AUG UNCC Sub-committee

Proposed AUGS Consultation Responses

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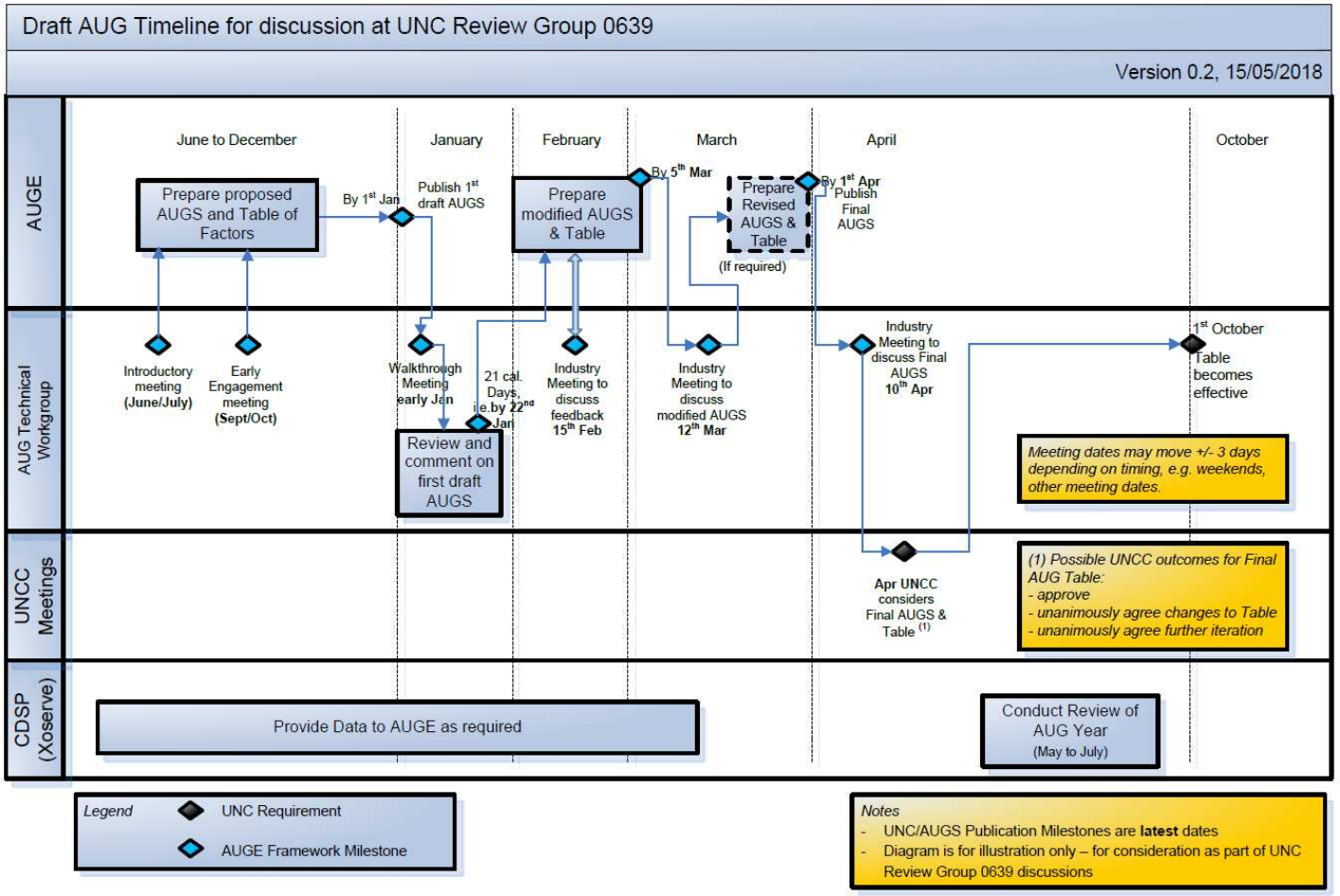
Agenda

- Meeting Purpose
- Summary of issues raised during consultation
- Detailed discussion of consultation issues
  - Describe & clarify issue
  - Provide feedback
- Data issues
- Next Steps
- AOB

