

Non-Domestic Renewable Heat Incentive

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Response to call for evidence on the Industry standards and practices for commissioning equipment used in the production of biomethane

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Overview

This document summarises the responses we received to our call for evidence on the industry standards and practices for commissioning equipment used in the production of biomethane for injection under the Non-Domestic Renewable Heat Incentive (RHI) scheme.

The purpose of this document is to discuss the key points raised by respondents. It does not provide a definitive list of the procedures and tests that need to be completed and is not a legal guide.

Associated Documents

The following documents support this publication:

Legislation

All documents are available at www.legislation.gov.uk:

- The Renewable Heat Incentive Scheme and Domestic Renewable Heat Incentive Scheme (Amendment) Regulations 2019¹
- The Renewable Heat Incentive Scheme and Domestic Renewable Heat Incentive Scheme (Amendment) Regulations 2018²
- The Renewable Heat Incentive Scheme Regulations 2018³

Guidance

All documents are available at www.ofgem.gov.uk/rhi:

- Non-Domestic RHI Guidance Volume 1: Eligibility and how to apply
- Non-Domestic RHI Guidance Volume 2: Ongoing Obligations and Payments
- Non-Domestic RHI Guidance: Guide to Tariff Guarantees

¹ The Renewable Heat Incentive Scheme and Domestic Renewable Heat Incentive Scheme (Amendment) Regulations 2019. No. 1052.

² The Renewable Heat Incentive Scheme and Domestic Renewable Heat Incentive Scheme (Amendment) Regulations 2018. No. 635.

³ The Renewable Heat Incentive Scheme Regulations 2018. No. 611.

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1. Introduction

What is the RHI?

- 1.1 The Renewable Heat Incentive (RHI) scheme was introduced to help support the transition to low carbon-heating in the UK, giving help to all in moving from conventional forms of heating to low-carbon alternatives.
- 1.2 The RHI provides support for biomethane production by allowing producers to become registered onto the scheme and receive payments in respect of eligible biomethane they produce, that is injected into the gas grid.
- 1.3 The Government, via the Department for Business, Energy and Industrial Strategy (BEIS) is responsible for developing the policy underpinning the RHI scheme including setting the levels of support, establishing the legislative framework and making amendments to the legislation.

What is Ofgem's role?

- 1.4 We are responsible for administering the RHI schemes and its day-to-day functions on behalf of the Gas and Electricity Markets Authority (the Authority).
- 1.5 We carry out our functions as efficiently and effectively as possible, in accordance with the Renewable Heat Incentive Scheme Regulations 2018. We cannot act beyond the scope of the powers laid down in the Regulations.

This document

- 1.6 Our call for evidence⁴ invited views on the industry standards and practices for commissioning equipment used in the production of biomethane for injection under the Non-Domestic RHI scheme.
- 1.7 The call for evidence was open for 4 weeks between 18 November 2019 and 16 December 2019. Overall, we received four responses from various stakeholders which are summarised in the responses section below.
- 1.8 In parallel with the call for evidence, we commissioned an independent consultant to provide us with their view of the industry standards and practices for commissioning equipment used in the production of biomethane for injection.

⁴ <https://www.ofgem.gov.uk/publications-and-updates/industry-standards-and-practices-commissioning-equipment-used-production-biomethane-call-evidence>

- 1.9 We used both sources of information to inform our current understanding of the overall commissioning process for equipment used to produce biomethane, and the type of evidence that is normally produced to demonstrate particular tests and/or procedures have been completed. In addition to summarising the responses we received to our call for evidence, this document will list the steps we expect prospective applicants to have taken before applying to register as a biomethane producer on the RHI.

Importance of commissioning

- 1.10 As the administrator of the RHI scheme, it is our duty to determine whether the equipment used to produce biomethane has been commissioned prior to the submission of an application for registration as a biomethane producer. This is because the Renewable Heat Incentive Scheme Regulations 2018 ('the 2018 Regulations')⁵ (as amended by The Renewable Heat Incentive Scheme and Domestic Renewable Heat Incentive Scheme (Amendment) Regulations 2018)⁶ include a number of requirements relevant to producers of biomethane for injection. Those requirements include that applicants for registration must:

- a. provide details of the process used to produce biomethane for injection
- b. specify the biogas production plant to be used for the purpose of registration
- c. commission equipment used to produce biomethane and, at the time of making their application
- d. have commenced the injection of biomethane.

