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DIGITAL SOLUTIONS

AUG Technical Workgroup of UNCC

Introductory Meeting for 2018/19

Tony Perchard & Andy Gordon

10 August 2018

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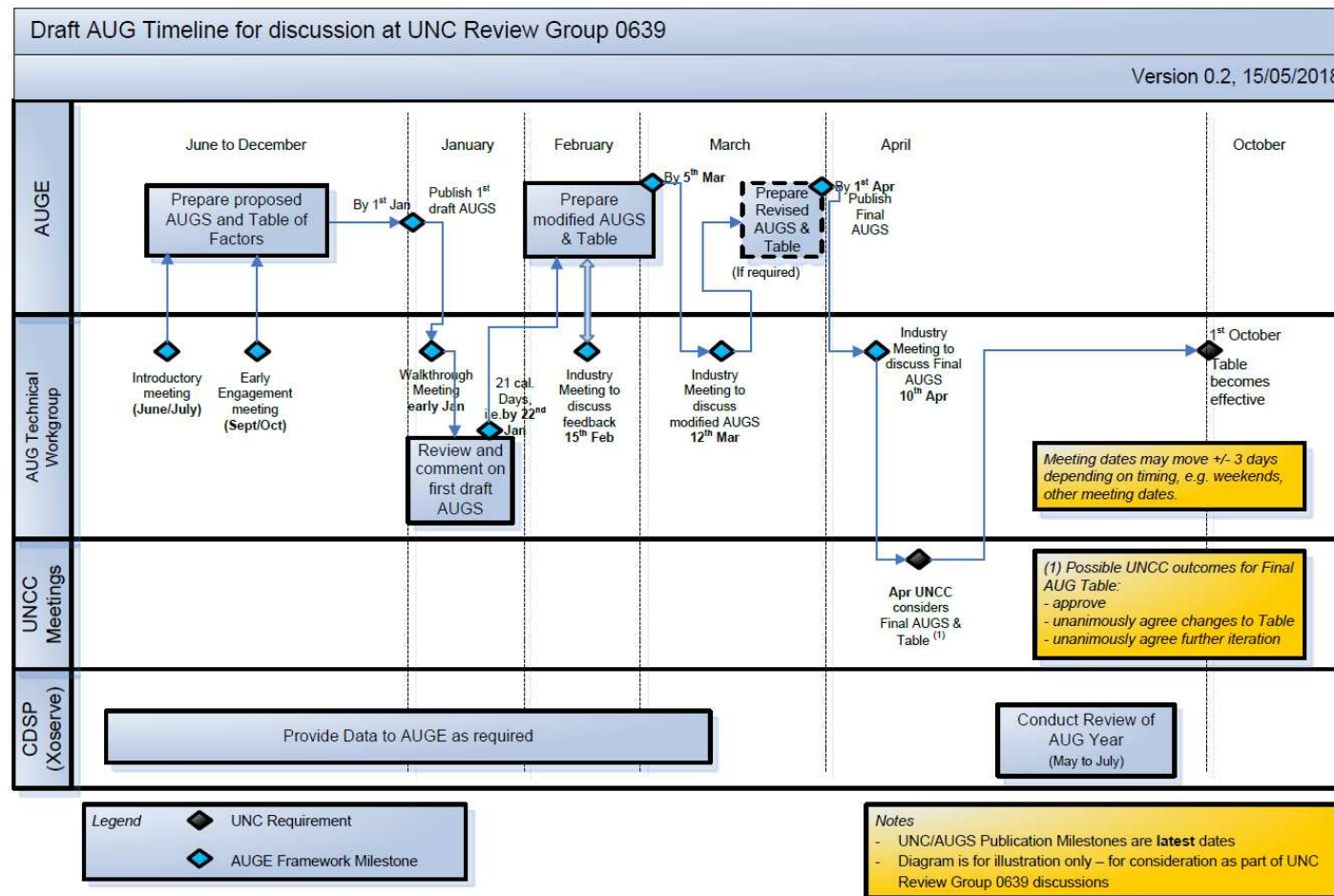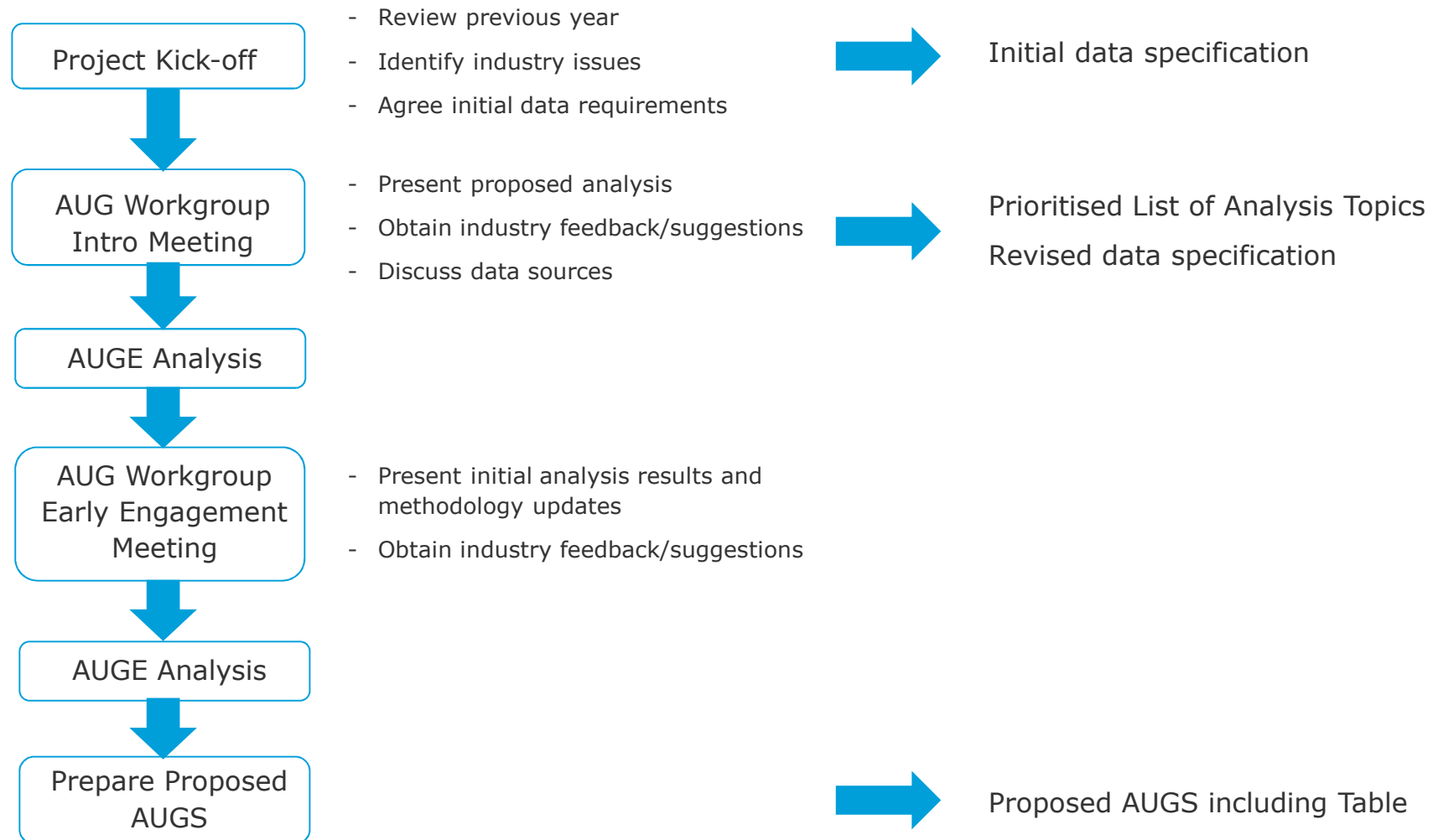
Agenda

