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for all gas and electricity customers

Renewable Heat Incentive Guidance
Volume One: Eligibility and how to apply

Guidance

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Contact:	RHI Operational Team
Team:	New Schemes Development
Tel:	**0845 200 2122**
Email:	RHI.Enquiry@Ofgem.gov.uk

Overview:

This is the Guidance document for the Renewable Heat Incentive (RHI), a new Government financial incentive scheme worth £860m to promote the uptake of renewable heat.

Ofgem will administer the RHI on behalf of Government, in accordance with the RHI Scheme Regulations 2011 once they come into force. The overarching policy and detailed legislative framework for the RHI are the responsibility of Government. Ofgem's E-Serve division already has extensive experience in delivering similar environmental schemes, such as the Renewables Obligation and Feed-in Tariffs.

Volume One of the Guidance describes the eligibility requirements of the RHI and how prospective participants can become accredited or registered as applicable.

Volume Two describes the ongoing requirements for RHI participants, information on how periodic support payments are calculated and paid, and our compliance and enforcement powers.

The Guidance is aimed at prospective RHI participants in the non-domestic sector and sets out how Ofgem intends to administer the scheme. It is not intended to be a definitive legal guide to the RHI.

Context

This document describes how the Gas and Electricity Markets Authority (Ofgem) will administer the Renewable Heat Incentive (RHI), a world first Government financial incentive scheme designed to increase the uptake of renewable heat technologies and reduce the UK's carbon emissions. It is a key measure for the UK to meet its renewable energy target of 15 per cent by 2020 as required by the European Union. To achieve an uptake of renewable heat technologies, the Government intends to introduce the RHI in two phases. From the date that it comes into force, the RHI will be available to parties in non-domestic sectors with eligible installations, and to producers of biomethane. Through phase two of the scheme, the Government has stated that in addition to expanding the non-domestic scheme it intends to introduce support for the domestic sector. The RHI policy and tariff rates are set by the Government, but the RHI will be administered by Ofgem.

The Secretary of State for Energy and Climate Change is using enabling powers contained in the Energy Act 2008 as amended ('the Act') to introduce the Renewable Heat Incentive (RHI) in Great Britain. Subject to the Renewable Heat Incentive Scheme Regulations 2011 (the Regulations) coming into force, we expect the RHI to be open for applications before the end of 2011.

Administration of the RHI is a key part of Ofgem's forward work plan and is reflected in Ofgem's Corporate Strategy 2011-2016[1] under 'Theme 4 - Ensuring the timely and efficient delivery of Government programmes for a sustainable energy sector'. As with other environmental programmes we deliver for the Government, including the Renewables Obligation and the Feed-in Tariff scheme, it is our aim to administer the RHI as effectively and efficiently as possible.

Associated documents

Readers should be aware of the following documents which support this publication.

- Energy Act 2008[2]
- DECC Renewable Heat Incentive Policy Document[3]
- Renewable Heat Incentive: Impact Assessment[4]
- Renewable Heat Incentive Scheme Regulations 2011[5]

[1] http://www.ofgem.gov.uk/About%20us/CorpPlan/Documents1/Corporate%20Strategy%20and%20Plan%202011%20-%202016.pdf
[2] www.legislation.gov.uk
[3] http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/renewable%20energy/policy/renewableheat/1387-renewable-heat-incentive.pdf
[4] http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/renewable%20energy/policy/renewableheat/1381-renewable-heat-incentive-ia.pdf
[5] http://www.legislation.gov.uk/

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Executive Summary

The Renewable Heat Incentive (RHI) is the world's first financial incentive scheme of its kind designed to increase the uptake of renewable heat technologies and reduce the UK's carbon emissions. Broadly speaking, the scheme provides a subsidy per kWhth of eligible renewable heat generated from accredited installations and a subsidy payable to producers of biomethane for injection.

The Government has appointed Ofgem to administer the RHI. Ofgem's E-Serve division has extensive experience in delivering similar environmental schemes, such as the Renewables Obligation and the Feed-in Tariff scheme. The Government is responsible for developing the underpinning RHI policy including setting tariffs, establishing the legislative framework, and the introduction of further scheme elements in phase two.

Scheme Eligibility

Initially the scheme will support non-domestic renewable heat installations and the production of biomethane for injection in the national gas grid.

The Government aims to introduce support for the domestic sector in phase two of the scheme. In the interim, the domestic sector may be eligible for the Renewable Heat Premium Payment (RHPP), which is a separate, complementary grant scheme to the RHI. Further information on the RHPP is available from the Energy Savings Trust's RHPP webpage.[6]

The following renewable heat technologies will be supported initially:

- solid biomass and solid biomass contained in municipal waste (including CHP),
- ground and water source heat pumps,
- geothermal (including CHP),
- solar thermal (at capacities of less than 200 kWth),
- biogas combustion (except from landfill gas but including CHP; at capacities of less than 200 kWth)
- biomethane injection.

Participants will also need to meet several other eligibility requirements which are explained in this Guidance. These include demonstrating that the heat is used for an eligible purpose, that metering arrangements are appropriate, and that grants have not been received for certain purposes.

Participants will be able to apply via the Ofgem RHI website from the start of the scheme, expected to be before the end of 2011. This is subject to the Regulations being approved by Parliament and coming into force.

[6] http://www.energysavingtrust.org.uk/Generate-your-own-energy/Sell-your-own-energy/Renewable-Heat-Premium-Payment

Ongoing obligations

Once part of the scheme, participants will need to comply with a number of ongoing obligations which are explained in this Guidance such as regular submission of heat data, meter readings and fuel data for certain bioenergy installations. Participants will also be expected to maintain their heating equipment and meters, and report any significant changes to their installation or heat uses to Ofgem. Participants will be required to make annual declarations to Ofgem confirming their compliance, and may be selected for audits and/or a site inspection. Failure to comply with ongoing obligations (including notification of a change of ownership of an accredited installation) may lead to Ofgem taking compliance action against a participant.

Guidance Document structure

The Guidance sets out our procedures for the administration of the RHI under the Regulations. Volume One provides details on eligibility requirements and how to apply for the RHI. Volume Two provides details of the ongoing obligations on participants, how periodic support payments are calculated, and our compliance and enforcement powers.

The Guidance is not a definitive legal guide to the RHI, (although its publication is made in accordance with the Regulations). Prospective participants are advised to familiarise themselves with it and read it in conjunction with the Regulations as it gives further elaboration on the obligations on participants under the Regulations and how Ofgem intend to administer the scheme according to the Regulations. In the event of any conflict between the Regulations and the Guidance, the Regulations take precedence.

1. Introduction

Policy Context

1.1. The European Union's (EU's) 2009 Renewable Energy Directive[7] obliges the UK to meet 15 per cent of its energy consumption from renewables by 2020 – this includes energy from heat, transport and electricity. Renewable energy will help the UK and the EU to meet targets to reduce carbon emissions and improve energy security by making better use of indigenous and non-finite resources. The UK Government also sees great potential in the development of jobs in the green economy.

1.2. Though the EU did not issue sector-specific targets except for renewable transport, the UK will need to develop each sector substantially to meet the target. For heat, the Government has committed to the ambition that by 2020, 12 per cent of heat will come from renewable sources.

RHI overview

1.3. The RHI is a new Government financial incentive scheme designed to increase the uptake of renewable heat and reduce the UK's carbon emissions. Broadly speaking, the scheme provides a subsidy per kWhth of eligible renewable heat generated from accredited installations and by registered producers of biomethane. The objective of the RHI is to significantly increase the proportion of the UK's heat that is generated from renewable sources, driving change in a heat sector that is currently dominated by fossil fuel technologies. It aims to encourage the uptake of renewable heat technologies by compensating for barriers to their adoption, including the current higher upfront costs and operational expenditure for these technologies as compared to those using traditional fossil fuels.

1.4. A range of renewable heat technologies will be supported under the RHI. These include solar thermal, ground and water source heat pumps, biomass and biogas boilers, geothermal, energy from solid biomass in municipal waste and biomethane injection into the gas grid. Payments will be made on a quarterly basis over a 20 year period to the owner of the RHI installation or producer of biomethane.

1.5. The Government intends to introduce the RHI in two phases:

- In the first phase, addressed in this Guidance document, the RHI will be available to parties with eligible installations in **non-domestic sectors**, and to producers of biomethane. The first phase is expected to commence before the end of 2011.

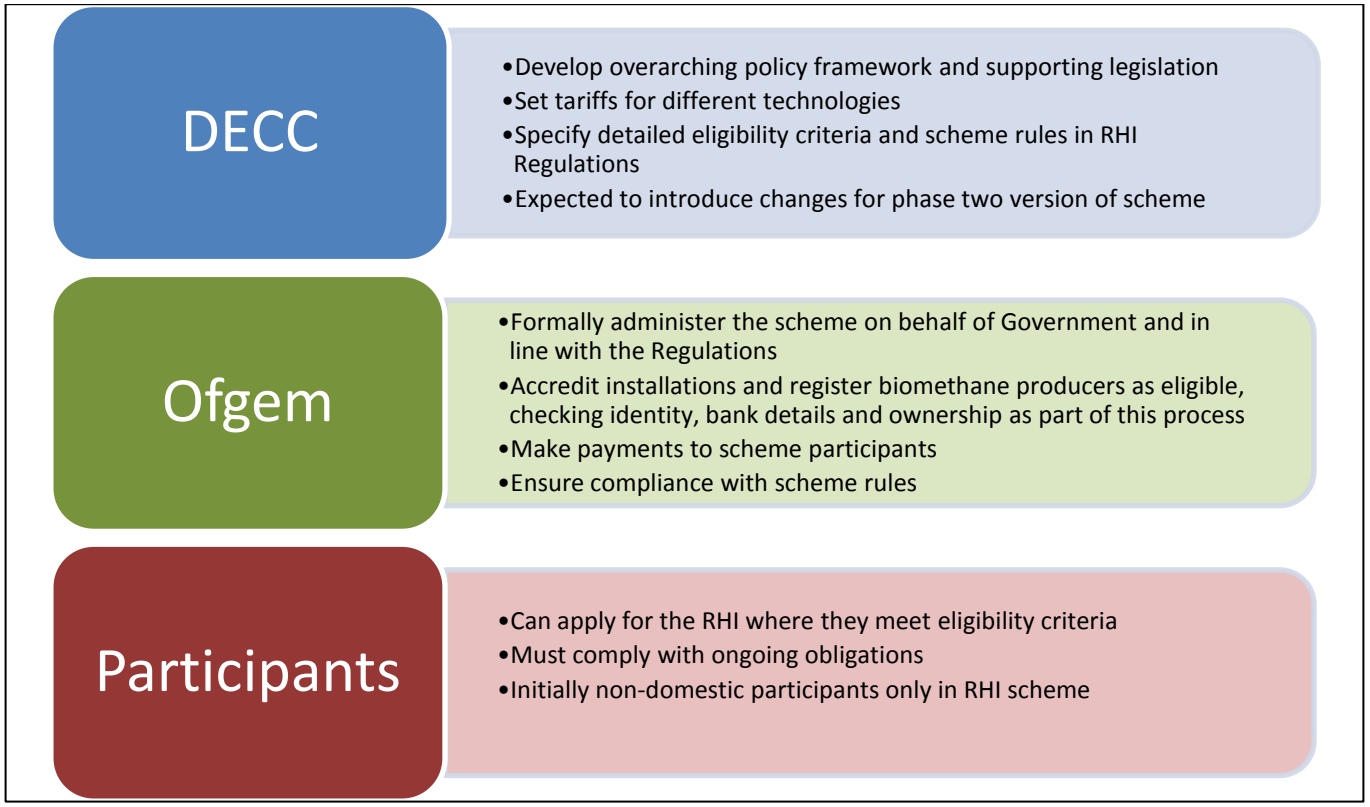
[7] 2009/28/EC

- In addition to expanding the non-domestic scheme, the Government aims to introduce support for the **domestic sector** in phase two. This phase will require further legislation and is not covered in this Guidance document. Before the RHI is made available to the domestic sector, that sector may be eligible for the **Renewable Heat Premium Payment (RHPP)**, a grant scheme which is complementary to the RHI. For more information on the RHPP, see the Energy Savings Trust RHPP webpage.[8]

Respective Roles

1.6. The Government is responsible for developing the underpinning RHI policy including setting tariffs, establishing the legislative framework, and the introduction of further scheme elements in phase two. Any queries about these aspects should be addressed to DECC.

1.7. The Government has appointed Ofgem to administer the RHI. Ofgem's E-Serve division already has experience in delivering similar environmental schemes, such as the Renewables Obligation and Feed-in Tariffs.



[8] http://www.energysavingtrust.org.uk/Generate-your-own-energy/Sell-your-own-energy/Renewable-Heat-Premium-Payment

Government, Ofgem and participants are involved in making the RHI work and each plays a distinct but important role in the scheme. The diagram above provides a brief overview of the responsibilities of each entity.

Ofgem's Key Functions

1.8. The Regulations detail Ofgem's key functions with respect to the RHI. The use of 'Ofgem', 'us', 'our' and 'we' are used interchangeably in this Guidance when referring to the exercise of our powers and functions under the RHI.

1.9. Key functions for Ofgem include:

- Accreditation of installations and registration of producers of biomethane which meet the eligibility criteria, including verifying identity, bank details and ownership of an installation
- Publishing guidance for participants and prospective participants to understand how to apply and how to comply with the conditions of the RHI
- Making payments on a quarterly basis to participants for the eligible heat generated or biomethane produced
- Monitoring and enforcing compliance with the initial eligibility and ongoing requirements of the RHI as outlined in the Regulations
- Undertaking inspections to ensure participants' ongoing obligations under the RHI are being complied with
- Reporting to the Secretary of State on the progress of the RHI on a monthly, quarterly and annual basis
- Providing a review procedure that allows prospective, current and former participants to challenge our decisions in relation to the administration of the RHI if they believe our decisions are incorrect.

1.10. We will carry out these functions as efficiently and effectively as possible. We cannot, however, act beyond the scope of the powers as laid down in the Regulations.

Publication of guidance

1.11. We are responsible for publishing guidance on the governance and administration of the RHI, including: our approach to ensuring compliance with the RHI; dealing with breaches of RHI requirements; conduct of inspections and handling reviews of decisions.

Publication of tariffs

1.12. We will publish an adjusted tariff table on an annual basis to reflect changes in the Retail Prices Index (RPI).[9] This will be published on or before 1 April each year for the period commencing 1 April of that year and ending 31 March the following year.

Reporting

1.13. In addition to providing monthly reports to DECC on the uptake of the scheme, we will publish quarterly and annual reports on our website from the launch of the scheme. These public reports will include the following information:

- aggregated details of accredited installations and fuel type
- aggregated details of the technology replaced
- total amount of periodic support payments made in that reporting period
- total amount of heat generated for which payments have been made under the RHI, as well as details of what this heat has been used for
- sustainability information for certain installations using biomass
- volume of biomethane injected by registered biomethane producers

1.14. We will also publish the following aggregated information on the Ofgem website on an ongoing basis:

- the number of accredited RHI installations and registered biomethane producers
- the technology and installed capacity of the installations
- the total amount of heat generated and biomethane produced together with the total amount of periodic support payments made under each tariff

1.15. We will aim to update this information daily.

[9] The general purpose domestic measure of inflation in the United Kingdom. More information available from the Office of National Statistics (www.statistics.gov.uk)

Additional information

1.16. We may also publish further information which we hold in relation to the performance of our functions under the Regulations if requested to do so by the Secretary of State.

Queries

1.17. Any queries relating to the scheme operation or applicant eligibility should be emailed to rhi.enquiry@ofgem.gov.uk with the nature of the query clearly marked. If you are an existing participant, please note in the query that you are a participant and your installation number. Written queries should be sent to the address on the front of this Guidance clearly marked for the attention of the RHI operational team. For telephone enquiries, the team can be contacted on 0845 200 2122. The phone line is open Monday to Friday, except public holidays. Please check the Ofgem RHI website for the opening hours of the phone line.

Guidance documents

Overview

1.18. The Guidance is divided into two volumes for the reference of participants and prospective participants in the RHI.

- **Volume One** (this volume) provides an overview of the RHI, including Ofgem's powers and duties with respect to the RHI, and information on the eligibility requirements which an applicant must meet and the accreditation or registration process which an applicant must go through in order to become accredited or registered for the scheme and be eligible for incentive payments.

- **Volume Two** details the payment calculation and payments provisions for the RHI, and ongoing obligations with which a participant needs to comply in order to receive RHI payments. This includes information about how to submit periodic data to Ofgem, including meter readings and annual declarations. Consequences of non compliance, inspection arrangements and the review process are also outlined.

1.19. There are two main purposes of the Guidance. The first purpose is to help clarify how the RHI works, what the criteria for joining the RHI are, and what your ongoing obligations will be once you are a participant in the RHI. The second purpose is to set out how we propose to apply the Regulations in cases where we have discretion. This means that, for example, where the Regulations allow us to ask you for evidence, we provide in the Guidance more detail on what form the evidence should generally take.

Scope of this Guidance

1.20. This Guidance does not claim to anticipate every scenario which may arise. Where a scenario arises which is not addressed in this Guidance, we will adopt an approach which we consider to be consistent with the relevant legislation. Any Guidance published in addition to this Guidance will be posted on our website.

1.21. This Guidance is for guidance only and is not intended to provide comprehensive legal advice on how the Regulations should be interpreted or itself to have legal effect. At all times, the onus is on the owner of an installation or producer of biomethane to ensure that he or she is aware of the requirements of the Regulations. We will provide advice on the eligibility of technologies where we can. However, if a technology is new, developers might find it helpful to seek their own legal and technical advice before approaching us.

1.22. This Guidance represents Ofgem's approach to matters concerning its general administration of the scheme in accordance with the current Regulations. If the Regulations change in the future Ofgem will reconsider its administrative arrangements accordingly.

1.23. Where a participant contracts with third parties in relation to the generation of renewable heat or the production of biomethane, it is the participant's responsibility to ensure, via contractual or other arrangements, that these parties also comply with any relevant ongoing obligations under the RHI. Needless to say, the obligations entered into by the participant on becoming accredited or registered remain those of the participant rather than being transferred to the third party concerned.

Date of this Guidance

1.24. The Guidance will apply from the coming into force of the Regulations, expected to be before the end of 2011.

Devolved Administrations

1.25. In accordance with the Act, we can only make payments to eligible renewable heat installations that are generating heat in England, Wales and Scotland, or to biomethane producers injecting into the grid in these regions. Amendments to the relevant legislation are a matter for the Secretary of State and Scottish Ministers. Northern Ireland will not be included in the RHI as the powers to implement the RHI legislation conferred by the Act do not currently extend to

the province.[10] The Isle of Man and the Channel Islands are excluded from the scheme.

Treatment of personal data

1.26. All personal data collected from participants by Ofgem will be processed in accordance with the Data Protection Act 1998. Ofgem is a public Authority and must protect the public funds we handle, so we may use the information you have given us to prevent and detect fraud. As part of this process, your information may be supplied to a third party that conducts ID verification and bank account validity checks. We may also share this information, for the same reasons, with other government organisations involved in the prevention and detection of crime. Please note that some personal data will be shared with DECC for the purpose of monitoring the scheme and that, where appropriate, DECC may share that data with the Devolved Administrations.

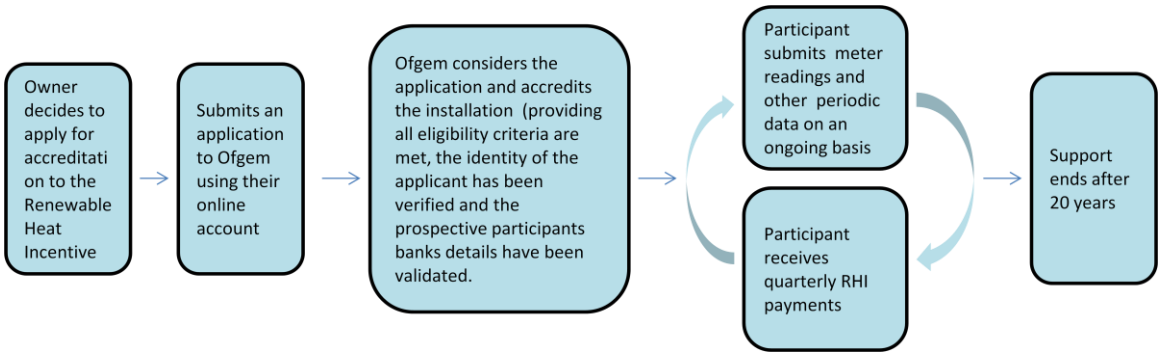
[10] Although note that the Department of Enterprise, Trade and Investment in Northern Ireland have issued a consultation document on introducing an RHI scheme for Northern Ireland under proposed new powers:
http://www.detini.gov.uk/consultation_on_the_development_of_the_northern_ireland_renewable_heat_incentive

2. How to apply

Chapter Summary

This Chapter sets out what accreditation under the RHI means, who can apply, what the process is for applying to the scheme, and how to determine how many applications you need to complete. The registration process for biomethane producers is addressed separately in Chapter Eight of this Volume.

Figure 1: High level end to end process for an RHI participant



Accreditation under the Renewable Heat Incentive

Overview

2.1. In order to receive support under the RHI, an eligible installation will have to be accredited by Ofgem. Accreditation (which is defined in the Regulations) is the term that we use to denote admission by us of an applicant to the RHI once we determine that the installation meets the eligibility criteria of the scheme and that the application for accreditation is properly made.

2.2. Biomethane producers are treated differently to other participants in the RHI. For full details on how to register as a biomethane producer for the RHI, please see Chapter Eight, 'Registration for Biomethane Producers'.

2.3. In order to gain accreditation for an installation, an applicant will have to demonstrate to us that an installation meets the RHI eligibility criteria, including that the installation is of an eligible renewable heat technology type and size, the heat is used for an eligible purpose, that metering arrangements are appropriate, and that grants for certain purposes have not been received. For further information on general and technology-specific eligibility requirements please see Chapters Four and Five respectively of this Volume. Information on eligible heat uses can be found in Chapter Six, while the requirements for metering arrangements are explained in detail in Chapter Seven.

2.4. Applications for RHI accreditation can only be made by an Authorised Signatory. An Authorised Signatory is a person who is authorised to open and use an account with the Ofgem RHI website or provide information by post, submit reporting information and complete the RHI annual declaration. If the applicant is not an organisation this person must, as appropriate, be the owner of an eligible renewable heat installation (or in the case of an installation which has multiple owners, the representative owner who has authority to act on behalf of all such owners) **or** where the owner or representative owner is an organisation, the nominated individual who is authorised by the organisation to open and use an account with the Ofgem RHI website or submit postal information on behalf of that organisation in its capacity as an owner or representative owner.

2.5. Prior to accrediting an RHI applicant, we must successfully verify the identity of the Authorised Signatory using personal information provided to us, and also validate the bank details provided. This information will be treated in accordance with the Data Protection Act as highlighted in Chapter One of this Volume of the Guidance. Our obligation to verify the identity of applicants and validate bank details is set out in the Regulations and is part of a package of fraud prevention measures designed to guard against the misappropriation of public funds.

2.6. For a quick reference eligibility summary and checklist, please see Chapter Three of this Volume. For more detailed information on the general eligibility requirements, the requirements for individual technologies, heat uses and metering eligibility requirements, please see Chapters Four to Seven respectively.

Before you apply

2.7. Before you apply, we would provide the following advice to applicants to improve the likelihood of a smooth passage through the application process:

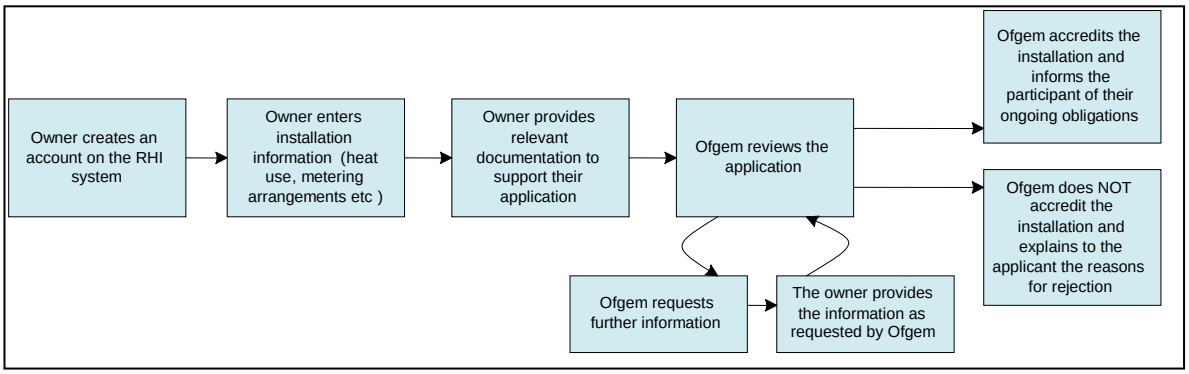
- Read this Guidance in full. It provides detailed information on our approach to administering the scheme, eligibility requirements and information on areas of interpretation.

- Prepare your accreditation application well. Gather relevant information (eg technical specifications of meters and boilers, schematics, planning consents, invoices and commissioning documents) that you will need to provide – you have the option of sending these in electronically as part of your online application, and it is recommended that you send the information in this way. This Guidance provides information on the types of information we will need applicants to provide. In addition, we will aim to provide a summary of documents you will need to retain on our RHI website in the form of a 'Summary of Supporting Information for RHI Applicants' by the launch of the scheme. If you are still unsure what is required, please contact the RHI enquiry line or by email.

- Send a high quality application. One cause of operational delays in assessing electronic applications is resolving issues with poor quality submissions. We recommend you provide clear, concise and complete information and ensure electronic documents are high quality (eg easy to navigate, any scans are legible).

Making an application

Figure 2: How to apply for accreditation



2.8. To apply for accreditation for an installation, you will need to apply online via the Ofgem RHI website (www.ofgem.gov.uk/RHI), and send in a separate hard copy form with your organisation's bank account details. If you are unable to apply online, you will be able to call Ofgem on **0845 200 2122** to discuss your requirements, which may include the provision of a paper application. Please note that we recommend applicants apply via the online system as this will allow us to process your application more quickly. For details of how we determine your accreditation date, please see below.

2.9. Accreditation can only be received once an eligible installation has been first commissioned. However, as an administrative concession, if the installation is 1MW or larger, we will accept applications for such installations up to a month prior to the installation's first commissioning. Please see the 'Early applications for 1MW or larger installations' section below for further information. Please note that this provision for ***early*** applications is separate to what the Regulations refer to as 'preliminary accreditation'. For full details on preliminary accreditation, please see the 'Preliminary accreditation' section of this Chapter below.

2.10. When completing the RHI application process online, please be aware that all accreditation questions relevant to your installation will need to be answered before you can submit your application. The information you will be required to provide at the application stage will depend on the technology type and size of your installation, and the complexity of your heat uses.

2.11. You will need to provide evidence in support of your application that shows the installation company details, date of installation and installation serial number

for your installation. Because each application will be different, this evidence could be any one (or a combination) of the following:

- Receipts and/or invoices relating to the installation of the equipment
- Commissioning certificate
- Commissioning report
- Photograph of the installation clearly showing the serial number of the equipment

2.12. Also, to receive accreditation, you must declare at this stage that you (or the owner(s) you represent) will continue to meet the ongoing obligations required by the scheme to receive accreditation. For further information on these obligations, please see Volume Two of the Guidance.

2.13. You must ensure that the information you submit is accurate. If we subsequently find that accreditation information was incorrect we may need to take compliance action. Receiving a financial gain through knowingly submitting false information could constitute fraud and where we suspect this has happened we will pass information on to the relevant authorities for further action which may lead to prosecution.

