

Non-Domestic Renewable Heat Incentive: Operational approach in respect of installations generating heat using ground source heat pumps and recovered heat

Consultation

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Overview:

Consultation on operational approach under the Non Domestic Renewable Heat Incentive (Non-Domestic RHI) in respect of installations generating heat using ground source heat pumps and recovered heat¹.

We are proposing a change to Ofgem's operational approach in relation to installations using ground source heat pumps (GSHPs) so that, in order to be eligible for Non-Domestic RHI support payments, recovered heat will no longer be required to be stored in the ground prior to circulating the heat pump.

We welcome views on any of the issues set out in this consultation. We would particularly welcome stakeholders' views on any additional implications which might result from the proposed change.

Unless clearly marked as confidential, responses will be published on our website. Please email responses to: NDRHI.heatpumps@ofgem.gov.uk. The consultation will be for four weeks and we would welcome response to this consultation by 23 February 2016.

¹ Relevant for Applications for accreditation made on or after 28th May 2014 and the plant was first commissioned on or after 4th December 2013.



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Associated Documents

The following documents support this publication.

- DECC Improving Support, Increasing Uptake Document²
- Ofgem Non-Domestic Renewable Heat Incentive, Guidance Volume One: Eligibility and How to Apply³

² [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265854/Non-Domestic Renewable Heat Incentive - Improving Support Increasing Uptake - PUBLISHED.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265854/Non-Domestic_Renewable_Heat_Incentive_-_Improving_Support_Increasing_Uptake_-_PUBLISHED.pdf)

³ <https://www.ofgem.gov.uk/publications-and-updates/non-domestic-rhi-main-guidance>

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1. Background

Under the Renewable Heat Incentive Scheme Regulations 2011 as amended (RHI Regulations), regulation 2 defines ground source heat pump (GSHP) to mean *"a plant which generates heat by absorbing energy stored in the form of heat in the ground, including water in the ground, or in surface water, but does not include a plant which is a deep geothermal plant"*.

GSHP systems may be able to make use of 'recovered' or 'waste' heat. The Department of Energy and Climate Change (DECC) has indicated that their policy intent⁴ under the Non-Domestic RHI in respect of eligible installations generating heat using a GSHP and who are generating in part from recovered heat, is for such installations to be eligible as long as there is also some naturally occurring heat being absorbed from the ground. In line with RHI Regulation 8(3)(b) and 8(3)(c), recovered heat is taken to mean heat from space cooling or process cooling, or heat from processes other than the generation of heat.

Regulation 8(3)(b) and 8(3)(c)⁵ provide that the requirement in paragraph 8(1)(b) (i.e. that is generating heat using naturally occurring energy) is deemed to be satisfied where in addition to using naturally occurring energy in the form of heat, the plant *"uses heat from space cooling or process cooling; or heat from processes other than the generation of heat"*.

Our current approach is that in order to be eligible for RHI support payments, recovered heat must first be stored in the ground, or in water in the ground, or in surface water, prior to circulating the heat pump.

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265855/Non-Domestic_Renewable_Heat_Incentive_-_Improving_Support_Increasing_Uptake_-_PUBLISHED.pdf

⁵ This consultation is relevant for Applications for accreditation made on or after 28th May 2014 and a date of first commissioning of the plant that is on or after 4th December 2013.

2. Proposal

This consultation is relevant for applications for accreditation made on or after 28th May 2014 and where the date of first commissioning of the plant that is on or after 4th December 2013.

We have engaged with a number of industry stakeholders regarding establishing a satisfactory mechanism that meets the requirements of the Regulations as currently in force, which will further support best practice in system design and operation in situations where recovered heat may be a partial heat source for a ground source heat pump (GSHP).

We are now proposing that, in order to be eligible for RHI support payments, recovered heat will no longer be required to first be stored in the ground prior to circulating the heat pump. However, in line with the policy intent, it would remain a requirement that some proportion of energy which is used to generate heat must be extracted from the ground as outlined below.

