Joint Office of Gas Transporters

UNC Request	At what stage is this document in the process?
# UNC 0719R: ## Calculation of Energy Value of Gas	

Purpose of Request:

The Offtake Arrangements Document describes arrangements between Transporters for calculating the energy value of the gas in the network. The main driver for this Review Group is the UNC OAD Section F notice period available to National Grid to terminate the provision of the existing service to the Gas Distribution Networks (GDN), however several developments such as the growth of biomethane injection into distribution networks, a need to review the process for attributing energy values from one offtake to another and questions about whether the UNC obligations sit with the correct party also direct that a review of these arrangements is required.

	The Workgroup recommends that the Panel accept the report and close-down the Review Group.
	High Impact: Transporters
	Medium Impact: Shippers
	Low Impact: IGTs

Joint Office of Gas Transporters

Contents

About this document:

This document is a Request, which will be presented by the Proposer to the panel on 19 March 2020.

The Panel will consider the Proposer's recommendation and agree whether this Request should be referred to a Workgroup for review.

Any questions?

Contact:
Joint Office of Gas Transporters

enquiries@gasgovernance.co.uk

0121 288 2107

Proposer:
Joel Martin, SGN

Joel.Martin@SGN.co.uk

0131 4691809

Transporter:
SGN

Joel.Martin@SGN.co.uk

029 2027 8552 or 07812 973337

Systems Provider:
Xoserve

UKLink@xoserve.com

telephone

Additional contacts:
Hilary.Chapman@SGN.co.uk

1 Request

Why is the Request being made?

The UNC Offtake Arrangements Document (OAD) describes arrangements for calculating the energy value of the gas in the network. A review is required due to:-

- The current UNC OAD obligations provide for a notice period to be served on the GDNs by National Grid for the termination of the service to calculate Flow Weighted Average Calorific Values (FWACV).
- The growth of biomethane injection into GDN networks at directed sites that require calculation of energy values.
- A need to review the process for attributing CV values from one offtake to another should equipment fail. (Calorific Value (CV) attribution)
- Whether the UNC OAD obligations sit with the correct party or parties.

Both GDNs and National Grid have an interest in the FWACV calculations, GDNs need to declare the Flow Weighted Average Calorific Value (FWACV) and National Grid need the data to calculate Calorific Value (CV) shrinkage and CO_2 emissions from NTS compressors. National Grid have confirmed they are not currently funded or provided with any regulated allowances to carry out the daily CV calculation service.

Scope

UNC 0646R - Review of the Offtake Arrangements Document is reviewing a number of sections of the OAD but is not reviewing sections F and M which are the focus of this review. Therefore, the two reviews can run in parallel.

A significant amount of work has already been completed by the GDNs and National Grid to identify four options to continue to meet the UNC OAD obligations. These need to be assessed and the most appropriate way forward identified, in terms of cost, timescales and overall efficiency for the industry. Potential changes to the Gas (Calculation of) Thermal Energy Regulations (the Thermal Energy Regulations) are out of scope. The options identified are:

Option 0 (current arrangement)

National Grid Gas continues to provide a centralised service to the industry.

Option 1

GDNs take responsibility for the service and use CDSP to provide a centralised service and publish the information on a centralised web site.

Option 2

GDNs take responsibility for the service and use a third-party provider or complete the work in house and publish the information on a centralised web site.

Option 3

Each party performs the functions that naturally fall to them and exchange information as required.

The UNC OAD related document "Transmission System Operator to Distribution System Operator Agreement Guidelines[1]" describes the process for projects affecting distribution and transmission relevant to the OAD and this document needs to be complied with in delivering whichever solution is chosen. Section 6 and Annex 1 are particularly relevant.

Impacts & Costs

The first stage of the process will be to calculate the total cost and assess the impacts of each option. For each option there are likely to be one off set-up costs and ongoing costs, who pays for these costs needs to be decided. Some options may take longer to deliver than others and this needs to be considered in conjunction with constraints imposed by other projects and budgets.