Requests from Ofgem for further information

2.14. Once you have submitted your application and your identity and bank details have been verified, we will then review all the information before making a decision as to whether the installation can be accredited. In some cases, we will need to contact you for further information to enable us to verify eligibility. After submitting your application you should therefore check for follow-up communication from Ofgem. Once we have received all of the necessary information, we will review your application for accreditation.

2.15. Please note that you must submit all information that directly relates to your installation via the RHI IT system. This will help to ensure data integrity, a proper audit trail, and minimise the time taken to process your application. N.B. The bank account information form is an exception to this as it must be printed, completed and posted to us. There could be other exceptional circumstances when you may be asked to provide data or documents via email or post.

2.16. If we are satisfied that the application has been properly made, that all of the relevant eligibility criteria have been met and that you are able to comply with the ongoing obligations of the scheme, we will then accredit the installation and you will become a participant in the scheme. We will notify you in writing whether your application for accreditation has been successful.

2.17. Please also note that before your installation is accredited, we may arrange for a site inspection to be carried out so that we can be assured that the installation is eligible and should be accredited.

2.18. We require accredited participants to retain evidence relating to the installation's design and installation, such as technical calculations, drawings, commissioning data or other operating and maintenance documentation, as applicable to the installation. We may ask to see this during the accreditation process or as part of an audit.

2.19. Once you are a participant in the scheme, you are able to receive support for your accredited installation. We will send you a statement of eligibility which will include or refer you to the following:

- the date of accreditation
- the applicable tariff rate for your installation
- the process and timing for providing meter readings
- details of the frequency and timetable for payments
- the tariff lifetime and the tariff end date for the installation
- the terms and conditions for your ongoing participation in the scheme.

2.20. If your application is not successful, you will be notified in writing of the reason(s) why. You are entitled to ask for a review of the decision to reject an application for accreditation. For more information on how to request a review, please see Chapter 12, Volume Two of this Guidance.

2.21. It will be a condition of accreditation that you must notify us within 28 days of any changes to your accredited installation or to any of the plants, including the installation of another plant, supplying heat to a heating system of which your accredited installation forms part. You must contact us with this information, and, depending on the information that has changed, amend your details in your online account. If the new information you supply affects your tariff rate or your eligibility to receive RHI payments we shall notify you and advise you as to what we intend to do in the circumstances.

Date of accreditation

2.22. The date of accreditation for your installation is the date from which your RHI payments will be calculated. The date of accreditation is the later of either the date on which an application (which is complete and which demonstrates the eligibility of an installation) is received by Ofgem and we are satisfied that the application was properly made, or the date the installation was first commissioned. As we do not process applications for accreditation in most

cases for installations which are not yet commissioned, we expect the date of accreditation to be the date we received your application, provided we are satisfied that your application is complete and that all of the eligibility criteria were met at this point. For installations that can apply for accreditation early (please see section 'Early applications for 1MW or larger installations below), we expect the date of accreditation to be the date of first commissioning.

2.23. If we are not satisfied that your application contains all the required information, the date of accreditation will be the date on which this outstanding information is provided to us, subject to all eligibility criteria being met at that time. If we are not satisfied that all the eligibility criteria are met on the date you submitted you originally submitted your application (for example, an extra meter is required), the date of accreditation will be the date on which you have demonstrated to us that the installation has met all of the relevant eligibility criteria. For more information on these criteria, please see Chapters Four-Seven respectively of this Volume. Please note that to ensure that the processing of your application can be completed in a timely manner, your hard copy bank details form should be sent to Ofgem as soon as possible after you have completed your online application.

2.24. If in exceptional circumstances you are submitting a paper application, please note that provided we are satisfied all eligibility criteria have been met, your accreditation date will be the day on which your completed, signed accreditation application was received by Ofgem (not the date on which a paper application form was requested). We recommend that proof of posting/delivery should be obtained when submitting postal applications.

Early applications for 1MW or larger installations

2.25. If your installation is 1MW or larger and has already been built, we will accept applications for accreditation up to a month prior to your installation being first commissioned. This early application window provides us with more time to process accreditation applications that are likely to be complex. Apart from this difference, the process for applying for accreditation for 1MW or larger installations is the same as that discussed in the 'How to apply for accreditation' section above.

2.26. Please note that if your installation is 1MW or larger and you choose to lodge an early application, the installation's accreditation date will be the date of first commissioning. This is provided that all other relevant eligibility criteria have also been met. You will need to contact Ofgem to advise us that your installation has been first commissioned and we will require evidence such as the initial meter readings from the installation.

What is the difference between the 'installation' and 'commissioning' of an eligible installation?

2.27. To install an eligible installation means to build and/or put in place the relevant plant. At this stage, the plant has not begun generating heat. To 'commission' a plant means to carry out all necessary tests and procedures

required by industry standards to show that the plant is able to deliver heat for the purpose for which it was installed. For smaller scale installations, installation and commissioning may happen on the same day. At the larger scale there is usually a significant testing period, so the date of installation and date of commissioning may be different.

How to apply when you have multiple plants

2.28. Applicants should apply only once for each installation for which they wish to claim RHI support. If you have multiple plants then you need to know whether these need to be applied for separately or if they should be considered together as a single installation.

2.29. As provided in the Regulations[11], an installation can consist only of one plant unless two or more plants making up an installation meet the following criteria:

- the component plant meets the eligibility criteria
- the plants use the same source of energy and technology (e.g. ground source heat pump)
- the plants form part of a common heating system, and
- none of the plants has already been accredited as an RHI installation.

In these cases, two or more component plants will be regarded as a single plant for RHI purposes if, in addition, the eligibility criteria referred to in the Regulations[12] are also satisfied and you should make one application for that single plant.

2.30. For example, if you wanted to apply for RHI support for two biomass boilers supplying heat to a common heating system, these would be treated as a single plant if the other conditions mentioned above were also satisfied and your 'installation' would comprise both biomass boilers. You would submit a single application including information on both boilers, rather than submitting two separate applications.

2.31. If your plants do not use the same source of energy or form part of different heating systems, or if the other conditions referred to above are not met, they will be considered to be standalone not component plants and, therefore, will be treated as separate installations. You will have to apply for accreditation for each installation (plant) separately in this instance. Separate metering arrangements will also apply.

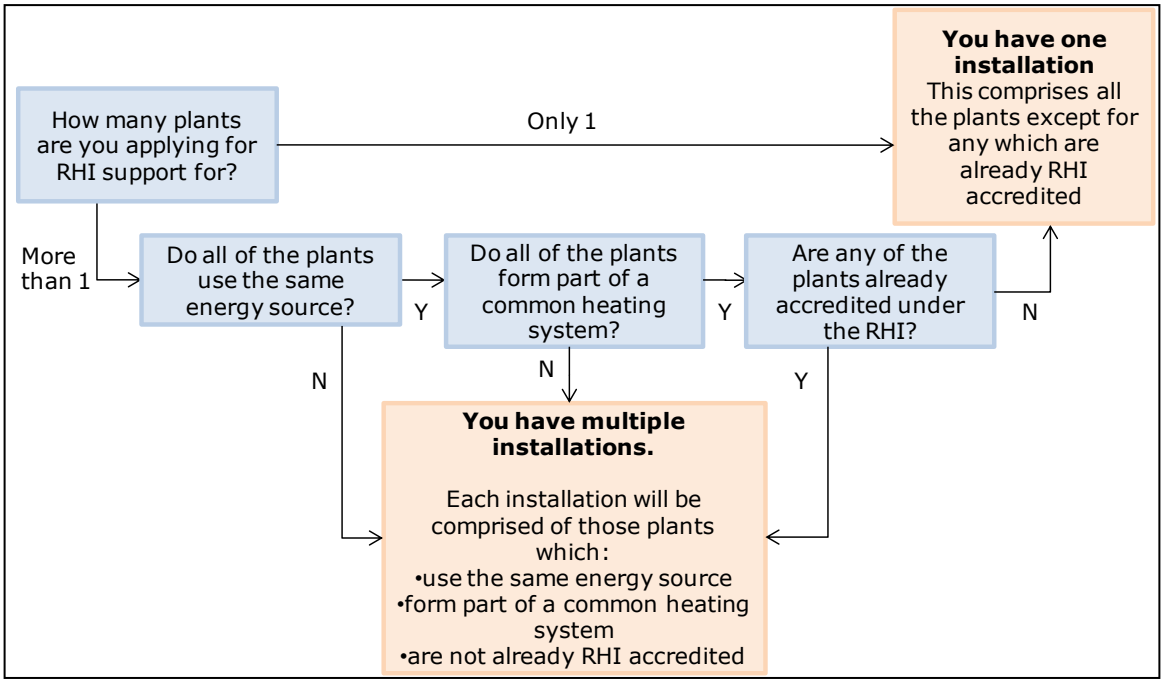
[11] Regulations, Part 2, Chapter 2, Regulation 14(2) & (3)
[12] Regulations, Part 2, Chapter 2, Regulation 14(3)

2.32. Please see Figure 3 to assess whether you should submit a single or multiple applications for RHI support.

2.33. Where an installation comprises more than one component plant (i.e. forms a single plant) we will consider the *combined installation capacity* of the component plants when determining the appropriate eligibility criteria for the installation. For example, the independent report on metering arrangements (see Chapter Seven of this Volume for further information on the report) would be required if the combined installation capacity of both boilers as discussed in Section 'Installation Capacity' of Chapter Four is equal to or greater than 1MWth.

2.34. If one or more of the plants is already accredited under the RHI, the addition of a further plant may be treated as 'additional capacity.' Please refer to Volume Two, Chapter Seven, 'Treatment of additional capacity' for further information on how to apply for accreditation for the additional plant(s).

Figure 3: Do I need to submit a single application for RHI support or multiple applications?



Inspections and access to third party premises

2.35. In order to encourage compliance with the scheme, we (or agents authorised on our behalf), will carry out a programme of site inspections of plants at the pre-accreditation stage and of accredited installations on an ongoing basis.

2.36. In instances where the installation and/or its associated infrastructure are located on third party premises not owned or controlled by the participant, the

participant will be required, as a condition of accreditation, to ensure access (by contractual or other means) for Ofgem (or our authorised agents) to such premises for the purposes of inspection. This will include access to non-domestic premises which are served by the installation for the purpose of verifying eligible heat use. We may also require you to provide evidence (e.g. site plans for domestic premises or external photographs) that domestic premises receiving heat from the heat distribution system are in fact domestic and do not have ineligible uses.

2.37. Further information regarding our approach to the audit and inspection of accredited installations can be found at Chapter 11 of Volume Two of this Guidance.

Preliminary Accreditation

2.38. In certain cases, applicants who are proposing to construct or operate an installation can apply for preliminary accreditation. The Government has decided to allow preliminary accreditation for certain proposed installations at the planning stage to give relevant applicants more certainty about future accreditation.

What does preliminary accreditation mean?

2.39. Preliminary accreditation means an individual or an organisation can submit plans and evidence demonstrating that, once built, an installation would meet the eligibility criteria of the RHI scheme. If we are satisfied that the eligibility criteria would be met, that it is likely renewable heat will be generated at the plant and that certain planning requirements are met, we will grant preliminary accreditation, which may include conditions. It is only available for installations that have **not** yet been commissioned.

2.40. Receiving preliminary accreditation can be considered as a form of 'in principle' agreement. It does not itself make the applicant a participant on the scheme, and no payments will be made on the basis of a preliminary accreditation. But it does give assurance that once the proposed installation is built and the owner applies for 'full' accreditation to the scheme, we will grant full accreditation providing that the installation is then built in line with the plans submitted, and other conditions are met as set out below.

2.41. There are no time limits on the validity of preliminary accreditation. However, receipt of preliminary accreditation is not a guarantee that a future 'full' accreditation application will be granted. In certain circumstances specified in the Regulations we will not do so, including where the legislation has changed since the preliminary accreditation in a way that means that, if the application for preliminary accreditation had been made after the change, it would have been refused... Similarly, Preliminary Accreditation does not guarantee that a specific tariff rate will be received if future regulation changes affect tariff rates.

Who is eligible for preliminary accreditation?

2.42. Preliminary accreditation is expected to be used for larger, more complex and bespoke installations, where greater up front clarity on eligibility may be needed. The Regulations only allow applications for preliminary accreditation for the following technologies:

- geothermal
- biogas
- solid biomass and solid biomass contained in municipal waste installations – but note this is only available for those proposed installations with a capacity of 200kWth and above.

2.43. As stated in the Regulations[13], you will be required to provide evidence that relevant planning requirements relating to the construction or operation of an installation are satisfied when applying for preliminary accreditation. This means that an installation has been granted the necessary planning permission, or that such planning permission is not required and appropriate evidence of this is provided to us.

2.44. In the case of conditional planning permission, this should be provided, along with an explanation of why it is conditional, or we may, upon an application by the person who proposes to construct or operate the installation, grant preliminary accreditation. We cannot grant preliminary accreditation unless the consent or permission is forthcoming or it is evidenced that consent or permission is not needed. Given time limits on planning consents and permissions, we will only grant preliminary accreditation if the consent or permission is current.

Metering requirements

2.45. As part of your preliminary accreditation application, you will be required to submit a schematic diagram detailing the proposed layout of your installation including positioning and the number of meter(s) that will be used. Please see section 'Schematic diagram' in Chapter Seven of this Volume for further information on this requirement. Please note you are not required at this stage to provide information regarding meter serial number(s), make(s) or model(s) of your meter(s), where these have not yet been selected. You will be required to provide an updated schematic with the full details if you later apply for full accreditation.

[13] Regulations, Part 3, Regulation 26(1)

Administration of preliminary accreditation

2.46. All applicants who receive preliminary accreditation for an installation will be required to advise us of any material changes made to the installation. 'Material changes' means changes to the installation as planned or built which may affect the tariff of the installation under the RHI, or that would mean that the installation would no longer be considered eligible to receive full accreditation under the RHI. Applicants should contact us for advice if they are in any doubt as to whether the changes they are considering are material.

2.47. Please note that the eligibility requirement in relation to publicly funded grants (discussed in the 'RHI interaction with publicly funded grants' section in Chapter Four of this Volume) also applies to applicants for and recipients of preliminary accreditation. If you are awarded preliminary accreditation and are subsequently paid a grant from public funds for the costs of purchasing or installing the equipment, you must inform Ofgem as this will render you ineligible for full accreditation. For further information on the publicly funded grants requirement, see section 'RHI interaction with publicly funded grants' in Chapter Four of this Volume.

2.48. We may attach other conditions upon granting preliminary accreditation to an applicant. These will depend on the circumstances of the application and will be determined on a case by case basis.

Notification of preliminary accreditation

2.49. We will confirm preliminary accreditation in writing to the applicant. Preliminary accreditation will in most cases be effective from the date we issue the notification letter to you or in some circumstances a later date we may specify in the notice. The notification letter will also specify any conditions attached to the preliminary accreditation.

2.50. Alternatively we may contact applicants to specify what further information is needed before preliminary accreditation can be granted.

2.51. If we decide to reject an application, we will write to you with an explanation of the reasons why.

Circumstances under which preliminary accreditation conditions may be attached, preliminary accreditation conditions may be amended, or preliminary accreditation can be withdrawn

2.52. The Regulations set out circumstances in which, following the granting of preliminary accreditation, conditions may be attached to a preliminary accreditation, conditions attached to a granted preliminary accreditation can be amended, or a preliminary accreditation can be withdrawn. These circumstances are the following:

- there has been a material change(s) in circumstances since the preliminary accreditation was granted;

- the information contained in the original application was incorrect in a material respect; or

- there has been a change in the applicable legislation since the date of preliminary accreditation was granted, and that change is such that if the application for preliminary accreditation had been made after this change the preliminary accreditation would not have been granted; or

- any conditions attached at the date of granting preliminary accreditation have not been complied with.

Conversion to full accreditation

2.53. Once an installation in receipt of preliminary accreditation has been built, the owner of the installation can apply for full accreditation in order to become a participant in the RHI and receive RHI payments. As part of their application for full accreditation the applicant should give the reference number of the preliminary accreditation that had been received.

2.54. In assessing the application for full accreditation, we will take into account the preliminary accreditation granted as explained in the next paragraph.

2.55. Where the installation has been built and commissioned in line with the original preliminary accreditation, preliminary accreditation has not been withdrawn and any conditions (including amended or additional conditions) set out in the preliminary accreditation continue to be complied with, we will grant full accreditation unless:

- we consider the information on which the original preliminary accreditation was based was incorrect in a material respect such that, if we had known about it at the time of preliminary accreditation, we would not have granted the preliminary accreditation, or

- there has been a material change in circumstances or a change in applicable legislation since the date of preliminary accreditation such that, in either case, if the application for preliminary accreditation had been made after the date of the change it would have been refused.

3. Eligibility Summary and Checklist

Chapter Summary

This Chapter contains a summary of the key eligibility criteria, along with references for each item as to where else in the document a more detailed explanation can be found. It should be read in conjunction with the following Chapters.

Legislation

3.1. The Act, which provides for the establishment of the RHI scheme, lists the sources of energy and technologies which may be eligible for support. Those sources of energy and technologies which will receive support from the commencement of the RHI in 2011 are set out in greater detail in the Regulations. The Regulations also determine the other criteria which must be met by prospective participants in order to qualify for such support.

Eligibility Criteria

3.2. If you want to apply for RHI accreditation for an installation, you will need to demonstrate to Ofgem that the installation meets the eligibility criteria for the RHI.

3.3. There are some general eligibility criteria which all applicants will need to meet in order for the installation to be accredited and for the owner of the installation to become a participant in the RHI. These are summarised in the list below with the details spelled out in the 'General eligibility requirements', 'Heat Uses' and 'Metering eligibility requirements' Chapters.

3.4. Further eligibility criteria may need to be satisfied in relation to particular technologies and fuels. These are summarised in the list below and set out in Chapter Five, 'Supported technologies and fuels'.

3.5. Please note that producers of biomethane should refer to Chapter Eight, 'Registration for biomethane producers' for the specific requirements for biomethane producers.

Overall eligibility checklist

3.6. The following checklists summarise for ease of reference the key eligibility requirements – this is meant as a starting point and should not be seen as comprehensive or as an alternative to reading the detailed requirements in this document and in the Regulations.

Table 1: General eligibility checklist

1) The applicant is the owner of the eligible installation (see Chapter Four), the owner's identity has been verified by us and their bank details have been validated ***Where there are multiple owners, the applicant must have permission to act for the others***
2) The plant is an eligible renewable heat technology type and size (please see Table 2 below)
3) The installation was completed and the plant was first commissioned on or after 15 July 2009 (see Chapter Four) ***(or is a CHP installation which was generating electricity only prior to 15 July 2009, using biomass or biogas and converted to become an eligible CHP system on or after 15 July 2009)***
4) No grants from public funding have been or will be received for purchasing or installing the eligible installation (see Chapter Four) ***(or for installations commissioned between 15th July 2009 and the start date for the RHI those grants have been repaid)***
5) The plant was new at the time of installation (see Chapter Four)
6) For applicable technologies: The plant has MCS or equivalent certification, and the installer of the plant had MCS or equivalent certification at time of installation (see Chapter Four)
7) The plant uses either liquid or steam as the heat delivery medium (see Chapter Four)
8) The plant is providing heat for at least one eligible heat use: heating a space, heating water or carrying out a process, where the heat is used within a building (see Chapter Five)
9) The installation is not solely heating a single domestic premises (see Chapter Four)
10) The metering arrangements are correct – right types of meters, calibrated, and placed in correct locations according to whether the installation is classed as "simple" or "complex" (see Chapter Seven)
11) The specific criteria, relevant to the technology applied for are met (see table 2 and Chapter Five)

Eligible technologies and sizes

Table 2: Eligible technologies and sizes and technology specific criteria

Eligible technology	Technology-specific criteria
Solid biomass	**All scales eligible** MCS certification requirements apply for installations less than or equal to 45kWth Must be specifically designed and installed to use solid biomass as its only primary fuel source Fuel eligibility requirements (see Volume Two)
Solid biomass contained in municipal waste	**All scales eligible** May not burn non municipal waste Fuel eligibility requirements (see Volume Two)
Ground-source heat pumps **Water-source heat pumps**	**All scales eligible** MCS certification requirements apply for installations less than or equal to 45kWth Must extract naturally occurring energy Must have a CoP of at least 2.9 Reversible heat pumps must only measure heating not cooling Capacity of heat pumps to be specified based on design conditions
Geothermal	**All scales eligible** To count as geothermal, must generate heat using naturally occurring energy located and extracted from at least 500m beneath the surface of solid earth
Solar thermal	**Installations less than 200 kWth eligible** MCS certification requirements apply for installations less than or equal to 45kWth Collector type must be flat plate or evacuated tube
Biogas combustion	**Installations less than 200 kWth eligible** Must be from anaerobic digestion, gasification or pyrolysis Participant must not use biogas which is landfill gas May not generate heat from solid biomass Fuel eligibility requirements (see Volume Two)
CHP	Must be one of the following technologies: geothermal, biogas, solid biomass contained in municipal waste or solid biomass, and meet the criteria for those technologies Ineligible in certain circumstances if accredited under the RO and if it is or has been 'a qualifying CHP station'
Biomethane injection	See Chapter Eight

4. General Eligibility Requirements

Chapter Summary

This Chapter sets out the general eligibility criteria for accreditation under the RHI such as that an installation must be new and the heat generated be used for eligible purposes. This Chapter also discusses the requirements for transitional combined heat and power (CHP) installations. Please see the following Chapter for details on the requirements for individual technologies.

4.1. The following sections set out a number of general eligibility criteria that apply to all applications.

The owner of the installation must be the applicant

4.2. It is a requirement that the owner, or where more than one person is the owner, one of the owners (the 'representative owner'[14]) as agreed with the other owners, of an installation be the person making the application for accreditation. An 'owner' in the context of the RHI is the person/organisation with exclusive rights and liabilities in respect of an RHI installation. The owner or where there is more than one owner, the representative owner, is the person who will receive RHI payments for an accredited installation. We expect that the owner will normally be the person/organisation who purchased and paid for the installation of the equipment.

4.3. The only exception to the above is in the circumstance of a 'hire purchase agreement, a conditional sale agreement or any agreement of a similar nature'. In these cases, the Act[15] defines the 'owner' for RHI purposes to be the person in possession of the plant under such an agreement. So it is this person who should apply for the RHI. We may require evidence from the applicant to verify that such an agreement is in place. We will interpret 'any agreement of a similar nature' to mean a contract providing for the separation of legal ownership and physical possession, and containing provision (which may be subject to conditions) for the ultimate transfer of ownership to the person having possession.

4.4. As part of the application for accreditation, the applicant will be required to declare that s/he is the owner, or representative owner, of the relevant eligible installation.

4.5. Where the prospective participant is a company or public authority, an individual within that organisation should be nominated by the owner or representative owner to act on the organisation's behalf when applying for accreditation under the RHI ('nominated individual').

[14] Where there is more than one owner of an accredited RHI installation, the owner with the authority to act on behalf of all owners is referred to as the representative owner.
[15] http://www.decc.gov.uk/en/content/cms/legislation/energy_act_08/energy_act_08.aspx

4.6. Where an installation has more than one owner, or the installation is comprised of more than one plant which have multiple owners, these owners will need to reach an agreement about who will be the representative owner nominated to apply and receive the RHI payments. Only one application will be accepted for any one eligible installation. We may request to see evidence of the agreement between multiple owners (such as a contract or signed letter of consent) as part of the accreditation process or as part of an audit.

4.7. Please note that only owners (with the exception of a representative owner or nominated individual) can receive the RHI. Agents or other third parties will not be allowed to receive the RHI on behalf of an installation's owner.

Installation capacity

4.8. For the purposes of the RHI, the installation capacity will be the total installed peak heat output capacity of the installation. For most technologies, the installation capacity should be simple to establish as it will be part of the information provided by the manufacturer. We will require details of the installation capacity as part of the accreditation process.

4.9. Where there is no standard information from the manufacturer, e.g. for bespoke equipment, as part of the accreditation process you may have to provide us with technical evidence to prove the installation capacity.

Installation capacity for CHP systems

4.10. The Regulations state that an installation's capacity is the "total installed peak heat output capacity" of that installation. For CHP systems, this relates to the total heat output of the equipment in the form of usable hot liquid or steam, irrespective of whether heat generated is subsequently used for power generation or heating.

4.11. For example, where a solid biomass CHP system uses a steam boiler to generate electricity and subsequently deliver heat to a separate process, the CHP system's capacity would be the total peak heat output capacity of the boiler(s) which originally generated the superheated steam supplied to the steam turbine.

4.12. In the example where a biogas CHP plant combusts gas in an engine to generate power, and the waste heat from this power generation is subsequently used for space or process heating (in the form of hot water or steam), the CHP system's capacity would be the rated peak heat output capacity of the heat exchanger that is used to generate the hot water or steam.

4.13. Please note that heat used to generate electricity is not eligible for RHI support, please see Chapter Five of this Volume for further details.

What is an installation?

4.14. The concept of 'installation' is important in the RHI scheme in relation to working out which equipment must be new or for which you must not have received a grant.

4.15. An 'eligible installation' is defined in the Regulations as a plant (which includes any equipment, apparatus or appliance) which meets the eligibility criteria. The eligibility criteria include those set out in Part 2, Chapter 2 of the Regulations — which require that eligible installations must 'generate heat' using specified eligible sources of energy and technologies.

4.16. The determination of those items of plant which are integral to the generation of heat (and which will, therefore, form an eligible installation) will depend on the particular facts and circumstances of each case.. However, the table below shows the position which Ofgem will usually adopt in assessing whether particular items of plant form part of an 'eligible installation' for these purposes. Our interpretation has taken into account DECC's tariff calculations that were designed to compensate for the additional cost of a renewable heat technology installation as compared to the cost of a gas installation (fossil fuel counterfactual).

Table 3: Ofgem's interpretation of 'eligible installation'

Technology type	**Examples of integral equipment usually included in definition of 'eligible installation'** *NB: this list is not exhaustive*	**'Associated infrastructure' usually not included in definition of 'eligible installation'** *NB: this list is not exhaustive*
All heating installations (i.e. all technologies except biomethane)		• Heat (hot water/ liquid and steam) meters • Heat distribution system (e.g. pipes delivering heat to users, heating controls, pumps, valves, radiators/ heat distribution heat exchangers etc.) • Heat storage equipment • Other buildings housing the plant equipment (e.g. boiler house) • Foundations
Ground Source Heat Pumps (GSHP)	• Ground or water loops • Heat pump unit • Any pumps/ pumping equipment used within the ground loop or to transport water to the external heat exchanger • Evaporator/condenser	

Solar thermal	• Solar collectors (evacuated tubes, flat plates) • Pipes and pump circulating between collector and heat exchanger	• Associated roof fixings
Solid biomass plants (including solid biomass contained in municipal waste)	• Boiler (e.g. ignition equipment, heat exchanger, electrical wiring and controls, combustion chamber, grate, air control, housing/ container) • Pipework required for the effective start up and shut down of the plant (e.g. back end loop/ valve) • Fuel feed equipment (e.g. auger, moving floor etc) where these are likely to be integral to the operation of the plant • Flue gas treatment equipment (where it is different to the equipment required for a comparable gas installation) • Fuel storage equipment (e.g. fuel hopper) **	• Ancillary fossil fuel equipment (e.g. gas start-up equipment) • Fuel delivery, processing (e.g. chipping/ drying) and preparation equipment • Fuel store housing (e.g. fuel storage sheds, bunkers) • Flue stack***
Biogas heat generation	• Boiler (e.g. ignition equipment, heat exchanger, electrical wiring and controls, combustion chamber, air control, housing/ container) • Exhaust gas treatment equipment and flaring etc.	• Biogas production plant, including the digestion/ gasification/ pyrolysis system and ancillaries, any feedstock feeding equipment, biogas processing equipment • Feedstock treatment equipment (e.g. pasteurisation) • Digestate/ char treatment equipment
Biomethane	• Equipment required to convert raw biogas into biomethane suitable for injection (e.g. where appropriate - CO_2 and oxygen removal, pressurisation equipment, propanation, odorant equipment)	• Equipment required to measure the energy content and volume of gas entering the network • Any flaring equipment • Biogas production plant (see biogas for list)

CHP (for solid biomass, biogas and geothermal)*	• Equipment as specified for relevant technology above	• Equipment as specified for relevant technology above • Renewable electricity generation equipment (including any gas turbines, internal combustion engines or sterling engines used to generate electricity, and turbines in a steam turbine facility), other than equipment used to generate hot water / steam at the plant (the boiler – as defined in the 'equipment included' column)
Geothermal	These will be determined on a case-by-case basis, based on the approach outlined above.	

