

Renewable Heat Incentive Guidance

Supplementary Appendices: Independent Report on Metering Arrangements

Consultation - supplementary appendices

Reference:**Publication date:** 24 June 2011**Response deadline:** 5 August 2011**Contact:** RHI Development Team**Team:** New Schemes Development**Email:** RHIGuidanceconsultation@ofgem.gov.uk**Overview:**

This document contains supplementary appendices for the draft Guidance that Ofgem is consulting on for the Renewable Heat Incentive (RHI). It comprises a draft template for the Independent Report on Metering Arrangements which is required as part of the accreditation process for installations with a capacity of 1MWth or above, or installations classed as 'complex' for RHI metering purposes. It also contains draft instructions for those completing the report, and a copy of the relevant sections of the RHI Regulations. This document is for consultation.

The Independent Report on Metering Arrangements (the 'Report') will enable participants to demonstrate that the metering requirements outlined in the RHI Regulations (the 'Regulations') have been met, including that:

- meters and sensors are correctly positioned
- meters and sensors are installed in accordance with the manufacturer's instructions
- meters and sensors meet the technical requirements set out in Chapter Seven of Volume One of this Guidance

Associated documents

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

- Ofgem RHI Guidance Volumes One and Two
- [Energy Act 2008](#)¹
- [DECC Renewable Heat Incentive Policy Document](#)²

¹ http://www.decc.gov.uk/en/content/cms/legislation/energy_act_08/energy_act_08.aspx

² <http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/renewable%20energy/policy/renewableheat/1387-renewable-heat-incentive.pdf>

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Appendix 1 – Draft template for the Independent Report on Metering Arrangements

Appendix summary: This Appendix contains a draft template for the Independent Report on Metering Arrangements (the 'Report') that will be required as part of the accreditation process for all installations with an installation capacity greater than or equal to 1MWth, or those classed as 'complex' for RHI metering purposes.

Further information about the Report and metering requirements for the RHI can be found in Chapter Seven of Volume One of the RHI Guidance documents.

Question box:

Question 1: Do stakeholders agree that it is reasonable to require an Independent Report on Metering Arrangements for all installations classed as complex for RHI metering purposes?

Question 2: Do stakeholders agree with the competency criteria proposed for the person permitted to undertake the Independent Report on Metering Arrangements?

Question 3: Do stakeholders have any comments on the draft Independent Report on Metering Arrangements which is being consulted on as a Supplementary Appendix?

Please note that Questions 1-3 above are also asked as consultation questions in Chapter Seven of Volume One of the Guidance.

Purpose of the Report

This Report is intended to verify to Ofgem that an installation seeking accreditation to the Renewable Heat Incentive (RHI) has metering arrangements in place which meet the RHI eligibility requirements.

In accordance with Schedule 1 of the Regulations, this Report may be requested by Ofgem as part of the application for RHI accreditation, where an installation:

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

We will be requiring all installations that fall into either of the above categories to provide a completed Report as part of the accreditation process.

Those completing this Report should ensure that they are familiar with the RHI Regulations and RHI guidance documents. Further details on this Report and how installations are classed as 'simple' or 'complex' for RHI metering purposes can be found in Chapter Seven of Volume One of this Guidance.

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DRAFT REPORT

1. Details of Visit

Date of visit:

Start time of visit:

End time of visit:

Personnel present during visit:

Name	Status/responsibility	Contact details

2. Details of installation

2.1 Location details

Prospective participant name:	
Contact address (inc post code):	
Contact telephone:	
Contact email:	
Installation Name:	
Installation Address (inc post code) if different from above:	

2.2 Technical details

Plant number / identifier	Technology type	Serial number, manufacturer and model	Total installed peak heat output capacity (kWth)	Fully functioning at time of visit? If no, please explain why not

2.3 Please enter any **additional comments** about the installation below

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3. Heat Use

3.1 Eligible heat uses

Does the heating system of which the installation forms part supply heat:	Yes/No
- To heat a space?	
- To heat water?	
- For carrying out a process (other than generating electricity), i.e. to supply process heat?	
- For any other purpose than those listed above?	
- Is all the heat used in one building?	

3.2 Ineligible heat uses

Does the heating system of which the installation forms part supply heat used to:	Yes / No	If yes, please provide details of the use and describe how the metering arrangement ensures that heat used for this purpose is not included in the figures submitted to Ofgem (with reference to the schematic diagram if appropriate)
Generate electricity?		
Reject heat directly to the atmosphere, e.g. heat dissipation circuit, heat rejection facility?		
Heat any outdoor space or structures that are not buildings as defined in the RHI regulations?		
Any other use that is not eligible for RHI support?		