Meeting Purpose

- Review and provide feedback on consultation responses



Purpose of Meeting

- AUG Expert has proposed methodology
- Industry have provided feedback on proposed methodology
- Aims of today
  - AUG Expert to get clarifications/more details around issues raised
  - AUG Expert to provide initial thoughts on issues raised
  - Discuss and understand issues raised in more detail

AUG Expert Framework

- "Code Parties may submit relevant topic areas for consideration by the AUG Expert during the consultation process. The submission must include a clear explanation of the topic, the reasons why this topic is relevant to the AUG Statement or AUG Table, any accompanying data or if relevant suggestions as to how the data may be obtained by the AUG Expert. Each topic area submitted by a Code Party will be published (including the details of the Code Party) to the industry as part of the AUG Expert's consultation response. However specific information provided and marked confidential will not be generally published."

- "The AUG Expert will publish a written response to the topic detailing whether it is in or out of the scope of work and the rationale to support this, whilst respecting the confidentiality of the original information."

AUG Expert Framework

- "The AUG Expert will consider any responses made, and will provide feedback for discussion at a meeting of the AUG Technical Workgroup."

- "The AUG Expert will review the AUG Statement and Table in light of any comments (received in Steps 7 and 8), and will adjust the AUG Statement and Table where it believes appropriate. The proposed AUG Statement document, as modified by the AUG Expert in accordance with this Step, will be republished the Joint Office of Gas Transporters website."

Summary Of Issues Raised

- 4 Responses Received
  - One response anonymous – 'Shipper1'
  - Clarification questions sent to one respondent
  - Published on JoT with reference added to each issue e.g. 2019_1

Topic	ICoSS	British Gas	Shipper1	Scottish Power
AUG Statement			1	
Overall Methodology	1			
Permanent vs Temporary UIG			2	
Volume Conversion	1	1	6	1
NDM Algorithm			1	
Reconciliation		1	1	
Balancing Factor			1	
Theft	1	1		
Smart/AMR Populations	1			
Product Class Populations		1		
Shrinkage		1		
Failed Suppliers		1		
Other	1		1	

Number of issues/comments by topic

AUG Statement & Overall Methodology

- AUG Statement
  - Updates to diagrams to reflect UIG terminology (2019_12)

- Overall Methodology
  - Feedback in support of the overall approach (2019_2)

Permanent vs Temporary UIG

- PC1 and PC2 consumption adjustments (2019_13)
  - Further consideration required
- Excluded items assumed to be temporary (2019_20)
  - Small items
  - CF updates
    - Data requested from CDSP to assess how quickly updates are being made

Volume Conversion

- Presence of Volume Converters (2019_14, 2019_15, 2019_11)
- Altitude assumptions (2019_16)
- Temperature corrections
  - 1 shipper supports continued use of 12.2C average temperature (2019_1)
  - 2 shippers do not support use of 12.2C (2019_17, 2019_25)
  - Meter location modelling (2019_19)
  - Volume correction should not just apply to PC4 (2019_22)

