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01	Initial Assessment Report
02	Preliminary Change Report
03	Final Change Report

CHANGE REPORT

R0142 – AMENDMENT TO MULTIPLICATION FACTOR ENUMERATIONS TO SUPPORT HYDROGEN TRIALS

CHANGE REPORT	PRELIMINARY
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CHANGE OVERVIEW

The H100 hydrogen gas trial involves the supply of hydrogen gas to households in place of natural gas. The quantity of gas supplies needs to be billed in a way that is comparable to standard gas supply. To facilitate the trial, a multiplication factor enumeration value must be established within the Data Specification that can replicate hydrogen's calorific value, therefore allowing accurate billing.

High Impact:	Gas Suppliers
Medium Impact:	Central Data Service Provider Meter Equipment Managers
Low Impact:	Gas Consumers

CODE MANAGER'S RECOMMENDATION

The Code Manager recommends Change Proposal R0142 is **APPROVED** for implementation on 28 June 2024.

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BACKGROUND

1 BACKGROUND

When the H100 hydrogen gas trial takes place, Consumers supplied with hydrogen gas must be able to have their consumption measured such that they are not been charged more than they would have been, had they consumed the equivalent energy from natural gas. This is to ensure both a fair outcome for the Consumer, and that REC Parties and Service Providers taking part in the trial are able to accurately report trial data, as well as being properly remunerated for their participation.

Gases that can be used as fuels have a calorific value. When natural gas is supplied to a property, it is assigned a daily calorific value at each Local Distribution Zone by the Gas Transporter based on the physical and chemical properties of the gas supplied. This is a calculation of the energy content of a gas. The multiplication factor is a value inherent to a Gas Metering Asset that standardises the measurement of the physical supply of gas into the asset, so that it can be recorded predictably as a volume through the meter. Both of these values are used in the calculation of a kilowatt hour (kWh), which is used to bill Consumers.

During these initial stages of the H100 trial, changes to Market Messages will need to be made to ensure that hydrogen gas can be billed, using the same methodology used in natural gas billing. In the longer term, a more permanent methodology will be developed, which will include using a different calorific value specific to hydrogen gas. As a result of the lower calorific value of hydrogen, approximately 12 (MJ/M^3) compared to the natural gas calorific value ranging from 38 to 41MJ/M3, the volume of gas used by consumers will be approximately three times greater to deliver an identical equivalent energy requirement. This solution will adjust the metered volume, while retaining the existing natural gas calorific value and will remain representative of the actual energy used at the Consumers' premises. It will equalise the resultant charges for the Consumers, irrespective of the fuel source being used.

Changes to calorific values are technically challenging and are expected to result in substantial consequential changes. A simplified temporary approach has been put forward for the trial, to modify the multiplication factor by an amount that will result in a corrected kWh figure for hydrogen, based on what the correct calorific value would have calculated instead.

2 PROBLEM STATEMENT

In order for the H100 gas trial to be successful, a billable value for hydrogen gas needs to be accurately calculated from supplied physical volumes. To do this, relevant Data Items (relating to the calculation of billable gas volumes) within the Data Specification need to be updated to allow a new value for the multiplication factor. This change seeks to introduce a new enumeration value for the multiplication factor needed to facilitate the addition of this new value.

3 USER STORIES

REF.	USER STORIES
CONSUMER USER STORIES	
C1	As a Consumer taking part in the H100 trial, I want to be charged based on the amount of hydrogen gas I consume, such that I am not charged more than I would have been, had I consumed the equivalent energy from natural gas.
MARKET PARTICIPANT USER STORIES	
M1	As a Gas Supplier, I want to ensure H100 trial Consumers, are not charged more than they would have been, had they consumed the equivalent energy from natural gas.
M2	As the Central Data Service Provider (CDSP), I want Market Messages relating to meter asset information to be accurate, so that I am better able to support dependant REC Parties
M3	As a Meter Equipment Manager (MEM) taking part in the trial, I want my metering assets compatible with the H100 trial to be underpinned by accurate Market Messages, so that I able to manage these meters correctly.

4 SUMMARY OF ANALYSIS UNDERTAKEN

This change has a fully formed solution. Whilst the broader context of the hydrogen trial will likely require substantial regulatory changes across the industry, this change has a narrow scope, only focusing on a change to the Data Specification to facilitate an additional enumeration value for an existing Data Item (the Multiplication Factor). As such, the Code Manager has already developed the required legal text changes to the Data Specification.