- Introduction

- High Level Approach to Developing AUG Methodology

- Proposed Changes to Methodology

  – Carried forward consultation responses

- Industry Changes and Modifications
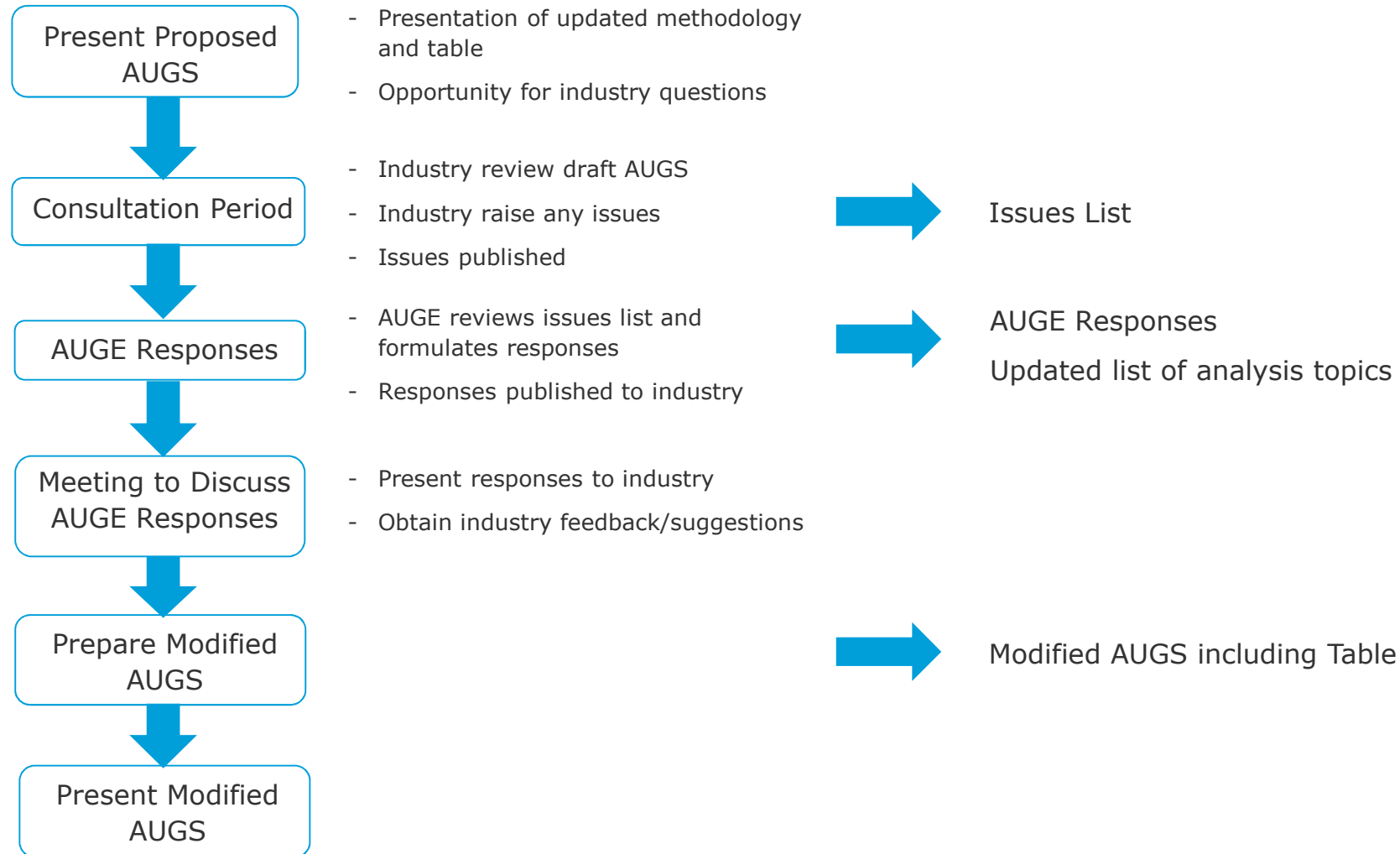
- Proposed Data Sources