3.3 Description of building(s) in which heat is used

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3.4 Additional comments on heat uses

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4. Metering Arrangements

4.1 Heat Transfer Medium

Please enter the heat transfer medium used by the heating system to which the eligible installation delivers heat (e.g. water, steam)	
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4.2 Simple / complex metering arrangements

Please tick **one** of the boxes below

Simple	
Complex	

4.3 Heat meters

Table 1 – heat meter details

Meter / component serial number	Meter / Component description	Make & Model	Installed in accordance with manufacturer's instructions?	Year of manufacture	Accuracy range	Class 2 evidence
Flow meter: AB1234 Temperature sensors: AB1234 Digital integrator: AB1234	Measures heat generated by biomass boiler A	Flow meter: A.N.Other1 Model X Temperature sensors: A.N.Other2 Model Y Digital integrator: A.N.Other 3 Model Z	Yes Yes Yes	2008	MID Class 2	MID markings (M, CE, last two digits of the year and the Notified Body number)
Flow meter: AB9876 Temperature sensors: AB9876 Digital integrator: AB9876	Measures heat generated by biomass boiler B	Flow meter: A.N.Other1 Model X Temperature sensors: A.N. Other2 Model Y Digital integrator: A.N.Other 3 Model Z	Yes Yes Yes	2008	Class 2	EN 1434 test certificate issued by xxxx test house (UKAS 17025 accredited)

Table 2 – heat meter calibration details and operating ranges

Meter Serial number (use flow meter serial number if not an integrated meter)	Date of most recent system calibration and result	Date of most recent digital integrator calibration and result	Date of most recent flow meter calibration and result	Date of most recent calibration of temperature sensors and result	Nominal flow rate (m³/hr)	Maximum flow rate (m³/hr)	Minimum flow rate (l³/hr)	Temperature range (°C)
Flow meter: AB1234	23/11/2010 – Passed	N/A	N/A	N/A	2.5	5	25	5 - 130
Flow meter: AB9876	N/A	15/09/2008 - Passed	12/09/2010 - Passed	23/09/2010 - Passed	6	12	60	5 - 130

4.4 Steam meters

Table 3 – steam meter details and calibration information

Meter / component serial number	Meter / Component description	Meter / component type make & model	Installed in accordance with manufacturer's instructions?	Year of manufacture	Date of most recent system calibration and result	Design accuracy	Date of most recent calibration of temperature sensors and result	Date of most recent calibration of pressure sensors and result
Flow meter: BC1234	Measures steam generated by biomass boiler C	Orifice plate: A.N.Other1 Model A	Yes	2007	22/3/2010 - Passed	+/- x% (System) In accordance with ISO 5167	22/9/2010 - Passed	22/9/2010 - Passed
Temperature sensor: BC1234		Temperature sensor: A.N. Other2 Model B	Yes					
Pressure sensor: BC1234		Pressure sensor: A.N.Other3 Model C	Yes					
Digital integrator: BC1234		Digital integrator: A.N.Other4 Model D	Yes					

Table 4 – steam meter operating ranges

Meter serial number	Meter min flow rate	Meter max flow rate	Temperature range	Pressure range
BC1234	150 m ³ /hr	600m ³ /hr	100-200 °C	2-10 Bar

4.5 Meter readings

Table 5 - start and end meter readings

Meter Serial number (use flow meter serial number if not an integrated meter)	Time START	Time END	HEAT METERS Cumulative reading (kWhth/MWhth) START	HEAT METERS Cumulative reading (kWhth/MWhth) END	STEAM METERS Cumulative reading (MWh / tonnes) START	STEAM METERS Cumulative reading (MWh / tonnes) END	STEAM METERS Temperature (Degrees Centigrade)	STEAM METERS Pressure (Bar)
AB1234	10:23	11:04	123456 kWhth	123466 kWhth				
AB9876	11:10	12:00	987654 kWhth	987664 kWhth				
BC1234	10:45	11:15			234567 MWh	234577 MWh	100	3

4.6 All meters: meter installation/operation

Are you satisfied with the installation of the RHI-relevant meters listed above? If no, please explain why not.	
Are the RHI-relevant meters listed above operating correctly to the best of your knowledge? If no, please explain why not.	
(Steam systems only) Are you content that the fluid returned from the eligible use(s) is consistent with the type of meter measuring the energy in this fluid?	

4.7 Shared Meters – heat generated

This section should **only** be completed if the heat generated by two or more plants is being measured by a single, i.e. shared, meter.

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4.8 Shared Meters – heat used for eligible purposes in more than one building

This section should **only** be completed if the heat used for eligible purposes in more than one building is being measured using a single meter.

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4.9 Additional requirements for reversible heat pumps

This section should **only** be completed if one or more of the plants comprising the installation is a heat pump that will be used to generate cooling as well as heating.