* CHP plants have a specific regulation in reference to what is classed as 'new' for the RHI. See 'New plant' section for details.

** Please note that in the case of fuel storage equipment such as hoppers for biomass boilers, we would expect at least one hopper to be new (to reflect the fact storage equipment was anticipated in the tariff) – but it is acceptable for the applicant to also have additional storage equipment in place which is not new.

*** Please note that although flue stacks would not be required to be new for RHI purposes, any new plant requires a health and safety assessment of the flue stack design (irrespective of the RHI)

RHI interaction with publicly funded grants

4.17. The Regulations state that:

- RHI support will only be available for an eligible installation if no grant from public funds has been paid or will be paid in respect of any of the costs of purchasing or installing the eligible installation, or

- where a grant from public funds has been paid for an eligible installation that was completed and first commissioned on or after 15 July 2009 but before the date the Regulations come into force, it has been paid back to the grant-making body or person.

4.18. In practice, this means:

- we can accredit an installation only where the purpose of the grant is, or will be, to meet costs other than the costs of purchasing or installing the installation; and

- an installation will not be accredited where a grant (of any value) has been, or will be, paid in relation to the costs of purchasing and installing it, if it was completed and first commissioned between 15 July 2009 and the date the Regulations come into force **and** that grant has not been repaid in full to the person who made it.

4.19. It is important to note that, if public funding is received in the form of a grant for the purchase or installation costs of an installation that is commissioned after the date the Regulations come into force, the installation will not be eligible for RHI support and cannot become eligible by paying the public funding back.

4.20. A grant from "public funds" can be a grant made by a public authority or by a person who is not a public authority but who is distributing funds on behalf of a public authority. Our consideration of whether or not a grant has been made from "public funds" will include grants from Europe, central or devolved governments and public authorities at regional or local level.

4.21. Ofgem will take a commonsense approach to determining what constitutes a "public authority".

4.22. Ofgem will interpret the 'costs of purchasing and installing an eligible installation' as including the costs of purchasing and installing any equipment, apparatus or appliance which, in accordance with the 'What is an Installation?' section above, it considers to form part of the eligible installation. On this basis, we do not consider that such costs would generally extend to costs incurred in purchasing and installing plant which is not needed in order to generate heat.

4.23. During the accreditation process, all prospective participants will be asked if public funds have been or will be received for an installation. If you declare that a grant has been, or will be, received (whether or not you consider the grant to be for the costs of purchasing or installing the installation) we may contact you for further information.

4.24. If you want to decline the grant offer, or pay back a grant that has already been received for the purchase or installation costs of an installation, to allow your application for the RHI to be considered, please contact the grant-making body or person directly. Before we can accredit your installation, you will need to provide evidence to us either that the offer has been declined or the grant has been repaid in full.

4.25. Participants have an ongoing obligation to notify us if any of the information provided in support of their application for accreditation was incorrect. This includes information relating to the receipt of public funding.

4.26. If we become aware at a later date that the information provided at accreditation in relation to grants was incorrect, we will consider taking enforcement action against the participant. Where we find that incorrect information was provided intentionally with the purpose of defrauding the scheme, we will refer the matter to the appropriate authorities. Please see Volume Two, Chapter Ten of this Guidance for further information on our approach to non-compliance within the scheme.

Date of completion of installation and first commissioning must be on or after 15 July 2009

4.27. Plants are only eligible for accreditation if their installation was completed and they were first commissioned on or after 15 July 2009. Please see below for the exception to this rule for CHP plants applicable in certain circumstances.

4.28. An installation will not be eligible if the installation of the plant was completed before this date, but the plant was commissioned afterwards. Ofgem will not consider applications for accreditation for installations where the installation of the plant was completed or the plant was commissioned prior to this date. We may ask for evidence of the date your plant installation was completed (eg purchase receipts) and of the commissioning date of your installation (eg a commissioning certificate). Please also note that we may ask for a photograph of your installation taken at the time it was installed for the purposes of accreditation checks and audit.

4.29. CHP installations are an exception to the requirements set out above. If a plant, which was previously generating electricity only using solid biomass or biogas, was first commissioned as a CHP system on a date (the conversion date) which is on or after 15 July 2009, Ofgem will treat these installations as if they are new plants installed and first commissioned on the date of conversion (irrespective of the date on which they started generating electricity).

4.30. For avoidance of doubt, a plant commissioned before 15 July 2009 cannot be decommissioned and recommissioned after that date in order to render it eligible. This is because the regulations require that it was first commissioned after this date.

Transitional arrangements: installations commissioned between 15 July 2009 and the commencement of the scheme

4.31. Installations that were installed and first commissioned on or after 15 July 2009 but before the start date of the RHI are eligible for the scheme, but have to meet all the eligibility criteria for the RHI just as with installations commissioned after the start of the scheme. This includes the microgeneration requirements as discussed below in section 'Microgeneration Requirements (installations of 45kWth or less)' and the metering requirements which are discussed in Chapter Seven, 'Metering eligibility requirements'.

4.32. These installations will be eligible for the same 20 year period of support as for those installations commissioned after the start of the scheme, starting from the date of accreditation (which cannot be prior to the start of the scheme). For avoidance of doubt, please note that payments will not be backdated to the date of first commissioning.

New plant

4.33. Your plant must be new to be eligible for the RHI. Ofgem interprets this requirement as applying to all of the 'plant' which can be regarded as constituting an 'eligible installation'; that is, any equipment, apparatus or appliance which is necessary for, and integral to, the generation of heat using eligible sources of energy and technologies. For guidance on our approach to determining the scope of plant which can be considered integral to the generation of heat, please refer to Table 3 in the 'What is an installation?' section.

4.34. We will interpret 'new' to mean plants that are new and have not been previously used. We will accept plant as being new if it has not been previously used before being installed and first commissioned. Converted equipment will not be eligible for the RHI. Upon request, you should be able to provide us with delivery notes or purchase receipts as evidence that your plant is new.

Location of the plant

4.35. Accreditation is assigned to the installation at the location that is provided at application. This is not transferable.

4.36. The relocation of a plant will render the plant ineligible; this is because to be eligible for the RHI, the plant must have been installed and first commissioned on or after 15 July 2009 **and** have been new at the time of installation.

4.37. However, a plant can be removed from in situ for maintenance or minor repairs, turned back on and reconnected to the heating system as long as the plant remains at the location for which it had been assigned accreditation. Removing a plant from in situ for these specified purposes will not be considered a relocation of the plant. Should your plant require major repairs or maintenance that must be conducted at a separate location from the plant's accredited location, you must notify Ofgem before removing the plant from its accredited location.

4.38. A plant commissioned before 15 July 2009 cannot become eligible by recommissioning after that date

Eligibility for CHP plants

4.39. At the conversion date, a heat exchanger and associated equipment must have been added to an existing electricity-only plant (and used for eligible heat uses) for a CHP plant to be considered new. For more information on the

CHP conversion date, see the 'Date of completion of installation and first commissioning must be on or after 15 July 2009' section above.

Installations heating one single domestic premises are ineligible

4.40. Renewable heating installations serving a single private residential premises are currently not eligible for the RHI. This includes single renewable heating units installed by a company, private landlord or registered social landlord, in one or more individual premises (but does not cover district heating systems where multiple dwellings are served by a central renewable heating unit). The Government aims to introduce support for single domestic premises in phase two. In the meantime, prospective domestic participants may wish to consider applying for the RHPP, if the installations are 45kWth or less. Further information about the RHPP can be found at the Energy Saving Trust RHPP website[16] or www.decc.gov.uk/RHI.

4.41. Only installations that provide heat to non-domestic premises or multiple domestic premises are eligible for the RHI in 2011. Domestic premises are defined in the Regulations as 'single, self contained premises used wholly or mainly as a private residential dwelling where the fabric of the building has not been significantly adapted for non-residential use.'[17]

4.42. For example, an eligible installation could serve:

- a single, non-domestic premises, e.g. a hairdresser
- multiple non-domestic premises, e.g. a shopping centre
- multiple non-domestic and domestic premises (mixed use), e.g. office space and residential flats
- multiple domestic premises, e.g. district heating supplying a block of flats.

4.43. In interpreting the definition of 'domestic premises' and 'single self-contained premises' we shall take into account whether those premises are treated as separate and self-contained premises for Council Tax banding purposes[18]. Accordingly, where a premises consists of a main property and other buildings such as outhouses, pool-houses, lean-to's etc. which are together treated as one self-contained unit in single occupation for Council Tax, this would be likely to be treated as a 'single self-contained' premises for RHI purposes. Where such premises are 'used wholly or mainly as a private residential

[16] http://www.energysavingtrust.org.uk/Generate-your-own-energy/Sell-your-own-energy/Renewable-Heat-Premium-Payment
[17] Regulations, Part 2, Chapter 2, Regulation 15 (2)
[18] http://www.voa.gov.uk/corporate/publications/selfContainedUnits.html

dwelling where the fabric of the building has not been significantly adapted for non-residential use', the premises will therefore be treated as 'domestic' for the RHI. Accordingly, where heat is generated for use solely in these premises, that heat would not be eligible for RHI support as it is 'for the use of one domestic premises.'

4.44. Similarly, where premises comprise a main property and adjoining property or properties (such as annexes, gatehouses, workers cottages etc.) which are themselves treated as self-contained units for Council Tax banding, each of these buildings will also be treated as 'single self-contained' premises for RHI purposes. Therefore, if each is 'used wholly or mainly as a private residential dwelling where the fabric of the building has not been significantly adapted for non-residential use', each will be treated as a separate 'domestic premises' under the RHI. On this basis, if each of these buildings is served by its own boiler, these boilers would not be eligible for support as each boiler would be generating heat 'solely for the use of one domestic premises.' However, if a single boiler provided heat to two or more self-contained units, this boiler would be treated as a district heating system serving multiple domestic premises and would be eligible for the RHI, subject to all other eligibility criteria being met.

4.45. Non-domestic premises will be business rateable, rather than being subject to council tax, although some properties, such as agricultural buildings, are exempt from paying these rates under Schedule 5 of the Local Government Finance Act 1988.[19]

4.46. In a situation of 'a private residential dwelling where the fabric of the building' ***has*** 'been significantly adapted for non-residential use', the Council Tax officer may decide that this makes all or part of the property business rateable. Therefore your premises may be viewed as non-domestic and eligible for the RHI.

4.47. Further guides to help you understand your council tax banding or business rating are available from the Valuation Office Agency (VOA) publication pages[20] on:

- business rates[21]
- working from home and business rates[22]
- holiday lets[23]

[19] http://www.legislation.gov.uk/ukpga/1988/41/schedule/5
[20] http://www.voa.gov.uk/corporate/publications/index.html
[21] http://www.voa.gov.uk/corporate/publications/businessRatesAnIntro.html
[22] http://www.voa.gov.uk/corporate/publications/workingFromHome.html
[23] http://www.voa.gov.uk/corporate/publications/holidayCottagesGuide.html

- guest houses and bed and breakfast accommodation (B&Bs)[24]

- multi-occupied homes[25]

4.48. Enquiries on your standing in this regard should be directed to your local Council Tax officer, who may also be able to help you to provide evidence if required (multiple council tax bills or business rates bills for premises on the heating system will usually suffice), or directed to the VOA.

4.49. If you require more detail, there is an extended legal guide to the rules used to set Council Tax bands 'Chapter 5 of the Council Tax Manual: Disaggregation of properties'[26] which deals with aspects such as outbuildings not in different occupation, self-contained units etc. In summary, for an installation to be eligible as serving non single domestic premises you must be able to demonstrate that the heating system is not solely providing heat to single premises covered by one Council Tax band. The installation will still be subject to all other eligibility criteria.

Heat delivery medium

4.50. The installation must use liquid or steam as a medium to deliver heat to the eligible use. It is acceptable for the final eligible use itself to heat air (e.g. radiators) provided that there is a liquid or steam heat delivery system connecting the RHI installation and the eligible use. Direct air heating is not eligible.

Microgeneration requirements (installations of 45kWth or less)

4.51. The Regulations provide that installations of 45kWth or less from certain technologies will be required to be backed up with certification under the Microgeneration Certification Scheme (MCS) [27] or an "equivalent scheme".

4.52. Table 4 below sets out which technologies require MCS certification. Where this applies, both of the following certification requirements will need to be met:

- the plant must be certified under the MCS or an equivalent scheme, and

- the plant's installer must have been certified under the MCS[28] or an equivalent scheme at the time of installation.

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[24] http://www.voa.gov.uk/corporate/publications/guestHousesandBasicAccommGuide.html
[25] http://www.voa.gov.uk/corporate/CouncilTax/multiOccupiedHomes.html
[26] http://www.mycounciltax.gov.uk/instructions/chapters/counciltax/council_tax_man_pn/m-ct-man-pn5.html
[27] Details of which are available at www.microgenerationcertification.org.

Table 4: Which technologies require MCS certification and which do not:

Technologies requiring MCS or equivalent scheme certification for installations of 45kWth or less	**Technologies of 45kWth or less not requiring MCS certification**
Ground Source Heat Pumps	Biogas for combustion
Water source heat pumps	Biomethane for injection into the grid
Solid biomass	Deep geothermal
Solar thermal	Solid biomass in municipal waste combustion

4.53. Equivalent schemes include Solar Keymark[29] for solar thermal installations, or any other scheme accredited under European Standard EN45011[30] (which certifies microgeneration products and installers in accordance with consistent standards). When applying for support, applicants will be asked for details of MCS or equivalent scheme certification. If applicants intend to apply using an MCS 'equivalent' scheme, they must prove to Ofgem that both the installer and technology have been certified by a scheme which meets the definition.

4.54. The Regulations specify that MCS or equivalent certification will not be required in the following two scenarios:

- if the combined installation capacity is more than 45kWth e.g. where a heating system using the same source of energy and technology, e.g. biomass, is made up of 2 x 25kW biomass boilers, then the two boilers will not need to be MCS or equivalent certified or MCS or equivalent installed if each component plant in the system satisfies the eligibility criteria referred to in regulation 14(3) of the Regulations and neither is already an accredited RHI installation

- if 'additional capacity' of less than 45kWth is added[31] to an existing RHI heating system, the additional capacity uses the same source of energy and technology and takes the total installed capacity over 45kWth, e.g. where a participant already has an accredited 25kWth ground source heat pump (GSHP) and applies for a second 25kWth GSHP which is connected to the same heating system, then MCS or equivalent scheme certification will not be required for the second GSHP.

[28] Ibid
[29] Please note that Solar Keymark certifies products, but not installation companies.
[30] ISBN 0580294153. Copies can be obtained from the British Standards Institution at www.bsigroup.com.
[31] And first commissioned within 12 months of the first commissioning date of the original plant.

Other requirements

District and community heating

4.55. District heating — such as a central boiler for an apartment building, or a network of pipes delivering heat from a central installation to a number of local households or businesses — will be eligible for the RHI where the heat is produced by an eligible installation. District heating will be treated in the same way as any other RHI installation of that technology and fuel type which is generating eligible heat. There is no uplift for district heating installations. For example, a district heating system served by a 600kWth biomass boiler will be treated the same way as a 600kWth boiler heating a single building in terms of RHI eligibility and support levels. District heating, where more than one building is being served, will be subject to the 'complex' metering requirements as described in Chapter Seven.

4.56. Please see the 'Inspections and access to third party premises' section in Chapter Two of this Volume for our approach to instances where the eligible heat use occurs on third party premises not owned or controlled by the participant. We may also require you to provide evidence that domestic premises receiving heat from the heat distribution system are domestic and do not have ineligible uses.

Fossil fuelled and dual fuelled biomass plant

4.57. The Government's policy is clear that no fossil fuel heat is to be supported, even in relation to channelling waste heat, as the role of the RHI is to promote progress towards targets under the EU Renewable Energy Directive. Where a fossil fuelled plant is present, it may need to be metered separately and must not contribute towards the heat generation meter readings of the RHI eligible plant (please see Chapter Seven for further information on meter placement). The fossil fuel derived element of any heat will not be eligible for support under the RHI. For example, heat generated by a solar thermal plant linked to a gas boiler would be eligible, so long as the gas boiler was metered separately and excluded from the heat for which RHI support was claimed. Component plants which use renewable and fossil-fuels together in a single boiler and which are not capable of separate metering are not eligible for the RHI.

4.58. Biomass plants must be designed and installed to use renewable fuels as their only primary fuel but have specific permitted uses for fossil fuels in the same boiler. For further details, please see the 'Ancillary and contaminated fuels' section in Chapter Five of this volume.

5. Technology specific criteria

Chapter Summary

This Chapter discusses the technologies and accompanying fuels eligible for the RHI, as well as additional eligibility criteria specific to a technology. A table of currently ineligible technologies has been included for ease of reference. Please see the following Chapter Six for further information on eligible and ineligible heat uses.

Supported technologies and fuels

5.1. To be eligible under the RHI, except for producers of biomethane, an installation must generate heat using one of the eligible technologies. Chapter Four discusses the general eligibility criteria of the scheme. This Chapter sets out the additional eligibility criteria that are specific to a particular technology.

Solar thermal

5.2. The total installation capacity of a solar thermal installation must be lower than 200 kWth. For further information on how to determine your installation capacity, please see the 'Installation Capacity' section in Chapter Four.

5.3. Only solar thermal installations comprising liquid filled flat plate or evacuated tube solar collectors will be eligible for RHI support. Other types of solar thermal technologies, such as solar wall or transpired solar thermal panels, solar thermal parabolic and trough collectors are not eligible under the RHI.

5.4. Any solar thermal installations of 45 kWth or less must be MCS certified under the MCS or equivalent scheme. See section 'Microgeneration requirements (installations of 45kWth or less)' in Chapter Four for further information.

5.5. For clarity, hybrid solar photovoltaic-thermal (PVT) systems will be eligible for RHI support in respect of their heat output only, provided that the thermal output of the system is separately rated in kWth, there is separate thermal metering and the solar thermal aspect of the technology is either a liquid flat plate or evacuated tube type system.

Geothermal energy

5.6. Geothermal systems at all scales, including CHP systems, will be eligible for support under the RHI. Geothermal systems are defined as those generating heat using naturally occurring energy in the form of heat located and extracted at least 500 metres below the surface of solid earth. Installations extracting naturally-occurring energy from the ground at a depth of less than 500m will be classed as a ground source heat pump for the purposes of the RHI and must meet the heat pump eligibility requirements.

5.7. There is no requirement for geothermal systems to be MCS certified.

Heat pumps

General eligibility

5.8. Heat pumps of all scales that utilise heat sourced from naturally occurring solar energy stored within the ground or surface water are eligible for the RHI, providing that the heat is subsequently transferred by liquid or steam.[32,33] We refer to such heat pumps here as 'ground source heat pumps' and 'water source heat pumps' respectively.[34]

5.9. Heat pumps generating heat from naturally-occurring energy located and extracted from at least 500m below the surface of solid earth are classed as **geothermal** installations for the purposes of the RHI; please see the 'Geothermal energy' section above for information pertaining to such installations.

5.10. We understand certain heating systems may utilise inter-seasonal heat storage, where excess naturally occurring summer heat is collected and transferred to a ground based thermal store for use in winter. Ground source heat pumps then extract this heat during winter months, effectively increasing ground source heat pump coefficient of performance as the ground has been pre-warmed. Ofgem will consider such systems as still extracting heat from a natural source, provided that fossil fuelled systems have not been used to pre-heat a thermal store. Additionally Ofgem will not make RHI payments for heat that is generated and transferred to a ground based thermal store, since the heat is not used within a 'building' (a key eligibility criteria of the RHI).

5.11. Air source heat pumps, including air-to-water and air-to-air heat pumps are not eligible for the RHI in 2011. Exhaust air heat pumps are also ineligible for the RHI. For a brief description of each of the different types of heat pump, please refer to DECC's RHI Policy Document.[35]

5.12. Both ground and water source heat pumps with an installation capacity of up to and including 45kWth must be certified under the MCS or an equivalent scheme. For further information about MCS certification, see section 'Microgeneration requirements (installations of 45kWth or less)' in Chapter Four.

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[32] Regulations, Part 2, Chapter 2, Regulation 8(a)
[33] This includes open loop heat pumps.
[34] The Environment Agency's 'Environmental good practice guide for ground source heating and cooling' can be found at http://publications.environment-agency.gov.uk/pdf/GEHO0311BTPA-E-E.pdf
[35] *DECC RHI Policy Document, March 2011* at http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Renewable%20energy/policy/renewableheat/1387-renewable-heat-incentive.pdf

Heat pumps with integrated electrical immersion

5.13. Heat pumps provided as a single unit with an integrated electrical immersion heater are eligible for the RHI. The primary functions of the electrical immersion should be to provide top up heat as required during high demand periods or boosting hot water temperature for the thermal disinfection of legionella bacteria spores as required.

5.14. Where the heat pump installation has an integrated immersion heater, the applicant will need to declare this to Ofgem within his or her application. In these cases, where practical, the applicant will be expected to account for the electrical input to the immersion heater and deduct this. Electrical consumption of an integrated immersion could be metered separately or calculated through logging its hours of use via the heat pump control unit and multiplying by the rating of the immersion. Where this is not possible, the applicant may need to measure overall electrical input. Please contact Ofgem for further information where you have an integrated immersion heater. We will keep the approach to integrated immersion heaters under review in the light of experience during the operation of the scheme.

5.15. For larger scale, e.g. 20kWth capacity individual units, we do not anticipate widespread use of heat pump units with integrated immersion heaters. Where these are proposed to be used we will seek a clear explanation from the applicant why an integrated immersion is specifically required for the installation.

5.16. No heat supplied to a heating system from a non integrated electric immersion heater will receive RHI tariff payments. Where a non-integrated immersion heater is utilised heat meters should be located suitably to exclude any output from the immersion heater.

Coefficient of performance

5.17. In addition to the general eligibility criteria outlined above, the Regulations require both ground and water source heat pumps to have a coefficient of performance (COP) of at least 2.9.[36] The coefficient of performance is defined in the Regulations as '*the ratio of the amount of heating or cooling in kilowatts provided by a heat pump to the kilowatts of power consumed by the heat pump*'.[37]

5.18. The policy rationale for this criterion is set out by the Government in the RHI Policy Document, which explains that this is 'a proxy for the EU standard for renewable energy measured. To avoid introducing a potentially complex

[36] Regulations, Part 2, Chapter 2, Regulation 8(c)
[37] Regulations, Part 1, Regulation 2, definition of "coefficient of performance"

system in advance of the Commission's guidelines (on how the seasonal performance factor should be measured), rather than referring to usable heat or seasonal performance, the RHI will require a COP of 2.9'.[38]

5.19. To ensure only heat pumps that meet the required COP are accredited to the scheme, we will ask for a statement of the heat pump's COP and supporting evidence as part of the RHI accreditation process. Please see the 'Evidence of COP required during application for RHI accreditation' section below which outlines the types of supporting evidence that will be acceptable.

5.20. If you are applying for accreditation and your installation is comprised of more than one heat pump unit then please first see the 'How to apply when you have multiple plants' section in Chapter Two of this Volume for more information on how to determine whether you should apply for accreditation for each plant separately or as a single installation. Where (as per Chapter Two) each heat pump unit is to be treated as a component plant making up a single installation for the purposes of the RHI, then the COP must be provided for each different make and model of unit comprising the installation as part of the accreditation process. As each component plant must meet the eligibility criteria, each unit will need to have a COP of 2.9 or above for the installation to be eligible. Where all the units comprising an installation are of the same make and model, we will only ask you to provide this information once.

Evidence of COP required during application for RHI accreditation

5.21. We expect participants to provide evidence that the COP has been determined in accordance with accepted industry good practice and is determined using design conditions representative of the actual installation ground loop inlet and distribution outlet temperatures for the heat pump installation i.e. its operational point.

5.22. For electrically-driven heat pumps where a natural refrigerant is not used, the EN 14511 standard sets out appropriate conditions under which the COP should be determined. The design ground loop inlet and distribution outlet temperatures should also be stated as part of your application for accreditation. The COP figure stated should be as per the rating result conducted to the closest appropriate rating temperature conditions available within table 7 of the EN 15411 standard. The most suitable location to declare this information in your application will be at the point where you will be asked to provide any further pertinent information.

5.23. For other types of heat pump where no European Standard has been issued, we would expect participants to provide details of the test conditions under which the stated COP has been determined, including reference to any industry standard or guidance which has been adhered to, and the basis on which the participant considers this approach indicative of good practice.

[38] DECC *Renewable Heat Incentive policy document*, p36

Relevant industry standards for these purposes may include, for example, test conditions for gas-driven heat pumps as set out in the ECA Energy Technology Criteria List or as recommended by the Japanese Standards Association. Where more than one standard could be used, we would expect participants to use that which is most appropriate for the standard operating conditions of the heating system to which the installation will supply heat.

5.24. A 'performance curve' or table for COP at various rating conditions, produced under EN 15411 test conditions would be considered suitable evidence to verify the COP figure stated within the RHI application. This information is often included within manufacturer's technical specifications for the heat pump unit.

5.25. In addition to the specific evidence set out below, we expect participants to retain evidence relating to the heat pump's design and installation: for example, commissioning data.

Suitable forms of evidence for COP for electrically driven heat pumps

5.26. Many heat pumps are sold as a packaged unit, comprising the compressor, condenser, expansion valve and evaporator. In this case, the manufacturer of the packaged unit will be considered as the heat pump's manufacturer for RHI purposes.

5.27. For packaged electrically-driven heat pumps, participants will be required to state the COP of the heat pump as part of the accreditation process, and provide evidence to support this. Typically, such evidence would be **one of the below**:

- evidence that the appliance is listed on the MCS list or the Enhanced Capital Allowance (ECA) Energy Technology List;
- copy of manufacturer's documentation, stating the heat pump make and model and the associated COP, tested in accordance with EN 14511;
- copy of manufacturer's test report, stating the heat pump make and model and the associated COP, tested in accordance with EN 14511;
- copy of independent third party test report, stating the heat pump make and model and the associated COP, tested in accordance with EN 14511.

Suitable forms of evidence for gas-driven heat pumps

5.28. Gas-driven heat pumps are also eligible for the RHI. For such heat pumps, appropriate evidence to support the declaration of COP will encompass

- any item listed above for electricity-driven heat pumps (replacing the requirement of testing COP in accordance with EN 14511 by the relevant test

conditions including reference to any industry standard or guidance which has been adhered to), or

- design calculations by the manufacturer or installer setting out the expected heat pump performance which clearly states the heat pump COP and provides technical justification for this figure, including for the test conditions at which the COP was calculated

5.29. For some gas-driven heat pumps, manufacturers may provide documentary evidence of the primary energy ratio (PER) instead of the COP. The primary energy ratio is defined as the ratio of the energy provided to the heating system, usually as hot water, to the amount of primary energy (e.g. fuel) used by the heat pump. To calculate the COP in accordance with the definition in the Regulations, participants will need to convert the PER to a COP using the following formula:

Primary Energy Ratio / engine efficiency = Coefficient of performance[39]

5.30. For example, if the heat pump engine has an efficiency of 35 per cent and a PER as declared by the manufacturer of 1.3, the equivalent COP figure would be 3.7.