- 1.11 The definition of commissioning is as follows:

"commissioned", in relation to an eligible installation or equipment used to produce biomethane for injection, means the completion of such procedures and tests as constitute, at the time they are undertaken, the usual industry standards and practices for commissioning that type of eligible installation or equipment used to produce biomethane for injection in order to demonstrate that it is capable of operating and delivering heat to the premises or process for which it was installed, or producing biomethane for injection"

- 1.12 As part of our assessment of whether the equipment used to produce biomethane has been commissioned, we will be requesting evidence that the necessary procedures and tests, which constitute the usual industry standards, have been completed.

⁵ The Renewable Heat Incentive Scheme Regulations 2018. No. 611

⁶ The Renewable Heat Incentive Scheme and Domestic Renewable Heat Incentive Scheme (Amendment) Regulations 2018. No. 635.

2. Responses

Main questions

2.1 We asked two main questions:

1. What do you believe are the current:
 - a. **usual industry standards and practices** which need to be completed for these types of plant to be considered capable of producing biomethane for injection.
 - b. **the tests and procedures** that make up the standards and/or practices you identified in your response to question 1a.
2. Please identify the evidence that is normally produced to demonstrate these tests and/or procedures have been completed.

General views

- 2.2 We received four responses to our call for evidence. These included responses from trade associations representing stakeholders in the biomethane and biogas industry, in addition to energy network operators.
- 2.3 Overall, the responses to our call for evidence and the views provided by the independent consultant, indicate general consistency in the usual industry standards and practices which need to be completed for equipment used in the production of biomethane to be considered commissioned, in line with the RHI regulations.
- 2.4 Respondents identified a number of standards set out by the Institution of Gas Engineers and Managers (IGEM). These included the following standards:
- **IGEM/GL/5 Edition 3** – Managing New Works, Modification or Repairs.
 - **IGEM/GL/6 Edition 3** – Safe Control of Operations for Gas Networks.
 - **IGEM/TD/16 Edition 2** – Biomethane Injection.
 - **IGEM/TD/13 Edition 2** – Pressure regulating installations for Natural Gas, Liquefied Petroleum Gas and Liquefied Petroleum Gas/Air.
 - **IGEM/SR/16 Edition 2** – Odorant systems for gas transmission and distribution.
 - **IGEM/SR/25 Edition 2** – Hazardous area classification of natural gas installations'

- 2.5 Among other things, these standards set out the requirements for the design and construction of the plant; the installation, testing and validation regime that should be conducted; the final commissioning protocols, and the ongoing operation and maintenance of the equipment used to produce biomethane for injection
- 2.6 We appreciate there may be differences between what the definition of 'commissioned', as defined in the RHI regulations, represents and what industry consider the overall commissioning process should entail outside of the context of the RHI. For example, there may be a range of contractual agreements between the owner of the equipment and the manufacturer or installer(s) which would not necessarily form part of Ofgem's assessment as to whether a plant, or component of a plant, meets the RHI definition of commissioned.
- 2.7 The table in Appendix 1 sets out our understanding of what the overall commissioning process entails and makes references to specific procedures and standards. This table contains the information we received in the responses to our call for evidence and by our independent consultant.
- 2.8 We are aware there will be some variation in circumstances surrounding each biomethane plant. As such, we do not expect all of the requirements set out in the standards identified to be relevant or appropriate to every plant. Similarly, we do not expect every plant to have completed all of the items listed in the table in Appendix 1.
- 2.9 However, we would expect, where particular practices or standards do apply, that prospective participants are able to provide evidence to demonstrate they have met the requirements of the applicable standards and/or completed the applicable practices.
- 2.10 In light of the definition of 'commissioned' in the RHI regulations, we have identified the minimum steps we expect to have been completed when commissioning equipment used to produce biomethane for injection under the RHI and the type of evidence we would expect applicants to have as part of their records of commissioning (see Table 1).
- 2.11 We expect applicants to provide the evidence necessary to demonstrate they have completed the steps listed in Table 1 at the point of submitting an application. We may also ask for additional evidence in some cases, including in relation to any of the steps listed in the table in Appendix 1.