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4.10 Additional requirements for biogas installations

This section should **only** be completed for biogas installations.

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4.11 Additional comments on metering arrangements

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5. Measurement details

Please only complete one section, in accordance with the classification made in Section 4.2 of this Report.

Simple installations

<i>Periodic support payment formula component</i>	<i>Meter serial numbers which measure this component of the formula</i>
"B" - the heat generated by the accredited RHI installation in kWhth	e.g. AB1234 + AB9876
"C" (biogas only) - the heat in kWhth directed from the accredited RHI installation or delivered by any other source to the biogas production plant which produces the biogas combusted (other than heat contained in feedstock used to produce biogas by anaerobic digestion)	e.g. AB2345

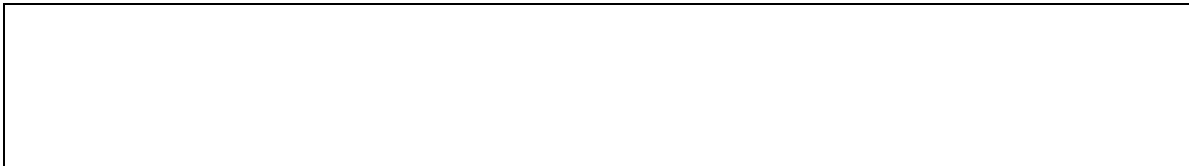
Complex installations

<i>Periodic support payment formula component</i>	<i>Meter number/identifier(s) which measure this component</i>
"B" - the heat used for eligible purposes (where such heat uses are supplied with heat from the heating system of which the installation forms part)	
"C" (biogas only) - the heat directed from the accredited RHI installation or delivered from any other source to the biogas production plant which produces the biogas combusted	
"D" - the heat generated by the RHI installation in kWhth	
"E" - the heat generated by all plants (eligible and ineligible for the RHI) that are supplying heat to the heating system of which the installation forms part	

6. Schematic Diagram (see instructions in Appendix 2 for further details)

A large, empty rectangular box with a thin black border, intended for a schematic diagram.

7. Documentation Review (see instructions in Appendix 2 for further details)

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8. Declaration

Competency Criteria

According to the Regulations, only a “competent person” can complete this report. We have interpreted a “competent person” to mean a person that meets **all** of the following criteria³:

1. An experienced and suitably qualified engineer (At least HND 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. Accredited to ISO 17020:2004 (General Criteria for the operation of various types of bodies performing inspection) or records demonstrating operational compliance with the standard;
5. Certified to ISO9001:2008 (Quality Management Systems) and/or records demonstrating that a quality management system is in place and is in operation;
6. Covered by Professional Indemnity Insurance of £1m (through employer or directly);
7. Completely independent of the owner(s) of the installation, and the end user(s) of the heat (where different to the owner).

Signed Declaration

I **{competent person}** [of **{company name}**] confirm that, to the best of my knowledge and belief, I meet competency criteria 1 to 7 above and am a competent person as defined by Ofgem in relation to the completion of this report. I agree to provide, at Ofgem’s request, evidence which is sufficient to satisfy Ofgem that I meet the competency criteria and am a competent person as so defined.

I certify at the behest of **{participant}** that the **{technology type(s)}** installation at **{complete address}** has been commissioned and that appropriate RHI-relevant meters have been installed in a manner that meets the metering requirements of the RHI scheme. I confirm that I have read the Ofgem RHI guidance and Regulations, and that all information and statements contained in this report are accurate to the best of my knowledge and belief. I acknowledge that Ofgem is entitled to rely on this report in considering an application for accreditation under the RHI scheme in respect of the above installation.

Signature

Date

Print Name

[Print company name (if applicable)]

³ Please see Chapter 7 of Volume One of the Guidance for further details of the competency criteria.

Appendix 2 – Instructions for those completing the Independent Report on Metering Arrangements

Appendix summary: This Appendix contains instructions for the competent person undertaking the Report which will be required as part of the accreditation process for all installations with an installation capacity greater than or equal to 1MWth, or those classed as 'complex' for RHI metering purposes.

These instructions should be read in conjunction with Chapter Seven of Volume One of the Guidance and the Regulations which provide additional information on the specific technical metering requirements for the RHI, and appropriate meter placement.

The first section of this Appendix provides some general guidance on completing the Report, and the remainder of the Appendix provides guidance on each section of the Report in turn.

General guidance:

- (i) All questions, apart from those marked as required for specific installations only and the comment boxes, must be completed. If it is not possible for you to answer a specific question, please clearly explain why.
- (ii) Items marked with '?' should be answered with **Y** (Yes), **N** (No), **N/A** (Not Applicable) or **N/E** (Not Examined)
- (iii) Any observations needing clarification should be marked '*' and an explanation or action included. For example, items marked **N/E** (Not Examined) will normally require further explanation.
- (iv) Please clearly label any additional pages with the installation name and the date, and attach them securely to the rest of the Report.

