Detailed Design Change Pack

# Communication Detail

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| Comm Reference: | 3015.3 – RT - PO |
| Comm Title: | XRN5298 H100 Fife Project Phase 1 |
| Comm Date: | 19/04/2022 |

**Change Representation**

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| Action Required: | For representation |
| Close Out Date: | 04/05/2022 |

# Change Detail

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| Xoserve Reference Number: | XRN5298 |
| Change Class: | Functional System |
| \*ChMC Constituency Impacted: | Shipper Users  Distribution Network Operators (DNOs) |
| Change Owner: | Paul Orsler  Customer Change Manager  [paul.orsler@xoserve.com](mailto:paul.orsler@xoserve.com)  0121 229 2496 |
| Background and Context: | SGN are developing a world-first 100% purpose-built hydrogen network in Levenmouth that will bring renewable hydrogen into homes in early 2023, providing zero-carbon fuel for heating and cooking. In the trial’s first phase, the network will aim to heat around 300 local homes using hydrogen gas produced by a dedicated electrolysis plant, powered by a nearby offshore wind turbine.  For those consumers taking part (opt in) they will have, along with the installation of a hydrogen compatible meter, their gas appliances changed (i.e. boilers, cookers, gas fires) to ones that can run on 100% hydrogen.  As well as showing that 100% hydrogen can be used as an alternative to natural gas, the trial must ensure that consumers that opt in to the H100 Fife trial:   * Can opt out of the trial – i.e. revert back to natural gas provisions should they choose to * Can switch their Shipper and/or Supplier whilst participating in the trial * Not be (negatively) financially impacted, participation is on a cost neutral basis * Have any disruption kept to a minimum   Please note that, the duration of the trial is set to be 3 years from its commencement in early 2023 and the continuation of the trial beyond 3 years will depend on whether an enduring long-term solution is agreed by the industry and the Government’s decision whether hydrogen is proven as an alternative to natural gas by 2025.  As existing industry arrangements in Uniform Network Code (UNC) are specific to a gas consisting of hydrocarbons or mixture of hydrocarbons and other gases consisting primarily of methane, SGN has raised the modification 0799 to facilitate hydrogen to be included as transitional text in the UNC covering the period the H100 trial will operate from and to. This modification will be discussed at Panel on 21st April 2022.  One of the principle objectives of H100 trial is that the end consumers opting in the trial will not have their bills negatively impacted for using hydrogen gas for domestic heating and cooking. When hydrogen gas with the Calorific Value (CV) approximately 12 MJ/m3 passes through the new hydrogen supply meters at the end consumers’ premises, the meters will record 3 times more volume for the same amount of energy consumed had the natural gas been used. The formula to calculate energy from the volume is –  **Energy (Kwh) = Units ((recent valid meter read – previous valid meter read) \* Multiplication FactorX \* CVY \* Conversion Factor) / 3.6**  **X** - The Multiplication Factor is a static figure that is used to measure the large consumption when the standard number of dials on the meter are insufficient to measure it. The Multiplication Factor is an attribute of the meter and is usually 1 for Domestic-type metric meters. The Multiplication Factor is held in Market Domain Data (MDD).  **Y** - For the sites in the Local Distribution Zone (LDZ), CV will be determined daily by Flow Weighted Average Calorific Value (FWACV) service. The LDZ CV can vary daily and is not a static figure. The LDZ CV is also called FWACV or Billing CV for the LDZ.  So that the consumers do not pay more for hydrogen than natural gas, a determined Multiplication Factor (also known as Reading Factor) will be set for the new hydrogen meter which will be used in energy calculation for H100 sites in the trial.  Following infographic describes the impact of using determined Multiplication Factor on a metric meter for a domestic property consuming 13000kWh a year. Please note the example is only for illustrative purpose and the final Multiplication Factor value will be determined by SGN in agreement with OFGEM.  As can be seen, the end consumer will not be overbilled even if the metered usage for hydrogen gas is approximately 3 times more than the natural gas usage. |

# Change Impact Assessment Dashboard (UK Link)

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| Functional: | None |
| Non-Functional: | None |
| Application: | SAP BW  SAP PO  SAP ISU |
| User(s): | Network Users  Shipper Users |
| Documentation: | None |
| Other: | None |

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| --- | --- | --- | --- | --- |
| Files | | | | |
| File | Parent Record | Record | Data Attribute | Hierarchy or Format  Agreed |
| None | None | None | None | None |