- Next Steps

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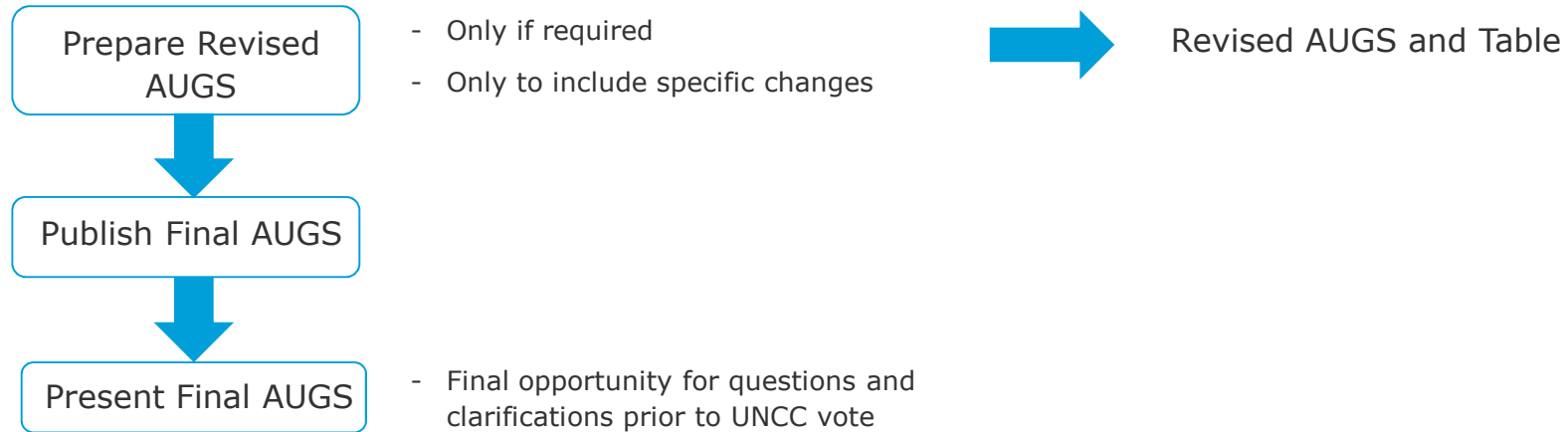# Introduction

- Mod 0639R – Review of AUGE Framework and Arrangements

Draft AUG Timeline for discussion at UNC Review Group 0639

Approach

Project Kick-off

- Review previous year
- Identify industry issues
- Agree initial data requirements

→ Initial data specification

AUG Workgroup Intro Meeting

- Present proposed analysis
- Obtain industry feedback/suggestions
- Discuss data sources

→ Prioritised List of Analysis Topics

Revised data specification

AUGE Analysis

AUG Workgroup Early Engagement Meeting

- Present initial analysis results and methodology updates
- Obtain industry feedback/suggestions

AUGE Analysis

Prepare Proposed AUGS

→ Proposed AUGS including Table

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Approach

Present Proposed AUGS
- Presentation of updated methodology and table
- Opportunity for industry questions

Consultation Period
- Industry review draft AUGS
- Industry raise any issues
- Issues published

→ Issues List

AUGE Responses
- AUGE reviews issues list and formulates responses
- Responses published to industry

→ AUGE Responses

Updated list of analysis topics

Meeting to Discuss AUGE Responses
- Present responses to industry
- Obtain industry feedback/suggestions

Prepare Modified AUGS

→ Modified AUGS including Table

Present Modified AUGS

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Approach

Prepare Revised AUGS
- Only if required
- Only to include specific changes

→ Revised AUGS and Table

Publish Final AUGS

Present Final AUGS
- Final opportunity for questions and clarifications prior to UNCC vote

Proposed Changes to Methodology

- Methodology Updates
  - Alternative Replacement Values in Consumption Calculation

- Areas for Investigation
  - Theft
  - Volume to Energy Conversion
  - Theft from PC2 Sites (ex DME/DMV)