Section 1: Details of visit

Please provide the date and start and end times of your visit to the installation and the specified information for each person who was present during your visit.

Section 2: Details of installation

2.1 Please provide the specified information for the installation that you visited. The name of the installation is chosen by the participant, and is simply a reference used

by the RHI IT system. The name entered on this report should therefore be the same as the installation name that will be entered as part of the application for accreditation.

2.2 Use separate rows to enter details of each plant when an installation is comprised of multiple component plants. Please provide the specified technical information for each plant that comprises the installation – for example, where the installation comprises 2 x 600kWth biomass boilers, please enter the information for each boiler. This information does **not** need to be entered for any other plants connected to the heating system (e.g. back up boilers).

- The **plant number/identifier** is the tag that will enable the plant to be identified on the schematic diagram. This can be chosen by the prospective participant.
- The **technology type** must be one of the following:
 - solid biomass (please indicate whether it is a CHP plant)
 - municipal solid waste (please indicate whether it is a CHP plant)
 - biogas (please indicate whether it is a CHP plant)
 - geothermal (please indicate whether it is a CHP plant)
 - ground source heat pump (please indicate if this will be used to generate cooling as well as heating)
 - water source heat pump (please indicate if this will be used to generate cooling as well as heating)
 - solar thermal.
- NB This report is not required for biomethane plants.
- The **total installed peak heat output capacity** of each plant should be simple to establish as it will be part of the information provided by the manufacturer. If the equipment is bespoke and you are unable to ascertain the total installed peak heat output capacity, please enter “bespoke” and explain in the comments box why you were unable to ascertain its capacity.
- **Please note** that biogas and solar thermal installations are not eligible for the RHI if they have a total installed peak heat output capacity above 200kWth.

2.3 In the additional comments box, please add any additional relevant information, such as any further explanation of the plants’ configuration to assist in interpreting the schematic diagram. If the installation is a CHP system, please also indicate here if it is eligible to use existing meters in accordance with Regulation 19 (see Appendix 3). Further information can be found in Chapter Seven of Volume One of the Guidance.

Section 3: Heat use

3.1/3.2 Please indicate in the tables provided which eligible and ineligible heat uses (if any) are supplied with heat from the heating system of which the installation

forms part. Chapter Five of Volume One of the Guidance provides further information about what constitutes eligible and ineligible heat uses.

3.3 Please provide a brief description of the building(s) in which the heat is used for eligible purposes, stating clearly the number of buildings in which heat is used for eligible purposes.

Only heat that is used for eligible purposes within a building is eligible for RHI support. Further information about what constitutes a “building” for RHI purposes is provided in Chapter Five of Volume One of the Guidance.

3.4 Please enter any additional comments about the heat uses supplied by the heating system of which the installation forms part.

Section 4: Metering arrangements

4.1 – Heat transfer medium

Please enter the heat transfer medium used in the heating system of which the installation forms part. Only liquids (such as water, water-ethylene glycol mix, oil) or steam are eligible heat transfer media for the RHI. Other media, such as hot air, are not eligible.

4.2 - Simple/complex metering arrangements

Please indicate whether the installation is classed as ‘simple’ or ‘complex’ for RHI-metering purposes. The figure below shows the criteria which determine this classification. Further information is available in Chapter Seven of Volume One of the RHI guidance document.

Note that this Report is only required for simple installations if they have an installation capacity above 1MWth.