# Change Design Description

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| **Determined Multiplication Factor and Energy Calculation**  CDSP will use the determined Multiplication Factor specifically for the Meter Point Reference Numbers (MPRNs) in H100 trial while calculating the energy when the read received is validated which includes energy tolerance validations and when consumption adjustments are made (which are standard processes included here for information only).  The determined Multiplication Factor for the meter used in H100 trial will be between 0 and 1, will be static value and will be used in conjunction with LDZ CV to calculate the energy.  The final value of the determined Multiplication Factor will be decided by SGN in agreement with OFGEM before H100 trial is live.  The determined Multiplication Factor will be attributed to the metric hydrogen meter by the meter manufacturer and it will be stored in Market Domain Data (MDD) as per BAU Retail Energy Code process and will be updated in MDD store in UK Link as part of BAU RGMA processes.  The new hydrogen meters will be metric smart meters which will be SMETS2 compliant. It is to be noted that since the Multiplication Factor is not present on the smart meter, the energy calculations on the end consumer’s In Home Display (IHD) will not be the true reflection of the energy consumed by smart hydrogen meter.  Shippers will receive the determined Multiplication Factor from RGMA Meter Exchange flows when hydrogen meter is installed as per BAU process. Shippers will use this value while calculating the volume consumption which will subsequently be used in calculation of the energy.  Suppliers will receive the determined Multiplication Factor from RGMA Meter Exchange flows when hydrogen meter is installed as per BAU process. Suppliers will use this value while calculating the volume consumption which will subsequently be used in calculation of the energy.  CDSP will need to exclude the H100 meter points from Non-Daily Metered (NDM) Sampling activities.  **Assignment of determined Multiplication Factor to MPRN**  When SGN arrange the meter exchange at the end consumer’s premise through MAM, the MAM will exchange the natural gas meter with the hydrogen meter and will set the new hydrogen meter details along with determined Multiplication Factor in the existing RGMA flows. There will be no changes in how CDSP will receive the metering information in the UK Link i.e. MAM -> Supplier -> Shipper -> CDSP (UK Link). This in turn will assign the determined Multiplication Factor to the H100 MPRN in the UK Link.  **Reports**  Following reports will be generated in UK Link and sent to the Shippers and/or SGN. All the reports are sent via email using password protected attachments using SAP BW -> SAP BO -> SAP PO channel. The passwords for the Shippers and SGN will be Castle Codes already shared with CDSP by the Shippers and SGN. CDSP will be reaching out to the Shippers and SGN for the best email id where the reports will be sent. If the email id is not obtained, the reports will be sent to DSC Contract or Change Manager.   1. **Daily Report to newly registered Shippers on the Shipper / Supplier Transfer on MPRNs that are part of De-carb project**   Report Name <SHP>\_PROJECT\_SHP\_SUP\_CHG\_REP\_DWY.xlsx  where <SHP> is Shipper Short Code.  Report Description The end consumer in any Network Innovation Project can change the Supplier and/or Shipper any time during the trial period. The report is to check if a valid change of shipper / supplier occurred on any day for any of the MPRNs belonging to any active Network Innovation Project. If the event has occurred, the associated MPRN is included in the Report. The report will have separate records for change of Shipper and change of Supplier at Shipper level.  Report Frequency when change of Supplier OR change of Shipper OR change of both Shipper and Supplier events occur, the report will be sent on the next day before midnight.  Report sent to designated email contact for each Shipper with their own portfolio  Data Items included in the Report   * METER\_POINT\_REFERENCE: This will be the MPRN of the Supply Meter Point * DECARB\_PROJECT\_NAME: This will be project name as shown in DES * DCEARB\_REJOECT DESCIPTION: This will be project name as shown in DES * MPRN\_ALLOC\_FROM\_DATE: This is the date the MPRN was assigned to the project * MPRN\_ALLOC\_TO\_DATE: This is the end date of the project. Please note this will be populated as 09099999 if the MPRN is still taking part in the project. * SUPPLY\_POINT\_CONFIRMATION\_REFERENCE: This is the reference number of the current contract with the Shipper * CONFIRMATION\_EFFECTIVE\_DATE: This is the date the registered Shipper is responsible for the MPRN * REASON\_FOR\_NOTIFICATION: This will be populated with “Supplier / Shipper Change on MPRN” * SHIPPER\_SHORT\_CODE: This will be the 3 digit unique Shipper Short Code of the registered Shipper * SUPPLIER\_SHORT\_CODE: This will be the 3 digit unique Supplier code     Notes   * The report will be generated and sent only