Table 1: *Minimum evidential requirements for commissioning equipment used in the production of biomethane for injection under the RHI.*

Construction, installation and testing phase:
<p><u>Pressure and hydrostatic testing:</u> Documentation showing all pipe work has been pressure tested to correct pressure rating in line with regulations and has been signed off. Documentation may include a certificate which confirms the system is air-tight for gas lies.</p>

<p><u>Appropriate certification for site wide electrical circuits:</u> A document demonstrating electrical testing has been carried out on all equipment used to produce biomethane (including the biogas production plant) and the confirmation that this equipment is ready for commissioning.</p>
<p><u>Complete site acceptance testing (SAT) package:</u> Signed document that demonstrates (i) all functionality and testing has been successfully completed and (ii) all alarms have been tested successfully on all equipment used to produce biomethane, irrespective of whether the biogas production and upgrading/injection equipment are located on separate sites.</p> <p>This document should also provide details of other person(s) who installed and tested the programmable logic control (PLC) and/or supervisory control and data acquisition (SCADA) monitoring systems.</p>
<p><u>Telemetry system:</u> Documentation showing installation and full end-to-end testing of the telemetry system installed and commissioned for the biomethane plant.</p>
<p><u>Network Entry Agreement:</u> A network entry agreement with the local Gas Network Operator confirming the biomethane, and control system, is adequate for injection into the gas grid for distribution.</p>
<p><u>Gas flow data:</u> Input and output data of gas relating to the biogas production plant, upgrading equipment and grid entry unit. For the biogas production plant, this would include information about the feedstock used and the gas produced. For the upgrading equipment, this will include gas inputs and resultant biomethane and for the grid entry unit, this will include the quality and quantity of the biomethane that is being injected into the grid.</p>

- 2.12 In cases where insufficient evidence is provided by the applicant to demonstrate the steps (in Table 1 or as identified by us) have been completed, we will expect the applicant to provide valid reasons for not producing this information.
- 2.13 Some respondents expressed views on the inclusion of the Biogas Production Plant (BPP) in the equipment used to produce biomethane.

- 2.14 The Renewable Heat Incentive Scheme Regulations 2018 ('the 2018 Regulations')⁷ (as amended by The Renewable Heat Incentive Scheme and Domestic Renewable Heat Incentive Scheme (Amendment) Regulations 2018)⁸ are concerned with establishing the overall process for biomethane production, including biogas production. The 2018 Regulations specify that Ofgem may refuse to register where it is satisfied that the BPP specified by the applicant has been used for the purposes of the registration of any other participant.
- 2.15 In light of this, we are of the view that the equipment used to produce biomethane includes the BPP. Consequently, we would expect all equipment used for biogas production and upgrade, and propane and odorant blending, to be commissioned at the time of making an application.
- 2.16 It is the responsibility of the applicant to ensure they have commissioned the equipment used to produce biomethane in line RHI regulations. Ofgem will assess, based on the evidence provided as part of an application, whether it considers all the equipment used to produce biomethane, including the BPP, upgrading equipment and injection equipment, has been commissioned as defined under the regulations.

Other comments

- 2.17 One respondent suggested a biomethane plant should be considered commissioned following the completion of cold commissioning. See Table 2 for a brief explanation of what we understand 'cold commissioning' to usually entail. We believe that where a station is yet to demonstrate production of biogas and upgrading of that biogas to produce biomethane for injection, it may be difficult to evidence that the station is capable of producing biomethane for injection.

Table 2: Phases of commissioning of a biomethane plant.

Phase	Description
Mechanical completion	The point at which all the equipment has been installed as per the contract specification, design drawings and standards.
Cold commissioning	Those commissioning activities performed before introducing feedstocks to the biogas production plant and biogas derived from those feedstocks into the upgrading equipment.
Hot commissioning	Those commissioning activities that are performed after the introduction of feedstocks to the biogas production plant and biogas derived from those feedstocks, into the upgrading equipment.

⁷ The Renewable Heat Incentive Scheme Regulations 2018. No. 611.

⁸ The Renewable Heat Incentive Scheme and Domestic Renewable Heat Incentive Scheme (Amendment) Regulations 2018. No. 635.

