft begins, 7 reads

  - ▶ In the 2 years following, 13 reads

- ▶ Sites where theft has occurred show no meaningful difference in quality of read history, when compared to the general population of sites.

Time from assumed theft start date	Pre-Theft Start (No. of Sites)	Post-Theft Start (No. of Sites)	Full Population (No. of Sites)
Read within 1 year	88%	80%	94%
Read within 2 years	8%	14%	4%
Read within 3 years	2%	4%	1%
Read within 4 years	1%	1%	0%
4+ years	1%	0%	0%
No read	0%	1%	0%

TABLE: Read history quality proxies in detected theft population, with comparison to non-theft population

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Detected theft data will always contain unavoidable bias.

Is there any way around this?

▶ Detected theft data reflects the outcome of industry operations. One way to identify sites for investigation is by examining reads.

▶ Detected theft may therefore show bias towards sites with more rather than less read data.

▶ We examined the effect of this by looking at the difference between thefts investigated after a tip-off and thefts investigated on the back of supplier data.

▶ We note that suppliers use read data AND pre-pay vending patterns as trigger, but ALL types of lead show the same strong correlation to a full read history.

Pre-Theft Start	Crimestoppers	Field Agent	MRA	Other	Police	Supplier	TRAS
Read within 1 year	86%	88%	89%	88%	93%	88%	89%
Read within 2 years	8%	8%	8%	7%	0%	8%	8%
Read within 3 years	3%	2%	2%	3%	0%	2%	2%
Read within 4 years	1%	1%	1%	1%	7%	1%	0%
4+ years	1%	1%	0%	1%	0%	1%	0%
No read	1%	1%	1%	0%	0%	0%	0%

TABLE: Comparing read history quality between theft investigation triggers

012 Theft: Quality of Read History: Next Steps

Further work and considerations

▶ We have established a proxy for quality of read history.

▶ This methodology will be applied to this an updated dataset which will include this year's TRAS data upon receipt (imminent).

▶ It is currently unlikely that we will apply an updated theft allocation methodology based on quality of read history.