5 PROPOSED SOLUTION

The Code Manager has prepared draft legal text to introduce a new enumeration value for the Multiplication Factor Data Item DI40145 / A0120. The new enumeration value will follow the same logical, decimal, and physical length rules as the existing enumerations, so no changes to the Data Item structure are required.

Introduction of the new Multiplication Factor enumeration takes the total number of enumerations from four to five and introduces the new value itself. The DI40145 Data Item is present in five Market Messages: MM40008, MM40009, MM40013, MM40014, and MM40033. As such, implementation of this change will impact both the Data Item itself as the associated Market Messages.

The proposed value for the new DI40145 enumeration has been provided to us from SGN via the proposer. The value that has been provided is 0.304. This value, when used in the calculation of a kWh consumption figure from a metered volume of gas in m^3, will produce a figure that allows hydrogen gas to be billed to Consumers as if it were natural gas. The Code Manager would like to provide a caveat here and note that this value has not yet been approved by Ofgem, and is therefore still subject to change. The Code Manager expects that Ofgem will have approved this value by the end of February 2024, and therefore we expect to have confirmation by the time this change is presented to the Technical Expert Group for a final decision.

6 DRAFT LEGAL TEXT

The legal text changes to deliver the proposed solution to R0142 can be found here.

7 SUMMARY OF IMPACT ASSESSMENT ACTIVITY

7.1 SERVICE PROVIDER IMPACT ASSESSMENTS

The Code Manager issued a detailed Service Provider impact assessment to the CDSP on 27 November 2023. Their response is summarised below.

Central Data Service Provider	The CDSP: • Support the proposed solution; • Did not identify any costs associated with the implementation of this change; • Highlighted two dependencies, which have been captured in section 9; and • Captured a need to update the Meter Product Table to add the hydrogen gas Metering Assets prior to the trial go live.

7.2 REC PARTY IMPACT ASSESSMENTS

The Code Manager issued a Party impact assessment on 01 December 2023, which lasted 15 WDs. We sought to understand the impact of the change to the Multiplication Factor Data Item, as well as the changes to the five associated Market Messages which contain the aforementioned Data Item. We also sought to understand whether REC Parties were able to sufficiently assess their impact in the absence of the calculated Multiplication Factor enumeration value, which was not available at the time. We received a single response, which is summarised below.

Meter Equipment Manager	• We received a single response from E.ON's MEM function. • E.ON MEM confirmed that they were able to suitably assess their impact without the final calculated Multiplication Factor enumeration value. • E.ON MEM did not anticipate any impact as any work to be conducted on Metering Assets involved in the trial is likely to be conducted exclusively by SGN's MEM.

8 DELIVERY AGAINST CHANGE PROPOSAL PLAN

Delivery of this change has so far progressed in accordance with the Change Proposal Plan. The Change Proposal Plan can be found here.

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9 KEY RISKS, ASSUMPTIONS, ISSUES AND DEPENDENCIES

9.1 ASSUMPTIONS AND DEPENDENCIES

No.	ASSUMPTION	NOTES	HOW/WHEN TO VALIDATE
1	The Code Manager assumes that REC Parties will be able to undergo impact assessment without the final multiplication factor value.		Validated – The Code Manager successfully completed impact assessment activities without the value.
2	REC Parties understand that this change is only part of the impact on their processes.	UNC Mod 0799 has already completed, been approved and is now pending implementation.	For suppliers to confirm themselves.
3	New Meter Model(s) will be added to the Meter Product Data Table before H100 Fife trial goes live	Needs R0142 to go live first as Multiplication Factor is included	

No.	DEPENDENCY	NOTES	STATUS
1	There is a dependency on Ofgem to approve the specific multiplication factor	Before the value is added to the enumerations, Ofgem approval is required	The Code Manager expects that Ofgem will approve the Multiplication Factor enumeration value by the time this change is presented to the Technical Expert Panel for final approval.
2	The enumeration value will need to be implemented before the H100 Fife trial goes live	The enumeration value will need to be transmitted via the relevant files when the 1st customer is connected to hydrogen	The Code Manager is proposing an implementation date in June, which is before the go live date in Q4 2024.

10 PROPOSED IMPLEMENTATION DATE AND APPROACH

PROPOSED IMPLEMENTATION DATE	28/06/2024

PROPOSED IMPLEMENTATION APPROACH	PHASED

The Code Manager is proposing a June 24 release, with a phased implementation approach, such that the amended Data Item and associated Market Messages are only made available for when they are needed by the H100 trial, in October 2024. Until the trial begins, the new

Multiplication Factor enumeration is not required and will not be needed for any existing purpose or function within the REC.