- Other Potential Areas for Investigation
  - Discussion

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Proposed Changes to Methodology
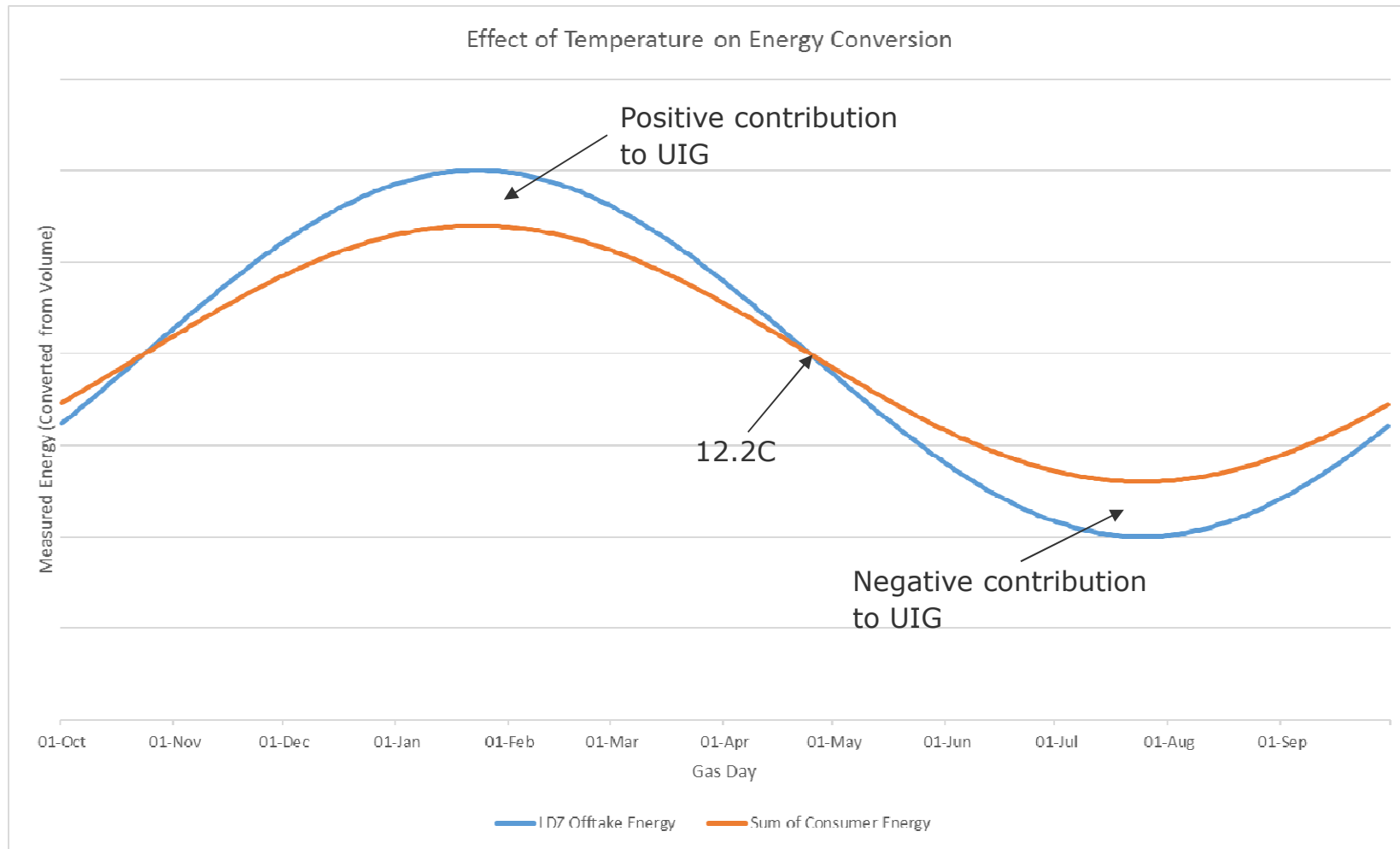
- Status of Consultation Responses

Issue Ref	Issue	Raised By	Response Ref	Status
1	Refer to Xoserve as CDSP	Eon	2018_2	Closed
2	AUGS References to SSP/LSP	Eon	2018_3	Closed
3	UIG/UG Terminology	Eon	2018_4	Closed
4	Pressure & Temperature Corrections	Eon	2018_5	For analysis 2018/19
5	Non-compliance with mandatory AMR	Eon	2018_6	Closed
6	Explanation of cubic smoothing of factors	Eon	2018_7	Closed
7	Meter read spacing for consumption calculation	Eon	2018_8	Closed
8	More Detailed Theft Analysis	Eon	2018_9	For analysis 2018/19
		Corona Energy	2018_14	
			2018_15	
		ICoSS	2018_17	
		British Gas	2018_23	
9	References to Theft Data	Eon	2018_10	Closed
10	Theft Split in SPAA Report	Eon	2018_11	Closed
11	Use of Site Specific Correction Factors	Eon	2018_12	Closed
12	AUGE Independence	Eon	2018_13	Closed
13	Shrinkage error	Corona Energy	2018_16	Closed
		ICoSS	2018_20	Closed
14	Theft from PC2 (DMV/DME sites previously)	ICoSS	2018_18	For analysis 2018/19
15	SMART/AMR population estimates	ICoSS	2018_19	Closed
16	Impact of Nexus DM Errors	Britsh Gas	2018_21	Closed
17	Allocation of Balancing Factor to DM Sites	Britsh Gas	2018_22	Closed
18	Smart Meter Population	Britsh Gas	2018_24	Closed
19	Uniformly Allocable Sources of UG	Britsh Gas	2018_25	Closed
20	Statistical Housekeeping	Britsh Gas	2018_26	Closed