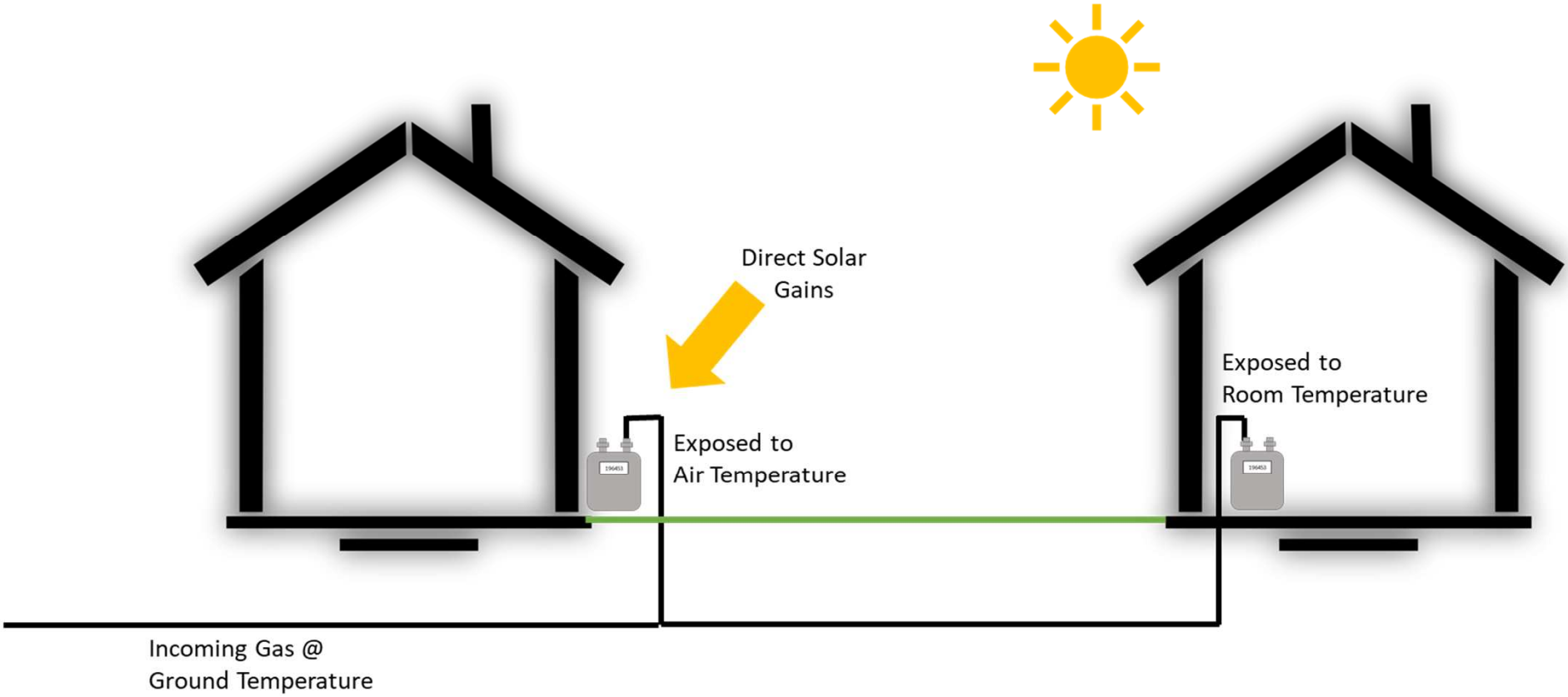
Gas Meter Temperature

- AUG Factors
  - National
  - Apply to upcoming gas year
- SNT
  - Cannot reliably forecast year ahead temperatures
- Consumption weighted
  - SND to avoid bias
- Lower temperature -> smaller Balancing Factor

- Clarification of 1.4TWh/degC
  - Actual temperature will not equal 12.2C or any temperature assumed by AUGE
  - Total UIG will not be correct unless average temperature = 12.2C
  - UIG factors will apportion incorrect amount of UIG