11 BUSINESS CASE ASSESSMENT

11.1 COSTS

No implementation costs have been identified for this change. CDSP confirmed as part of their impact assessment activity that they will not incur costs as they do not need to build or develop a product as part of the implementation of this change.

11.2 BENEFITS

INTANGIBLE BENEFITS	BENEFITS DESCRIPTION
Positive outcomes for H100 Trial participants	Consumers taking part in the H100 trial expect to be billed accurately and reliably, such that they are not billed more than they would have been had they consumed an equivalent quantity of natural gas. Suppliers (and Shippers) who supply Consumers taking part in the trial should also expect to be able to bill those Consumers accurately and reliably with minimal change. The proposed solution will deliver positive outcomes for participants by ensuring that supply arrangements are comparable to those for natural gas, thus ensuring fairness for all involved.
Improved H100 Trial Result Fidelity	By facilitating a successful trial in which participants are supplied in a consistent and reliable manner, we can contribute to a higher fidelity of trial results. This in turn helps with future hydrogen trials, and the broader goal of moving towards hydrogen fuel as an aim of the UK energy market long term.
Reduction in operational complexity	The proposed solution circumvents the need for a more complex solution in which the calorific value would have been changed. At this stage of the trial, the change to multiplication factor is simpler, and thus reduced the complexity of the trial.

11.3 COST BENEFIT ANALYIS SUMMARY

The Code Manager believes that this change meets the cost-benefit test, as there are no costs to implement, but substantial benefits resulting from a successfully delivered H100 trial that prioritises fair Consumer outcomes and consistency in billing for Suppliers and other associated REC Parties.

12 CASE FOR CHANGE

12.1 SELF GOVERNANCE

The Code Manager considers that there is a case for change to implement this solution, on the basis that it:

- is both viable and implementable, and it appropriately resolves the problem statement; and
- is cost effective and proportionate to the anticipated benefit.

13 CODE MANAGER'S RECOMMENDATION

Based on the evidence provided in sections 11 and 12 of this report, the Code Manager considers that a positive business case can be made for implementing this solution.

The Code Manager recommends that the Technical Expert Panel:

- **APPROVE** the proposed change solution;
- **APPROVE** the proposed implementation approach; and
- **APPROVE** the proposed implementation date of 28 June 2024.

14 CONSULTATION PLAN AND NEXT STEPS

The consultation on this Preliminary Change Report for R0142 will be published on the REC Portal on 19 January 2024 and closes on 09 February 2024**.**

Following consultation, the Code Manager will produce an updated version of this Preliminary Change Report (referred to as the Final Change Report). This will include the outcome of the consultation, setting out a summary of the consultation submissions and the Code Manager's response.

The Final Change Report will be issued to the Technical Expert Panel to make its determination.

15 APPENDIX

CHANGE PROPOSAL	Link
LEGAL DRAFTING	Link
CONSOLIDATED IMPACT ASSESSMENT RESPONSES	Link

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16 GLOSSARY

TERM	DEFINITION
Calorific Value	means the amount of energy released when a known volume of gas is completely combusted under specified conditions.
Central Data Service Provider	means the 'Central Data Service Provider' appointed by Gas Transporters pursuant to standard special condition A15 (Central Data Service Provider) of the Gas Transporter Licences.
Data Catalogue	means the catalogue of data flows, data definitions and data formats as approved and defined under the REC Data Specification.
Data Item	means the most granular level of data defining a specific attribute in respect of a data type, the permissible values for which are defined and controlled in the Data Item Catalogue.
Data Item Enumerations	means permitted values associated with specific Data Items.
Data Specification	means the document of that name forming part of the Technical Specification.
Gas Transporter	means a person holding a Gas Transporter Licence which requires that person to become a Party to this Code.
H100	The H100 project is a 100% hydrogen network trial project managed and operated by Scotia Gas Network in Fife and forecast to operate from quarter one 2023 until 31st March 2027.
Market Message	means a structured communication sent between two Market Participants in the form and with the content required (and as otherwise specified) by the Data Specification.
Metering Asset	shall have the same meaning as Metering Equipment.
Multiplication Factor	means the multiplication factor detailed in the market domain data field in the Market Domain Data meter product table published under the Retail Energy Code.
Registered Supplier	means, in respect of an RMP and at any time, the Energy Supplier recorded against that RMP in the Central Switching Service at that time with an Active or Secured Inactive Registration Status (or, in respect of a period of time, the Energy Supplier that had, has or will have an Active or Secured Inactive Registration Status in respect of that RMP during that period).
Shipper	means a person holding a Shipper Licence.
Uniform Network Code	means the Uniform Network Code established under the Gas Transporter Licences.