5.31. For gas-driven heat pumps where the manufacturer's documentation specifies the PER only, this may be provided as evidence for the COP value declared. We may ask participants to provide evidence to support the engine efficiency figure used in their calculation of the COP. Participants will need to enter the COP figure on the Ofgem RHI register as part of their application for accreditation.

Suitable forms of evidence for bespoke heat pumps

5.32. For bespoke heat pumps, i.e. those where the constituent components are tailored by the manufacturer or installer to meet the client's needs, there may be no standard technical documentation to evidence the installation's COP and installation capacity. For these installations participants should provide a copy of either:

- design / modelling calculations or commissioning data reflecting the actual design conditions of the installation, signed off by the manufacturer or installer setting out the expected heat pump COP and installation capacity. This should clearly state the heat pump COP and provide technical justification for this figure, including justification for the conditions at which the COP was calculated, **or**

[39] http://www.heatpumpcentre.org/en/aboutheatpumps/heatpumpperformance/Sidor/default.aspx

- documentation from a recognised test house stating the heat pump COP at the design conditions of the installation and providing a justification for this, including a statement of the test conditions at which the COP was determined.

Reversible heat pumps

5.33. It is common, especially at the larger scale, for ground and water source heat pumps to run in reverse in the warmer months to generate cooling. Such reversible ground and water source heat pumps are eligible for the RHI, but only the heating generated is eligible for RHI support. As set out in the RHI Policy Document,[40] any cooling generated by operating the heat pump in reverse is not eligible for RHI support. Therefore, heat pumps that will only be used for generating cooling are not eligible for the RHI.

5.34. In accordance with the Regulations, participants must therefore ensure that their metering arrangement allows them to only measure heat generated, and where appropriate discount any cooling generated by running the heat pump in reverse.[41] We may ask for evidence that this is the case, either as part of the accreditation process or at any time once an installation has been accredited. Further information on meter placement for reversible heat pumps can be found in Appendix One of this Volume, 'Meter placement examples.'

Determination of heat pump installation capacity

5.35. The installation capacity of a heat pump installation should be determined based on the intended design conditions (operational point). The relevant temperature conditions of the operational point should be stated in the application.

5.36. For packaged heat pump units the heating output (kW) can be evidenced through provision of a manufacturer's technical specification highlighting heating output at different operational points. The heating output for the heat pump unit, or each individual unit where multiple plant are present, should be calculated based on the nearest operational conditions for that unit as tested by the manufacturer. A 'performance curve' or table for heating capacity at various rating conditions, produced under EN 15411 test conditions would be considered suitable evidence to verify the installation capacity figure stated within the RHI application. This information is often included within manufacturer's technical specifications for the heat pump unit.

5.37. Where an installation comprises multiple heat pump units and (as per Chapter Two 'How to apply when you have multiple plants') these are to be treated as component plants making up a single installation, then the overall 'installation capacity' will be the sum of the individual peak heat output of each unit.

[40] DECC RHI Policy Document, March 2011, p36.
[41] Regulations, Part 4, Chapter 3, Regulation 35(3)

5.38. For bespoke equipment, as part of the accreditation process you may have to provide us with technical evidence e.g. design data or simulation results, to verify the installation capacity stated.

Biomass

General biomass criteria

5.39. In addition to the general eligibility criteria, plants burning biomass, or biogas derived from biomass, must meet certain eligibility criteria specific to the technology type.

5.40. Biomass is defined as 'material, other than fossil fuel or peat, which is, or is derived directly or indirectly from, plant matter, animal matter, fungi or algae'.[42] Examples of fuels that often meet this definition include (but are not limited to):

- Wood logs, chips and pellets
- Straw and agricultural residues
- Food waste
- Paper/ pulp residues from the paper manufacturing process
- Biomass residues from the food processing industry
- Sewage sludge

5.41. When referring to solid biomass or biogas produced from biomass, we mean that the fuel is, or is derived from, the material in the above definition.

Solid biomass boilers

5.42. Whereas some technologies have an upper limit on capacity to be eligible under the RHI, solid biomass boilers are eligible at all scales.

[42] Act, s. 100(3)

'Solid'

5.43. Fuels need to be classed as 'solid' to be eligible for accreditation under this technology. If the fuel is gas, it would be eligible under the biogas technology category. Technologies using liquid fuel are not eligible.

5.44. 'Wet' fuels such as food waste could still be considered solids (i.e. where solids are contained in water).

5.45. Where there is doubt about fuels which could be either solid or liquid, we will consider liquids as including the fuels listed in paragraph 2.3 of the 'Communication from the Commission on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels'.[43] Liquids therefore include viscous liquids such as waste cooking oil, liquid animal fats, palm oil, crude tall oil and tall oil pitch. We will also include fuels with similar properties to these as liquids.

5.46. We would consider the state of the fuel at the heat generating plant in determining whether the fuel is a solid or a liquid. For example, if solid biomass is melted before it enters the heat generating plant (using the definition of 'eligible installation' in section 'What is an installation' in Chapter Four above), and thus enters the heat generating plant as a liquid, then we would generally consider this to be a liquid. Equally, where a fuel enters the plant in a solid state, we would generally consider this to be a solid.

Solid biomass as 'primary fuel source'

5.47. The Regulations require that to be eligible, a biomass boiler must be 'specifically designed and installed to use solid biomass as its only primary fuel source'. This means that boilers capable of operating effectively when using coal, oil, plastic waste or other fossil fuels are ineligible, as are dual-fuel or co-firing fossil fuel/biomass boilers. See the 'Requirements for plants of 45kWth and under' and 'Solid biomass plants above 45kWth' sections below for information on how applicants should demonstrate this requirement.

General documents to keep

5.48. It will be a condition of accreditation that all biomass and biogas participants must keep planning permission documents, environmental applications and permits required under other legislation (such as air quality legislation, the Environmental Permitting (England and Wales) Regulations 2010 or the Pollution Prevention and Control (Scotland) Regulations 2000). We will generally not require these at the accreditation stage, but we may ask for them as a follow-up to verify details provided about the boiler, such as the fuel(s) the boiler is designed to run on.

[43] Available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:160:0008:0016:EN:PDF

Heat medium

5.49. A solid biomass installation must include a boiler to be eligible for the RHI. The Regulations provide that the installation's heat must be transferred through liquid or steam, and this liquid or steam must be metered (see Chapter Seven of this volume for further information on this requirement). If the installation produces any direct air heating (such as from a stove), the installation may still be eligible if only the hot water component (e.g. from a 'back boiler') is metered. However, the installation would still need to meet the solid biomass as 'primary fuel source' outlined above.

Requirements for plants of 45kWth and under

5.50. Biomass plants of 45kWth and below must be certified under MCS or an equivalent scheme.

5.51. The Regulations do not provide that plants of this scale are permitted to burn any fossil fuel or biomass contaminated with fossil fuel at the plant (i.e. in the same boiler). It will therefore be a condition of accreditation that these biomass plants must use 100 per cent biomass fuels. It is acceptable to have fossil fuel boilers connected to the same heating system (although heat generated by fossil fuel boilers is not eligible for the RHI and should not be included in meter readings of the RHI installation's output).

5.52. Plants must meet the solid biomass 'as primary fuel source' definition. MCS certify that solid biomass products are tested to meet certain standards, but the product would not automatically meet this definition merely because it has been certified by MCS.

5.53. To meet the 'as primary fuel source' definition, MCS-certified products at this scale will need to be tested to the following standards as applicable:

- Standards "BS EN 303-5:1999 Heating boilers - Part 5: Heating boilers for solid fuels, hand and automatically fired, nominal heat output of up to 300kW. Terminology, requirements, testing and marking." and "BS EN 14785:2006 - Residential space heating appliances fired by wood pellets. Requirements and test methods." – these will generally be eligible because the stoves/ boilers tested to this standard and approved by MCS are generally not capable of operating on ineligible fuels[44]

- Standard "BS EN 12809:2001+A1:2004 - Residential independent boilers fired by solid fuel. Nominal heat output up to 50 kW Requirements and test methods" –products produced to this standard would only meet the definition where the fuel used to test the product was a biomass fuel (as defined in the standard), rather than the fossil and peat fuels listed in the standard.

[44] Pellet stoves would also be required to operate with a back boiler, as outlined above

- Standard "BS EN 13240:2001+A2:2004 - Room heaters fired by solid fuel. Requirements and test methods" – these products would generally not meet the eligibility requirements, as we could not be confident that the stove (when fitted with a back-boiler) is not capable of operating primarily on ineligible fuels.

5.54. MCS installation companies and product manufacturers are able to provide advice on what standards each product was tested to. Most biomass products available have been tested to the BS EN 303-5:1999 standard and so meet the definition. Applicants will be asked at the accreditation stage to provide us with the name of the standard to which the product was tested (e.g. BS EN 303-5:1999).

Solid biomass plants above 45kWth

5.55. Solid biomass boilers at this scale must meet the solid biomass 'as primary fuel source' definition and the applicant must demonstrate that this definition is met.

5.56. To evidence this, participants must keep documentation related to the purchase and installation of the plant that demonstrates that the boiler was 'specifically designed and installed to use solid biomass as its only primary fuel source'. We will ask for the relevant pages of these documents to verify eligibility on a sample basis.

5.57. An example of this evidence is a boiler warranty showing a fuel specification that clearly shows that the boiler is designed to use biomass as its primary fuel source, and that fossil fuel is not listed as being a fuel that can be used in the boiler. This would generally be sufficient to demonstrate that the boiler is a biomass boiler and meets the definition.

5.58. The manufacturer may also provide a reference in the warranty to detailed fuel specifications under the CEN/TS 14961:2005 or equivalent wood fuel standards, which would also generally be sufficient to demonstrate meeting this requirement.

5.59. Although we would review the requirement on a case-by-case basis, any of the following documents could be **sufficient** to demonstrate that this requirement is met:

- Product warranty – where it states that a solid biomass fuel should be used (e.g. where a warranty refers to an operating manual, and that manual states that biomass fuels are to be used)

- Planning permission/ environmental/ air quality permits from the relevant planning authority that states that solid biomass fuels should be used, where that authority has provided documentation stating that it has verified that the plant meets that permission/ permit

- Test standard – where the boiler was tested to a given standard (e.g. EN 303-5) and a biomass fuel was used in the test

- Construction contract or specification – where a more 'bespoke' plant has been constructed based on a building or construction specification, and the client has specified on a contract that the plant is to generate heat from biomass

5.60. Where no documents from the above list are available to the plant, an applicant could provide a combination of alternative supporting evidence to demonstrate that the requirement is met. We would need to assess this documentation on a case-by-case basis.

5.61. As a guide, some combination of the following could be used as supporting evidence to demonstrate that the requirement is met (where the documentation outlined above is not available/sufficient):

- Recommendations made in the boiler installation/ operation manual stating that solid biomass fuels should be used, and non-biomass fuels should not be

- Technical evidence of the problems that using non-biomass fuels would cause to the operation of the plant (e.g. whether any tests have been carried out with non-biomass fuels, or whether non-biomass fuels have ever been used and caused problems)

- Technical evidence to demonstrate that a plant has been configured to run on biomass rather than fossil fuel (e.g. type of grate)

- Other evidence demonstrating that the plant was not designed and installed to use a fuel other than biomass as its primary fuel source (where the above has not been sufficient evidence)

- Insurance – where the building insurance states what kind of boiler is installed (and that this boiler operates on solid biomass)

5.62. Where the boiler has a similar configuration to fossil fuel (e.g. coal) boilers, we would consider this a factor against the likelihood that the boiler was designed only for biomass, and we may require stronger supporting evidence in these cases.

Ancillary and contaminated fuels

5.63. Although the RHI is designed to support solid biomass fuels, there are allowable uses of fossil-derived fuels to generate heat. In solid biomass plants above 45kW, fossil fuels are permitted for 'ancillary purposes', and solid biomass fuels contaminated with fossil fuels are permitted (e.g. wood which has been painted, and municipal waste containing plastic). But these uses are only allowed up to certain levels. These uses, how they are measured and

what evidence you need to keep on an ongoing basis, are outlined in Volume Two, Chapter Four.

5.64. For plants using these fossil-derived fuels above 1MW, we ask for applicants to complete fuel measurement and sampling questionnaires. These need to be provided to us and agreed as part of the accreditation process. The Fuel Measurement and Sampling Questionnaires can be found on the RHI website[45] and more information on how to complete the questionnaire can be found in Volume Two of the Guidance. Non submission of the FMS Questionnaire will result in a delay in reviewing your application and subsequently a delay in making any RHI payments. We will agree FMS procedures on a case-by-case basis according to the setup and condition of each plant.

Future Emissions Limits

5.65. In March 2011, the Government announced information of introducing emission limits of 30 g/GJ particulate matter and 150g/GJ for NOx on combustion of biomass boilers below 20MWth. These emissions limits do not currently apply but we expect them to be introduced in phase two. If you would like further information, please refer to the Renewable Heat Incentive Policy Document.

Best Practice

5.66. If you would like further information on implementing a biomass project, please see the Carbon Trust's best practice guide, 'Biomass heating: a practical guide for potential users for biomass projects'[46]. If you would like further information about the location of suitable fuels for your biomass boiler then this is available from the biomass energy centre website[47]. Please note that both guides are for information only and should not be construed as guaranteeing eligibility to the RHI.

Biomass contained in municipal waste

5.67. Installations that apply under the 'biomass contained in municipal waste' category can only use municipal waste as their fuel source. If the installation is to be eligible for the RHI on the basis that heat is being generated there from solid biomass contained in municipal waste, fuels that are not classed as municipal waste by the Regulations (e.g. other wastes, or solid biomass) cannot be used at the plant. The use of other fuels at the plant would mean that the solid biomass in municipal waste provisions in the scheme could not be utilised.

[45] www.ofgem.gov.uk/rhi
[46] http://www.carbontrust.co.uk/Publications/pages/PublicationDetail.aspx?id=CTG012
[47] http://www.biomassenergycentre.org.uk/portal/page?_pageid=77,225275&_dad=portal&_schema=PORTAL

5.68. The Regulations specify that 'Municipal waste' has the same meaning as in section 21 of the Waste and Emissions Trading Act 2003 (WSET). This is:

- 'waste from households', and
- 'other waste that, because of its nature or composition, is similar to waste from households.'

5.69. It is clear from this definition that where an installation uses household waste only, this waste can be viewed as 'municipal waste' within the meaning of the Regulations.

5.70. Where a participant wishes to use a mixture of household waste and other waste ('mixed waste'), Ofgem will need to be satisfied that all of this mixed waste can be regarded as municipal waste. This is because installations which use biomass contained in waste other than municipal waste are not eligible for support under the RHI.

5.71. In assessing whether household waste or mixed waste may be treated as municipal waste under section 21 of WSET, Ofgem will use the interpretative guidance on the meaning of municipal waste contained in the Department of Environment, Food and Rural Affairs' 'Consultation on meeting EU Landfill Diversion Targets' and subsequent decision document, 'Summary of responses to the consultation on meeting EU Landfill Diversion Targets in England' (the 'Defra Guidance'). The Defra Guidance regards waste as meeting the WSET definition of municipal waste when it falls into specified categories of the List of Wastes (formerly known as the European Waste Catalogue).The first table at Appendix 4 shows the categories from the List of Wastes that DEFRA has concluded should be classed as municipal waste. The second table at Appendix 4 shows examples of the categories from the List of Wastes that DEFRA has concluded should not to be classed as municipal waste.

5.72. If changes are made to the Defra Guidance or the List of Wastes in the future, Ofgem will aim to align its policy on interpreting the meaning of municipal waste accordingly.

Biogas combustion for heat

5.73. Biogas is defined as 'gas produced by the anaerobic or thermal conversion of biomass'.[48] Because of this link to the term 'biomass' and the definition of that[49], this does not include any gas produced from fossil fuel or peat, but only from fuel 'which is, or is derived directly or indirectly from, plant matter,

[48] Act, s. 100(3).
[49] Ibid

animal matter, fungi or algae'.[50] For example, this could include gas produced from food or farm waste.

5.74. The biogas installation must use one of the following conversion technologies:[51]

- Anaerobic digestion: 'the bacterial fermentation of biomass in the absence of oxygen'.

- Gasification: 'the substoichiometric oxidation or steam reformation of a substance to produce a gaseous mixture containing two or all of the following: oxides of carbon, methane and hydrogen'.

- Pyrolysis: 'the thermal degradation of a substance in the absence of an oxidising agent (other than that which forms part of the substance itself) to produce char and one or both of gas and liquid'.

200kWth biogas limit

5.75. Only biogas systems of under 200 kWth are eligible for RHI support. In other words the 'total installed peak output capacity'[52] of the heat generating equipment must be less than that. Please refer to the 'Installation capacity for CHP systems' section in Chapter Four for how to determine this.

Other criteria

5.76. In addition to the biogas upper limit, regulations state that the plant must not generate heat from solid biomass (including solid biomass contained in municipal waste).[53] This means that where liquid or steam is heated from solid biomass, the plant would not be eligible as a biogas plant. For example, log gasification boilers (and other gasifying boilers) would generally be classed as generating heat from solid biomass (as well as biogas) because significant amounts of heat from the solid biomass, in the form of hot gases generated by the biogas plant, would be transferred to the hot water. Plants such as these would instead be eligible as solid biomass plants and receive the solid biomass rather than biogas tariff.

5.77. An example of a plant which does not generate heat from solid biomass (and would therefore be classed as biogas) would be where syngas produced from a gasification process is quenched before being combusted (in an engine, turbine or boiler). Because the syngas does not contain significant amounts of heat, heat would not be passed from the solid biomass to the hot water.

[50] Ibid
[51] Regulations, Part 1, Regulation 2, definitions.
[52] Please see the 'Installation Capacity' Section in Chapter Four for an explanation of this term.
[53] Regulations, Part 2, Chapter 2, Regulation 11(c)

5.78. Where a plant generates hot liquid/ steam from solid biomass (i.e. from the heat contained in the syngas before combustion is complete) through a heat exchanger, and another plant combusts the biogas and generates hot liquid/ steam through a further heat exchanger, this would count as two separate plants (one solid biomass and one biogas). Two applications would be made to the RHI, and each plant would receive the tariff applicable to that heat generation and use.

5.79. Biogas from landfill sites will not be eligible for support.

5.80. Plants configured to operate on both biogas and fossil fuel gas (e.g. where a single boiler is connected to both a biogas and natural gas supply), which are effectively dual-fuel biogas/ fossil fuel boilers, would not be considered to be generating heat from biogas so would not be eligible under the scheme.

5.81. Biogas can also be upgraded to make biomethane, as set out in the section on biomethane below, and/ or used directly to produce heat. Where a company produces biogas and some is combusted to provide heat, while the rest is 'upgraded' to biomethane, the plant should apply separately for accreditation of the installation generating heat from the biogas and for registration of the biomethane production.

5.82. There is no requirement for MCS certification of biogas plants.

5.83. Biogas plants will still need to comply with relevant waste and environmental permitting legislation irrespective of their participation in the RHI.

Biogas and Feed-In Tariffs

5.84. The Feed-In Tariffs (FIT) scheme provides support for renewable electricity installations up to 5MW, including those powered by anaerobic digestion. The FITs scheme does not provide support for renewable heat. There are no limitations on receiving RHI for renewable heat where anaerobic digestion installations are also receiving FITs for renewable electricity. However, any heat used for electricity generation will not be eligible for RHI support, as outlined in the 'Ineligible heat uses' section in Chapter Six, 'Heat uses'.

Combined heat and power

5.85. The heat output of CHP systems is eligible for support under the RHI so long as the system uses geothermal, biogas, solid biomass contained in municipal waste or solid biomass as a source of energy. These plants will also have to meet the additional eligibility requirements applicable to that technology (geothermal, biogas, solid biomass contained in municipal waste or solid biomass) detailed above to be eligible.

5.86. There is one exception to the above as detailed in the Regulations[54] where a CHP plant cannot be accredited under the RHI. A CHP plant will not be eligible for the RHI where it is fuelled by solid biomass (including solid biomass contained in municipal waste), is accredited under the Renewables Obligation[55] and has at any point since receiving that accreditation been a 'qualifying CHP' generating station within the meaning of the Renewables Obligation Order. A 'qualifying combined heat and power generating station' is defined in the RO Order as a combined heat and power generating station that has received accreditation under the Combined Heat and Power Quality Assurance (CHPQA) Standard and CHPQA Guidance Note 44. We interpret this to mean that they have been issued with a 'ROC eligible' certificate in addition to a 'Regular' CHP certificate (see CHPQA Guidance Note 44 for further details[56]). NB for avoidance of doubt, this exception applies even if the plant has not been in receipt of the ROC uplift.. See Appendix 2 of this volume for a diagram setting out the requirements for CHP system eligibility.

Biomethane injection to the grid

5.87. Production of biomethane for injection into the gas grid will be eligible for the RHI. Please see Chapter Eight of this volume for further information.

[54] Regulations, Part 2, Chapter 2, Regulation 9(2)
[55] Renewables Obligation Order 2009 or Renewables Obligation (Scotland) Order 2009
[56] https://www.chpqa.com/guidance_notes/GUIDANCE_NOTE_44.pdf

Ineligible technologies

5.88. The earlier parts of this Chapter set out the technologies which are eligible for the RHI. For ease of reference, Table 5 below sets out a number of technologies which are ineligible for the RHI for 2011. This is not an exhaustive list of ineligible technologies.

Table 5: Ineligible technologies in 2011

INELIGIBLE TECHNOLOGIES IN 2011	
Co-firing of biomass with fossil fuel	**The Government will not be supporting the co-firing of biomass with fossil fuels in single boilers under the RHI. Regulations place obligations on the type of boiler installed (see solid biomass eligibility section) and on the fuels used on an ongoing basis (see section on 'ongoing fuelling requirements' in Chapter 4 of Volume 2).**
Exhaust air heat pumps	**Exhaust air heat pumps use air extracted from inside the building, for example from kitchens or computer server rooms, as their air source. They are particularly useful in very well insulated buildings which require mechanical ventilation. However, they are not classified as renewable under the Renewable Energy Directive as they do not rely solely on outside air and therefore will not be eligible for the RHI.**
Transpired solar thermal panels	**The Government have confirmed that direct air heating and transpired solar panels will not be supported under the RHI as they are not counted as a renewable technology under the RED.**
Fossil fuel fired CHP	**The Energy Act 2008 only allows the RHI to support renewable energy and therefore the Government have confirmed RHI will not support fossil-fired CHP.**
Waste heat from fossil fuel	**The Government have confirmed the exclusion of waste fossil fuel heat from the RHI as it is not renewable and therefore does not count towards the UK's renewable energy targets.**

6. Heat uses

Chapter Summary
This chapter sets out:

- The principles underlying the Government's policy on heat uses that will be eligible for RHI support;
- The uses of heat that will be eligible for RHI support;
- The ineligible heat uses which will not be eligible for RHI support.

6.1. The RHI Policy Document sets out the principles underlying the Government's policy on heat uses that are eligible for RHI support:

- The RHI is intended to provide support for renewable heating where the heat generated is usable and useful.

- In order for an installation to be eligible for the RHI, the heat load it is being used to meet must be an economically justifiable heating requirement, i.e. a heat load that would otherwise be met by an alternative form of heating.

- The heat load should be an existing or new requirement, i.e. not created artificially purely to claim the RHI.

6.2. This Chapter does not apply to biomethane plants; please see Chapter Eight for an explanation of the registration process for such plants.

Eligible heat uses

6.3. The Regulations state that the RHI will support heat where that heat is used in a building for 'eligible purposes': heating a space, heating water or for carrying out a process where the heat is used.[57] Our interpretation of these terms is described in more detail below.

- **Heating a space**: the heating of rooms or other enclosed spaces within buildings, typically through the supply of hot liquid to heat emitters, such as radiators and underfloor heating.

- **Heating water**: the heating of water for direct use, such as commercial and industrial hot water or for use in schools or hospitals. Heating hot water for domestic use is also permitted, provided that the eligible installation does not provide heat solely to a single, domestic premises. For more information on what constitutes a single, domestic premises, see section 'Installations heating one single domestic premises are ineligible' in Chapter Four above.

[57] Regulations, Part 1, Regulation 2 (definition of 'eligible purpose') and Regulation 3(2)

- **Carrying out a process**: the use of heat to carry out a specific process such as industrial cooking, drying (including drying of wood and other biomass fuels), pasteurisation[58] or chemicals manufacture. It also includes heat that is subsequently used for cooling, e.g. passing renewable heat through absorption chillers. It does not include heat used for the generation of electricity, as set out in section 'Ineligible heat uses' below.[59]

6.4. Any heat that is not used for an eligible purpose is classed by the Regulations as an 'ineligible purpose', and such heat is not eligible for RHI support.[60]

6.5. To be eligible for RHI support, heat must be used for eligible purposes within a building. For example, renewable heat generated to meet the heat loads described below would not be eligible for the RHI:

- Heating of external surfaces to prevent frost or cold temperatures[61];
- Underground heating of open external spaces, e.g. recreational facility;
- Heating of open air or partially enclosed swimming pools.

6.6. The Regulations define a building as 'any permanent or long-lasting building or structure of whatever kind and whether fixed or moveable which, except for doors and windows, is wholly enclosed on all sides with a roof or ceiling and walls'. The definition therefore has two main components: whether the building is permanent or long-lasting, and whether it is wholly enclosed. We explain below how we will interpret these two components; **you will need to ensure that your building meets both criteria**.

6.7. We will ask for information about the building(s) in which the heat is used as part of the accreditation process. To illustrate how we will apply this definition of a building in practice, we include below some indicative examples relating to both parts of the definition. These are not intended to be comprehensive and we will look at other situations on a case-by-case basis to assess whether the definition in the Regulations is met.

6.8. In assessing whether we consider that a building or structure meets the requirement that it is '**permanent or long-lasting**', we shall consider all the relevant circumstances. Aspects to which we may have regard include:

- the length of time for which it is expected that the building or structure will remain in its location;

[58] For anaerobic digestion plants, the pasteurisation of feedstocks before they enter the digester, and the digestate, will be regarded as eligible processes.
[59] Regulations, Part 1, Regulation 2, definition of 'process'
[60] Regulations, Part 1, Regulation 2, definition of 'ineligible purpose'
[61] Trace heating of insulated pipework will in general be regarded as an eligible use. See paragraph 6.15 for further information.

- the materials from which the building or structure (including any associated foundations) are constructed; and

- the degree to which the building or structure is designed to be moved and the extent of works required to effect its removal.

6.9. In considering the length of time for which a building or structure is expected to remain in its location, we would not generally consider any building which would be eligible for exemption from the energy efficiency requirements of Schedule 1, Part L of the Buildings Regulations 2010 on the basis that it has 'a planned time of use of two years or less'[62], to be 'permanent or long-lasting'. In addition, we may also consider a claim for capital allowances on a moveable building[63] as an indication that this building is not expected to remain in a single location on a 'permanent or long-lasting' basis.

6.10. Based on the above, we would normally consider that tents, polytunnels and similar structures are erected on a temporary basis and therefore are not eligible because they do not meet the criterion of 'permanent or long-lasting building or structure'. However, moveable buildings or structures which are constructed with a view to having a long period of use such as porta-cabins, static caravans, greenhouses and shipping containers could be regarded as 'permanent or long-lasting' provided they are expected to remain in the same location for a sufficiently long period of time.