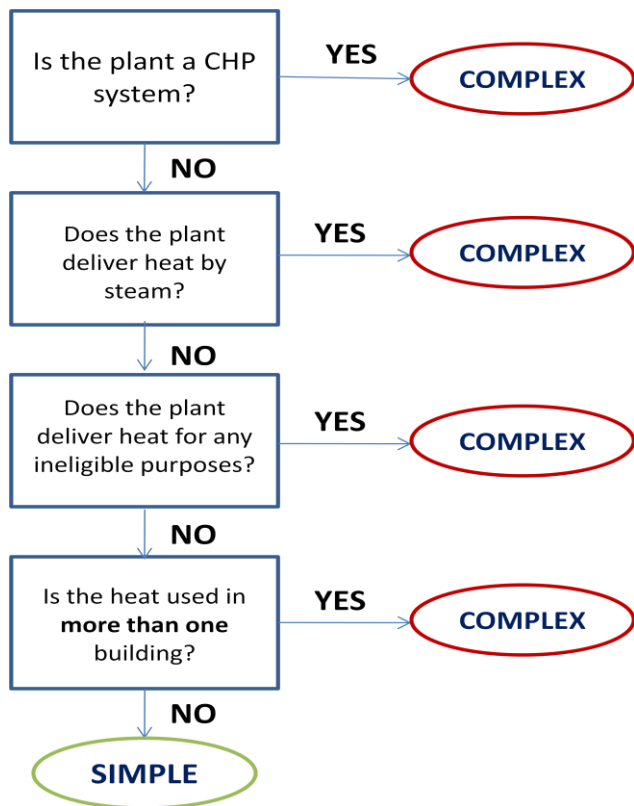


Figure 1: A flow chart illustrating whether a plant comprising all or part of an eligible installation is classed as 'simple' or 'complex' for RHI metering purposes, in accordance with the Regulations. Where an installation is comprised of multiple plants, it will be classed as 'complex' for RHI metering purposes where any of its component plants are classed as complex.

4.3 - Heat meters

For systems where there are RHI-relevant heat meters, please complete Tables 1 and 2 for each RHI-relevant heat meter. Where meters have been purchased as individual components, i.e. flow meter, matched pair of temperature sensors and digital integrator/calculator, please list in Table 1 the serial numbers and make/model for each component (as shown in the examples provided).

Further information about each item listed in the tables is provided below.

Table 1 – heat meter details

- **Meter/component Serial Number:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation.
- **Meter/component description:** This should be a brief description of what the meter is designed to measure and the source of heat it is intended to measure.
- **Make and Model:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Installed in accordance with manufacturer’s instructions?:** Compare installation with instructions supplied with the meter or components or with accompanying product documentation.
- **Year of manufacture:** This will usually be with accompanying documentation
- **Accuracy range:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Class 2 Evidence:** This should confirm that the meter meets the technical requirements for the RHI, as set out in Chapter Seven of Volume One of the Guidance.

Table 2 – heat meter calibration details and operating ranges

- **Meter Serial Number:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation; this should be as in Table 1 and where the sub components were purchased separately, should be the serial number of the flow meter
- **Date of most recent System Calibration and result:** Test certificate showing date of calibration with statement showing conformance against Class 2 requirements for the complete heat metering system
- **Date of most recent digital integrator calibration and result:** Test certificate showing date of calibration with statement showing conformance against accuracy requirements needed to ensure the full heat metering system meets Class 2 requirements
- **Date of most recent flow meter calibration and result:** Test certificate showing date of calibration with statement showing conformance against accuracy requirements needed to ensure the full heat metering system meets Class 2 requirements
- **Date of most recent temperature sensor calibrations and results:** Test certificate showing date of calibrations with statement showing conformance against accuracy requirements needed to ensure the full heat metering system meets Class 2 requirements
- **Nominal flow rate:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Maximum flow rate:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Minimum flow rate:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation

- **Temperature range:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation

4.4 – Steam meters

For heating systems where there are RHI-relevant steam meters, please complete Tables 3 and 4 for each RHI-relevant steam meter. Where meters have been purchased as individual components, i.e. flow meter, temperature sensor, pressure sensor and digital integrator/calculator, please list each component in “meter/component description” box, and provide the serial numbers and make/model for each component as shown in the example.

Further information about each item listed in the tables is provided below.

Table 3 – steam meter details and calibration information

- **Meter/component Serial Number:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Meter/component description:** This should be a brief description of the what the meter is designed to measure and the source of heat it is intended to measure
- **Make and Model:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Installed in accordance with manufacturer’s instructions:** Compare installation with instructions supplied with the meter or components or with accompanying product documentation
- **Year of manufacture:** This will usually be with accompanying documentation
- **Date of most recent System Calibration and result:** Test certificate showing date of calibration
- **Design Accuracy:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Date of most recent temperature sensor calibrations and results:** Test certificate showing date of calibrations
- **Date of most recent pressure sensor calibrations and results:** Test certificate showing date of calibrations

Table 4 – steam meter operating ranges

- **Meter Serial Number:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Minimum flow rate:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Maximum flow rate:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Temperature range:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation
- **Pressure range:** Normally fixed to the meter or its components (data badge or etched) or with accompanying product documentation

4.5 - Meter readings

Please take meter readings for all RHI-relevant heat and steam meters listed in Tables 1 and 3.

Table 5 – start and end meter readings

- **Time (Start):** Time when initial meter reading was taken
- **Time (End):** Time when final meter reading was taken
- **Cumulative Heat Meter Reading (Start):** Initial reading taken at time (start)
- **Cumulative Heat Meter Reading (End):** Final meter reading taken at time (end)
- **Cumulative Steam meter reading (Start):** Initial reading taken at time (start)
- **Cumulative Steam meter reading Reading (End):** Final meter reading taken at time (end)
- **Steam meters -- Temperature:** Average temperature of steam registered during inspection
- **Steam meters -- Pressure:** Average pressure of steam registered during inspection

4.6 – Meter installation and operation

Please complete this table on the basis of your inspection of all the heat and/or steam meters listed in Tables 1 and 3 above.