Conclusion

- 2.18 Through our call for evidence, we have informed our understanding of the overall commissioning process for equipment used to produce biomethane, and the type of evidence that is normally produced to demonstrate particular tests and/or procedures have been completed.
- 2.19 It is clear there is a degree of variation in how these standards, and associated tests and/or procedures, are applied, which means it is not possible to develop a specific list of requirements that can be applied to all plants.
- 2.20 We will continue to assess applications for biomethane registration on a case by case basis. At this stage we have been unable to narrow to a prescriptive list of commissioning procedures and tests that would constitute a plant meeting the definition.
- 2.21 This was not the goal of the call for evidence and providing such a list is likely to create unwarranted expectations for prospective participants. We will continue to look for any ways to help simplify registration for both prospective participants and ourselves.
- 2.22 The call for evidence has updated our view of the current industry standards and practices for commissioning equipment used to produce biomethane for injection. This has allowed us to more clearly understand the steps prospective participants should have completed prior to making an application for registration as a biomethane producer under the RHI.
- 2.23 We will continue to review application for biomethane registration in line with the items outlined in our [Guidance Volume 1: Eligibility and how to apply](#)⁹. This document is not definitive and we will continue to take account of any circumstances specific to the biomethane plant in question.
- 2.24 We encourage applicants to seek their own independent advice, as appropriate, if they need any reassurance on determining whether equipment used to produce biomethane for injection meets the definition of “commissioned” as defined in the RHI regulations. Such advice may be presented to us when an application for registration is made.

⁹ <https://www.ofgem.gov.uk/publications-and-updates/non-domestic-rhi-main-guidance>

Appendix 1 –Evidence associated with overall commissioning process

Table 3: Evidence of commissioning equipment used to produce biomethane for injection.

Information and documentation	Nature of item ¹⁰
<p>Commissioning & Operating procedures: A clear and complete written plan and set of procedures for the commissioning and operation of all parts of the biomethane plant, including the biogas production plant. The document would also outline any maintenance that would need to be carried out on the live plant.</p>	Good Practice
<p>Health and Safety (H&S) File: The H&S file must be completed in accordance with the The Construction (Design and Management) Regulations 2015¹¹. This is a file containing information relating to the project which is likely to be needed for health and safety purposes during any subsequent construction work.</p>	Good Practice
<p>Designers Risk Assessment (DRA): The DRA must be completed in accordance with the The Construction (Design and Management) Regulations 2015¹⁰. The DRA will include assessments for specific hazards and state what is required to address them. Such risks may include: work at height; control of substances hazardous to health (COSHH); manual handling; noise; vibration and lead.</p>	Good Practice
<p>Construction Phase Plan (CPP): The CPP must be completed in accordance with the Construction (Design and Management) Regulations 2015¹⁰ by the person(s) / contractor(s) responsible for the project.</p>	Good Practice
<p>Emergency procedure and contact details: A plan for emergencies that can have a wider impact. Special procedures needed for emergencies such as serious injuries, explosion, flood, poisoning, electrocution, fire, release of radioactivity and chemical spills. The Management of Health and Safety at Work Regulations 1999¹² cover these procedures. The Dangerous Substances Regulations 1990¹³ covers sites where at least 25 tonnes of dangerous substances are held.</p>	Good Practice

¹⁰ 'Good practice' and 'Critical' ratings are provided in the context of assessing commissioning of equipment used to produce biomethane for injection under the RHI. It is not providing legal advice on whether particular items are required by law.

¹¹ The Construction (Design and Management) Regulations 2015. No.51.

¹² The Management of Health and Safety at Work regulation 1999. No. 3242, (as amended) 2003. No. 454 and 2006. No. 384.

¹³ The Dangerous Substances (Notification and Marking of Sites) Regulations 1990. No. 304.