6.11. Structures which are erected outdoors but are themselves '**wholly enclosed on all sides with a roof or ceiling and walls**' such as distillation columns and silos would be eligible. This interpretation would generally extend to situations where a number of 'wholly enclosed' structures are erected outdoors on the same site; for example, where a chemical or industrial processing facility comprises a series of 'wholly enclosed' structures joined by sealed pipework. This is subject to each individual structure meeting the requirement that it is 'permanent or long-lasting' (see our guidance above) and 'wholly enclosed' (see our guidance below in this section on apertures which are not windows and doors). It must also be shown that the eligible heat use e.g. the carrying out of a process is contained within the relevant structure(s).

6.12. Where heat is used for an eligible purpose within a series of 'wholly enclosed' structures which make up a chemical or industrial processing facility, each such structure would normally be treated as a separate 'building' for RHI purposes. Therefore, an installation generating heat used in a facility consisting of multiple structures would be treated as 'complex' for RHI metering purposes (see the 'Metering heat where there are multiple buildings' section in Chapter Seven of this Volume for the options for metering multiple buildings). Open structures such as uncovered tanks, reservoirs and channels would be excluded from the definition of building. We also interpret the

[62] Regulation 21(3)(c), Building Regulations 2010.
[63] Under Capital Allowances Act 2001, s. 23, List C, item 21.

requirement that buildings or structures should be 'wholly enclosed on all sides' to mean that structures with open sides (such as barns, car ports, covered terraces etc) and with retractable roofs are ineligible. The eligibility of a 'wholly enclosed' building or structure where one or more of its four walls contains a window or door which is significant in proportion to the area of the wall (such as retail shops with display windows, cafes with patio doors, loading bays and docks, garages etc.) is not affected.

6.13. In interpreting the requirement for 'wholly enclosed', we shall also take a pragmatic approach to the existence of apertures in walls, ceilings or roofs which are not doors or windows (such as vents, flues, air intakes etc.), provided that these are small in size and number relative to the area of the wall, ceiling or roof and do not, in our opinion, permit the significant escape of heat.

6.14. As part of the accreditation process, applicants will be required to provide information about how the heat generated by their eligible installation is used. This information will help Ofgem to verify that only heat which is eligible for the RHI is being supported. The information requested will include:

- which of the eligible purposes described above are supplied with heat from the heating system of which the eligible installation forms part;

- a brief description of what the heat is used for, including whether any heat is used for ineligible purposes or exported to third parties.

6.15. Trace heating of insulated pipework will in general be regarded as an eligible use. Ofgem may seek assurance, including through the Independent Metering Report (see section 'Independent Report on Metering Arrangements' in Chapter Seven of this Volume), that trace heated pipework is insulated appropriately, and that trace heating of any heat distribution systems is appropriate to the system.

6.16. The Regulations permit us to request evidence that the heat for which the RHI is paid is being used for eligible purposes as set out above.[64] We may do this as part of the accreditation process or at any time after the installation has been accredited. Please see section 'Inspections and access to third party premises' in Chapter Two of this Volume for our approach to instances where the eligible heat use occurs on third party premises not owned or controlled by the participant.

6.17. Participants who are unable to provide this evidence or procure the relevant rights of access from third parties may not be granted accreditation or may be subject to subsequent enforcement action as set out in Volume Two, Chapter Ten, 'Compliance and Enforcement Powers'.

[64] Regulations, Part 4, Chapter 3, Regulation 34(o)

6.18. Participants will also be required to agree to upfront as well as annual declarations which confirm that the participant is not generating heat for the predominant purpose of increasing their RHI payments.

Ineligible heat uses

6.19. In accordance with the Regulations, any use of heat that is not supplied to an eligible purpose is supplied to an ineligible purpose and is therefore ineligible for RHI support. Some specific uses of renewable heat are excluded by the Regulations, and these are outlined below. These examples do not constitute an exhaustive list of all ineligible purposes, as we cannot account for every scenario in this Guidance.

6.20. An installation can be eligible for the RHI if it supplies heat to one or more ineligible purposes in addition to at least one eligible purpose. However, meter readings and heat output data submitted to Ofgem for RHI payment purposes must not include any heat that has been used for ineligible purposes. For example, an installation 'pre-heating' a liquid subsequently heated by a further fossil fuel plant would generally be regarded as eligible, providing meter readings and heat output data submitted to Ofgem for RHI payment purposes did not include heat generated by the fossil fuel plant or the heat used for ineligible purposes. Examples of such pre-heating are given in metering examples [five] and [six] in Appendix One.

6.21. The following heat uses are considered ineligible:

- Cooling generated by heat pumps run in reverse (see Chapter Five, section 'Reversible heat pumps' for further details of how such cooling must be accounted for).[65]

- From the point where it is metered for the purposes of calculating RHI support, renewable heat must not be used to generate electricity[66]. This is also the case if the heat is delivered to a third party who uses the heat to generate electricity. Where renewable heat has been used to generate electricity in a renewable CHP system, i.e. electricity is generated and then the waste (renewable) heat from this process is subsequently used for an eligible purpose as set out in the 'Eligible heat uses' section above, this renewable heat is eligible for RHI support providing all other eligibility requirements are satisfied.

- Process internal heat (sometimes referred to as 'parasitic loads'), i.e. heat that is subsequently used in the generation of heat, is normally not eligible for RHI support. For example, steam used for pre-heating or de-aeration of feedwater, and condensate/steam returns to an installation are not eligible for

[65] Regulations, Part 4, Chapter 3, Regulation 35
[66] Regulations, Part 1, Regulation 2, definition of "process"

support[67]. Process internal heat uses not covered in this guidance document will be treated on a case-by-case basis. If you believe that your installation has such a heat use, please contact us. Chapter Seven sets out more detail of how process internal heat should be accounted for when providing meter readings and heat output data to Ofgem.

6.22. Any heat that is rejected from a system and not subsequently used for eligible purposes, or vented directly to the atmosphere, for example through a heat rejection facility of a CHP system or a heat dissipation circuit of a solar thermal system, is not eligible for RHI support and must not be included in meter readings provided to us.

[67] Regulations, Part 2, Chapter 3, Regulation 17 & Part 5, Regulations 38 and 39

7. Metering eligibility requirements

Chapter Summary
This Chapter sets out:
- The types of meters that are allowed for the RHI, and the technical requirements they must meet;
- The information relating to meters and metering arrangements which we will be asking for during the accreditation process;
- Where meters should be positioned, relative to the installation and heat uses, to ensure that measurements are relevant and accurate and that only eligible heat is claimed for;
- Ongoing requirements that relate to meters in use for RHI purposes.

7.1. In accordance with the Regulations, participants may only claim RHI support on eligible heat that is delivered by any heat-conveying liquid or steam.[68] Where heat is delivered from other sources, such as direct air heating, this is not eligible for RHI support. All eligible installations will therefore need one or more heat or steam meters to correctly measure the amount of renewable heat that is eligible for RHI support.

7.2. Information on metering for biomethane plants is provided in Chapter Eight; the requirements set out in this Chapter do not apply to such plants.

7.3. For installations with a capacity of 45kWth and below, the MCS installation company should be able to advise participants on how to comply with the technical metering requirements set out below (as applicable).

7.4. This Chapter contains information that is necessarily technical. Appendix One, 'Meter placement examples', provides examples of how the metering requirements set out in this Chapter could apply in certain situations. This is intended to assist with understanding of how technical requirements could apply in practice. These are illustrative examples only, and are not intended to be an exhaustive list of all possible system configurations. However, for each application for RHI support, we will apply the principles described below when assessing whether the metering arrangements for that heating system meet the RHI eligibility requirements.

7.5. Details of how to provide ongoing meter readings and heat output data to Ofgem are provided in Volume Two, Chapter Three of this Guidance. The ongoing obligations participants need to meet with respect to maintaining their meters can be found in section 'Maintenance of meters' in Volume Two, Chapter Two of this Guidance.

7.6. For the purposes of this Guidance we refer to 'heat meters' for the measurement of heat transferred by any liquid, typically hot water or water

[68] Regulations, Part 2, Chapter 2, Regulation 12(1)

and a mixture of other agents (such as ethylene glycol). Steam meters are covered separately in the 'Steam measuring equipment (steam meters) section' below. Where heat and steam meters are referenced in this Chapter, it is assumed they meet the requirements set out in the Regulations.

Heat meters

What standard of heat meter is permissible for the RHI?

7.7. Where renewable heat is delivered by a heat conveying liquid, the Regulations require that all heat meters used for RHI purposes comply with Class 2 accuracy requirements, that is:

- comply with the relevant requirements set out in Annex I to the 2004 Measuring Instruments Directive (MID)[69] (2004/22/EC), and
- comply with the specific requirements listed in Annex MI-004 of the MID, and
- fall within accuracy Class 2 as defined in Annex MI-004[70].

7.8. There is an exception to this requirement for certain transitional CHP systems, please see the 'CHP systems currently registered on the CHPQA scheme' Section below for further details.

7.9. The MID sets out the requirements for a number of measuring instruments used for trade[71]. MID covers meters used to measure heat by heat conveying liquids, such as hot water, in a heat exchange circuit. MID requirements in Annex I include allowable errors (accuracy classes), durability, resistance to disturbances, and inscriptions and markings that may need to be fixed to the meter. It also sets out what information must be provided by the manufacturer for installation, operation and maintenance of the meter. For further information about the MID, please see the National Measurement Office website[72].

7.10. It will be a condition of accreditation that the heat meter(s) for your installation must not in any way be tampered with to affect the meter readings of the installation.

[69] http://www.bis.gov.uk/assets/bispartners/nmo/docs/legislation/legislation/mid/measuring-instruments-directive-text-from-oj.pdf
[70] Regulations, Part 1, Regulation 2, definition of 'class 2 heat meter'
[71] http://ec.europa.eu/enterprise/sectors/legal-metrology-and-prepack/documents/europ-standards/index_en.htm
[72] http://www.bis.gov.uk/nmo/technical-services/product-certification/MID/heat-meters

7.11. MID provides requirements for different accuracy classes of heat meter. The Government has concluded that a minimum of Class 2 requirements are applicable for the RHI, as set out in the Regulations[73,74].

7.12. To comply with the specific requirements in Annex MI-004 of the MID, all heat meters used for RHI purposes must comprise:

- a **flow sensor** (or meter) - a meter which determines the volume of fluid which has passed through a pipe within a given time period,

- a **matched pair of temperature sensors** (such as two thermocouples) - two temperature sensors that are calibrated together as a pair to make sure the temperature difference between the input and output of the system is measured to the stated accuracy level, and

- a **calculator/digital integrator** (though in some systems a Building Management System may take the place of the integrator) – a device which uses the information provided by the flow meter and the matched pair of temperature sensors to calculate the heat energy being transferred.

7.13. These above-listed components can be purchased together as an integrated meter. Alternatively, individual components, or sub-assemblies, can be brought together as a heat metering system. Where individual components are brought together as a heat metering system, the applicant must ensure that individual components are compatible. For example, a manufacturer of a calculator/digital integrator will advise on compatibility requirements for differing designs or sources of flow sensor and/or temperature sensors that meet the requirements set out above.

7.14. A heat meter comprising individual components which all meet or exceed (i.e. Class 1) Class 2 requirements would be accepted as meeting the requirements of a Class 2 meter (outlined above). However, if any component of the heat meter does not meet the Class 2 requirements, (e.g. the flow meter only meets the less accurate Class 3 requirements), the Class 2 requirements set out in the Regulations are not met.

7.15. Participants must ensure that any Class 2 heat meter used for RHI purposes is designed (and appropriately calibrated and properly installed) for the heat-conveying liquid used by the heating system.

[73] See for example, Regulations, Part 2, Chapter 3, Regulations 16 and 17.
[74] Meters that fall within accuracy class 1 as defined in Annex MI-004 of the MID and meet the other appropriate eligibility requirements are also appropriate for RHI purposes (as these requirements are stricter than those for Class 2).

What information needs to be supplied when applying for accreditation?

7.16. There are a number of routes for demonstrating that an integrated heat meter meets the eligibility requirements. As part of the RHI accreditation process, we will ask for evidence to demonstrate that the meter meets the Class 2 requirements, which may be provided in all or any of four different ways. This information will be required for each model of integrated meter used for RHI purposes.

7.17. The most straightforward method to demonstrate that the meter used for RHI purposes meets the eligibility requirements is to provide evidence that the meter has been submitted and shown to comply with MID MI-004 conformity assessment procedures. A digital photograph of the meter showing meter design details, its serial number and display of its 'M' and 'CE' markings and approval numbers affixed to it could be used. Alternatively, a copy of the manufacturer's declaration of conformity could be used.

7.18. We will also accept other methods of demonstrating compliance with Class 2 requirements. The alternative options are:

- A (pre-MID)[75] EEC type approval certificate showing compliance with Class 2 accuracy requirements, or a digital photograph with the meter showing the EEC approval markings and verification seals affixed to it; or

- A certificate from an independent test house accredited to ISO 17025 (heat meters) demonstrating compliance against the applicable European Standard (EN 1434: 2007 Parts 4 and 5) for Class 2 heat meters; or

- An International Organization of Legal Metrology (OIML) Class 2 Heat Meter Certificate of Conformity.

7.19. Where the meter components are purchased separately, we will ask for evidence that each component meets the requirements. This evidence could be manufacturer's documentation or conformity assessment/testing certificates, for example.

7.20. As part of the accreditation process we will also ask for:

1. each heat meter's **manufacturer and model** or, where the components are purchased separately, the manufacturer and model of the flow sensor;

2. each heat meter's **serial number** or, where the components of the meter are purchased separately, the serial number of the flow meter component;

[75] MID was implemented in GB on 30 October 2006. There is a 10 year transitional period for existing (pre-MID) approvals to continue to be manufactured and placed on the market.

3. a **brief description** of each meter, e.g. 'measures heat generated by biomass boiler' or 'measures heat being supplied to office block' allowing it to be identified on the system's schematic diagram (for further information about the schematic diagram, please see section 'Schematic diagram' below;

4. a **meter reading** for each meter, and the date on which that reading was taken;

5. the applicant's **confirmation** that all meters were installed in line with manufacturer's instructions (including any installation requirements required as part of the MID conformity assessment or other EEC, EN 1434 or OIML testing certificates, as appropriate) and that the metering system is appropriate for the measurement function (e.g. the possible flow rates of the fluid being measured fall between the maximum and minimum flow rate calibration range of the flow sensor or the temperature sensors are designed to measure the possible temperature range of the liquids) and was appropriately calibrated prior to use.

7.21. We may request a copy of the MID EC-type or design examination certificate or other EEC, EN 1434 or OIML testing certificates, where appropriate, for any heat meter used for RHI purposes. Where the components of the heat meter are purchased separately, the manufacturer and model of the temperature sensors and calculator/digital integrator, and the serial number of the calculator/digital integrator may also be requested.

7.22. All large or 'complex' installations that deliver heat by hot liquid will be required to provide an independent report that verifies the metering arrangements in place as part of the accreditation process. This will provide further information about the heat meters and the heating system, allowing us to verify that all the relevant eligibility criteria have been met. Please see the 'Independent report on metering arrangements' Section in this Chapter for further details of this report, and the RHI website for a template of the report[76].

7.23. In some systems the composition of the heat conveying liquid could vary over time. This may include some heating systems where a mixture (such as a water/ethylene glycol mix) will be topped up using liquid of a different composition (such as water). In these circumstances, the applicant must demonstrate that the meters installed will always meet the general eligibility conditions as outlined in this Guidance. In reviewing such a position, Ofgem will be mindful of any procedures in place to monitor and control the concentration of the heat conveying liquid and the regime for re-calibrating the meters where necessary to compensate for changes to heat transfer liquid composition. Applicants may also wish to consider alternative meter configurations, such as positioning the meter after the primary heat exchanger/primary heat loop, in order to remove the requirement to meter a heat conveying liquid of which the composition may vary over time. Note that

[76] www.ofgem.gov.uk/rhi

this would not be permitted where such a configuration could result in a meter reading contributing to misreporting of the heat generated by the installation. For example, a meter to measure heat generated by the installation that was influenced by the heat generated by another plant would not be permitted.

Steam measuring equipment (steam meters)

What standard of steam meter is permissible for the RHI?

7.24. Where renewable heat is delivered by steam, the Regulations set out the requirements for 'steam measuring equipment' (hereafter referred to as steam meters).[77]

7.25. Steam meters used for RHI purposes must have, as a minimum, the following components continuously measuring the steam properties and calculating the cumulative steam energy that has passed through the measuring system as shown on the system's schematic diagram:

- A **flow meter** – a meter which determines how much fluid (steam) has passed through a pipe over a given time period;
- A **pressure sensor** – a device for measuring the pressure of steam flowing through the pipe;
- A **temperature sensor** – a device for measuring the temperature of steam flowing through the pipe;
- A **calculator/digital integrator**– a device which uses the information provided by the flow meter, temperature and pressure sensors to calculate the cumulative heat energy transferred through the pipe.

7.26. These components can be purchased together as an integrated meter or purchased separately.

7.27. The Regulations also require that all steam meters are capable of displaying the measured steam pressure and temperature, and the current mass flow rate and cumulative mass of steam which has passed through it since it was installed. To accommodate cases where cumulative readings may be reset during the calibration process, Ofgem will consider this to also include steam meters capable of displaying the measured steam pressure and temperature, and the current mass flow rate and cumulative mass of steam which has passed through it since it was installed or calibrated.

[77] Regulations, Part 1, Regulation 2, definition of 'steam measuring equipment'

7.28. We expect that participants will install steam measuring equipment which is capable of delivering the levels of reliability and accuracy associated with accepted industry good practice. Where available, compliance with International, European or British Standards including ISO 5167 (orifice plates) is likely to be indicative of good practice, as is the use of methodologies provided in the Carbon Trust Good Practice Guide 018 or the CHPQA guidance notes (CHPQA guidance).[78]

What information about steam meters needs to be supplied when applying for accreditation?

7.29. As part of the accreditation process we will ask for:

- each steam meter's **manufacturer and model** or, where the components are purchased separately, the manufacturer and model of the flow meter component
- each steam meter's **serial number** or, where the components of the meter are purchased separately, the serial number of the flow meter component
- the date of the **most recent calibration** of the steam meter
- a **brief description** of each meter, e.g. 'measures steam generated by biomass boiler' or 'measures steam being supplied to sterilisation process' allowing it to be identified on the schematic diagram (for further information about the schematic diagram, please see the 'Schematic diagram' Section below)
- a **meter reading** for each meter, and the date on which that reading was taken
- the applicant's **confirmation** that all meters were installed in line with manufacturer's instructions and, where appropriate, that the metering system is appropriate for the measurement function (such as the flow rate and the calibration range of the temperature and pressure sensors) and calibrated prior to use.[79]

7.30. The most recent calibration dates and the manufacturer and model of the calculator/digital integrator, temperature and pressure sensors are expected to be available upon request.

7.31. All installations that deliver heat by steam will be required to provide an independent report that verifies the metering arrangements in place as part of

[78] http://chpqa.decc.gov.uk/guidance-notes/
[79] Regulations, Part 2, Chapter 3, Regulation 20(2)

the accreditation process. This will provide further information about the steam meters and the heating system, allowing us to verify that all the relevant eligibility criteria have been met. Please see section 'Independent report on metering arrangements' below for further details of this report.

Additional information for systems with more than three RHI-relevant meters

7.32. Where a system has more than three RHI-relevant meters, we will also ask for a description of the metering arrangements relating to the eligible installation and heat uses. This should explain how the metering arrangement will enable the relevant heat output figures required for tariff calculation purposes to be determined. Further details about which figures are required are set out in Chapter Three, 'Provision of periodic data – heat output data and supporting meter readings', of Volume Two.

CHP systems currently registered on the CHPQA scheme

7.33. Where eligible CHP systems have a heat recovery system that was first commissioned on or after 15 July 2009, and the system was generating electricity only, using solid biomass or biogas, prior to 15 July 2009, the Regulations allow us to accept such a system's existing heat or steam meters for the RHI providing:

- the meters were installed prior to the date of commencement of the Regulations **and**

- the CHP system was registered under the CHPQA standard[80] prior to the date of commencement of the Regulations.[81]

7.34. In practice, this means that where such a CHP system has a pre-existing Class 3 heat meter(s) that is relevant for the RHI, they will be exempt from the requirement to have a Class 2 heat meter.

7.35. All other RHI eligibility and ongoing requirements relating to metering set out in Chapter Seven, 'Metering eligibility requirements', must be complied with. If a CHP system which benefits from the above exemption in relating to existing meters needs to install additional meters to meet the RHI metering requirements, e.g. if their existing meters are not appropriately located, the exemption will not apply and these additional meters will need to comply with **all** of the requirements set out in Chapter Seven.

[80] http://chpqa.decc.gov.uk/
[81] Regulations, Part 2, Chapter 3, Regulation 19

7.36. We may ask for evidence such as receipts, invoices or installer's documentation and CHPQA documentation to verify that the above criteria have been met.

Meter placement: simple and complex installations

7.37. This section sets out where meters need to be located in order to comply with the Regulations. The Regulations classify installations as either 'simple' or 'complex' for RHI metering purposes.[82] This classification in turn determines which quantities must be measured, and where meters must be located.[83] It also affects how payments are calculated, as set out in Chapter Two, 'Periodic support payments', in Volume Two of this Guidance.

7.38. Where more than one eligible installation is connected to the same heating system (e.g. a biomass boiler and a heat pump), each eligible installation must be metered separately to ensure that its renewable heat contribution can be measured for RHI payment purposes. Where an installation comprises multiple plants, it may be possible for the plants to share a meter for RHI purposes, please see the 'Shared meters' Section below for further information.

Is your installation 'simple' or 'complex' for RHI metering purposes?

7.39. If the answer to any of the questions below for **any** of the plants comprising your installation is 'Yes', then the Regulations require the installation to be classed as **complex** for RHI metering purposes.

- Is the plant a **CHP** system (a plant where power is generated and waste heat from the power generation process is recovered and used for eligible purposes)?
- Is heat generated by the plant delivered by **steam**?
- Does the plant generate heat that is supplied to one or more **ineligible purposes** (see Chapter Six for details of what constitutes an ineligible purpose)?
- Is the heat generated by the plant used or generated within **more than one building**?

7.40. If the answer to all the questions above is 'No' for **all** plants comprising an eligible installation, then the installation will be classed as 'simple' for

[82] Regulations, Part 2, Chapter 3, Regulations 16 and 17
[83] Regulations, Part 2, Chapter 3, Regulations 16 and 17 & Part 5, Regulations 38 and 39

metering purposes, and for the calculation of payments as set out Chapter Five, 'Periodic Support Payments' in Volume Two of this Guidance.

7.41. Where an installation is comprised of multiple plants, it will be classed as 'complex' for RHI metering purposes where any of its component plants are classed as complex.

7.42. Whether an installation is classed as simple or complex for RHI metering purposes is illustrated in Figure 4 below.

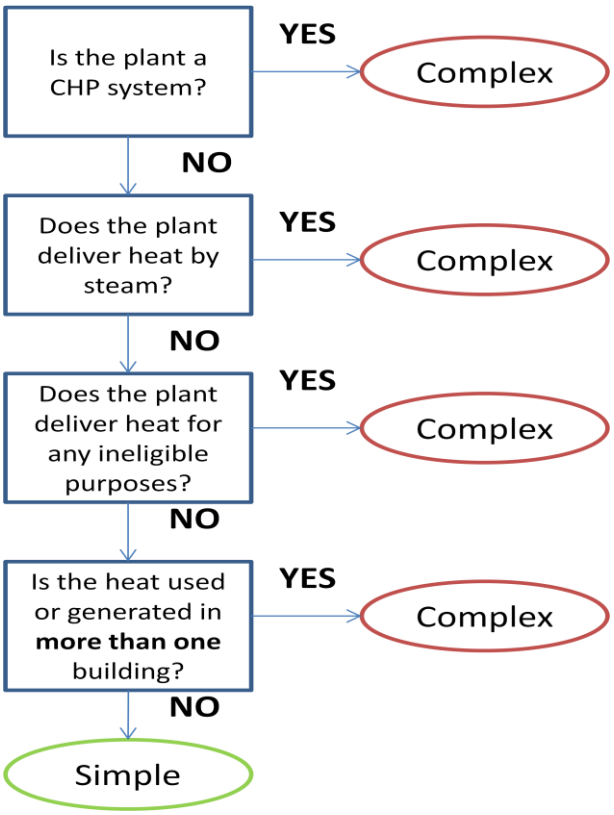

Figure 4: A flow chart illustrating whether a plant comprising all or part of an eligible installation would be classed as 'simple' or 'complex' for RHI metering purposes, in accordance with the Regulations. NB: Where an installation is comprised of multiple plants, it will be classed as 'complex' for RHI metering purposes where any of its component plants are classed as complex.

Meter placement for 'simple' installations

7.43. The Regulations allow simple installations to meter only the **renewable heat generated** by the eligible installation, and to receive RHI support on this

amount.[84] This means that the heat meter measuring points must be positioned correctly to meter the heat generated by the eligible installation.[85]

7.44. The temperature sensors must be installed appropriately so that they measure accurately:

- the temperature of the liquid returning to the installation, **and**
- the temperature of the liquid as it leaves the installation, prior to entering any common pipework or vessels, such as a common header[86] or storage tank.

7.45. The pipe carrying the hot liquid flow **leaving** an installation is commonly referred to as the **flow** pipe; the pipe carrying the cool liquid flow **entering** an installation is commonly referred to as the **return** pipe. We use this terminology here. The (heat) flow meter must be located on either

- the return pipe directly entering the eligible installation **or**
- the flow pipe directly leaving the eligible installation.

7.46. The heat meter calculator/digital integrator must be correctly configured for the installed location of the flow meter and temperature sensors, as well as the properties of the heat conveying fluid.

7.47. Figure 1.1 in Appendix One provides an example of how the principles above would apply in practice.

7.48. Where an eligible installation is classed as simple for RHI metering purposes, the participant will receive RHI payment on the kWhth as measured by the class 2 heat meter(s) that measure heat generated by the eligible installation. For further information about how RHI payments are calculated, see Chapter Five, 'Periodic Support Payments' in Volume Two of this Guidance.

Meter placement for 'complex' installations where the heat transfer medium is a liquid (i.e. not steam)

7.49. Any installation where heat is delivered by a liquid and which does not meet the 'simple' criteria outlined above will be classed as 'complex' for RHI metering purposes. This section describes the meter placement requirements for heating systems where the heat transfer medium is a liquid. The scenario where the heat transfer medium is steam is covered separately in the 'Meter

[84] Regulations, Part 2, Chapter 3, Regulation 16(2) and Part 5, Regulation 38
[85] As shown in Figure 4, an installation that is classed as 'simple' for RHI metering purposes cannot deliver heat by steam, and therefore steam meters would never be required.
[86] A 'common header' is the main pipe to which plants supply heat, and from which heat uses are supplied. A heating system may have multiple common headers.

placement for 'complex' installations where the heat transfer medium is steam' Section below.

7.50. For complex installations where the heat transfer medium is a liquid, heat meters will be required to directly measure three quantities for the heating system of which the installation forms part (hereafter referred to as 'the heating system'):

- The heat generated by the eligible installation, prior to any common pipework or vessels;

- the total heat generated by all plants supplying hot liquid to the heating system (this applies to all plants, whether they are eligible for the RHI or not); **and**

- the heat used for eligible purposes by the heating system.[87] This must not include any heat that is used for ineligible purposes. Examples of ineligible purposes are given in Chapter Six, 'Heat uses'.

7.51. Where section 'CHP systems currently registered on the CHPQA scheme' does not apply, meters used to measure the quantities listed above must be class 2 heat meters or can be better (class 1 meters).