Please confirm that you are satisfied that all RHI-relevant heat and/or steam meters have been installed correctly in line with manufacturer's instructions to the best of your knowledge. If you are not satisfied, please explain why not, or, if you have identified any areas of potential concern or uncertainty, please describe these with comments on their likely impacts on installation data.

The Regulations require participants to keep their meters operating continuously, properly maintained and periodically checked for errors. Please confirm that the RHI-relevant meters are operating correctly to the best of your knowledge. If you are not satisfied, please explain why not with reference to specific meters listed in the tables in Sections 4.1 and 4.2.

For steam systems, please confirm that the fluid returned from the eligible use(s) is consistent with the type of meter measuring the energy in this fluid.

4.7 – Shared meters – heat generated

Please **only** complete this section if the heat generated by two or more plants is being measured by a single meter.

The Regulations allow Ofgem discretion to permit the heat output of two or more plants comprising one eligible installation to be measured by a single meter under certain circumstances, as outlined in Chapter 7 of Volume 1 of the Guidance.

Please provide a brief description of the relevant plants that share a meter in the space provided and confirm that, in your opinion, the heat generated by these plants is being directly measured by the shared meter.

4.8 – Shared meters – heat used for eligible purposes in more than one building

This will only apply to complex installations.

Chapter Seven of Volume One of the Guidance outlines that in exceptional circumstances, we may permit the heat used for eligible purposes in more than one building to be measured using a single meter.

Please provide a brief description of the relevant buildings in which heat is used solely for eligible purposes that share a meter. Please also confirm that, in your opinion, the heat lost in transmission between the buildings is insignificant in comparison to the heat used for eligible purposes within those buildings and provide a justification for this.

We will consider the factors below, as appropriate to the application, when exercising our discretion, so you may find it helpful to refer to these in your justification:

- The length of the pipe(s) conveying the hot liquid/steam between the relevant buildings;
- Whether the pipe(s) conveying the hot liquid/steam between the relevant buildings has (have) been appropriately insulated;
- The dimensions and properties of the pipe(s) conveying the hot liquid/steam between the relevant buildings;
- Any other factors influencing the rate of heat loss, such as the temperature difference between the ambient temperature and the hot liquid/steam being conveyed;
- Any other actions taken to mitigate heat losses from the pipe(s) conveying the hot liquid/steam.

4.9 - Additional requirements for reversible heat pumps

Please **only** complete this section if the installation or any component plant is a heat pump that will also operate in reverse to generate cooling.

The Regulations impose additional requirements where participants use heat pumps to provide both heating and cooling. Participants must ensure that their meters enable them to –

- a) measure heat used for eligible purposes only, and
- b) where appropriate, discount any cooling generated by the reverse operation of the heat pump

Please explain in the space provided how the metering arrangements enable the participant to discount any cooling generated by the reverse operation of the heat pump, where appropriate. You may refer to the schematic diagram in your explanation if helpful.

4.10 – Additional requirements for biogas installations

Please **only** complete this section for biogas installations.

The Regulations require heat meters to be installed to meter any heat directed from the plant combusting the biogas to the biogas production plant, and any heat supplied to the biogas production plant from any source other than the plant combusting the biogas.

Where external heat (e.g. from a fossil fuel boiler or solar thermal panels) is being used at the biogas production plant, please confirm it is metered separately from the installation for which RHI support is sought and that the meters are correctly positioned. You may refer to the schematic diagram in your explanation if helpful.

4.11 – Additional comments on metering arrangements

Please add any additional comments on the metering arrangements in the space provided.

Section 5 – Measurement details

This section should explain how each of the elements of the relevant periodic support payment calculation formula will be measured by the RHI-relevant meters listed in Section 4.

Please complete one of the tables, in accordance with whether you classed the installation as 'simple' or 'complex' in Section 4.2. Please list the appropriate meter serial numbers in the table, identifying what the meter is measuring in relation to the RHI periodic support payment formula.

The meter serial numbers used should correspond to those in the tables in Section 4, and used on the schematic diagram. Further information about the tariff calculation formula can be found in Volume Two of the Guidance. Any meter that is listed in this Section must be listed in Table 1 or Table 3, as appropriate.

Section 6 – Schematic diagram

Please attach a copy of the schematic diagram, dated and signed by you, verifying the diagram is an accurate representation of the installation and other plant(s) delivering heat to the heating system, and that you are satisfied, as far as reasonably practical, that:

- the meter/meter components are positioned and present in sufficient numbers to directly meter the heat flows required for the RHI periodic support payment formula
- all plants providing heat to the heating system, whether eligible or ineligible for RHI support, are shown
- the installation/plant positions are correctly represented on the diagram,

- all uses supplied with heat from the heating system, both eligible and ineligible, are shown
- the relevant pipework connections between all plants and heat uses are included
- the positions of relevant heat and steam meters and their associated components are shown.