Gas Temperature Overview

- Heat Transfer Depends on
  - Gas Flow Rate
  - Temperature Difference



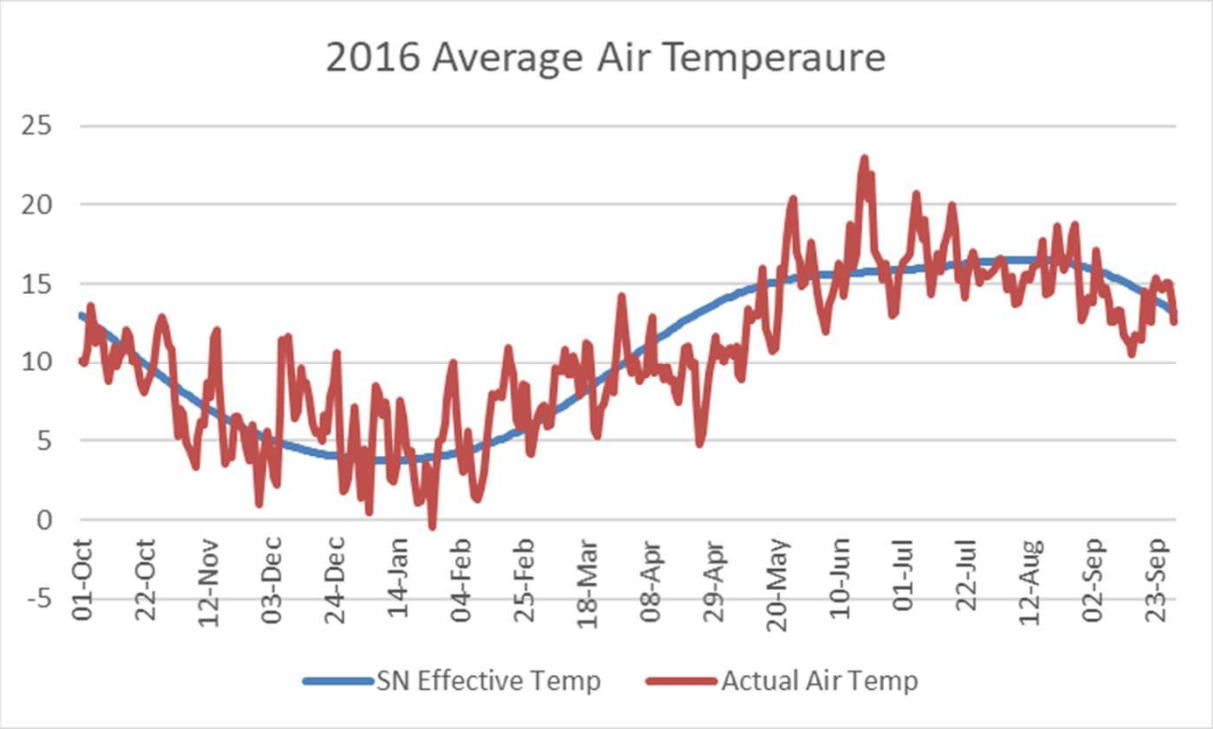
External Meters

- Ground Temperature
  - Smoother/less variable than air temperature
  - Lagged compared to air temperature
  - Depth dependent
- Air Temperature
  - Variability over time
    - Gas Year average (2011-2016) varied from 9.58C to 11.12C
    - Daily Avg (2011-2016) 10.5C whole day vs 10.9C for heating hours
  - Susceptible to local conditions
  - Highly variable over short distances (*reported 6C difference within 8miles)
- Other Factors
  - Exposed locations
  - Direct sun
  - Climate change

*source: The derivation of LDZ gas temperatures for the period 1996-2000, L M Wallis, Feb 2002

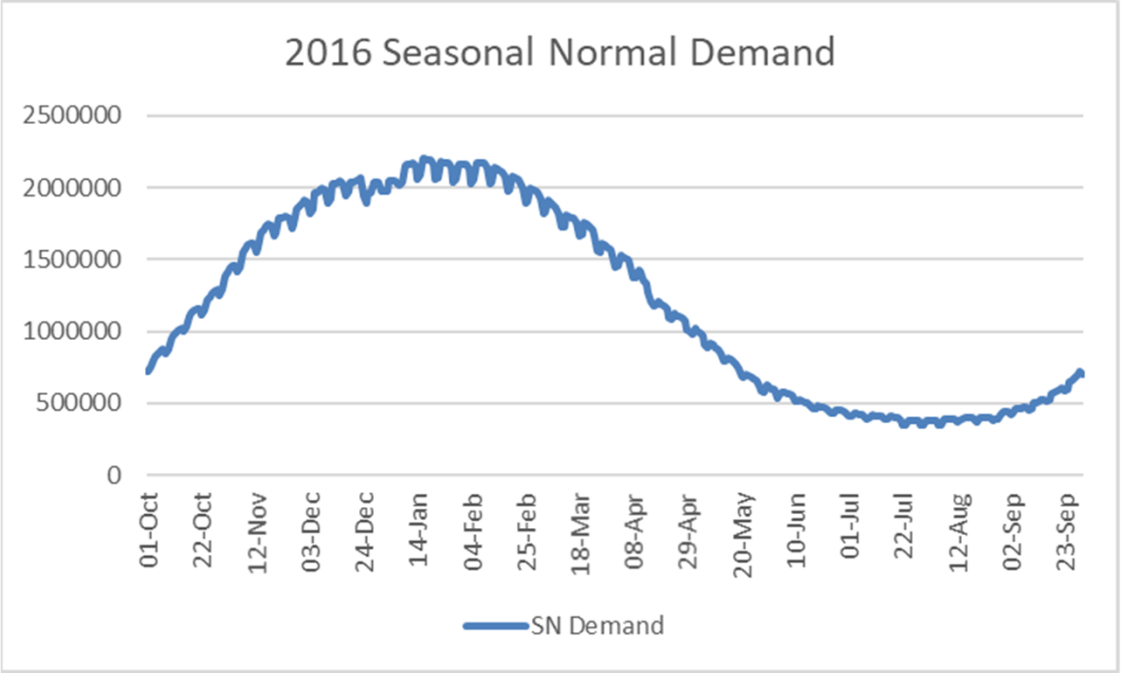
External Meters

- Volume conversion and UIG are affected by daily fluctuations
- AUG factors should use a SN temperature