7.52. For all three quantities listed above, the flow meter component of the heat meter should be located on either:

- the return pipe directly entering the installation/heat generating plant(s)/eligible purpose **or**

- the flow pipe[88] directly leaving the installation/heat generating plant(s)/eligible purpose.

7.53. The temperature sensors must be placed so that they measure:

- the temperature of the liquid returning to the installation/heat generating plant(s)/eligible purpose, and

- the temperature of the liquid as it leaves the installation/heat generating plant(s)/eligible purpose.

[87] Regulations, Part 2, Chapter 3, Regulation 17(2)
[88] The pipe carrying the hot water flow leaving an installation or heat use is commonly referred to as the flow pipe.

7.54. Figure 1.2 in Appendix One, 'Meter placement examples', shows an example where the installation is classed as 'complex' for RHI metering purposes and the heat transfer medium is a liquid.

Metering heat where there are multiple buildings

7.55. Ofgem is required by the Regulations to make payment only for heat used for eligible purposes. Since heat lost in transportation between buildings is not an eligible purpose, such lost heat must not be included in any claim for payment. The simplest way to achieve this is to meter each building individually and it is therefore our firm expectation that participants should meter individual buildings.

7.56. However, in exceptional circumstances where it would be unduly burdensome, for example where it is likely to be highly impractical or disproportionately expensive, as for instance with some legacy heat distribution systems, as a concession we would consider the following alternative arrangement.

7.57. Where an applicant does not wish to meter buildings separately, we may be able to accept instead an approach where an agreed percentage is deducted from the eligible heat use figure to represent heat lost between buildings. In the future we will establish a standard methodology for calculating heat losses between buildings. Such a standard methodology would be used to calculate the percentage heat loss likely to be experienced in a particular application. We are currently working to develop this methodology, and will seek advice from key stakeholders. We will provide further guidance in this area when the methodology is agreed.

7.58. In the meantime, we will consider proposals for alternatives to metering individual buildings on a case-by-case basis. If you wish us to consider such a proposal, please set out as part of your application for accreditation why metering individual buildings would be unduly burdensome. In addition you would need to provide us with design calculations showing how much heat will be lost between buildings. We may ask you to provide verification of these calculations by an independent and/or professionally qualified person. If we accept that the calculations are satisfactory we will be able to accredit you on this basis. Future payments will need to be adjusted pro-rata so that you are only paid on the heat that has been used for eligible purposes. We will inform you how this calculation should be carried out. As this is an administrative concession, we will keep this area under review and may issue further guidance on this approach.

Alternative approach where separate heating circuits are fed by a common distribution system

7.59. In general, for systems considered complex for metering purposes all plant supplying heat to the heating system must be metered for heat output. However, Ofgem is mindful that this requirement may be overly burdensome where certain conditions are met. One particular scenario might apply in the case of a building supplied from a district heating system via a heat exchanger, and where the building contains a back-up or supplementary

boiler, the output of which is completely isolated from the main district heating circuit. An example of such a system is provided in Appendix One, Figure 1.8. To accommodate situations of this kind, we may consider proposals to measure the eligible heat delivered to this building using a single meter, where:

- Heat is supplied to a building via a heat exchanger, such that the building has a heat distribution system separate to the main distribution loop served by an installation; and

- There are no ineligible uses within the building; and

- The meter is capable of capturing only heat used for eligible purposes, i.e. it must not include any heat used for ineligible purposes; and

- It can be demonstrated that any heating plant(s) within the building make no contribution to providing heat for any use outside of the building which they serve.

7.60. In this case, the term in the tariff calculation formula for heat generated by all plants supplying heat to the same heating system of which the installation forms part, would not include heat generated by plants within this building. For more details on how payments are calculated, see Chapter Five of Volume Two of this Guidance.

Meter placement for 'complex' installations where the heat transfer medium is steam

7.61. All installations where steam is the heat transfer medium are classed as complex for RHI metering purposes.[89] All steam meters used for RHI purposes must meet the technical requirements set out in the 'Steam measuring equipment (steam meters)' section above. Where heat is used for eligible purposes in more than one building, section 'Metering heat where there are multiple buildings' above applies.

7.62. The Regulations require steam meters to be positioned to measure:

- the heat generated in the form of steam by the eligible installation;

- the total heat generated in the form of steam by all plants supplying heat to the heating system;

- the heat in the form of steam used for eligible purposes by the heating system. This will require

[89] Regulations, Part 2, Chapter 3, Regulation 17(1)

- a steam meter to measure the energy in the form of steam that is delivered to the eligible purpose, and

- heat meters or steam meters positioned to measure heat which is returned from the eligible purpose in the form of condensate, low pressure steam, or a two phase flow[90] of condensate and steam.[91]

7.63. We assume that the energy in the hot water delivered to the eligible installation and any ineligible plant(s) does not need to be metered, as the feedwater temperature for all plants will be the same.[92]

7.64. Where any combination of condensate, non condensable gases and steam are discharged, the steam meter(s) measuring steam delivered to an eligible purpose must be positioned such that they will not include heat lost via such discharges.

7.65. The previous paragraph would in general apply to devices including steam traps and blowdown valves. However, Ofgem is aware that well maintained steam traps and related devices may be an integral part of best practice system design. Where steam traps and related devices are well maintained and are appropriate to the system, Ofgem would not consider these devices to be an ineligible use for metering purposes. Ofgem may seek assurance, including through the Independent Metering Report (see section 'Independent Report on Metering Arrangements' below), that such devices are not inappropriate to the system, and are not poorly maintained.

7.66. Where steam is used for internal processes, such as feed water pre-heating, de-aeration or any other such returns to the installation, the steam meter(s) measuring steam delivered to the eligible purpose must be positioned such that they exclude steam used for these purposes. Where this is not possible, calculation of the amount of steam used for such purposes using metering by difference may be permitted, see the 'Metering by difference' section in this Chapter for further details. For further information about process internal heat, see Chapter Six of this Volume.

7.67. Often the fluid that returns from the eligible purpose will be a two-phase mixture of hot water and steam. We expect applicants to know the conditions of this returned fluid in order to determine whether a steam meter or heat meter is most appropriate for measuring its energy content. We may ask for

[90] A two-phase flow is one in which two phases flow simultaneously – in this case, the two phases are gas (steam) and liquid (water)
[91] Regulations, Part 2, Chapter 3, Regulation 17(2)
[92] As the heat generated by the eligible installation and the total heat generated by all plants that deliver heat to the heating system only appear in the tariff calculation formula as a ratio, the enthalpy difference between the steam and the feedwater cancels out in the tariff calculation formula. For further details of this formula, please see Chapter Five of Volume Two of this Guidance.

evidence showing that the choice of meter is appropriate for the typical conditions of the returned fluid.

7.68. Where the returned fluid is wholly or primarily hot water, the heat meter should have one temperature sensor in the return pipe from the eligible purpose and use the datum used by the steam meters in place of the second temperature sensor. Typically this datum will be 0ºC.[93]

7.69. Where the fluid returned from the eligible use is wholly or primarily steam, additional temperature and pressure sensors must be located in the return pipe leaving the eligible purpose (in addition to a flow meter).

7.70. In line with industry good practice, we expect participants to return as much fluid from the eligible purpose as practically possible. We may ask for information or evidence to confirm this is the case.

7.71. Flow meters, pressure sensors, temperature sensors and calculators/digital integrators must be clearly marked on the schematic diagram. The schematic diagram must also show which meter components are used to derive the energy measured by particular steam meters, as shown in Figure 1.3 in Appendix One, 'Meter placement examples'.

Location of meters on boilers with heat recirculation

7.72. Ofgem is aware that boilers may be incorporated into a heating system in conjunction with a "back end loop", the function of which is to recirculate heat directly to the boiler while bypassing the main heating circuit or any further heating loads. Ofgem understands that this will be standard practice for certain boiler types, including biomass boilers. Ofgem would consider best practice system design to involve meter placement after the back end loop, in order to protect against recirculated heat being measured for the purposes of RHI payment calculations. An example of this meter placement is given as Example 2 in Appendix One. Ofgem will examine the body of evidence that emerges through the administration of the scheme, and may at a later date be minded to require meters to be placed after the back end loop in all cases.

Biogas-specific metering requirements[94]

7.73. Any heat generated by the plant, once it has passed the meter used to calculate the RHI payment (e.g. waste heat generated from the combustion of biogas), which is subsequently returned to the process of producing the biogas at the plant (for example, where hot water heats the digester), must be measured and deducted from the final RHI payment calculation. See above for details of the meters which are required to perform this calculation. We will ask at the accreditation stage how this fits in to the overall heat metering process at the plant. Due to the metering requirements, the heat will have to

[93] See, for example, https://www.chpqa.com/guidance_notes/GUIDANCE_NOTE_23.pdf
[94] Regulations, Part 2, Chapter 3, Regulation 21

be transferred in the form of liquid or steam. Biogas plants are specifically excluded from delivering hot air from the heat generating plant to the biogas production plant.[95]

7.74. Any other heat inputted into the production of the biogas at the biogas production plant must also be measured and deducted from the overall RHI payment calculation. For example, where water heated by a fossil fuel or renewable boiler is used to raise the temperature of an anaerobic digester, this must be measured and deducted. We will ask at the accreditation stage what these uses are and how they will be measured (they will need to comply with the standard class 2 heat meter requirements detailed above). When periodic information is provided each quarter, this needs to be entered on to the system and will be deducted from the overall payment.

7.75. The exception to this is when heat is contained in feedstock used at an anaerobic digestion plant (e.g. following pasteurisation of the feedstock). The heat in this feedstock does not need to be measured or deducted.

Shared meters

7.76. An eligible installation comprised of multiple component plants that use the same source of energy and technology may use one heat or steam meter to measure the heat generated by some or all the component plants, provided those plants are eligible to receive the same tariff, share the same tariff start date and tariff end date and providing that, in our opinion, a single meter is capable of measuring the required quantity.[96]

7.77. This section does not apply where additional RHI capacity is added to an installation (after the original installation has been accredited). For further details on additional capacity, please see Volume Two, Chapter Seven of this Guidance.

7.78. The shared meter approach allows plants using the same energy source and technology to be grouped together and metered by just one heat or steam meter. In practice, we will generally permit a shared meter where the heat generated by one or more of the plants comprising the eligible installation can be **directly** metered by a single heat or steam meter. For example, the return temperature sensor would need to be placed prior to any heat from other sources entering the heating system, and the flow temperature sensor after any pre-heating. Where such direct measurement is not possible, each plant will need to be metered individually.

7.79. Figure 1.4 in Appendix One, 'Meter placement examples', gives an example of how this might work in practice.

[95] Regulations, Part 4, Chapter 3, Regulation 34(h)
[96] Regulations, Part 2, Chapter 3, Regulation 18

7.80. It should be made clear on the schematic diagram and in the application for accreditation where an eligible installation is comprised of multiple component plants. See Chapter Two, 'How to apply when you have multiple plants', for further information.

Installations in series

7.81. Where one eligible installation is used in series with another, for example a solar thermal installation preheats feed water to a biomass boiler, heat meters (or steam meters if appropriate) must be positioned to directly measure the heat generated by **each** installation and to allow measurement of the contribution made by **each** eligible installation to the total heat generated. An example is provided in Appendix One of this volume.

Metering by difference

7.82. In general, we will require direct measurement of the quantities described in the paragraphs above.[97] This is to ensure that measurements used for RHI payment purposes are accurate, as combining meter readings to obtain a quantity required for the RHI tariff calculation may affect the accuracy with which that quantity has been measured.

7.83. However, we recognise that in some circumstances direct measurement may not be possible and in those cases we will give consideration to measuring by difference on a case-by-case basis. For example, if a Class 2 heat meter measures quantity A and another Class 2 heat meter measures quantity B, then we may permit these measurements to be used to calculate the RHI-required quantity C, where "C = A – B".

7.84. We are most likely to grant permission for measuring by difference where there is good reason for not using direct measurement, and where measuring by difference can provide an acceptable level of accuracy. In this case, we would usually expect all relevant metering equipment to have been calibrated at the same time by the same person to reduce any calibration errors.

7.85. Any agreement we make to measuring by difference will be in writing, together with agreement as to the means of calculation.

Installation of meters

7.86. As part of their application for RHI accreditation, applicants will need to declare that all heat or steam meters (and meter components where these were purchased separately) to the best of their knowledge still conform to the manufacturer's specifications (e.g. they have not been modified in any material way or, if repaired or refurbished, replacement parts were sourced

[97] The exception to this is the measurement of heat used in systems where heat is delivered by steam.

from the original manufacturer) and still maintain relevant accuracy (i.e. within the class 2 or other eligibility requirements).

7.87. The applicant is also required to ensure that all meters and their associated components are then installed in accordance with the manufacturer's specifications (including any installation requirements required as part of the MID EC-type or design examination certificate or other EEC, EN 1434 or OIML testing certificates where appropriate). For example, manufacturers of flow meters often stipulate that the meter must:

- have a flow conditioner or be placed a defined number of upstream and downstream straight pipe diameters from any obstruction or plant to ensure that the meter is not affected by flow disturbances or perturbations

- have the temperature (and, where appropriate, pressure) sensors placed to ensure that the temperature or pressure measurement is that of the heat-conveying liquid or steam and is not affected by other factors, such as other heat sources or the pipework configurations.

7.88. As part of this, applicants must ensure that the meters installed are appropriate for the operating conditions of the heating system.

7.89. Participants should keep records of the relevant manufacturer's instructions and relevant installer's receipts/documentation as we expect these to be available upon request.

Schematic diagram

7.90. Applicants will be required to provide a schematic diagram of the installation and the heating system of which it forms part during the accreditation process. This diagram will form a key part of the application for accreditation.

7.91. This diagram will need clearly to show, as appropriate to the heating system of which the installation forms part:

- the relative positions of the eligible installation(s) (including any component plants), any ineligible plant(s), eligible heat use(s), any ineligible heat use(s) and heat rejection facility/facilities

- the relevant pipework connections between all plants within the eligible installation(s)

- the relevant pipework connections between all eligible installations, all ineligible plants and eligible or ineligible uses of heat, and

- the relative positions of the relevant heat and steam meters and their associated components as listed under sections 'Heat meters' and 'Steam measuring equipment (steam meters)' above.

7.92. With regards to metering arrangements, the schematic diagram (including a key) must clearly show for each meter used for RHI purposes, as appropriate:

- the meter sub components' positions, i.e. positions of temperature sensors, pressure sensors, flow meters and any flow conditioners/straighteners
- which measurements will be combined by the calculator/digital integrator to generate the meter reading
- the meter serial number as listed in the applicant's application for accreditation.

Independent report on metering arrangements

7.93. In accordance with Schedule 1 of the Regulations, where an installation

- has a capacity of 1MWth or above, or
- is classed as complex for RHI metering purposes,

we will require an independent report by a competent person demonstrating that the metering and measuring requirements imposed by Chapter 3 of Part 2 of the Regulations have been met[98] (the 'Report').

7.94. Please note that we generally will not require installations that have an installation capacity of 45kWth or below to submit the Report. However, we may require the Report for these installations if we are not satisfied by the other evidence provided at accreditation that the metering arrangements for the system meet the scheme requirements. Applicants applying for accreditation of plant with an installation capacity of 45kWth or below should therefore be prepared to provide such a Report, but the applicant may choose not to obtain this in advance of making his/her accreditation application.

7.95. A Report will also be required in the following scenarios:

- where additional RHI capacity[99] takes an accredited installation's capacity over 1MWth,

[98] Regulations, Schedule 1, paragraph 1 (2)(v)(v)
[99] 'Additional RHI capacity' is defined in the Regulations (Part 6, Regulation 43(2)) as a plant which is—
(a) first commissioned after the date on which an accredited RHI installation ('the original installation') was first commissioned;
(b) uses the same source of energy and technology as the original installation; and
(c) supplies heat to the same heating system as that of which the original installation forms part.

- where additional RHI capacity takes an accredited installation's capacity over 45kWth and the installation is considered complex for RHI metering purposes,

- or where a change is made to the installation/heating system that results in an RHI-accredited installation moving from a simple to complex classification for RHI metering purposes.[100] It will be a condition of accreditation for all participants with accredited installations that should this third scenario arise, the participant will be required to produce an independent metering report for their accredited installation.

7.96. Further information about additional RHI capacity and simple and complex classifications can be found in Chapter Seven in Volume Two and Chapter Seven, 'Metering eligibility requirements' of this volume respectively.

Who can write the Report?

7.97. In order to ensure the Report is of an appropriate standard, the Regulations require the Report to be completed by a 'competent person'.

7.98. At present, mindful of the emerging nature of heat metering, Ofgem has interpreted 'competent person' to mean a person that meets all of the following criteria:

1. An experienced and suitably qualified engineer (at least HND or equivalent in an engineering discipline from a recognised academic institution);
2. Has demonstrable experience and expertise in flow measurement and heat/steam measurement systems demonstrated by training and development records;
3. Has a relevant background (involved in energy, utilities, building services, heating system design, heating system operation & maintenance);
4. Covered by Professional Indemnity Insurance of at least £1m (through employer or directly);
5. Is unbiased and impartial.

7.99. Over time we will keep these criteria under review, and we may in future ask for further competence criteria to be met as the number and levels of qualification of people in the marketplace increases.

7.100. Prospective participants may be required to demonstrate to our satisfaction that the competent person is, and is seen to be, unbiased and impartial. We will consider each case on its facts but we consider that a competent person is unlikely to be regarded as unbiased and impartial where, for example:

- He or she is, or is an employee, of the owner or heat user;

- He or she is related to the owner or heat user;

[100] Regulations, Part 2, 36 (1)

- He or she is contractually obliged to author Reports exclusively for a given owner;

- The submission of the Report could have a material impact on a significant portion of his or her income.

7.101. For avoidance of doubt, this would allow the designer or meter installer to complete the Report, where they were in a normal arms-length commercial relationship with the applicant, and the bullet points listed above did not apply.

7.102. As with the 'competent person' criteria, over time we will keep under review the above examples of persons we would consider unlikely to be regarded as unbiased and impartial.

7.103. We recognise that some large organisations intending to apply routinely for RHI may hope to use in-house expertise to complete reports. We anticipate that schemes will emerge within industry that will certify that a person is appropriately qualified, and that they are carrying out their work in a professional and independent manner. Such a scheme would be expected to carry out regular audits of members' activities. Where such schemes emerge and we are satisfied that the certification requirements meet our needs, we will be minded to accept certification under these schemes as evidence of both competence and independence – including where the person is an employee of the RHI applicant.

7.104. The competent person producing the Report must undertake a visit to the installation and complete the Report. Where this Report is required, applicants are responsible for ensuring it is carried out by a competent person who meets the criteria set out above. Trade bodies should be able to provide further advice if required.

What should the Report cover?

7.105. In order to ensure that all Reports are consistent and provide the information we require to confirm metering arrangements are appropriate for the RHI, we have developed a Report template. This template is available on the Ofgem RHI website.[101] The competent person is required to follow this template as closely as possible and input one of the acceptable responses for each question, except in the comment boxes where they can comment freely.

7.106. The Report will cover the installation's metering arrangements for RHI purposes, including:

- whether meters and sensors are correctly positioned

[101] www.ofgem.gov.uk/RHI

- confirming that where any steam traps or related devices regarded as eligible for metering purposes are observed, there is no evidence that these are inappropriate to the system, inadequately maintained or inappropriately vented

- whether meters and sensors are installed in accordance with the manufacturer's instructions and, where relevant, any installation requirements required as part of the MID EC-type or design examination certificate or other EEC, EN 1434 or OIML testing certificates where appropriate

- whether meters and sensors meet the technical requirements set out elsewhere in this Chapter

- whether the system is configured so that any significant heat losses are accounted for by the meter and sensor positioning

- whether the schematic diagram is an accurate representation of the installation and the heating system of which it forms part.

7.107. The competent person must sign a declaration, confirming that they meet the competency criteria and that the information provided in the Report is accurate to the best of his or her knowledge.

What happens if Ofgem is not satisfied with the Report?

7.108. In order for the installation to be accredited to the RHI, those installations requiring a Report must have it satisfactorily completed and provided to Ofgem. If we are not satisfied with all or any portion of a Report, we will explain our concern to the applicant directly. For example, the Report should be completed on the template provided. If it is not, we will notify the applicant that the Report will not be reviewed until it is provided on the template. It is the applicant's responsibility to resolve any problems with the Report and resubmit a new or amended Report as appropriate. This may require the applicant to obtain further verification and sign off from the competent person who completed the initial Report.

8. Registration for biomethane producers

Chapter Summary

This Chapter sets out the registration requirements for producers of biomethane.

Biomethane as a developing technology

8.1. As few biomethane facilities currently operate within the UK, the technology and regulatory framework around biomethane production is still developing. We will therefore seek to introduce more detailed guidance in this area as the sector develops.

8.2. Here we outline how biomethane producers could demonstrate that they meet the eligibility criteria in the Regulations. We will review all applications against the legislative requirements.

8.3. Due to the developing nature of this technology, we advise developers to contact us early in the process for informal guidance on how legislative requirements can be met.

Existing regulatory framework

8.4. There is an existing regulatory framework relating to the injection of gas onto the gas network. For example, the Health and Safety Executive regulate the health and safety aspects of the entry of gas on to the network. Ofgem also has a role as the network regulator. All of these regulatory requirements should be adhered to irrespective of any application for registration under the RHI. Registration under the RHI should not be regarded as verifying compliance with any other piece of legislation.

8.5. DECC has produced a guidance document[102] for those interested in producing biomethane for entry on to the network. The document outlines the main legal, technical and regulatory requirements specific to the gas market in Great Britain. This will help producers of biogas, who may not have considered injecting it into the gas grid, to make an informed choice between the various marketing options.

Biomethane registration eligibility

8.6. Biomethane producers are treated differently to other participants in the RHI. This is because the Government has decided that the regulations and

102 http://www.decc.gov.uk/en/content/cms/meeting_energy/markets/gas_markets/nonconvention/nonconvention.aspx

standards currently in place for biomethane injection are sufficient to ensure that the RHI requirements are met, so no further RHI-specific accreditation standards are necessary. As a result, the Regulations describe the process for biomethane producers as 'registration' rather than accreditation.

8.7. Biomethane is defined in the Energy Act 2008 as 'biogas which is suitable for conveyance through pipes to premises in accordance with a licence under section 7 of the Gas Act 1986 (c.44)(gas transport licence)'.

8.8. As biogas is derived from biomass, we therefore need assurance at the registration stage that the biogas is indeed from biomass and not some other source. This may include, for example, a description of where the feedstocks came from and what processes the feedstocks have gone through.

8.9. For the gas to be considered 'suitable for conveyance' (or transported in accordance with a gas transporter's licence), it will have to meet the health and safety criteria (as defined in the transporter's Safety Case), regulated by the Health and Safety Executive, and any consumer protection measures that have been agreed by our Networks Team and/ or industry (e.g. as laid out in the Uniform Network Code).

8.10. We will therefore require documentation from the participant to demonstrate that the biomethane produced meets, or is expected to meet, all of the Health and Safety Executive requirements on gas safety. We will also require, where appropriate, evidence that any consumer protection conditions (e.g. relating to the gross calorific value (GCV) of the gas) have been met, in order for us to verify that the biomethane produced may be considered 'suitable for conveyance'.

8.11. There is a point at which biogas (which itself is the gas formed by the conversion of biomass) becomes biomethane under the Regulations. This point is when the biogas has met all of the conditions required to be 'suitable for conveyance'. For example, biomethane production may involve adding propane to the biogas in order to alter its GCV or odorising or pressurising the biogas before it is suitable for conveyance. We therefore consider that, where more than one entity is involved in producing the biomethane from biogas (or, ultimately, from biomass), the entity which bears the cost of carrying out the final production process(es) necessary to bring the biogas within the definition of biomethane under the Regulations is to be regarded as the 'producer' of that biomethane for RHI purposes. For example, where a biogas producer contracts with third parties to 'upgrade' the gas to a form suitable for conveyance, it would be the biogas producer that was the biomethane producer for the purposes of the RHI.

8.12. The Regulations[103] state that biomethane producers will need to provide 'details of the process by which the applicant proposes to produce biomethane and arrange for its injection'. This is to determine that the party is the

[103] Regulations, Part 3, Regulation 25(2)(c)

producer of the biomethane, and has arranged access for its conveyance through pipes.

8.13. Further documentation we will therefore ask for at the registration stage to accompany the application for registration is:

- a schematic diagram showing the process of biomethane production from the biogas plant(s), and the point of entry on to the network, and
- extracts of contracts and the Network Entry Agreement with relevant third parties relating to the agreement to convey the gas on to the pipeline network.

Assurance

8.14. In order to help ensure compliance with the scheme, we may periodically require participants to provide an independent, third party verification of their biomethane production, to confirm that the information provided to Ofgem is correct and that the biomethane has come from renewable sources.

How to register

8.15. As for all other prospective RHI participants, biomethane producers should apply to register as a participant under the RHI either through the Ofgem RHI website or via a paper application for registration. We do not encourage you to apply using a paper application, as this may take longer for us to process.

8.16. Please note that you are only able to apply for registration once the scheme is open for applications, currently expected to be before the end of 2011.

8.17. We cannot register an applicant if a grant from public funds has been paid or will be paid in respect of any of the equipment used to produce the biomethane for which he wishes to receive payments.

8.18. A grant from "public funds" can be a grant made by a public authority or by a person who is not a public authority but who is distributing funds on behalf of a public authority. Our consideration of whether or not a grant has been made from "public funds" will include grants from Europe, central or devolved governments and public authorities at regional or local level.

8.19. Ofgem will take a commonsense approach to determining what constitutes a "public authority".

8.20. Ofgem will interpret the 'equipment used to produce the biomethane' in accordance with Table 3 in the 'What is an Installation?' section above.

8.21. During the registration process, prospective participants will be asked if public funds have been or will be received in respect of any of the equipment used to produce biomethane. If you declare that a grant has been, or will be, received

(whether or not you consider the grant to be for any equipment used to produce biomethane) we may contact you for further information.

8.22. Participants have an ongoing obligation to notify us if any of the information provided in support of their application for registration was incorrect. This includes information relating to the receipt of public funding.

8.23. If we become aware at a later date that the information provided at registration in relation to grants was incorrect, we will consider taking enforcement action against the participant. Where we find that incorrect information was provided intentionally with the purpose of defrauding the scheme, we will refer the matter to the appropriate authorities. Please see Volume Two, Chapter Ten of this Guidance for further information on our approach to non-compliance within the scheme.

8.24. We also cannot register an applicant if it would mean RHI support being paid to more than one participant for the same biomethane.

8.25. It will be a condition of registration that you must tell us within 28 days of any change to your circumstances which may affect your eligibility. You may contact us with this information, or, depending on the information that has changed, amend your details in your online account. If the new information you supply affects your eligibility to receive RHI payments we shall notify you and advise you as to what we intend to do in the circumstances.

8.26. The date of registration for a producer of biomethane means the first day falling on or after the date of receipt by Ofgem of the application which Ofgem is satisfied is complete with all required information included. Assuming that you meet the eligibility criteria of the RHI for biomethane producers, then the registration date for a postal application would be the date that we received your completed, signed application.

8.27. Once you are a participant in the scheme, you are able to receive support. We will send you a statement of eligibility which will include the following:

- the date of registration
- the applicable tariff rate for the biomethane injected
- the process and timing for providing energy measurement data
- details of the frequency and timetable for payments
- the tariff lifetime and the tariff end date for the tariff payments
- the terms and conditions for your ongoing participation in the scheme.