Recommendations

The objective of the Review Group is to identify the most appropriate solution that delivers the requirements and works with the current structure of the industry. The outcome may be a UNC Modification which proposes a solution to deliver an option which meets the relevant licence objectives.

This Modification should be developed through a UNC workgroup to enable all industry parties to contribute to the assessment of the options and development of the solution.

Additional Information

Gas Act: Section 12 provides:

12: Methods of calculating therms.

(1) Except in prescribed cases, the number of therms or kilowatt hours conveyed by a gas transporter to premises, or to pipe-line systems operated by other gas transporters, shall be calculated in the prescribed manner—

(a) on the basis of calorific values of the gas determined by the transporter in accordance with regulations under this section, or so determined by another gas transporter and adopted by the transporter in accordance with such regulations; or

(b) if and to the extent that regulations under this section so provide and the transporter thinks fit, on the basis of declared calorific values of the gas;

and regulations under this section shall be made by the Director with the consent of the Secretary of State.

The regulations referred to above are the Gas (Calculation of) Thermal Energy Regulations. These were issued in 1996 and amended in 1997, 2002 and 2015. Links are below:

The Gas (Calculation of Thermal Energy) Regulations 1996

The Gas (Calculation of Thermal Energy) (Amendment) Regulations 1997

The Gas (Calculation of Thermal Energy) (Amendment) Regulations 2002

The Gas (Calculation of Thermal Energy) (Amendment) Regulations 2015

[1] Transmission System Operator to Distribution System Operator Agreement Guidelines

The Thermal Energy Regulations were originally drafted into legislation in 1996 and reflected the gas industry structure at that time, although they have been amended in subsequent years. The current gas industry structure has one transmission transporter, four distribution networks as well as Independent Gas Transporters (IGT) and it is not immediately clear whether one or more than one gas transporter has the legal obligation to calculate daily CVs or whether it is a shared legal obligation. Since bio-methane injected into a distribution network, (or potentially an IGT network), will remain in the distribution network then it may be argued that the distribution network should calculate the energy values associated with this input. By that argument National Grid would be responsible for calculating the energy value of biomethane sites injecting into the NTS. National Grid currently calculates energy values for end users directly connected to the NTS. Currently GDNs measure all the energy values at inputs into distribution networks and provide the data to National Grid who calculate the FWACVs that are used for all energy settlements. National Grid are the only party that has access to information to establish the directional flow of the gas flowing within the NTS and this information would be required by GDNs to identify the most appropriate offtakes if CVs have to be attributed to one offtake from another offtake. National Grid uses the FWACV to calculate daily CV shrinkage, (in accordance with General Terms C3.3.3), and also uses the data once a year to calculate CO_2 emission factors for their compressors (this is not required by the Thermal Energy Regulations). The information (CV, volume, and energy figures per LDZ) are currently published in National Grid's Market Information Provision Initiative (MIPI) system and on the National Grid Data Item Explorer. In the interests of convenience for Shippers and non-fragmentation of information, this information needs to continue to be published in a central easily accessible location, preferably together with other relevant information.

UNC OAD F4.1.2[2] provides National Grid the option to serve six months' notice that they are terminating the current service to GDNs on the basis that the UNC states the calculation of FWACVs is a GDN obligation under the Thermal Energy Regulations.

2 Impacts and Costs

Consideration of Wider Industry Impacts

Impacts on Shippers

The aim is to identify potential impacts on Shipper organisations stemming from the various options to calculate the FWACV, with the aim to limit / eliminate any impacts and that CV information for all networks should still be published on one central accessible website.

Impacts on IGTs

No impact on IGTs is expected, there are currently no biomethane sites injecting into IGT networks and this review assumes that this will not change. Should a biomethane site, or other gas producer, inject into an IGT site and this site be directed by Ofgem under Gas Act section 12(4), then the IGT would need to make appropriate arrangements.