▶ Bias in detected theft data is likely and unavoidable. But it is the only theft data available. Ultimately it is not possible to definitively prove or disprove the hypothesis for undetected theft.
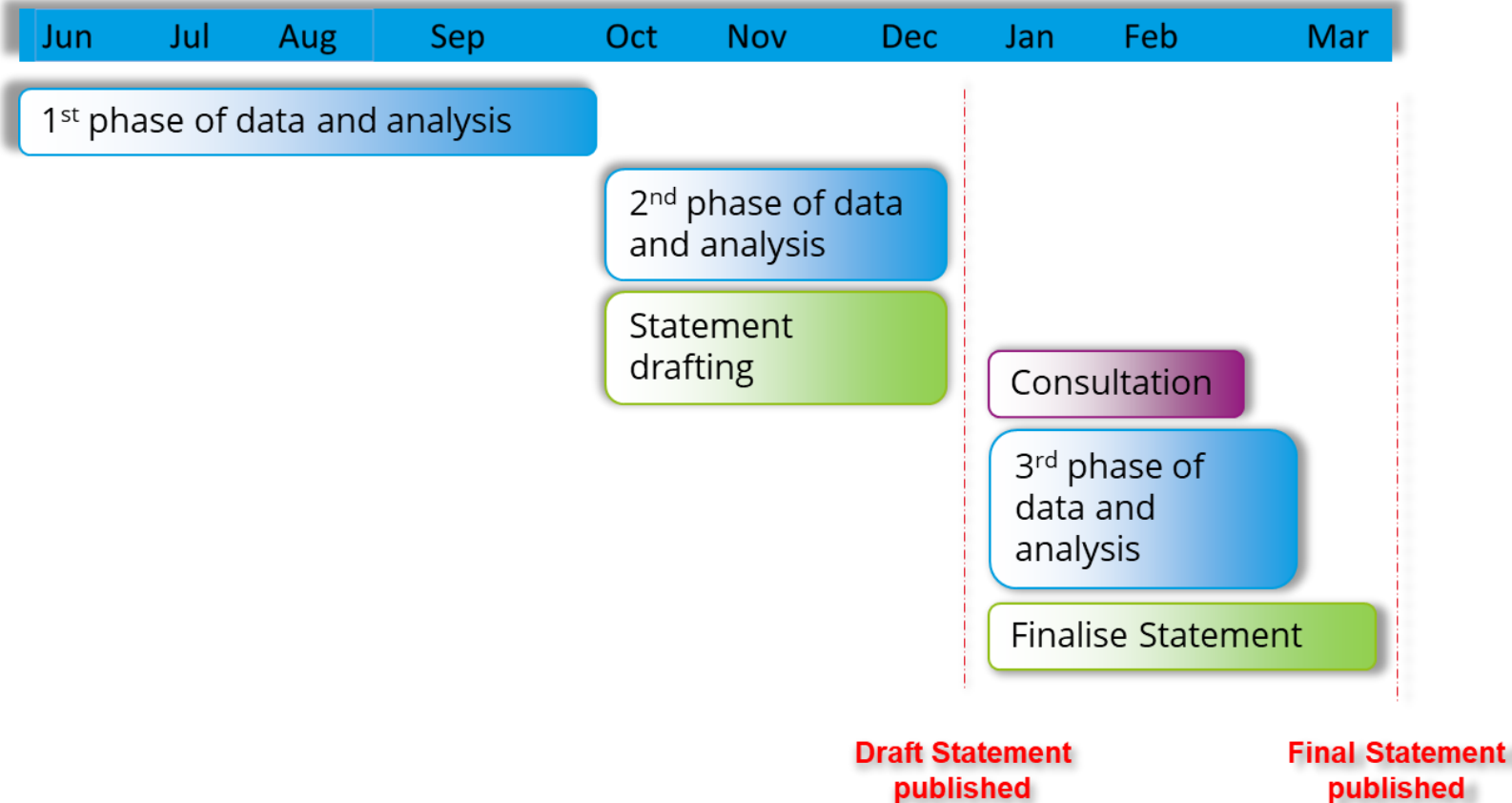
Repeat Contributors

All previous contributors are re-analysed using refreshed data

We also re-assess our assumptions and methodology in light of new information or developments in our thinking

Contributor	Gas Year 22-23 UIG estimate
010 Theft of Gas	7,602 GWh
020 Unregistered Sites	35 GWh
025 Shipperless Sites	26 GWh
040 Consumption Meter Error	432 GWh
050 LDZ Meter Errors	1 GWh
060 IGT Shrinkage	18 GWh
070 Average Pressure Assumption	359 GWh
080 Average Temperature Assumption	1,220 GWh
090 No Read at the Line in the Sand	861 GWh
100 Incorrect Correction Factors	53 GWh
160 Isolated Sites	47 GWh

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Overall Progress

Timeline (Jun – Mar):
- 1st phase of data and analysis (Jun – Sep)
- 2nd phase of data and analysis (Oct – Nov)
- Statement drafting (Oct – Dec)
- Consultation (Dec – Jan)
- 3rd phase of data and analysis (Jan – Feb)
- Finalise Statement (Jan – Feb)