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Energy Conversion

- Relies on accurate Pressure, Temperature & CV

- Specifically asked to consider effect of fixed P&T correction factors

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Effect of Temperature on Energy Conversion

Effect of Temperature on Energy Conversion

Positive contribution to UIG

12.2C

Negative contribution to UIG

Measured Energy (Converted from Volume)

Gas Day

LDZ Offtake Energy   Sum of Consumer Energy

Effect of Temperature on Energy Conversion

- UIG will display a seasonal pattern due to approximations in energy conversion
  - Discrepancy is ~0.35% per DegC**
  - Gas temperatures in domestic meters in range 0-24 degC**
  - Discrepancy in energy +/- 4%**
  - May be offset by pressure effect
- UIG will vary geographically due to temperature variations
- Only get permanent UG where +ve and –ve UIG don't cancel out
  - Previous assumption -> 12.2C is a good average estimate over 4yrs

**Gas energy measurement. A consultation document. Ofgem, Nov 2000

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Pressure

- Standard Pressure – 1013.25mb

- Altitude

  – Standard P Factor -> 66m above sea level

  – Discrepancy is ~0.12% per 10m altitude difference**

- Daily Air Pressure Variation

**Gas energy measurement. A consultation document. Ofgem, Nov 2000

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Proposed Altitude Analysis

- Calculate Total Consumption using current P/T factors
  - Only meters with successful consumption calculation
  - Only meters with standard correction factors
- Obtain data
  - Meter Altitude
- Recalculate Total Consumption for comparison

- Data Required for Analysis
  - Meter level altitude data (OS), mapped to MPRN by CDSP
  - 3 LDZs?
  - Gas years 2009-2016?

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Proposed Pressure/Temperature Analysis

- Calculate Total Consumption using current P/T factors
  - Only meters with successful consumption calculation
  - Only meters without converters fitted
- Obtain data
  - Historic Temperature and Pressure
- Recalculate Total Consumption for comparison

- Data Required for Analysis
  - Actual daily average air temperatures and air pressures
  - Actual daily average ground temperatures
  - Details of converters fitted
  - Meter set pressures
  - 3 LDZs?
  - Gas years 2009-2016?

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Industry Changes and Modifications

– 659S Improvements to the Composite Weather Variable

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Theft – Current Data/Method

- Detected theft records available from CDSP
  - Record by record for individual thefts (anonymised)
- SPAA Schedule 33 report
  - Aggregate level only

- It is not appropriate to use detected theft records to draw conclusions about undetected theft
  - Detected theft levels are the result of targeting
  - Theft will only be detected where the Supplier looks for it

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Theft – 2019/20

- Develop a method for removing bias from the detected theft records
- Allow undetected theft to be estimated from adjusted detected theft
  - Replace existing method, which is based on limited data
  - Include Smart Meter/AMR/Traditional meter split

- Analysis requires additional data
- Line by line theft records as provided by Suppliers
  - TRAS Outcome files
  - All data: leads ("suspected incidents"), investigations and detections

- Full versions supplied to CDSP
- CDSP anonymise and provide to AUG Expert
  - MPRNs replaced with dummy values consistent with those used elsewhere

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Theft – Approach

- Lead

- Investigation

- Detection

- Investigations and detections influenced by Supplier strategy

  – Choice of how much and what to investigate

- Leads from certain sources are unbiased

  – TRAS, MRA and Tip-Off

  – Relative levels reflective of prevalence of suspicious activity in wider population

    – Same pattern as undetected theft

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Theft – Approach

- Use this subset of leads to produce figures for detected thefts with Supplier strategy influence removed
  - Leads → Investigations
  - Investigations → Detections

- Split by EUC/Product Class
  - Additional split by Smart/AMR/Traditional

- Use theft quantity in each case
  - More kWh per unit time from larger sites

- Convert to proportions
- Apply to Balancing Factor

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Theft – Smart Meters

- Relative level of theft from Smart Meters is key to UG calculations
- Smart Meters still not fully represented in asset data

- Use serial numbers as well as asset data to identify Smart Meters
  - Serial numbers should be recorded in TRAS Outcome files
  - If not, CDSP can retrieve them using MPRN
  - Map serial number to meter type
  - CDSP supply mapping only to AUG Expert, not the serial numbers themselves

- Asset data and these rules combined should identify the vast majority of Smart Meters

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Theft – Smart Meters

- Elster Smart Meter
  - BKG4E

- Secure Smart Meter
  - 14P, 15P, 16P

- Landis and Gyr Smart Meter
  - E6S

- Any more?