[2] UNC Offtake Arrangements Document Section F

Impact on Central Systems and Process	
Central System/Process	Potential impact
UK Link	• No major impact
Operational Processes	• Potentially new processes depending on solution option

Impact on Users	
Area of Users' business	Potential impact
Administrative and operational	• May impact depending on solution option / solution to communicate daily CVs.
Development, capital and operating costs	• May impact depending on solution option / solution to communicate daily CVs.
Contractual risks	• Nil
Legislative, regulatory and contractual obligations and relationships	• The existing regulatory and contracting framework would be realigned, and new contracting arrangements established to ensure that the new CV derivation process was provided seamlessly for users.

Impact on Transporters	
Area of Transporters' business	Potential impact
System operation	• No direct impact
Development, capital and operating costs	• Potential impact depending on option
Recovery of costs	• Potential impact depending on option
Price regulation	• Potential impact depending on option
Contractual risks	• Potential impact depending on option
Legislative, regulatory and contractual obligations and relationships	• Potential impact depending on option
Standards of service	• No impact

Impact on Code Administration	
Area of Code Administration	Potential impact
Modification Rules	• No impact
UNC Committees	• No impact
General administration	• No impact
DSC Committees	• No impact

Impact on Code	
Code section	Potential impact
	• OAD Sections F - Determination of Calorific Value and M - Information Flows

Impact on UNC Related Documents and Other Referenced Documents	
Related Document	Potential impact
Network Entry Agreement (TPD I1.3)	• Nil
General	Potential Impact
Legal Text Guidance Document	• Nil
UNC Modification Proposals – Guidance for Proposers	• Nil
Self Governance Guidance	• Nil
TPD	Potential Impact
Network Code Operations Reporting Manual (TPD V12)	• Nil
UNC Data Dictionary	• Nil
AQ Validation Rules (TPD V12)	• Nil
AUGE Framework Document	• Nil
Customer Settlement Error Claims Process	• Nil
Demand Estimation Methodology	• Nil
Energy Balancing Credit Rules (TPD X2.1)	• Nil
Energy Settlement Performance Assurance Regime	• Nil
Guidelines to optimise the use of AQ amendment system capacity	• Nil
Guidelines for Sub-Deduct Arrangements (Prime and Sub-deduct Meter Points)	• Nil
LDZ Shrinkage Adjustment Methodology	• Nil
Performance Assurance Report Register	• Nil
Shares Supply Meter Points Guide and Procedures	• Nil
Shipper Communications in Incidents of CO Poisoning, Gas Fire/Explosions and	• Nil

Impact on UNC Related Documents and Other Referenced Documents	
Local Gas Supply Emergency	
Standards of Service Query Management Operational Guidelines	• Nil
Network Code Validation Rules	• Nil
OAD	Potential Impact
Measurement Error Notification Guidelines (TPD V12)	• Nil
EID	Potential Impact
Moffat Designated Arrangements	• Nil
IGTAD	Potential Impact
	• Nil
DSC / CDSP	Potential Impact
Change Management Procedures	• Nil
Contract Management Procedures	• Nil
Credit Policy	• Nil
Credit Rules	• Nil
UK Link Manual	• Potential impact depending on option

Impact on Core Industry Documents and other documents	
Document	Potential impact
Safety Case or other document under Gas Safety (Management) Regulations	• Nil
Gas Transporter Licence	• Nil

Other Impacts	
Item impacted	Potential impact
Security of Supply	• Nil
Operation of the Total System	• Nil
Industry fragmentation	• Possible impact depending on option.
Terminal operators, consumers, connected system operators, suppliers, producers and other non code parties	• Nil