if one or more MPRNs are found for the given Shipper. The report will not be generated and sent if no MPRNs are found. * The report will include only new MPRNs that meet the reporting criteria and previous MPRNs won’t be sent in the new Report. * The report will be future proofed so that it will be sent for any Network Innovation Project that exists or will be configured in future. * The report will include MPRNs that are part of CSSC (Central Switching Service Consequential) as well as MPRNs that are not part of CSSC.  1. **Weekly Report to Shippers and SGN for H100 MPRNs where non-hydrogen meters are installed**   Report Name   1. For Shippers - <SHP>\_H100\_SHP\_METER\_MISMATCH\_WKY.xlsx   where <SHP> is Shipper Short Code.   1. For SGN -<NET>\_H100\_NET\_METER\_MISMATCH\_WKY.xlsx   where <NET> is Network Short Code and will be SGN for this change.  Report Description - A weekly independent scheduled report to check if any non-hydrogen Meter is installed on any active H100 MPRNs. If found, such MPRNs are sent out to each shipper with their own portfolio and each network with their own portfolio.  Report Frequency – Weekly – the report will be sent on weekend including Bank Holidays.  Report sent to – designated email contact each Shipper with their own portfolio, designated email contact each network with their own portfolio  Data Items included in the Report for Shippers   * METER\_POINT\_REFERENCE: This will be the MPRN of the Supply Meter Point * DECARB\_PROJECT\_NAME: This will be project name as shown in DES * DCEARB\_REJOECT DESCIPTION: This will be project name as shown in DES * MPRN\_ALLOC\_FROM\_DATE: This is the date the MPRN was assigned to the project * MPRN\_ALLOC\_TO\_DATE: This is the end date of the project. Please note this will be populated as 09099999 if the MPRN is still taking part in the project. * SUPPLY\_POINT\_CONFIRMATION\_REFERENCE: This is the reference number of the current contract with the Shipper * CONFIRMATION\_EFFECTIVE\_DATE: This is the date the registered Shipper is responsible for the MPRN * METER\_SERIAL\_NUMBER: This will be the manufacturers serial number * METER\_MODEL\_NAME: This will be the model description for example U6 * METER\_READING\_FACTOR: The factor to apply to volumes calculated from meter readings to convert hundreds of cubic feet if imperial or cubic meters if metric. * REASON\_FOR\_NOTIFICATION: This will be populated with “Un-expected Non-Hydrogen meter installed” * SHIPPER\_SHORT\_CODE: This will be the 3 digit unique Shipper Short Code of the registered Shipper * SUPPLIER\_SHORT\_CODE: This will be the 3 digit unique Supplier Short Code   Data Items included in the Report for SGN   * METER\_POINT\_REFERENCE: This will be the MPRN of the Supply Meter Point * DECARB\_PROJECT\_NAME: This will be project name as shown in DES * DCEARB\_REJOECT DESCIPTION: This will be project name as shown in DES * MPRN\_ALLOC\_FROM\_DATE: This is the date the MPRN was assigned to the project * MPRN\_ALLOC\_TO\_DATE: This is the end date of the project. Please note this will be populated as 09099999 if the MPRN is still taking part in the project. * SUPPLY\_POINT\_CONFIRMATION\_REFERENCE: This is the reference number of the current contract with the Shipper * CONFIRMATION\_EFFECTIVE\_DATE: This is the date the registered Shipper is responsible for the MPRN * REASON\_FOR\_NOTIFICATION: This will be populated with “Non-Hydrogen meter installed at a H100 project MPRN” * SHIPPER\_SHORT\_CODE: This will be the 3 digit unique Shipper Short Code of the registered Shipper * SUPPLIER\_SHORT\_CODE: This will be the 3 digit unique Supplier Short Code   Notes   * The report will be generated and sent only if one or more MPRNs are found for the given Shipper or given Distribution Network. The report will not be generated and sent if no MPRNs are found. * The report will include all outstanding MPRNs that meet the reporting criteria even if they are sent in the previous Report.  1. **Weekly Report to Shippers for non-H100 MPRNs with hydrogen meter installed**   Report Name <SHP>\_H100\_SHP\_METER\_MISMATCH\_WKY.xlsx  where <SHP> is Shipper Short Code.  Report Description A weekly independent scheduled report will be generated to check if the hydrogen meters are installed on any of the active non-H100 MPRNs. If found, such MPRNs are sent out to each shipper with their own portfolio.  Report Frequency Weekly – the report will be sent on weekend including Bank Holidays.  