In line with DECC's 2013 policy document Improving Support, Increasing Uptake⁶ we propose to adopt monitoring to determine the proportion of heat that is derived from a renewable source. Working with industry, DECC engineers have developed a rule that marks a clear dividing line between a system that is predominantly sourcing heat through energy recovery and a system that is predominantly generating renewable heat. This rule ('the Rule') is that:

$$\frac{\text{Heat extracted from the ground}}{\text{Total heat supplied to the heat pump}} \geq \frac{3}{5}$$

⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/265855/Non-Domestic_Renewable_Heat_Incentive_-_Improving_Support_Increasing_Uptake_-_PUBLISHED.pdf



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The quantity that we therefore propose to monitor is the heat drawn from the ground in such a way that it can be distinguished from the recovered heat that has not circulated the ground.

Anticipated approach to administration

Should we decide to proceed in line with our proposal following consultation, we would anticipate the administrative approach taken to be based on the following principles.

Calculating payments:

For any quarterly period where we are satisfied that the Rule is met, payments would be calculated and made in line with all other requirements based on submitted monitoring evidence, without a deduction for heat not stored in the ground. Where the Rule is not met in any quarterly period we would be unable to make payments for any proportion of heat which had not been extracted from the ground.

Metering and monitoring:

Our proposed requirements for metering are presented in Appendix A.

Example Scenarios:

To illustrate the proposal, a range of scenarios are presented in Appendix B. In summary:

Scenario 1

Recovered heat added after the heat pump would be ineligible for RHI support under both our current and proposed approach.

Scenario 2 - 5

Only recovered heat that has circulated the ground would be eligible for RHI support under our current approach. Under our proposed approach all recovered heat would be eligible for RHI support.

3. Our questions for respondents

Instructions

Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document.

1. Do you agree with our proposal to adopt a new approach to recovered heat?

Please answer Yes or No and state the reason for your response.

2. Thinking about your installations and designs, do you foresee any difficulties in distinguishing the heat drawn from the ground from the recovered heat that has not circulated the ground? (Metering could be used in addition to an appropriate calculation.)

Please answer Yes or No and state the reason for your response.

3. Do you foresee any other consequences/impacts were we to adopt the proposed approach?

Responses should be received by 23 February 2016 and should be sent to:

NDRHI.heatpumps@ofgem.gov.uk

Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website www.ofgem.gov.uk. Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be



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helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

Next steps: Once the consultation has closed we will consider the responses and look to publish our response and decision before the end of Spring 2016. We will notify all consultation respondents and applicants, participants and other stakeholders when this occurs.

Any questions on this document should, in the first instance, be directed to:

NDRHI.heatpumps@ofgem.gov.uk

Appendix A

Requirements for metering

Regulation 17B(2)(b) states that *"in the case of a ground source heat pump, where that heat pump is capable of simultaneous heating and cooling, such metering as will enable the heat drawn from the ground, including water in the ground, or from surface water, to be measured."* Simultaneous systems are capable of both heating and cooling and these are grouped into two categories:

1. Systems with more than one heat pump that is capable of simultaneous heating and cooling, but not necessarily (or always) at the same time; and
2. Systems making use of the relatively cool fluid rejected by the heat pump on the evaporator side of the heat pump.

Regulation 17B(2)(b) therefore will allow us to monitor the $\frac{3}{5}$ rule for simultaneous heat pumps.