Draft Statement published

Final Statement published
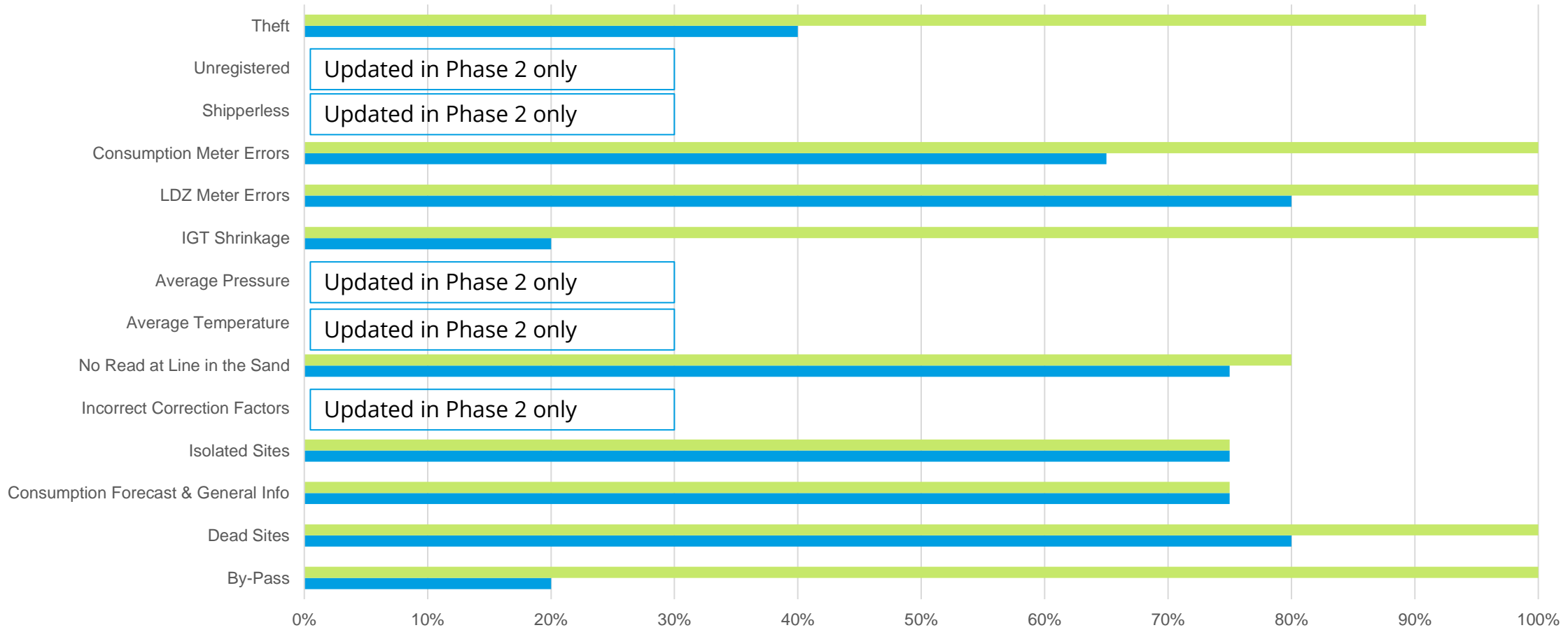
▶ Largely on track for moving to Q4 activities of analysis and Statement production

▶ Awaiting some key data e.g. TRAS file

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Progress of Repeat Contributors

Phase 1 Completion towards initial view of UIG Volume & Allocation

Legend: Initial Data received & validated (green), Initial Analysis (blue)

Categories shown:
- Theft
- Unregistered — Updated in Phase 2 only
- Shipperless — Updated in Phase 2 only
- Consumption Meter Errors
- LDZ Meter Errors
- IGT Shrinkage
- Average Pressure — Updated in Phase 2 only
- Average Temperature — Updated in Phase 2 only
- No Read at Line in the Sand
- Incorrect Correction Factors — Updated in Phase 2 only
- Isolated Sites
- Consumption Forecast & General Info
- Dead Sites
- By-Pass

Market Considerations

In general the impact of prevailing market conditions on our methodology is minimal, given our focus on the allocation of UIG rather than its overall level.