<p>Site piping and instrumentation diagram (P&ID): Diagram(s) of the entire plant detailing the physical placement of all equipment and the places where systems, including the biogas production plant and upgrading equipment, connect with one another.</p>	<p>Critical</p>
<p>Site electrical: A drawing, or drawings, showing the gas to grid connection, usually in the form of a single line drawing or a number of individual drawings for each process areas and how they all interface.</p>	<p>Critical</p>
<p>Complete set of drawings and specifications, confirmed as built, operation and maintenance documents and spares list: These are hand over documents that demonstrate each component of the plant meets the applicants specification and have been installed as specified by the owner.</p>	<p>Good Practice</p>
<p>Appropriate consent from regulatory Authorities: Written confirmation of compliance with obligations from other Authorities e.g. planning permission and environmental permits (where necessary).</p>	<p>Critical</p>
<p>Written Scheme of Examination (WSoE) if applicable: This would be where an insurance company has ensured the gas to grid process is fit for injection and distribution. This document is produced in line with the gas/pressure systems standards and regulations.</p>	<p>Critical</p>
<p>Commissioning & Operating procedures: A clear and complete written plan and set of procedures for the commissioning and operation of all parts of the biomethane plant, including the biogas production plant. The document would also outline any maintenance that would need to be carried out on the live plant.</p>	<p>Critical</p>
<p>Complete list of plant items: A document that lists every component of the plant (including the biogas production plant).</p>	<p>Good Practice</p>
<p>Mechanical construction completion certification: Certificates that civil work, mechanical work and electrical work has been completed tested and signed off, prior to commissioning.</p>	<p>Good Practice</p>

<p>Pressure and hydrostatic testing: A set of document showing all pipe work has been pressure tested to correct pressure rating in line with regulations and has been signed off. Documentation may include a certificate which confirms the system is air-tight for gas lies.</p>	<p>Critical</p>
<p>Appropriate certification for site wide electrical circuits: This would be a document that would be issued demonstrating that electrical testing has been carried out on all equipment used to produce biomethane (including the biogas production plant) and the plant has been electrically tested and is ready for commissioning.</p>	<p>Critical</p>
<p>CE Marking: Where applicable, a declaration of conformity for the entire plant, including the biogas production plant.</p>	<p>Good Practice</p>
<p>Cable testing: Certification of cabling pressure test (X volts for Y Time).</p>	<p>Good Practice</p>
<p>Switchboard Factory Acceptance Tests (FAT) and Site Acceptance Test (SAT) certification: This includes inspection, pressure tests & functionality checks.</p>	<p>Critical</p>
<p>Earthing system test certifications: Documentation demonstrating the all equipment used to produce biomethane as a whole has had an earthing survey and a report has been issued and signed-off.</p>	<p>Critical</p>
<p>Network communication certification: Evidence that communication signals from gas to grid have been tested and are working correctly. Such communications include those between the gas plant and telemetry systems and the SCADA/PLC control systems.</p>	<p>Good Practice</p>
<p>Telemetry system: Documentation showing installation and full end-to-end testing of the telemetry system, installed and commissioned for the biomethane plant.</p>	<p>Critical</p>
<p>Instrument and Monitoring: A statement/certificate that the instrument and monitoring devices, including export meters, have been calibrated in line with the manufactures recommendation.</p>	<p>Critical</p>

<p>Complete site acceptance testing (SAT) package: Signed document that demonstrates (i) all functionality and testing has been successfully completed and (ii) all alarms have been tested successfully on all equipment used to produce biomethane, irrespective of whether the biogas production and upgrading/injection equipment are located on separate sites.</p> <p>This document should also provide details of other person(s) who installed and tested the programmable logic control (PLC)/supervisory control and data acquisition (SCADA) monitoring systems.</p>	<p>Critical</p>
<p>Certification from Network Operator: A network entry agreement with the local Gas Network Operator that the biomethane and control system is adequate for injection into the gas grid for distribution.</p>	<p>Critical</p>
<p>System purge: Certification demonstrating the entire system has been purged, including all the equipment used to produce biomethane.</p>	<p>Good Practice</p>
<p>Gas flow data: Input and output data of gas relating to the biogas production plant, upgrading equipment and grid entry unit. For the biogas production plant, this would include information about the feedstock used and the gas produced. For the upgrading equipment, this will include gas inputs and resultant biomethane and for the grid entry unit, this will include the quality and quantity of the biomethane that is being injected into the grid.</p>	<p>Critical</p>
<p>Sampling and testing off site: In cases where the data relating to the gas to grid supply is not locally monitored, Ofgem would need to verify that the readings taken at the biomethane plant and the monitoring site are identical.</p>	<p>Critical</p>