Please note that meters should be labelled on the schematic diagram with their serial number. Please enter any additional comments about the schematic diagram in the space provided on the Report.

Section 7 – Documentation review

As well as inspecting the relevant meters, we also expect you to review the listed documents to ascertain whether those meters meet the technical eligibility requirements for the RHI.

Please describe the approach you took to verifying key documents, i.e. which documents and what proportion of the documents did you review, and whether or not the documents were satisfactory, in the space provided below.

We would expect you to review the following documents or records:

- manufacturer's or installer's certification relating to the meters and/or meter components as appropriate
- declaration that the meter conforms to the requirements set out in the RHI guidance (heat meters) or accords with industry good practice (please refer to the RHI guidance document for further details)
- installation design (with meter/ sensors requirements)
- specifications of installed meter and sensors
- most recent calibration certificates (meters, temperature sensors and, where applicable, pressure sensors) and
- any relevant commissioning reports.

If any of the records listed above were not available for review, please explain why in the space below.

We would expect a sample of the following documents or reports to be reviewed:

- historical calibration records
- maintenance records - for example, fault or planned replacement;
- records of any repair work carried out
- equipment or component manufacturer's instructions
- operational inspections and any corrective actions relating to the meters; and
- functional checks on the meter (not necessarily a calibration).

Section 8 – Declaration

Please sign and date the declarations.

Appendix 3 – Relevant excerpts from the Regulations

Appendix summary: This Appendix contains excerpts from the Regulations that are relevant to the Report:

- Schedule 1 of the Regulations, and
- Chapter 3 of Part 2 of the Regulations (which is referenced in Schedule 1).

3.1 Schedule 1 of the Regulations

The sections of text relevant to the Report are highlighted below.

Information required for accreditation and registration

1.—(1) This Schedule specifies the information that may be required of a prospective participant in the scheme.

(2) The information is, as applicable to the prospective participant—

- (a) name, home address, e-mail address and telephone number;
- (b) any company registration number and registered office;
- (c) any trading or other name by which the prospective participant is commonly known;
- (d) details of a bank account in the prospective participant's name which accepts pound sterling deposits in the United Kingdom;
- (e) information to enable the Authority to satisfy itself as to the identity of the individual completing the application;
- (f) where an individual is making an application on behalf of a company, evidence which satisfies the Authority, that the individual has authority from the company to make the application on its behalf;
- (g) details of the eligible installation owned by the prospective participant including its cost;
- (h) evidence, which satisfies the Authority, as to the ownership of the eligible installation;
- (i) evidence that the eligible installation was new at the time of installation;
- (j) where an eligible installation has replaced a plant, details of the plant replaced;
- (k) evidence which demonstrates to the Authority's satisfaction the installation capacity of the eligible installation;
- (l) details of the fuel which the prospective participant is proposing to use;
- (m) in relation to prospective participants generating heat from biomass, notification as to whether the prospective participant is proposing to use solid biomass contained in municipal waste and, if so, whether or not the prospective participant is regulated under the

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Environmental Permitting (England and Wales) Regulations 2010⁽⁴⁾ or the Pollution Prevention and Control (Scotland) Regulations 2000⁽⁵⁾;

- (n) where the plant is a heat pump, evidence which demonstrates to the Authority's satisfaction, that the heat pump meets a coefficient of performance of at least 2.9;
- (o) in respect of a producer of biogas or biomethane, details of the feedstock which the producer is proposing to use;
- (p) details of what the heat generated will be used for and an estimate of how much heat will be used;
- (q) details of the building in which the heat will be used;
- (r) the industry sector for which the heat will be used;
- (s) details of the size and annual turnover of the prospective participant's organisation;
- (t) details of other plants generating heat which form part of the same heating system as the eligible installation to which the application relates;
- (u) where regulation 13 applies, evidence from the installer that the requirements specified in that regulation are met;
- (v) such information as the Authority may specify to enable it to satisfy itself that the requirements of Chapter 3 of Part 2 have been met including—
 - (i) evidence that a class 2 heat meter, other heat meter or steam measuring equipment has been installed;
 - (ii) evidence that the class 2 heat meter, other heat meter or steam measuring equipment was calibrated prior to use;
 - (iii) in relation to all heat meters, details of the meter's manufacturer, model, meter serial number;
 - (iv) a schematic diagram showing details of the heating system of which the eligible installation forms part, including all plants generating and supplying heat to that heating system, all purposes for which heat supplied by that heating system is used, the location of meters and associated components and such other details as may be specified by the Authority;
- (v) where—
 - (aa) an eligible installation has an installation capacity of 1MWth or above, or
 - (bb) regulation 17 applies,if so requested by the Authority, an independent report by a competent person verifying that such of those requirements as the Authority may specify have been met;
- (w) such other information as the Authority may require to enable it to consider the prospective participant's application for accreditation or registration.