Fuel measurement and sampling questionnaire

8.28. Participants will be asked to complete a fuel measurement and sampling (FMS) questionnaire to inform Ofgem of how it will calculate the renewable proportion of the gas that is injected, what meters are to be used at the facility and how the GCV and volume are to be measured accurately for the relevant quarterly period. For further information on the FMS questionnaire, please see the relevant section in Chapter Four, 'Ongoing fuel eligibility requirements', in Volume Two of this Guidance.

8.29. The propane measurement approach is also outlined in Chapter Nine, Volume Two of this Guidance.

8.30. We will agree an appropriate assurance regime with biomethane producers to allow us to verify that the procedures agreed between us and the biomethane producers have been followed.

Metering volume

8.31. In your FMS questionnaire, you will be asked to provide information on the volume meters used at the injection point to measure the volume of gas entering the network. This information will include how many and what meters are being used at the injection point, and what the opening meter readings are on the day the application for registration is made. This may be included in the contractual or Network Entry Agreement information detailed above.

8.32. Once registered, participants should use the volume meters that are used for the balancing and settlement and other industry transaction purposes for measurement of volume in the RHI. These are detailed in the Uniform Network Code.[104]

Measuring GCV

8.33. The equipment used for measuring the GCV of the gas for regulatory purposes (which our Smarter Grids and Governance Team need to agree and approve for non-RHI purposes) should be used for calculating the weighted average GCV of the gas over the quarterly period for RHI purposes. This would be adjusted to standard temperature and pressure.

8.34. Where biomethane producers propose to blend their biomethane with natural gas prior to injection, we will review the measurement requirements outlined in the Network Entry Agreement to ensure that the measurement will be accurate.

8.35. Biomethane producers must deduct any heat used in the production of the biogas at the plant (where this has come from an external source, such as

[104] http://www.gasgovernance.co.uk/UNC

renewable or fossil fuel gas). Further details of this can be found in Volume Two of this Guidance.

Appendices

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Appendix 1 – Meter placement examples

1.1. This Appendix provides examples of how the meter placement requirements outlined in Chapter Seven of this volume could apply in practice. These are illustrative examples only. Meter configurations which divert from the arrangements described below may be permissible, but participants could need to provide technical justification of how the requirements in Chapter Seven are met by their alternative approach.

1.2. The information in this Appendix is additional information to that provided in Chapter Seven; the eligibility and other metering requirements set out in that Chapter still apply. When we refer to 'heat' and 'steam' meters below, we assume that they are meters that comply with all the relevant technical requirements set out in Chapter Seven.

1.3. Further information about when and how to provide periodic data, i.e. meter readings and heat output figures, to us can be found in Chapter Three of Volume Two of this Guidance. Information about how periodic data is used to calculate payments is in Chapter Five of Volume Two of this Guidance.

1.4. In order to provide clarity on the meter positioning principles illustrated in this Chapter, the diagrams displayed here are inherently 'simplified schematics', and do not illustrate all of the detailed specifications necessary to meet the requirements for a schematic submitted as part of an RHI application. To give an indication of how some of the detail required for the schematic submitted for an application might be depicted, Example 8 (decentralised ineligible plant located on secondary heating circuits in separate buildings) has been annotated provided with a key, a table of meter specifications, and with buildings boundaries labelled and annotated.

1.5. The examples provided here show possible meter arrangements where:

1. An installation is classed as 'simple' for RHI metering purposes
2. An installation is classed as 'complex' for RHI metering purposes and the heat transfer medium is water
3. An installation is classed as 'complex' for RHI metering purposes and the heat transfer medium is steam
4. Multiple plants comprise one installation and share a single meter
5. Two eligible installations are connected in series (in this case, where one installation pre-heats the water that enters a second installation)

6. Hot water in a common storage tank is heated by both an ineligible plant (in this example, an electrical immersion heater) and an eligible installation

7. Reversible heat pumps generate both heating and cooling

8. Decentralised ineligible plant (in this example, fossil fuel boilers) are located on secondary heating circuits in separate buildings.

Example 1: Possible meter arrangement for an installation that is classed as 'simple' for RHI metering purposes

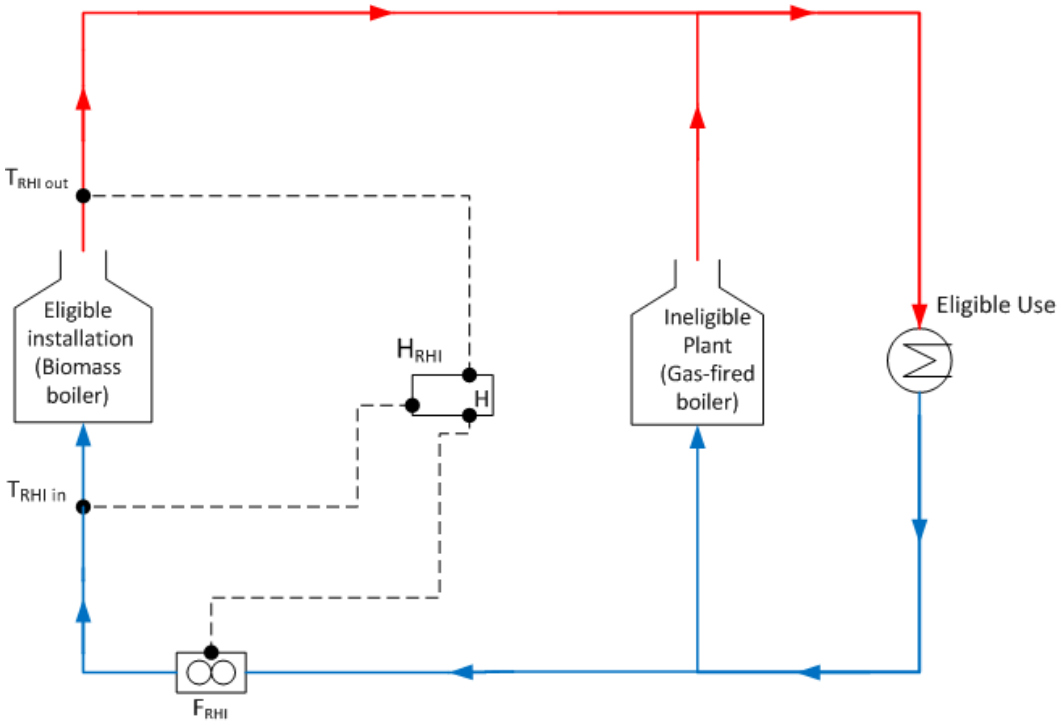
1.6. Figure 1.1 shows an example where a biomass boiler (eligible installation) and a back-up gas-fired boiler (ineligible plant) supply hot water to a single office building, which is then used for space heating purposes within that building only.

1.7. This installation is classed as 'simple' for RHI metering purposes because it is not a CHP system, does not deliver heat by steam and the heating system delivers heat only to eligible purposes within one building.

1.8. In this case, one heat meter, H_{RHI}, is required to measure the heat generated by the eligible installation, as shown below. This takes information from the temperature sensors $T_{RHI\ out}$ and $T_{RHI\ in}$ and the flow meter F_{RHI}.

1.9. The placement of the temperature sensors ensures that heat generated by the backup gas-fired boiler (ineligible plant) is not included in the meter reading used for RHI payment purposes.

1.10. The participant would need to supply the cumulative meter reading in kWhth as shown by the calculator/digital integrator to us in accordance with the timings and process set out in Chapter Three, 'Provision of periodic data – heat output data and supporting meter readings', of Volume Two of this Guidance. The participant would also need to use the cumulative meter readings to calculate the amount of renewable heat generated by the installation in the relevant period.



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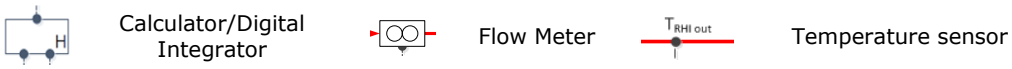


Figure 1.1: Illustration of eligible metering arrangement for a simple installation. The flow meter can be placed in either the flow or return pipe (red lines denote the hot 'flow' pipes, and blue lines indicate the cool 'return' pipes).

Example 2: Possible meter arrangement for an installation that is classed as 'complex' for RHI metering purposes and the heat transfer medium is water

1.11. Figure 1.2 shows a heating system where a biomass boiler (eligible installation) and a gas-fired boiler (ineligible plant) supply heat to a common heating system. The heating system supplies heat that is used for both an eligible purpose and an ineligible purpose. Further information about what constitutes an eligible/ineligible purpose can be found in Chapter Six, 'Heat uses', of this volume.

1.12. In this case, although the installation is not a CHP system and does not deliver heat by steam, heat is used for an ineligible purpose as well as an eligible purpose. This means that the installation is classed as 'complex' for RHI metering purposes.

1.13. Following the approach for complex metering outlined in Chapter Seven, three heat meters are required for RHI purposes. These need to be located to measure:

- the heat generated by the biomass boiler (eligible installation) – Meter H_{RHI}
- the total heat generated by both the biomass boiler and the gas-fired boiler – Meter H_{total}
- the heat used for eligible purposes – Meter $H_{eligible}$

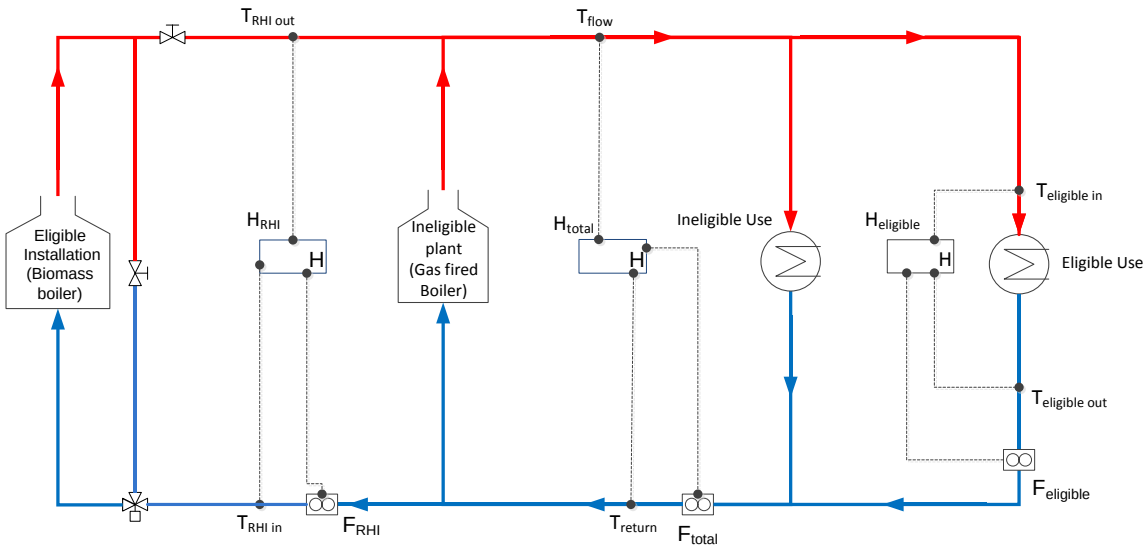
1.14. Figure 1.2 shows a possible meter arrangement. In this case, a participant would need to supply the cumulative meter reading in kWhth as shown by the calculator/digital integrator for each meter to us in accordance with the timings and process set out in Chapter Three of Volume Two of this Guidance.

1.15. This example schematic includes an illustration of the loop provided to recirculate heat directly to the boiler while bypassing the main heating circuit (sometimes referred to as the 'back end loop'). In line with Chapter Seven of Volume One of this Guidance, the meter H_{RHI} has been located after the back end loop.

1.16. Denoting the cumulative meter reading at the start of a period by (1) and that at the end of the relevant period by (2), the participant would also need to use the cumulative meter readings to calculate (and provide us with):

- the total amount of renewable heat in kWhth generated by the installation during the relevant period = $H_{RHI}(2) - H_{RHI}(1)$,
- the total amount of heat from the heating system that was used for eligible purposes during the relevant period in kWhth = $H_{eligible}(2) – H_{eligible}(1)$, and
- the total amount of heat supplied to the heating system by both the eligible installation and the ineligible plant during the relevant period in kWhth = $H_{total}(2) – H_{total}(1)$.

1.17. Further information about how these figures are used to determine the payment amount for the relevant period can be found in Chapter Five of Volume Two of this Guidance.



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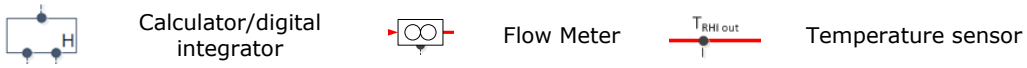


Figure 1.2: Illustration of possible metering arrangement for a complex installation where the heat transfer medium is a liquid. Note that the flow meter can be placed in either the flow or return pipe. Red lines denote the hot flow pipes, and blue lines indicate the cool return pipes.

Example 3: Possible meter arrangement for an installation that is classed as 'complex' for RHI metering purposes and the heat transfer medium is steam

1.18. Figure 1.3 shows an example where a biomass boiler and a back-up gas-fired boiler deliver steam to both an eligible purpose (carrying out a process) and an ineligible purpose (generating electricity). We assume here that condensate is returned from the eligible purpose in the form of hot water. The installation is classed as 'complex' for RHI metering purposes because the heat transfer medium is steam (and, in addition, heat is used for an ineligible purpose).

1.19. Steam generated by the installation is directed for feedwater treatment prior to the eligible use. This is classed as process internal heat, and is therefore not eligible for RHI support. For further information about process internal heat, please see Chapter Six of this volume.

1.20. In this example, the following meters would be required:

- Steam meter located to measure the heat generated in the form of steam by the biomass boiler. The flow meter must be placed in the flow pipe, along with the pressure and temperature sensors. This is meter S_{RHI} in the figure; this meter references the flow meter F_{RHI}, the pressure sensor P_{steam} and the temperature sensor T_{total} (as well as the datum temperature T_{datum}).

- Steam meter located to measure the heat generated in the form of steam by both the biomass boiler and the gas-fired boiler. This is meter S_{total} in the figure, which references the flow meter F_{total}, the pressure sensor P_{steam} and the temperature sensor T_{total} (as well as the datum temperature T_{datum}).

- Steam meter located to measure the heat in the form of steam delivered to the process (i.e. eligible purpose); this should not include any steam returned to the installation. This is meter $S_{eligible}$ in the figure, which references the flow meter $F_{eligible}$, the pressure sensor $P_{eligible}$ and the temperature sensor $T_{eligible}$ (as well as the datum temperature T_{datum}).

- Heat meter located after the process (i.e. eligible purpose) to measure the energy in the condensate returned from the process. In this case, a temperature sensor must be located in the return pipe from the process, and the other temperature used in the calculation made by the calculator/digital integrator should be the datum temperature used by the steam meters, which will typically be 0 degrees. The flow meter must be positioned prior to the condensate entering any common pipework or vessels. This is meter $H_{condensate}$ in the figure, which references the flow meter $F_{eligible}$ condensate, and the temperature sensor $T_{condensate}$ (as well as the datum temperature T_{datum}).

1.21. In this case, if lower grade steam had been returned from the eligible purpose (rather than hot water) the heat meter at point 4 above would be replaced by another steam meter. This would require a separate pressure and temperature sensor to be added in the return pipe leaving the eligible purpose.

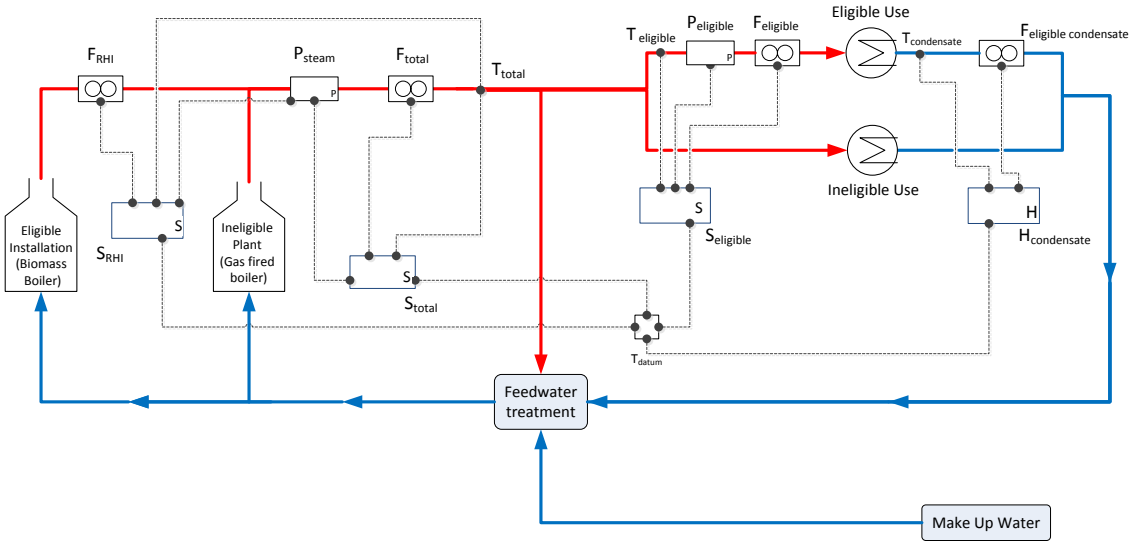
1.22. The steam meters S_{RHI} and S_{total} share a pressure and temperature sensor. We also assume that the feedwater temperature is the same for both the eligible installation and the ineligible plant, so that measurement of the energy contained in the feedwater is not required.

1.23. The participant would need to provide cumulative meter readings in kWhth as shown by the calculator/digital integrator for each meter to us in accordance with the timings and process set out in Chapter Three of Volume Two of this Guidance. Denoting the cumulative meter reading at the start of a period by (1) and that at the end of the relevant period by (2), the participant would also need to use the cumulative meter readings to calculate:

- the total amount of renewable heat generated by the installation during the relevant period in kWhth = $S_{RHI}(2) - S_{RHI}(1)$;

- the total amount of heat from the heating system that was used for eligible purposes during the relevant period in kWhth = $S_{eligible}(2) - H_{condensate}(2) - [S_{eligible}(1) - H_{condensate}(1)]$;

- the total amount of heat supplied to the heating system by both the eligible installation and the ineligible plant during the relevant period in kWhth = $S_{total}(2) - S_{total}(1)$.



Key

Steam meter calculator/digital integrator

Heat meter calculator/digital integrator

Flow meter

Steam pressure sensor

Temperature sensor

Figure 1.3: Illustration of possible steam meter (and component) placement for a heating system where an eligible biomass boiler and a gas-fired boiler deliver steam that is used for both an eligible and ineligible purpose. Condensate in the form of hot water is returned from the eligible purpose.

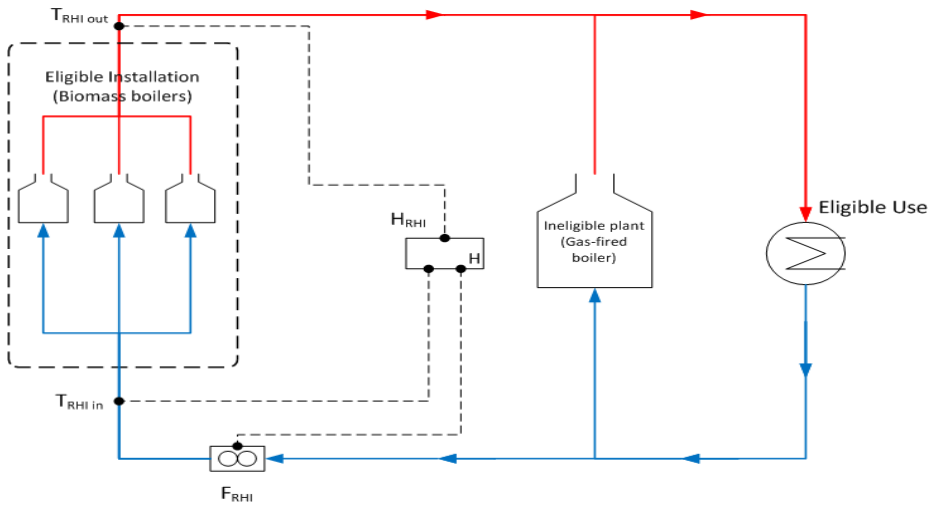
Example 4: Multiple plants comprising a single installation share a meter

1.24. Figure 1.4 shows an eligible installation comprised of three RHI-eligible biomass boilers supplying heat to a single heating system. In this example, the biomass boilers are considered as component plants which together make up one installation whose capacity is the sum of each individual boiler's capacity for RHI tariff purposes. They share the same tariff start and end dates.

1.25. The boilers are not CHP systems, and supply heat in the form of hot water for space heating in one office block. This is therefore a **simple** installation for RHI metering purposes, and so only the heat generated by the eligible installation needs to be measured. In this case, it is possible for all three boilers to be metered using one meter, H_{RHI}, providing that meter is placed:

- before the heat from the gas boiler enters the system, **and**
- before any heat is supplied from the system to the eligible use (space heating in this case).

1.26. As in Example 1, the participant would need to supply the cumulative meter reading in kWhth as shown by the calculator/digital integrator to us in accordance with the timings and process set out in Chapter Three of Volume Two of this Guidance. The participant would also need to use the cumulative meter readings to calculate the amount of renewable heat in kWhth generated by the installation in the relevant period.



Key

Calculator/Digital Integrator

Flow Meter

Temperature sensor

Figure 1.4: Illustrative example of a situation where a shared meter would be permitted. This installation would be classed as 'simple' for RHI metering purposes.

Example 5: Two eligible installations in series

1.27. In this example, a heat pump (eligible installation 1) pre-heats water delivered to a biomass boiler (eligible installation 2). Apart from this, this is the same system configuration as the heating system shown in Figure 1.2. Note that the owner or owners of the installation must apply for accreditation under separate RHI applications, and separate accreditation and ongoing obligations will be associated with each installation. Note that one implication of this is that separate schematic diagrams, appropriately annotated for each installation and indicating the plant for which RHI payments are being sought, should be submitted.

1.28. Both the heat pump and the biomass boiler are **complex** installations for RHI metering purposes, as the heating system of which they form part delivers heat to both an eligible purpose and an ineligible purpose. In this case, the following meters are required:

1. A heat meter to measure the heat generated by **each** eligible installation. In this example, a shared meter is not allowed because the installations use different energy sources and will therefore have different tariff rates. However, heat meters may reference common components to provide them with the required information for their heat calculations. In this example, the heat meters determining the heat generated by the biomass boiler and the heat pump both reference the temperature sensor '$T_{RHI\ interim}$' and the flow meter 'F_{RHI}'.

   The hot water generated by the heat pump is measured by a heat meter (H_{HP}), which uses the flow meter F_{RHI} and temperature sensors $T_{RHI\ in}$ and $T_{RHI\ interim}$ located in the heat pump's input pipe and in the output pipe **prior** to the hot water entering the biomass boiler respectively.

   The hot water generated by the biomass boiler is also measured by a heat meter (H_{BB}), which uses the flow meter F_{RHI} and the temperature sensors $T_{RHI\ interim}$ and $T_{RHI\ out}$ located in the biomass boiler's input pipe **after** the heat pump, and in the biomass boiler's output pipe **prior** to the hot water generated by the gas-fired boiler entering the heating system respectively.

2. A heat meter to measure the total heat generated by **both** the biomass boiler and the gas-fired boiler, H_{total}.

3. A heat meter to measure the heat used for eligible purposes, $H_{eligible}$.

1.29. The participant would need to supply the cumulative meter reading in kWhth as shown by the calculator/digital integrator for each meter to us **separately** for each eligible installation (i.e. one set of periodic data would be submitted for the heat pump, and a separate set for the biomass boiler). For each installation, this

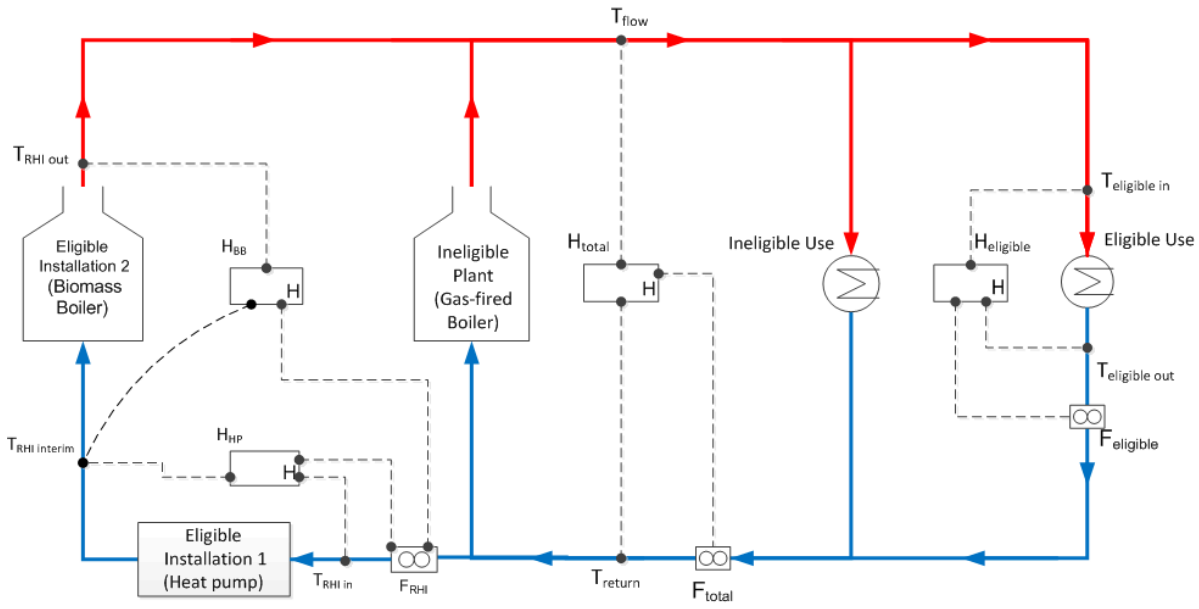
information must be submitted in accordance with the timings and process set out in Chapter Three of Volume Two of this Guidance.

1.30. Denoting the cumulative meter reading at the start of a period by (1) and that at the end of the relevant period by (2), and assuming that the periods over which data is submitted are the same for both installations, the participant would need to use the cumulative meter readings to calculate:

- the total amount of renewable heat generated by that installation during the relevant period = $H_{HP}(2) - H_{HP}(1)$ for the heat pump or $H_{BB}(2) - H_{BB}(1)$ for the biomass boiler;

- the total amount of heat from the heating system that was used for eligible purposes during the relevant period = $H_{eligible}(2)-H_{eligible}(1)$, and

- the total amount of heat supplied to the heating system by both the eligible installations and the ineligible plant during the relevant period = $H_{total}(2) - H_{total}(1)$.



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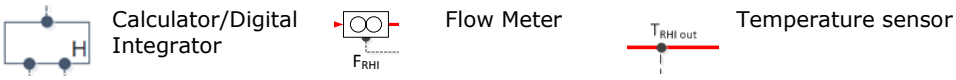


Figure 1.5: illustration of permissible heat meter locations for a system where a heat pump (eligible installation 1) pre-heats water delivered to a biomass boiler (eligible installation 2).