External Meters

- Temperature should be consumption weighted, ideally SN
- SNT consumption weighted average by SND (NDM only)
  - 8.19C
- SNT consumption weighted average by 2017 Throughput
  - 8.35C



External Meters

- DMTS
  - 9.07 average over 2 years (9.08, 9.06)

- Ground Temperatures
  - 1.22m depth, average 1931-1960
  - Average 10.35C
  - Consumption Weighted Average (using SND) 8.72C

- BGS Study*
  - Average Ground Temp @1m varies from 12C in S England to 9C in N Scotland
  - Ground Temp is warmer than air temp by 0.9C on average
  - Urban Heat Island (UHI) effect ~0.55C on average

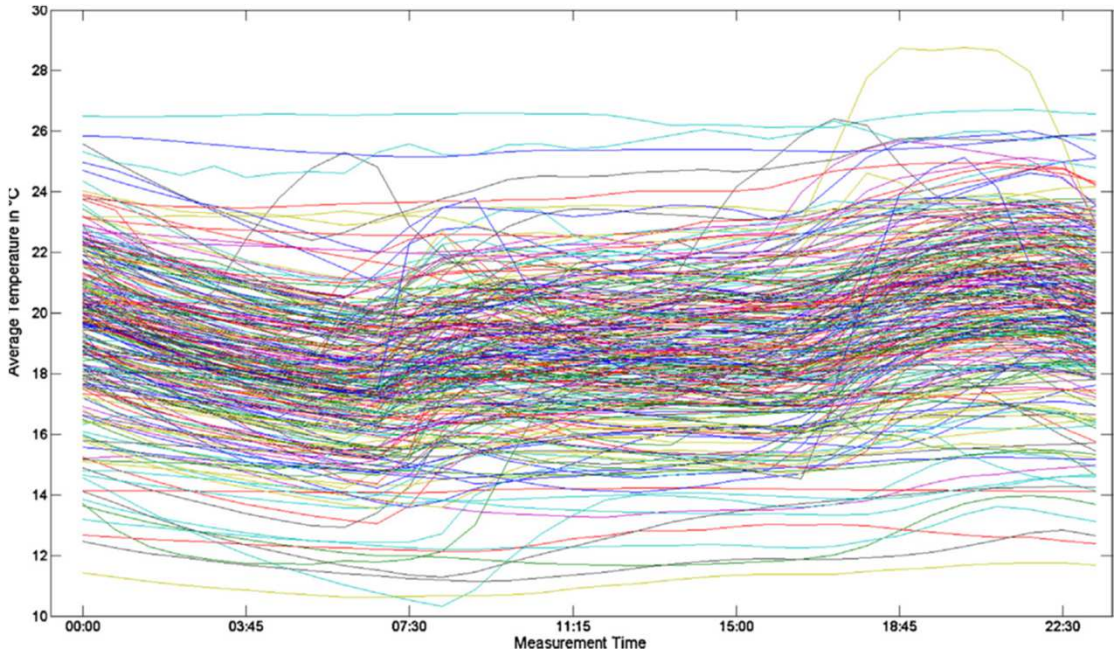
*UK shallow ground temperatures for ground coupled heat exchangers, Jon Busby

Internal Meters

- Flow rate is low (small/domestic meters)/intermittent & Temperature difference is large -> Significant heating of incoming gas
  - DMTS: internal gas temperature 5.2-6.1C warmer than external
  - KIWA study: internal gas temperature within 2C of room temperature

Internal Meters

- Internal Temperatures
  - Studies by UCL showed average living room temperature ~19C (1 Nov-31 Jan)*



*Gesche M. Huebner, Megan McMichael, David Shipworth, Michelle Shipworth, Mathieu Durand-Daubin & Alex J. Summerfield (2015) The shape of warmth: temperature profiles in living rooms, Building Research & Information, 43:2, 185-196, DOI:10.1080/09613218.2014.922339