3 Terms of Reference

Background

The secondary legislation relating to the calculation of energy values of gas was originally drafted when there was one gas transporter in Great Britain, albeit the legislation was subsequently amended and does reference Public Gas Transporter legal obligations. The UNC OAD document recognises distribution and transmission obligations relating to the calculation of daily CVs. In a world where there is one transmission transporter, four GDNs as well as IGTs it is not immediately clear whether one or more than one gas transporter has the obligation or part of the obligation. In addition, the advent of bio-methane injection into a distribution network and potentially the National Transmission System has resulted in many more sites providing data. Directional gas flows have also changed over the years, with gas entering from different sources and locations. On the basis that only National Grid currently have access to the most appropriate measurement points (which may be located within another GDN's network or on the NTS) on any given day to attribute CVs for another offtake point, access to this data needs also to be considered. Data is being used in ways not originally envisaged by the current arrangements in the OAD for example National Grid use some of the data to calculate the value of gas used in NTS compressors.

Topics for Discussion

- Understanding the objective

The objective is to determine the least cost, most efficient and least industry impact option for the calculation of energy values given legal obligations under the Thermal Energy Regulations and recent developments in a multi-transporter and multi gas source industry.

- Assessment of alternative means to achieve objective

Are there any other options in addition to those identified?

- Development of Solution

Fully scoping the options including estimates of costs, identifying timescales and other impacts such as resource or budget constraints.

- Selection of preferred solution.
- Development of project plan for preferred solution.
- Development of UNC modification required for preferred solution.
- Assessment of legal text of modification.

Outputs

Produce a Workgroup Report for submission to the Modification Panel, containing the assessment and recommendations of the Workgroup including a draft modification to implement the preferred solution, (if necessary).

Composition of Workgroup

The Workgroup is open to any party that wishes to attend or participate.

A Workgroup meeting will be quorate provided at least two GDN and one National Grid representatives are present.

Meeting Arrangements

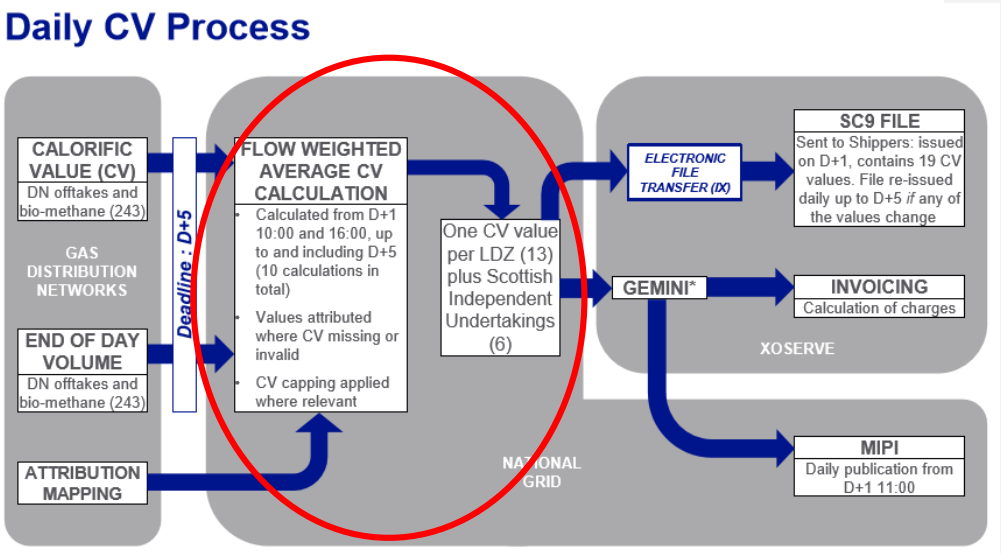
Meetings will be administered by the Joint Office and conducted in accordance with the Code Administration Code of Practice.

4 Output of Review Group

Process Discovery

The UNC (OAD F1.2) reflects that GDNs are required to determine daily CVs for their charging areas (LDZs) pursuant to the Thermal Energy Regulations. The UNC (OAD F 4.2.3) places an obligation on National Grid to determine daily CVs having been provided with the necessary information by the GDNs.