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Theft – Data

- TRAS/SPAA data request written and under review by industry/CDSP
- Final draft 13th August
- To be considered at meeting on 21st August

- Summary of data requested:
  - EUC/Product Class
  - Meter Type (traditional/Smart/AMR) – from asset data/serial number
  - Meter installation date - from asset data
  - Source of lead (MAM, MRA, GT, TRAS, own analysis, tip-off)
  - Lead investigated? (Yes/No)
  - Theft detected? (Yes/No)
  - Gas stolen (kWh)
  - Theft type (tampering code)
  - Start and end dates of theft

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Product Class 2

- Product Class consists of two types of sites
  - Ex-DMV/DME: these have low UG levels
  - Ex-NDM LSP: these have higher UG levels
- Need to deal with both in same Product Class

- Type of each PC2 site can be traced
  - Ex-DMV/DME, ex-NDM LSP
  - Appropriate UG level applied to each during analysis

- Improved quantification of theft levels also feeds into calculation
  - Smart Meter and AMR

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Product Class 2

- UG for PC2 split into components during analysis
- Same approach as used for PC2 EUCs 1-3
  - Smart or traditional meter

- Combine into single set of factors for the Product Class

- Overall UG will be correct for PC2 as a whole
  - Cross-subsidy between ex-DMV/DME and ex-NDM LSP will still exist
  - Same as for Smart or Traditional meters in PC4

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Proposed Data Sources

- Updated datasets from CDSP
  - Data Specification Issued 13 July

Date Requested	Reason for Request	Data Type/Information required	Data Provider	Due Date	Status
13/07/2018	Calculation of Consumption	**Allocations** Final allocations including CSEPS from 01/10/2016 to 30/09/2017, new data only	Xoserve	10/08/2018	Not Provided
13/07/2018	Calculation of Consumption	**Throughput** Required from point of Nexus go-live	Xoserve	10/08/2018	Not Provided
13/07/2018	Calculation of Consumption	**AQ History** Updated AQ history files to be provided containing any new AQ records since previous data drop.	Xoserve	By LDZ as available	Not Provided
13/07/2018	Calculation of Consumption	**CSEP Invoicing Data at 1 Oct 2017** - Supply point counts and Aqs - AQ recalculation success rates	Xoserve	10/08/2018	Not Provided
13/07/2018	Calculation of Consumption	**Factors (Profiling Algorithm Parameters)** An update containing the most recent factors (gas year 2016/17) is required	Xoserve		Not Provided
13/07/2018	Calculation of Consumption	**Meter Errors (LDZ, CSEP, DM & Unique)** All meter error adjustments from 1/04/2008 onwards, "closed" meter errors only	Xoserve		Not Provided
13/07/2018	Calculation of Consumption	**Meter Asset Information** Update of Meter Info files containing all updates since the previous data drop	Xoserve	By LDZ as available	Not Provided
13/07/2018	Calculation of Consumption	**Meter reads & volumes** Updated meter reads from 01/04/2008	Xoserve	By LDZ as available	Not Provided
13/07/2018	Calculation of Consumption	**Prime/Sub Meters**	Xoserve		Not Provided

Proposed Data Sources

- New datasets from CDSP - Requested
  - Elevation data
- New theft data – Request to be considered at TIG (21 Aug)
  - SPAA Schedule 33 Report
  - Supporting data regarding report completeness
  - Record level theft investigation/outcome data
  - All qualified outliers/leads identified by TRAS/ETTOS
- Additional data requirements
  - Historic actual temperatures (air, ground, at meter?)
  - Historic actual pressures
  - Details of converters fitted

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Next Steps

- AUGE to report back at Early Engagement Meeting – End Oct

- Any Feedback?

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Thank you

AUGE.software@dnvgl.com

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