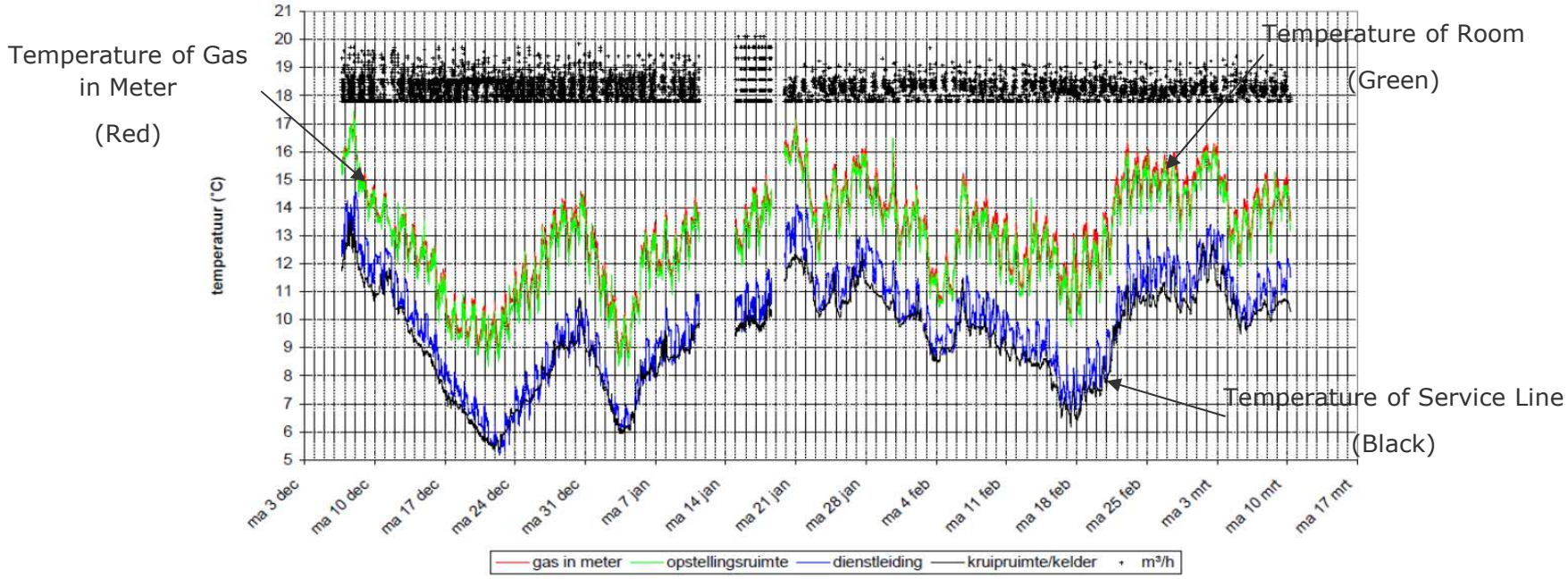
http://discovery.ucl.ac.uk/1436128/1/Huebner_shape%20of%20warmth%20temperature%20profiles%20in%20living%20rooms.pdf

*Gesche M. Huebner, Megan McMichael, David Shipworth,Michelle Shipworth, Mathieu Durand-Daubin, Alex Summerfield, The reality of English living rooms – A comparison of internal temperatures against common model assumptions

https://www.sciencedirect.com/science/article/pii/S0378778813004131/

Internal Meters

- "the temperature of the gas in the gas meter is almost exclusively determined by the temperature in the room where the meter is installed."
- "The heat transfer through the service line in the meter installation room and through the gas meter is such, that the gas temperature within two degrees is equal to the temperature in the meter installation area, regardless of the flow temperature."