The graphic below represents the activities undertaken by parties, (and data flows between them), to determine CVs applicable in GDN charging areas. For the purposes of this Workgroup, it is the activities and data processing in the red oval which National Grid currently undertakes on behalf of GDNs (pursuant to OAD Section F4) which is the focus of discussions.



The activities undertaken by National Grid comprise:

- Receiving Calorific Values and volumetric data from, in total, 243 NTS / LDZ Offtakes and LDZ entry points, (principally biomethane producers)
- Producing the applicable CV applicable for each of the 13 charging areas (LDZs) and the 6 SIUs and re-running the calculations twice a day, (up to a maximum of 10 runs in total), until the CV and volume data closes-out at end of D+5.

  (Note: the term applicable CV is used rather that FWACV because occasionally it may be necessary to cap the LDZ CV at 1MJ/m³ above the lowest source flowing into the LDZ, in accordance with the rules for determining CV, set out in the Thermal Energy Regulations).

- Applying the "Attribution Mapping Matrix" to provide proxy values where actual CV data is not available. The CV attribution process was explained by National Grid in a presentation: **FWACV attribution mapping**.
- Sending charging area CV data to the CDSP for consolidation into SC9 files for onward transmission to shippers
- Inputting charging area CVs into Gemini up to the end of D+5 as values and revisions become available
- Producing of a monthly report for Ofgem of the form: **Components of Flow-Weighted Average CV Interface File**
- The daily determination and publication of Forecast CVs

The time-point, end of D+5 after the gas flow day, is set out in the UNC as the Exit Close Out Date and establishes the point in time when exit related energy values are finalised for settlement purposes. Up to that point FWACVs may change if revised data becomes available and would be communicated to National Grid where relevant.

National Grid would continue to carry out auxiliary CV related activities, such as:

- CV Shrinkage calculations (for determination of NTS Shrinkage volumes)
- Publication of CVs on MIPI

MIPI can be accessed using the following link: **MIPI,** and choosing either the Report Explorer or Data Explorer links under the CV data section:.

CV data

You can view or download CV information relating to charging zones from the Report Explorer and Data Item Explorer.

National Grid Position

At the August meeting, National Grid confirmed its decision to discontinue its existing service for determination of charging area CVs and communicated its intention to issue notice (under OAD F4.1.2) to terminate the arrangements in OAD F4. It stated an expectation to issue this notice in September 2020, providing a minimum 6 months' notice period.

However, as part of this advance statement of intent, National Grid acknowledged that lead times for establishing an alternative option, (as specified by GDNs and CDSP), are likely to extend beyond 6 months and therefore in order to ensure continuity it would offer to provide an interim service to GDNs for a maximum period of 12 months following the initial 6 month notice period. National Grid commented that the interim service would only be offered on an "all or none basis", i.e. to GDNs collectively and would be a chargeable service covering National Grid's OPEX costs.

Therefore, considering the 6-months' notice period and 12-months' interim service option, if the service offer were to be accepted by GDNs this would provide a maximum time span of 18 months continued service for GDNs which should provide sufficient for all parties to engage another service provider and develop the necessary systems, interfaces and implement alternative arrangements.

Latest Developments

At the September meeting, National Grid confirmed that on 07 September it had issued a notice to all GDNs advising them that it would be ceasing to provide the service on the current basis on 31 March 2021 and would offer to provide service continuation beyond that period through a transitional arrangement for a further 12 months on new "commercial terms". The exact wording of transition agreement is yet to be developed, although, while noting that the agreement would be a multi-bilateral arrangement outside of the UNC, a view was expressed that since many parties, including gas customers depended on these calculations and the CV information being publicly available, that the service schedules in contract should be visible to the wider community to provide assurance during the transition.