Report sent to each Shipper with their own portfolio  Data Items included in the Report   * METER\_POINT\_REFERENCE: This will be the MPRN of the Supply Meter Point * DECARB\_PROJECT\_NAME: This will be project name as shown in DES * DCEARB\_REJOECT DESCIPTION: This will be project name as shown in DES * MPRN\_ALLOC\_FROM\_DATE: This is the date the MPRN was assigned to the project * MPRN\_ALLOC\_TO\_DATE: This is the end date of the project. Please note this will be populated as 09099999 if the MPRN is still taking part in the project. * SUPPLY\_POINT\_CONFIRMATION\_REFERENCE: This is the reference number of the current contract with the Shipper * CONFIRMATION\_EFFECTIVE\_DATE: This is the date the registered Shipper is responsible for the MPRN * METER\_SERIAL\_NUMBER: This will be the manufacturers serial number * METER\_MODEL\_NAME: This will be the model description for example U6 * METER\_READING\_FACTOR: The factor to apply to volumes calculated from meter readings to convert hundreds of cubic feet if imperial or cubic meters if metric. * REASON\_FOR\_NOTIFICATION: This will be populated with “Unexpected Hydrogen Meter Installed” * SHIPPER\_SHORT\_CODE: This will be the 3 digit unique Shipper Short Code of the registered Shipper * SUPPLIER\_SHORT\_CODE: This will be the 3 digit unique Supplier Short Code   Notes   * The report will be generated and sent only if one or more MPRNs are found for the given Shipper. The report will not be generated and sent if no MPRNs are found. * The report is future proofed such that it can be executed for any Meter Model Code and Meter Manufacturer Code. * The report will include all outstanding MPRNs that meet the reporting criteria even if they are sent in the previous Report.   **Multiplication Factor in Outbound Files**  The determined Multiplication Factor will be shown on following outbound files, where applicable, from CDSP for the MPRNs included in H100 trial –  .AAI, .AAO, .API, .ASI, .ASO, .CDN, .CDJ, .EDL, .EQL, .EWS, .PPN, .IDL, .IQL, .MBR, .CDR, .NRL, .NRM, .NRO, .NRQ, .NRS, .RCS, .WOI, .WOO, .WSI, .WSO, .MRI, .TMC, .PAC  These are the existing files containing Multiplication Factor and there are no additional files for this change.  **Meter Reading Units**  The Meter Reading Units is a field derived within UK Link from the Multiplication Factor. As the field only allows whole numbers the Meter Reading Units are the truncated Multiplication Factor. The Meter Reading Units will be shown on following outbound files, where applicable, from CDSP for the MPRNs included in H100 trials –  . AML, .ASN, .ASP, .BRR, .CFR, .CRS, .NMR, .NRF, .NRL, .NRO, .SNR  On these files, Meter Reading Units for the hydrogen meter will show as 0.  In Data Enquiry Service (DES), Meter Reading Units - displayed as “units” - will show value 0 for MPRNs taking part in H100 trial. Post CSSC, DES will be known as Gas Enquiry Service (GES).  **Consumers that Opt Out**  End consumers in H100 trial have an option to opt out of the trial before the trial ends. SGN will arrange the meter exchange at the end consumer’s premise through MAM. The MAM will exchange the hydrogen meter with the natural gas meter and will set the natural gas meter details along with the Multiplication Factor for the natural gas meter in the existing RGMA flows.  SGN will also share the list of MPRNs which are opted out of the trial with CDSP. CDSP will end date the MPRNs from the Network Innovation Project so that they will not be included in any reporting for H100 trial. CDSP will also inform the Registered Shippers for the MPRNs that the MPRN has been removed from the H100 trial.  **Gemini changes**  A new LDZ system entry point will be created in Gemini as per BAU process. Gemini will be able to accept the hydrogen CV for the new LDZ system entry point. The H100 trial project will sell hydrogen gas to a single third-party entry Shipper at natural gas price index which will sell into the energy balancing system enabling the retail supply to participate as normal.  There are no changes how Shippers nominate their energy requirements in Gemini.  **FWACV service changes**  CDSP is taking over the FWACV process from National Grid as part of XRN5231.  As the CV for hydrogen gas is approximately 3 times lower than the average natural gas CV value, SGN will declare a CV for hydrogen to be approximately 12 MJ/m3. In the current FWACV process, the low hydrogen CV would trigger capping process in accordance with the obligations set out in the **Gas** (Calculation of **Thermal** **Energy**) **Regulations**, causing financial impact on settlement processes.  A new LDZ system entry point will be created in FWACV service as per BAU process and will be excluded from the FWACV calculations for Scotland LDZ to avoid capping. The values will be sent to Gemini to ensure LDZ energy is balanced.  **Identifying MPRNs taking part in the H100 trial**  For the end consumers who have opted in for the trial, SGN will provide a list of MPRNs to the CDSP after a joint exercise undertaken to prepare and validate those MPRNs. SGN will provide the date SGN has agreed with the end consumer for exchanging the natural gas meter with the hydrogen meter so the MPRN can be assigned to the Project.  The MPRN allocation information will be shown in DES available in Community and Portfolio view as below –   1. Network Project Name - SGN 100% H2 LEVENMOUTH FIFE 2. Network Indicator – H100FIFSGN 3. Network Project Start Date - date the end consumer will first receive hydrogen 4. Network Project End Date - date the end consumer stopped receiving hydrogen   Please find the example screenshot for how the information will be shown in DES (the dates shown are for illustrative purposes only) |