Taken from "Misreading of Conventional Diaphragm Domestic Gas Meter", Rene Hermkens, KIWA Technology, 2012

Average Meter Temperature

- External: Ground Temperature or DMTS ~9C
- Internal: 2 options
  - DMTS 14.72C
  - KIWA 17C (19C average internal – 2C)
- Sheltered: located in unheated spaces e.g. garage
  - Average Temperature between internal and external
  - <10% meters

- Overall: 11.5-12.5C
  - Weighted average based on meter location split

NDM Algorithm

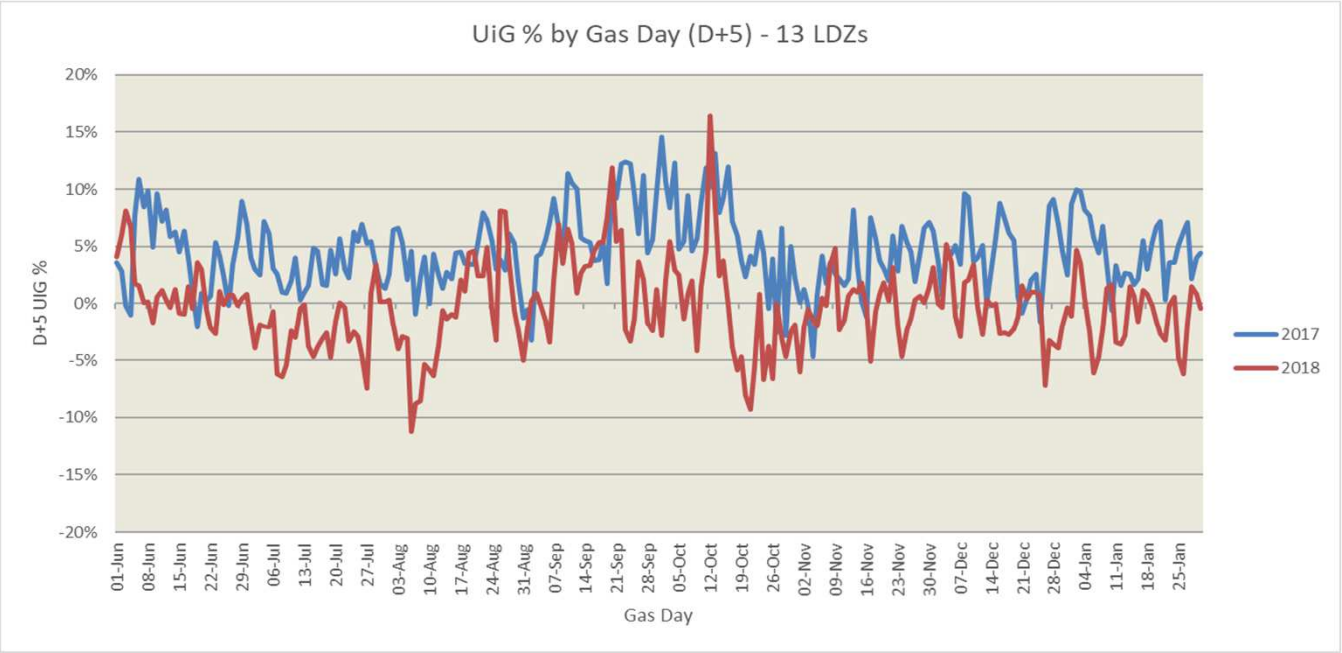
- Seasonal effects from NDM algorithm should be included in UIG factors (2019_18)

Reconciliation

- Levels of final UIG (2019_21)
- Interaction between Demand Estimation, allocation, reconciliation and UGR smearing (2019_9)
  - Factors used for allocation vs reconciliation?

Reconciliation

- Average UIG 1 June to 31 Jan
  - 2017: +4.6%
  - 2018: -0.4%
- ALP/DAF scaling removes 2-3% UIG
  - 2018: +1.1% assuming 3% uplift from 1 Oct 2018 onwards



Balancing Factor

- Balancing Factor over 96% (2019_24)
  - Early Engagement meeting to seek input from industry
  - Additional potential sources of UIG added to issues list by AUGE
  - Continual monitoring of UIG taskforce findings, PAC findings and code mods
  - 33 new items added to UIG issues log this year

Theft

- Support of new theft methodology but further improvements can be made with additional data from Experian (2019_3)
- AUGE should not undertake theft assessment in isolation (2019_10)
  - Concern around assessed losses for pre-payment meters
  - Concern over TRAS data for I&C sites
- Offer to meet with British Gas Revenue Protection Unit