Options Available for GDNs

Given National Grid's notification ~~of intention to issue notice~~ to cease provision of its service for calculation of charging area CVs, GDNs confirmed the options available to them are as follows:

Option 0

Continue current arrangements with National Grid providing daily CV calculation service to the GDNs and the industry as a whole, although it was noted that for this option to be given effect, a UNC modification would be required to re-set the obligation for determining CVs on National Grid.

Option1

Engage the services of a single service provider (to replicate the central activities provided by National Grid), noting that this could be the CDSP or a Third Party.

Option 2

Each GDN to calculate the charging area CVs for each of its Networks individually, noting that to avoid impacting shippers, a means of providing consolidated SC9 files would be required, (and this could be a CDSP service).

Further analysis of the Options, including budget implementation and running costs, may be found here: **Potential FWACV Options Overview - Initial Cost and Development Timescale Assessment.**

Proposed Course of Action

All GDNs expressed that their preferred alternative was a CDSP provided service rather than each individual GDN carrying out the daily CV calculation, however GDNs confirmed that the preferred service provision was for National Grid to continue to provide the service with existing consumer funded systems, processes and trained FTEs to the industry as a whole rather than place additional cost and potentially fragment the current arrangements.

In terms of a single, new service provider implementation, the CDSP set out a provisional time-line showing a proposed implementation date with associated decision points. Essentially, to achieve an implementation date in 2021, the scope of work would need to be approved by the December 2020 DSC Change Management Committee in order for it to be considered for inclusion in the proposed November 2021 UK-Link Release.

The presentation may be found here: **UK-Link Future Releases (20-21) Update**

At the final Review Group, the CDSP reported that due to the nature of the potential solution, it may be possible to deliver the change outside of the normal release structure, but it was also noted that there was still the potential for change congestion, (for instance with Faster Switching) around this time.

The next steps are:

1. National Grid to issue formal notice to GDNs to cease provision of the charging area CVs service. (Note: This notice was issued on 07 September.)
2. National Grid's offer to cost the activity and provide an interim service charge, split by GDN, in the form of a quotation.

   (Note: National Grid have indicated that it intends to provide a quotation for the interim service towards the end of September)
3. Once in possession of the proposed commercial arrangements, GDNs to confirm, **collectively**, whether or not they wish to accept offer of an interim service
4. Given that National Grid have notified the GDNs of its intention to discontinue the service, and on the basis of GDNs' preference expressed to date, GDNs to initiate a formal request for the CDSP to develop an enduring charging area CV service.

   CDSP to work with GDNs, and National Grid, (noting that one of the requirements would be that National Grid continue to received CV and volume information at offtake and DN Entry Point level), to develop detailed Business Rules to enable a specification to be baselined and at the December 2020 meeting of the DSC Change Management Committee, with the intention of gaining approval for inclusion in the November 2021 release, or such other mutually convenient time, depending on the solution.

   (Note, this action has already commenced and XRN 5231 has already been raised to initiate the project. Link to: XRN 5231 - Provision of a FWACV Service)
5. Once XRN 5231 scope and business rules have been baselined and costed, to present the information to DSC Contract Management Committee for further refinement in terms of cost allocation for the development and implementation phases and for a funding determination on the ongoing service.
6. Once a clear path for the change has been determined, National Grid to the raise a Modification to reset to obligations and draft associated provisions and documentation to align with the new arrangements. The initial view is that a non-exhaustive list would include:
   - UNC OAD Section F
   - UNC TPD Section C1.6
   - UNC GT Section C3
   - OAD - Offtake Communication Document
   - OAD - Transmission System Operator to Distribution System Operator Agreement Guidelines

Formatted: Indent: Left: 1.27 cm, No bullets or numbering

5 Recommendations

Review Group's Recommendation to Panel

The recommendation to Panel, as set-out in the Report, is that since the UNC Request Group has:

- concluded its investigation into the processes used to calculate CVs;
- analysed and documented all elements of the process;
- set-out options for next steps and arrangements to effect a transition of the activities

and, as such, the report is accepted, and the Request Group closed down.