(3) Information specified in this Schedule must be provided in such manner and form as the Authority may reasonably request.

⁽⁴⁾ S.I. 2010/675, amended by S.I. 2011/988.

⁽⁵⁾ S.S.I. 2000/323, as amended in particular by S.S.I. 2002/493; S.S.I. 2003/146; S.S.I. 2003/170; S.S.I. 2005/101; S.S.I. 2005/340; S.S.I. 2007/2325 and S.S.I. 2011/226.

(4) The costs of providing the information specified in this Schedule are to be borne by the applicant.

3.2 Chapter 3 of Part 2 of the Regulations

CHAPTER 1

Eligibility criteria in relation to metering and steam measuring

Metering of plants in simple systems

16—(1) This regulation applies where—

- (a) the plant is generating and supplying heat solely for one or more eligible purposes within one building;
- (b) no heat generated by the plant is delivered by steam; and
- (c) the plant is not a CHP system.

(2) Where this regulation applies, a class 2 heat meter must be installed to measure the heat in kWhth generated by the plant.

Metering of plants in complex systems

17—(1) This regulation applies where regulation 16(1) does not apply.

(2) Subject to regulation 19—

- (a) where heat generated by the plant is delivered by liquid, class 2 heat meters must be installed to measure both the kWhth of heat generated by that plant and the kWhth of heat used for eligible purposes by the heating system of which that plant forms part; and
- (b) where heat generated by the plant is delivered by steam, the following must be installed—
 - (i) steam measuring equipment to measure both the heat generated in the form of steam by the plant and the heat in the form of steam used for eligible purposes; and
 - (ii) a class 2 heat meter or steam measuring equipment to measure any condensate or steam which returns to the plant.

(3) Where this regulation applies, and more than one plant is supplying heat to the heating system supplied by the plant, steam measuring equipment or class 2 heat meters must be installed, as appropriate, to measure the heat generated in kWhth by all plants supplying heat to that heating system.

Shared meters

18.—(1) Subject to paragraph (2), the heat generated by the plant must be individually metered.

(2) Subject to regulation 43(8), the heat generated by two or more plants may be metered using one meter provided that—

- (a) the plants use the same source of energy and technology;
- (b) the plants will, once given accreditation, be eligible to receive the same tariff;
- (c) the plants will then share the same tariff start date and tariff end date; and

- (d) it is the Authority's opinion that a single meter is capable of metering the heat generated by all of those plants.

Metering of CHP systems generating electricity only before 15th July 2009

19.—(1) This regulation applies where the plant is a CHP system and the requirements of regulation 12(1)(a) and (b) are deemed to be satisfied in accordance with regulation 12(2).

(2) Where this regulation applies, any existing heat meter or steam measuring equipment installed before the date of commencement of these Regulations may continue to be used by a participant to measure the heat generated by the CHP system and used for eligible purposes, provided that the CHP system was registered under the CHPQA before that date.

(3) For the purpose of this regulation, “the CHPQA” means the Combined Heat and Power Quality Assurance Standard, Issue 3, January 2009, as published by the Department of Energy and Climate Change⁽⁶⁾.

Matters relating to all heat meters and steam measuring equipment

20.—(1) All heat meters installed or used in accordance with these Regulations must, where applicable—

- (a) be calibrated prior to use;
- (b) be calibrated correctly for any water/ethylene glycol mixture; and
- (c) be (or have been) properly installed in accordance with manufacturer's instructions.

(2) All steam measuring equipment installed or used in accordance with these Regulations must be—

- (a) calibrated prior to use;
- (b) capable of displaying measured steam pressure and temperature;
- (c) capable of displaying the current steam mass flow rate and the cumulative mass of steam which has passed through it since it was installed; and
- (d) properly installed in accordance with manufacturer's instructions.

Additional metering requirements for plants generating heat from biogas

21.—(1) This regulation sets out additional requirements in relation to metering where a plant is generating heat from biogas.

(2) In that case—

- (a) a class 2 heat meter must be installed to meter any heat directed from the plant combusting the biogas to the biogas production plant; and
- (b) a class 2 heat meter must be installed to meter any heat supplied to the biogas production plant from any source other than—
 - (i) the plant combusting the biogas; and
 - (ii) where the biogas has been produced by anaerobic digestion, the feedstock from which it was produced.

⁽⁶⁾ A copy is available on www.chpqa.decc.gov.uk.