Theft

- Results of initial analysis using new method
- Of 9000 confirmed thefts since Nexus go-live
  - 0 from PC1, PC2
  - 2 from PC3
- 307 confirmed thefts from Smart/AMR
  - All but 2 in PC4 despite having the technology to be in different PC
- 78% of all confirmed thefts are from ETM
  - ETMs overwhelmingly PC4 EUC 01B

Theft

- Even when effects of targeting are removed, theft arises almost entirely from PC4
  - Around 95% from EUC 01B
  - Around 5% from EUC 02B
  - Negligible amounts from other sources

Balancing Factor Split

New

EUC	PC1	PC2	PC3	PC4
01B	0.00%	0.00%	0.02%	94.07%
02B	0.00%	0.00%	0.02%	5.80%
03B	0.00%	0.00%	0.00%	0.09%
04B	0.00%	0.00%	0.00%	0.00%
05B	0.00%	0.00%	0.00%	0.00%
06B	0.00%	0.00%	0.00%	0.00%
07B	0.00%	0.00%	0.00%	0.00%
08B	0.00%	0.00%	0.00%	0.00%
09B	0.00%	0.00%	0.00%	0.00%

Old

EUC	PC1	PC2	PC3	PC4
01B	0.00%	0.00%	0.23%	78.36%
02B	0.00%	0.00%	0.40%	7.00%
03B	0.00%	0.00%	0.49%	5.13%
04B	0.00%	0.00%	0.35%	2.29%
05B	0.00%	0.00%	0.23%	1.61%
06B	0.00%	0.02%	0.17%	1.40%
07B	0.00%	0.03%	0.13%	1.14%
08B	0.00%	0.07%	0.10%	0.85%
09B	0.00%	0.00%	0.00%	0.00%

Theft

- ETTOS and qualified outlier data not available for current year
  - Analysis conducted without them
  - Unable to remove some effects of supplier theft detection targeting
  - Data will be pursued for next year

- Further improvements
  - Theft closely linked to ETM
  - Theft patterns will therefore follow changes in ETM population rather than changes in overall population if these differ
  - Track ETM population over time and use to forecast this element of theft (78%)
  - Additional data and method update required
    - This will be implemented for calculation of 2020/21 factors

Smart/AMR Populations

- Concerns raised that the method of extrapolating Smart/AMR populations to the forecast year does not recognise the difference in installation rates between small and large suppliers (2019_4)

- Method uses BEIS data for large suppliers as a basis
- For small suppliers, these rates are amended based installation history
- These differences are therefore taken account of

- We will review the section of the AUGS where this method is described and update as necessary.

Product Class Populations

- Composition of sites in PC2 (2019_6)

- Concern that lower UIG factors for PC2 will result in a sharp increase in the population of this Product Class
  - Currently a 36% increase from now until the forecast year is estimated

- AUGE approach must be data-based and evidence-based
  - Therefore reactive and cannot anticipate potential (unknown) responses to such changes

- Magnitude of issue mitigated by getting a new set of data immediately prior to final factor calculation and using this

Shrinkage

- Relationship between AUGE & Shrinkage model (2019_7)
  - Shrinkage consultation
  - Flat shrinkage profile

Failed Suppliers

- How do failed suppliers distort reconciliation process? (2019_8)

Other

- Additional 10% to PC4 (2019_23)
  - Clarification has been sought
- Shipper is pleased with handling of verifiable (directly calculated) sources of UIG where data is available (2019_5)

Data Status – Outstanding Issues

- Meter Reads
  - Significant number of missing reads (>16m)
- Meter Asset Information
  - Outstanding queries regarding meters with volume conversion
- Offline Adjustments
  - Only provided by billing month
- IGT CSEPS
  - Issue with CSEP invoicing data for gas years 2013 & 2014
  - May not include SIUs
  - CSEP rejection process no longer managed by Xoserve
    - Need to identify alternative data source
- Theft
  - ETTOS and Qualified Outlier data will not be available this year

Next Steps

- AUG Expert to prepare Modified AUGS & Table by 5 Mar
  - Table will be based on latest data where possible
- AUG Expert will re-publish consultation responses to include
  - any additional clarifications/feedback from today
  - AUG Expert's assessment of how each issue will be treated
- Data
  - Work with SPAA to progress data request for next year
  - Work with CDSP to resolve data provision issues early to mitigate impact on next year's AUG process

Thank you

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