As our work progresses, we are mindful of the potential impacts on UIG of the COVID-19 pandemic on the datasets we use; and the already visible impact of the energy price/cost of living crisis on consumption and behaviour (e.g. recent run of negative UIG at allocation)

COVID-19 pandemic impact

- Any impact on AQ from different areas of the market changing behaviour (albeit temporarily) could flow through into our consumption forecast. However no obvious universal trends outside of normal variability to make the case for adjustments

- Reduced Theft data available. We look at 10 years worth of data which will help mitigate this

- Fewer meter reads/in-field activity

Energy crisis impact

- We can see AQs falling as usage is reduced. This will feed through into our consumption forecasts

- Potential for theft to increase

- Potential for more suppliers to go bust – impact on data quality

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ADVISORY SERVICE

▶ Our Advisory Service is designed to provide stakeholders, including relevant industry groups, with expert advice from the AUGE

▶ We can use this service to provide additional analysis of other areas which do not fall under the Core Service or the Innovation Service

▶ Maximum 18 days per year June to May

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AUGE PAC Issues List

We provide a six-monthly update to a list of potential performance issues that we have encountered when working with CDSP data

Issue Ref	Topic	Issues still presenting?
AUGE01/02/03	Inconsistencies/missing theft data	TBC
AUGE04/05/06/07	Problems not being resolved that lead to No Read by LitS	Yes
AUGE08	Incomplete Use of Consumption Adjustments	N/A
AUGE09/10	Correction Factor inconsistencies	TBC
AUGE11	Isolated sites consuming	Yes
AUGE12/13	By-Pass data	Yes
AUGE14/15	Unregistered/Shipperless	TBC
AUGE16/17/18	Site Classification inconsistencies	Yes
AUGE19	Dead Sites consuming	Yes

▶ To be next presented for discussion at PAC October or November 2022

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NEXT STEPS
and feedback

Next Steps

▶ During Q4 we combine continued analysis, data updates and Statement production activities

▶ We have some ongoing industry engagement to complete to inform this year's investigations

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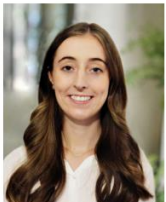
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▶ With no formal touchpoint until January, we will provide progress updates and indicative outcomes (where appropriate) via the Joint Office

▶ All further discussion and suggestions are welcome. We can be contacted at
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Appendix

1. Future Considerations (latest)

The following items reproduced from June 2022 AUG Sub-Committee, with closed items removed

21/2f	We will consider the potential impact of flow rates on Consumption Meter errors for subsequent years.	Open
21/3f	We will consider the potential inclusion of Shipperless sites awaiting their GSR visit in our data and analysis for subsequent years.	Open
22/1b	We will consider the practicalities of a further level of top-down validation of our outputs.	Open
22/2b	As part of our annual assessment for the Gas Year 2023-2024, we will investigate additional ways to validate the Isolated Sites data for inclusion in future AUG Statements.	Open
22/2c	We will assess whether additional data is available to improve the accuracy of AQ assumptions for Isolated Sites.	Open
22/2d	We will continue to monitor closely any output from other research and analysis being undertaken in the area of energy theft, and specifically the outcome of the current RECCo review.	Open
22/4a	We will assess the scaling up of our UIG estimate under contributor '180 – Unfound UIG Contributors', after discussion with interested Shippers.	Open

2. Industry Issues Log

Issue Number	Issue	Latest Update	Status	Date Opened	Date Closed
2	COVID	Potential impacts assessed and included in the 2022/2023 Statement where appropriate. We will continue to consider the impact of COVID-19 in the 2023/2024 Statement	Live	01/06/2020	
3	Changes to theft arrangements due to REC v1.1	Beyond a minor impact of TRAS data not being available for 6 months of this year there is no immediate impact on our existing methodology. However, we will await further information as to RECCo's progress in the development of a Theft Reduction Strategy and theft methodology	Live	22/10/2020	
4	Faulty Meters	Potential issue around energy associated with faulty meters not entering Settlement. Identified as part of the 2021/2022 Gas Year Investigation	Live	01/03/2021	
5	Must Reads	Our investigation into must reads provided very limited results. Therefore, we would suggest a more detailed review into why must reads for monthly read sites were not being completed before the Line in the Sand. Recent outcome of must reads could also be used as a feed into the error percentage	Live	01/03/2021	
6	AQ corrections on Supply Meter Points with no read	Supply Meter Points with no read for a substantial amount of time are allowed to submit AQ corrections for change of use with no validation	Live	01/03/2021	

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