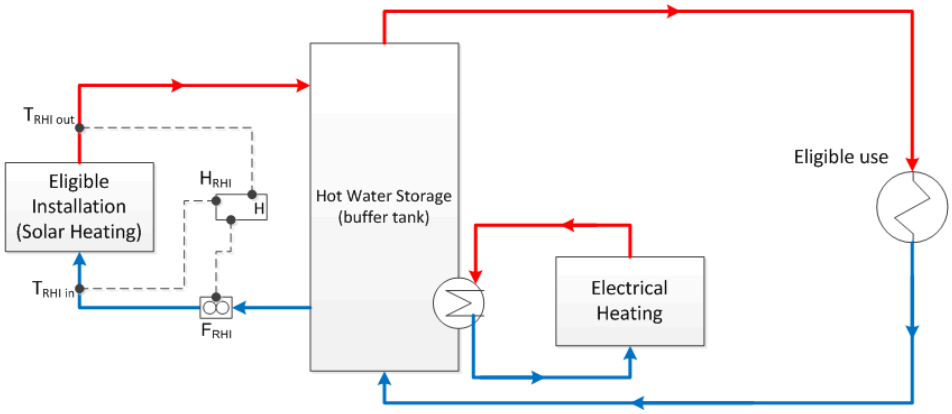
Example 6: Hot water in a common storage tank is heated by both an ineligible plant and an eligible installation

1.31. It is common, particularly in systems where hot water is generated by solar thermal installations and heat pumps, for hot water storage tanks to have the facility for direct heating from an electrical immersion heater.

1.32. This is permissible for the RHI, providing no heat generated by the immersion heater is included in meter readings provided to Ofgem for RHI purposes. This means that temperature sensors must be placed to measure hot water generated **prior** to entering the storage tank where the hot water is mixed with water heated by the immersion heater. This may mean that temperature sensors $T_{RHI\ in}$ and $T_{RHI\ out}$ must be placed on the flow and return pipes from the eligible installation.

1.33. A permissible configuration is shown in Figure 1.6 below. This installation is classed as simple for RHI metering purposes, as heat is supplied by hot water to two eligible uses (hot water and space heating) in a single school building (and the installation is not a CHP system and does not deliver heat by steam). Therefore, one heat meter, H_{RHI}, is required to measure the hot water generated by the solar thermal installation.

1.34. If the flow and return pipes from the solar thermal installation contain an ethylene glycol/water mixture or any other liquid, the Regulations require that the meter is appropriately calibrated for the properties of that liquid.



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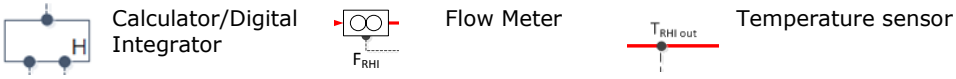


Figure 1.6: Illustration of permissible meter placements for a simple solar installation that feeds a hot water tank which is also supplied with heat by an electrical immersion heater.

Example 7: A reversible heat pump that generates both heating and cooling

1.35. Many heat pumps can operate in reverse to generate cooling in the warmer months. Such heat pumps are eligible for the RHI, but must be metered such that it is possible to calculate the cooling and heating generated separately. Only the heat generated by the heat pumps can be included in the meter readings submitted to Ofgem for RHI payment purposes.

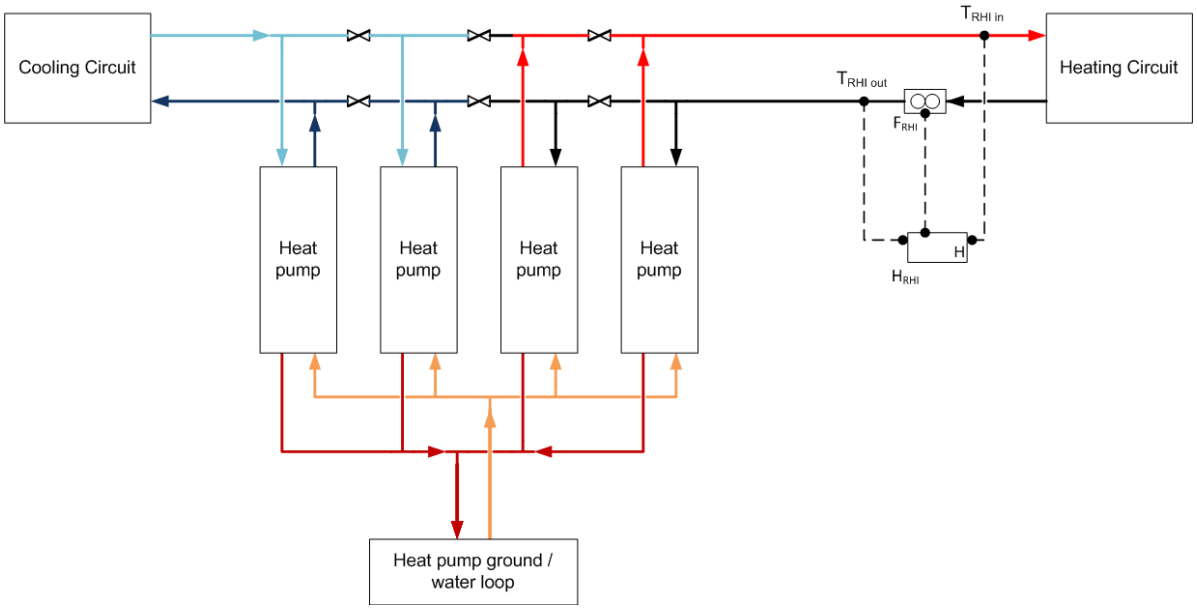
1.36. Some heat pump installations will operate on a 'sliding header'[105], as shown in Figure 1.7 below.

1.37. In this example, all heat is provided for hot water and space heating in one building, and so the installation is classed as simple for RHI metering purposes. The installation is comprised of four reversible ground source heat pumps which all have the same tariff start and end dates. Therefore, they may use a shared meter to measure the total heat generated by the installation, and so only one heat meter is required.

1.38. The flow meter can be placed in either the flow or return pipe. However, in this case the temperature sensors must be located in the flow and return pipes for the heating header to ensure that only heat that is eligible for the RHI is included in the meter readings provided for Ofgem for RHI payment purposes. If all the heat pumps in the installation are generating cooling, there should be no flow in the heating circuit as no eligible renewable heat is being generated.

1.39. Only heat recovered from the ground loops is eligible for RHI support. Any heat recovered from the cooling system and supplied to the heating system is ineligible for RHI purposes. This is because extracting heat from the cooling system is an efficiency measure; it is not heat from a renewable source. Any such heat must therefore be excluded from meter readings provided for RHI purposes, and meters must be positioned accordingly.

[105] In a system with both cold and hot headers (i.e. pipes into which the heat pumps can feed either cold or hot water), the sliding header is what determines which header the heat from the heat pump is feeding in to. The location of the header will change depending on the amount of heating vs. cooling that is required.



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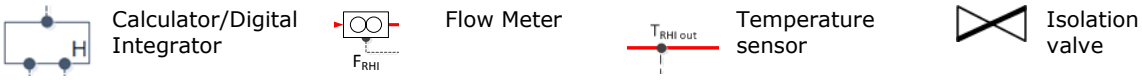


Figure 1.7: Illustration of permissible meter placement for a simple installation where four heat pumps deliver both heating and cooling on a sliding header. In this case, two heat pumps are supplying the heating circuit, and the other two are supplying the cooling circuit.

Example 8: Possible meter arrangement for an installation with decentralised ineligible plant (in this example, fossil fuel boilers) located on secondary heating circuits in separate buildings

1.40. Figure 1.8 shows a heating system where a biomass boiler (eligible installation) supplies heat to two separate buildings. As heat is used in more than one building, the installation is classed as 'complex' for RHI metering purposes.

1.41. In this case, the heating system supplies heat that is used for space heating each building, such that all heat use within each building is for eligible purposes. Further information about what constitutes an eligible/ineligible purpose can be found in Chapter Six, 'Heat uses', of this Volume.

1.42. Each building has its own heat exchanger taking heat from the common heating circuit supplied by the installation, and a gas-fired boiler (ineligible plant) used as a back-up boiler and to provide top-up heat as required. In this case, although the installation is not a CHP system and does not deliver heat by steam, heat is used in more than one building. This means that the installation is classed as 'complex' for RHI metering purposes.

1.43. Section 'Alternative approach where separate heating circuits are fed by a common distribution system' in Chapter Seven of this Volume may apply in a situation such as this, where separate heating circuits are fed by a common distribution system. We may consider proposals to measure the eligible heat delivered to this building using a single meter, where:

- Heat is supplied to a building via a heat exchanger, such that the building has a heat distribution system separate to the main distribution loop served by an installation; and

- There are no ineligible uses within the building; and

- The meter is capable of capturing only heat used for eligible purposes, i.e. it must not include any heat used for ineligible purposes; and

- It can be demonstrated that any heating plant(s) within the building make no contribution to providing heat for any use outside of the building which they serve.

1.44. In this case, the term in the tariff calculation formula for heat generated by all plants supplying heat to the same heating system of which the installation forms part, would not include heat generated by plants within this building. For more details on how payments are calculated, see Chapter Five of Volume Two of this Guidance.

1.45. Assuming the above conditions are met, three heat meters are required for RHI purposes. These need to be located to measure:

- the heat generated by the biomass boiler (eligible installation) – Meter H_{RHI}

- the total heat used for eligible purposes by the 'main building' – H_A

- the total heat used for eligible purposes by the 'outbuilding' – H_B

1.46. Figure 1.8 shows a possible meter arrangement. In this case, a participant would need to supply the cumulative meter reading in kWhth as shown by the calculator/digital integrator for each meter to us in accordance with the timings and process set out in Chapter Three of Volume Two of this Guidance.

1.47. Denoting the cumulative meter reading at the start of a period by (1) and that at the end of the relevant period by (2), the participant would also need to use the cumulative meter readings to calculate (and provide us with):

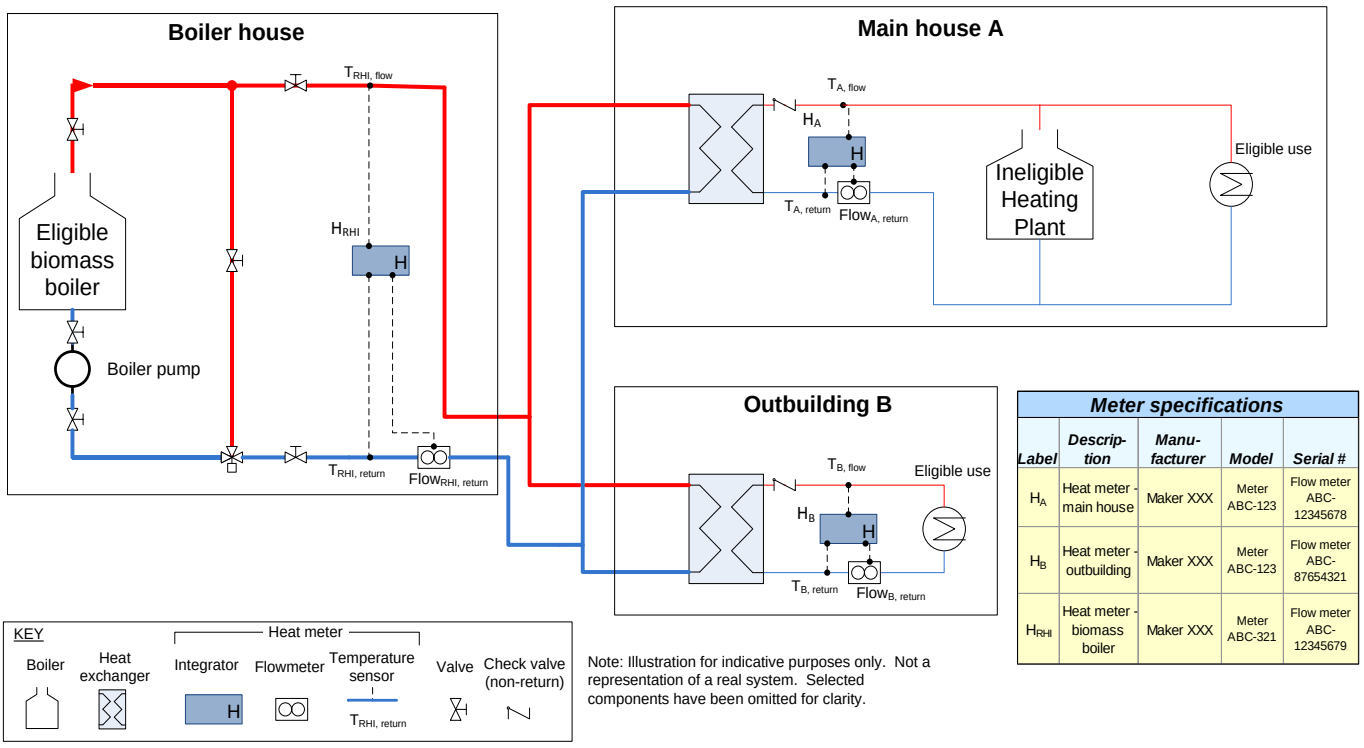
- the total amount of renewable heat in kWhth generated by the installation during the relevant period = $H_{RHI}(2) - H_{RHI}(1)$.

- the total amount of heat from the heating system that was used for eligible purposes during the relevant period in kWhth = ($H_A(2) - H_A(1)$) + ($H_B(2) - H_B(1)$), and

- the total amount of heat supplied to the heating system by both the eligible installation and the ineligible plant during the relevant period in kWhth = $H_{RHI}(2) - H_{RHI}(1)$.

1.48. Note that in this case, the total heat supplied to the system is equal to that supplied by the eligible installation, as there are no other plants supplying heat to the heating system. As these quantities are the same, the meter H_{RHI} will provide appropriate readings for both "heat generated by the RHI installation" and "total heat generated on the system" in the complex formula for payment. For more details on how payments are calculated, see Chapter Five of Volume Two of this Guidance. Note that although these quantities are the same value, and this may in general result in a simplification of the tariff payment formula, it will still be necessary to provide a meter reading in order to meet the ongoing obligations of the scheme.

1.49. Further information about how these figures are used to determine the payment amount for the relevant period can be found in Chapter Five of Volume Two of this Guidance.



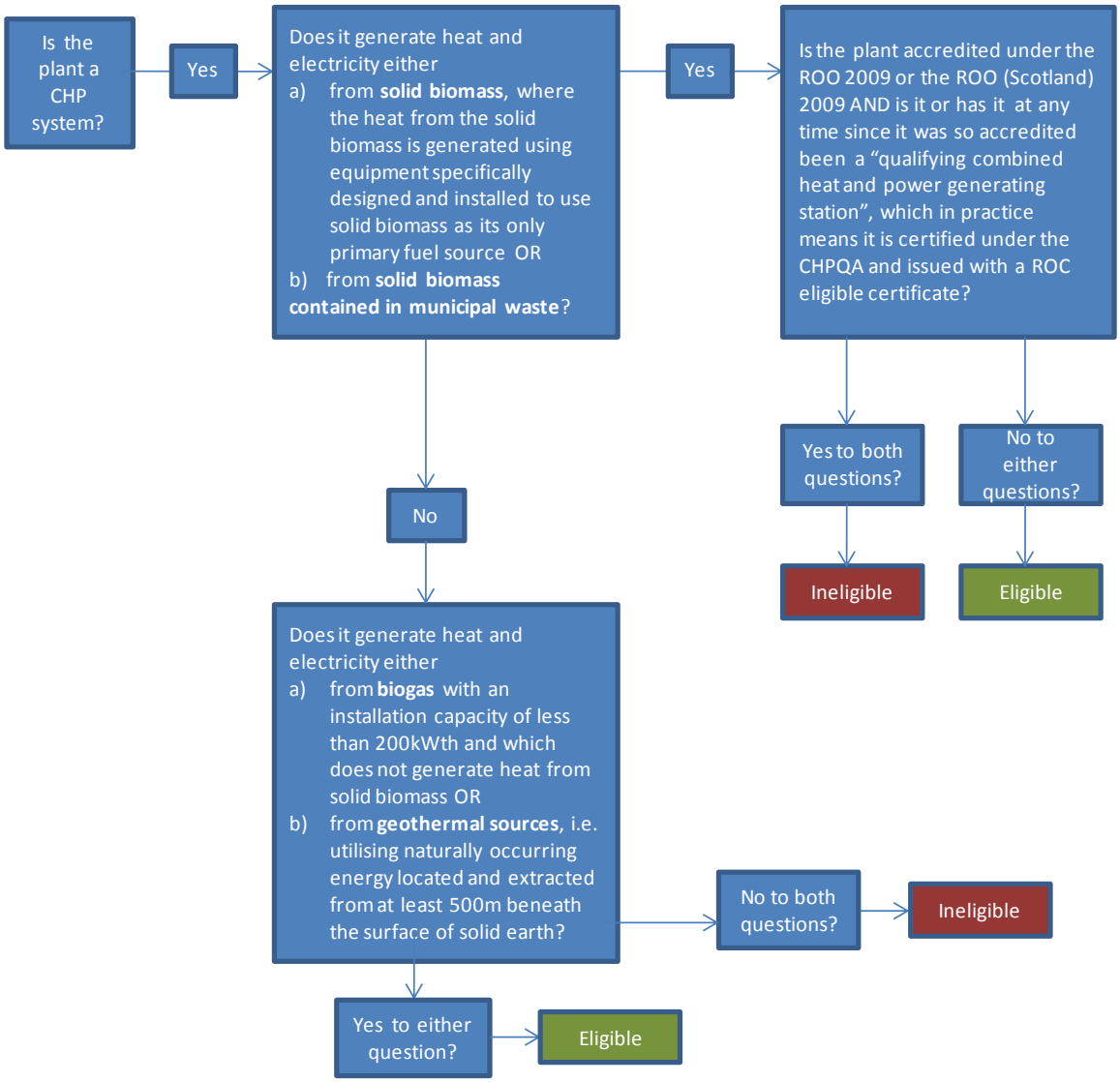
Meter specifications				
Label	Description	Manufacturer	Model	Serial #
H_A	Heat meter - main house	Maker XXX	Meter ABC-123	Flow meter ABC-12345678
H_B	Heat meter - outbuilding	Maker XXX	Meter ABC-123	Flow meter ABC-87654321
H_{RHI}	Heat meter - biomass boiler	Maker XXX	Meter ABC-321	Flow meter ABC-12345679

Figure 1.8: Illustration of possible metering arrangement for a complex installation where decentralised ineligible plants (in this example, fossil fuel boilers) are located

on secondary heating circuits in separate buildings. Note that the flow meter can be placed in either the flow or return pipe. Red lines denote the hot flow pipes, and blue lines indicate the cool return pipes. This schematic has been annotated with a key, a table of meter specifications, and building names/boundaries, as discussed in Section 1.4 of this Appendix.

Appendix 2 – How to determine whether your CHP system is RHI eligible

The figure below demonstrates how you can determine the eligibility of your CHP system.



Appendix 3 – Technologies under consideration for inclusion in phase two

As noted in Chapter Three, the table below discusses the technologies DECC have stated that they are considering for inclusion in phase two but are not currently eligible for the RHI.

Technologies under consideration for inclusion in the scheme in phase two	
Air source heat pumps	Air source heat pumps will not be supported from the outset. The Government has decided that more work is required to better understand the costs associated with the technology. Also, for air to air heat pumps, as described below (Direct air heating), the Government has not yet developed a means of measuring direct air heating, as they have for water and steam. The Government is investigating whether to extend eligibility for air to water source heat pumps in phase two.
Direct air heating	The Government has decided that technologies delivering renewable heat directly through hot/warm air will not be supported in the RHI from the outset. This means technologies such as ground or water source to air heat pumps; biomass kilns; furnaces; ovens and air heaters will not be able to claim the RHI. The Government is considering how these technologies could be included in the RHI in phase two.
Bioliquids	Bioliquids will not be eligible for support from the outset of the RHI. The Government has stated that before they can support bioliquids in the RHI, it will be necessary to put in place a co-ordinated approach so that the supply of liquid feedstocks into the heat market does not unduly impact on other important uses, including energy and non-energy uses. Sustainability criteria, as required under the Renewable Energy Directive, will also need to be developed before bioliquids can be supported under the RHI. An evaluation of the costs and benefits of the use of bioliquids in heat, electricity and transport is underway and this will inform the development of a co-ordinated approach to bioliquids. The Government is therefore considering supporting bioliquids in phase two.

Landfill gas	The Government is still working to consider the costs of biogas or biomethane injection from landfill gas. In many cases this concerns landfill gas sites which are already producing electricity, and would likely have lower costs of switching to heat or biomethane than other biogas options. The Government has decided it would therefore not be appropriate to include landfill gas within the general tariff for biomethane pending the outcome of their work on landfill gas.

Appendix 4 – List of Wastes that DEFRA has concluded are or are not classified as municipal waste: The complete list

As noted in Chapter Five of this Volume, there are two tables below that concern the List of Wastes. Table 1 shows examples of the categories DEFRA has concluded are classified as municipal waste and Table 2 shows examples of the categories DEFRA has concluded are not classified as municipal waste.

Table 1: Examples of the categories from the List of Wastes that DEFRA has concluded are classified as municipal waste (this list is not exhaustive)

Chapter of List of Wastes	**Codes from the List of Wastes classed as municipal waste**	**Examples of wastes classed as municipal waste (list not exhaustive)**
Chapter 20 – Municipal wastes (household waste and similar commercial, industrial and institutional waste) including separately collected fractions	All codes	• Paper and cardboard • Biodegradable kitchen and canteen waste • Glass • Textiles • Plastics • Metals • Garden and park waste
Chapter 19 – Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use	Code 19 05 - Wastes from aerobic treatment of solid wastes	• Non-composted fraction of municipal and similar wastes • Non-composted fraction of animal and vegetable waste
	Code 19 06 – Wastes from anaerobic treatment of waste	• Digestate from anaerobic treatment of municipal waste • Digestate from anaerobic treatment of animal and vegetable waste
	Code 19 12 – Wastes from	• Paper and cardboard

	the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified	• Ferrous metal • Wood • Combustible waste (refuse derived fuel)
Chapter 15 – Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	Code 15 01 01	• Paper and cardboard packaging
	Code 15 01 02	• Plastic packaging
	Codes 15 01 05 – 15 01 09	• Mixed packaging • Textile packaging

Table 2: Examples of the categories from the List of Wastes that DEFRA have concluded are not to be classed as municipal waste (this list is not exhaustive)

Example chapters and codes (list not exhaustive)	**Example codes not being classed as municipal waste**	**Examples of wastes not classed as municipal waste (list not exhaustive)**
Chapter 2 – Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	Code 02 01 – Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing	• Sludges from washing and cleaning • Wastes from forestry
Chapter 3 – Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard	Code 03 01 – Wastes from wood processing and the production of panels and furniture	• Sawdust, shavings, wood, particle board and veneer
Chapter 15 – Waste packaging; absorbents, wiping cloths, filter materials and	Code 15 01 03	• Wooden packaging

protective clothing not otherwise specified		
Chapter 17 – Construction and demolition wastes (including excavated soil from contaminated sites)	Code 17 01 – Concrete, bricks, tiles and ceramics	• Concrete • Bricks • Tiles and ceramics
Chapter 19 – Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use	Code 19 07 – landfill leachate	• Landfill leachate

Appendix 5 – Glossary of RHI terms

A

ACCREDITATION

In order to receive support under the RHI, an eligible installation will have to be accredited by Ofgem. Accreditation (which is defined in the Regulations) is the term that we use to denote admission by us of an applicant to the RHI once we determine that the installation meets the eligibility criteria of the scheme and that the application for accreditation is properly made.

ADDITIONAL RHI CAPACITY

Additional RHI capacity, which is defined in the Regulations, means a plant which is first commissioned after the date on which an RHI installation was first commissioned, uses the same source of energy and technology as the original plant and supplies heat to the same heating system.

ADDITIONAL PLANT

Additional plant means a heat generating plant which uses a different technology or source of energy to an existing accredited RHI installation but is connected to the same heating system as the accredited RHI installation.

ANCILLARY FOSSIL FUEL

Ancillary fossil fuel refers to the small amounts of fossil fuel necessary for the effective operation of the installation.

ANNUAL DECLARATION

The annual declaration is a confirmation that must be signed by the Authorised Signatory to confirm that the accredited RHI installation/registered biomethane producer has met the eligibility criteria and ongoing obligations of the scheme for the previous 12 months.

AUTHORISED SIGNATORY

An Authorised Signatory is a person who is authorised to open and use an account with the Ofgem RHI website or provide information by post, submit periodic data and complete the RHI annual declaration.

B

BIOENERGY

This term is used as shorthand for any of the following technologies: solid biomass, solid biomass from municipal waste, biogas, biomethane.

C

CHP

'CHP' is defined in the Regulations and refers to a Combined Heat and Power plant.

COMMISSIONED

This means, in relation to an eligible installation, that all tests required by industry standards for the installation to be able to deliver heat for the purpose for which it was installed have been completed. For a legal definition, please see the Regulations.

COMMON HEADER

This is the main pipe to which plants supply heat, and from which heat uses are supplied. A heating system may have multiple common headers.

COMPLEX INSTALLATION

A complex installation is any installation that is not considered simple.

F

FLOW PIPE

The pipe carrying the hot water flow leaving an installation or heat use is commonly referred to as the flow pipe.

FUEL MEASUREMENT AND SAMPLING (FMS)

The term 'fuel measurement and sampling' (FMS) refers to the way in which the renewable biomass proportions of input fuels are determined. By 'measurement', we mean determining the amount or quantity of a fuel (for example in tonnes or cubic meters). By 'sampling', we mean taking small sample amounts of fuel and testing them to determine specific properties such as their GCV.

I

INSTALLATION CAPACITY

The installation capacity is defined in the Regulations as the 'total installed peak heat output capacity of a plant' (which includes the 'total installed peak heat output capacity' of a single plant (installation) made up of two or more component plants).

K

KILOWATTS (kW)

A kilowatt is a measure of power i.e. the **rate** at which energy is transferred or converted. A kilowatt is equal to 1 kilojoule of energy transferred/converted each second.

KILOWATT-HOURS (kWh)

A kilowatt-hour is the measure of energy transferred or converted over a period of time. A kilowatt-hour is equal to the amount of energy generated by an installation with a power capacity of 1kW in an hour **or** an installation with a power capacity of 2kW in a half-hour etc.

N

NOMINATED INDIVIDUAL

An individual within an organisation nominated to act on the organisation's behalf in relation to the RHI.

O

ONGOING OBLIGATIONS

Ongoing obligations refer to the obligations that need to be met to remain accredited or registered to the scheme. The term is defined in the Regulations.

P

PARTICIPANT

A participant is defined in the Regulations as either the owner of an accredited RHI installation, a representative owner or a producer of biomethane who has registered with the Authority to receive the RHI. In practice this means that once the owner or representative owner of an eligible installation or a biomethane producer receives accreditation or registration respectively to the RHI scheme, he/she will be referred to as a participant in the RHI scheme.

PERIODIC SUPPORT PAYMENTS

RHI support will be delivered to participants in the form of quarterly 'periodic support payments', the term being defined in the Regulations.

PERIODIC DATA

Periodic data is the information participants will need to submit on a regular basis as an ongoing obligation, and in order for Ofgem to calculate the appropriate payment.

R

RENEWABLE HEAT INCENTIVE

The Renewable Heat Incentive is a Government environmental programme designed to provide long-term financial support to renewable heat installations to encourage the uptake of renewable heat.

RENEWABLE HEAT PREMIUM PAYMENT

The Renewable Heat Premium Payment is a separate, complementary grant scheme to the RHI. It will provide a one-off payment to eligible domestic generators of renewable heat for the interim period before eligible domestic generators will be able to apply for the RHI.

REPRESENTATIVE OWNER

Where there is more than one owner of an accredited RHI installation, the owner with the authority to act on behalf of all owners is referred to as the representative owner.

RETURN PIPE

The pipe carrying the cool liquid flow returning from an installation or heat use is commonly referred to as the return pipe.

S

SCHEMATIC DIAGRAM

The schematic diagram is an illustration of the installation and heating system for which RHI accreditation is being applied for.

SIMPLE INSTALLATION

A simple installation is an installation which is not a CHP system, does not deliver heat by steam, does not supply heat to an ineligible purpose, and uses the heat generated in one building.

T

THERMOCOUPLE

Electronic sensor for measuring the temperature of pipework at a given position.