# Associated Changes

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| Associated Change(s) and Title(s): | XRN5231 – Provision of a FWACV service |

# DSG

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| Target DSG discussion date: | 25/04/2022 |
| Any further information: | To discuss any comments provided from the Detailed Design Change Pack representations |

# Implementation

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| Target Release: | Release: Nov 22 |
| Status: |  |

**Industry Response Detailed Design Review**

**Change Representation**

(To be completed by User and returned for response)

***Please consider any commercial impacts to your organisation that Xoserve need to be aware of when formulating your response***

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| --- | --- | --- | --- |
| User Contact Details: | Organisation: | Wales & West Utilities | |
| Name: | Tom Stuart | |
| Email: | tom.stuart@wwutilities.co.uk | |
| Telephone: | 07964937739 | |
| Representation Status: | Consultation | | |
| Representation Publication: | Publish | | |
| Representation Comments: | We support this change as it advances the use of Hydrogen in networks and works towards net zero targets. | | |
| Confirm Target Release Date? | Yes | | «h1\_userDataAlternative» |

**Xoserve’ s Response**

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| Xoserve Response to Organisations Comments: | Thank you for your representation, this will be included and used to support reaching a decision at CHMC in May 2022. |

Change Management Committee Outcome

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| --- | --- | --- | --- | --- | --- |
| Change Status: | ☐ Approve | ☐ Reject | | | Defer |
| Industry Consultation: | 10 Working Days | | ☐ 15 Working Days | | |
| ☐ 20 Working Days | | ☐ Other [Specify Here] | | |
| Date Issued: | 19/04/2022 | | | | |
| Comms Ref(s): |  | | | | |
| Number of Responses: |  | | | | |
| Solution Voting: | ☐ Shipper | | | Please select. | |
| ☐ National Grid Transmission | | | Please select. | |
| Distribution Network Operator | | | Please select. | |
| ☐ IGT | | | Please select. | |
| Meeting Date: | 11/05/2022 | | | | |
| Release Date: | Release: Feb / Jun / Nov XX or Adhoc DD/MM/YYYY or NA | | | | |

Please send the completed representation response to [uklink@xoserve.com](mailto:uklink@xoserve.com)

**ChMC Recommendation – Detailed Design**

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| --- | --- | --- | --- | --- | --- |
| Change Status: | Approve | Reject | | | Defer |
| Industry Consultation: | 10 Working Days | | 15 Working Days | | |
| 20 Working Days | | Other N/A – Previously deferred at May ChMC, taken back for approval at December ChMC | | |
| DSC Consultation Issue: | Yes | | No | | |
| Date Issued: | Click here to enter a date. | | | | |
| Comms Ref(s): | 3015.3 – RT - PO | | | | |
| Number of Responses: | N/A | | | | |
| Solution Voting: | Shipper | | | Please select. | |
| National Grid Transmission | | | Please select. | |
| Distribution Network Operator | | | Please select. | |
| IGT | | | Please select. | |
| Meeting Date: | 14/12/2022 | | | | |
| Release Date: | Feb 2023 | | | | |

Version Control

# Document

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| --- | --- | --- | --- | --- |
| Version | Status | Date | Author(s) | Remarks |
|  |  |  |  |  |