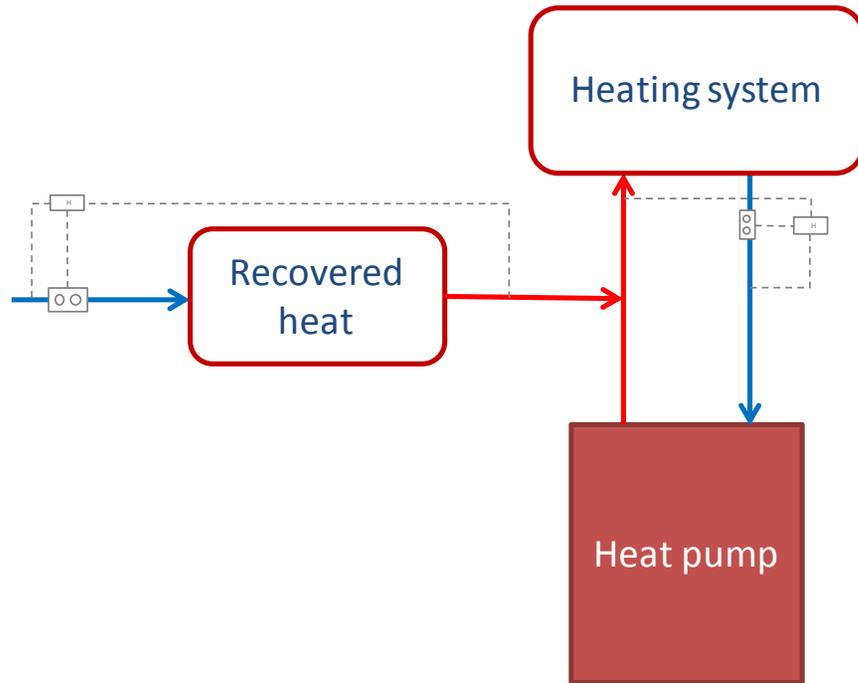
We also understand that non-simultaneous heat pump installations may also make use of recovered heat and, were the proposal to be accepted, we will be asking that these quantities are reported as part of quarterly periodic data submissions.

We understand that ground loop metering may not be sufficient for us to obtain the required quantities as some recovered heat may be added to the ground and some may not. Where Regulation 17B(2)(b) states *"...such metering as will..."* we expect that the quantities may be obtained using a combination of ground loop meters, heating system side meters, and a suitable calculation.

Appendix B

Scenarios for recovered heat

Scenario 1 – Direct recovered heat



Key points:

- Recovered heat does not circulate the ground.
- Recovered heat does not circulate the heat pump.

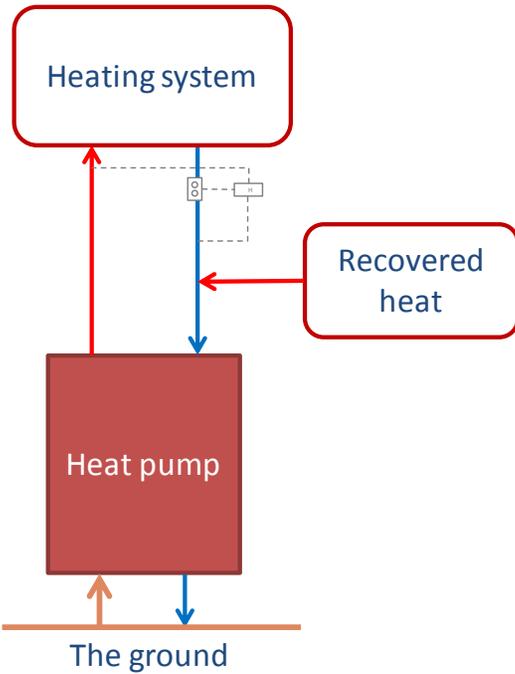
In this scenario the recovered heat is **ineligible** for RHI support payments.

The recovered heat added to the heating system should not affect the RHI relevant heat meters' ability to accurately measure the eligible heat output.

Example metering arrangement shown on diagram. Note that this is only a suggested metering arrangement. All metering arrangements are reviewed on a case-by-case basis when an RHI application is made.

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Scenario 2 – Recovered heat added to heat pump return



Key points:

Recovered heat is added to the return line and then circulates the ground.

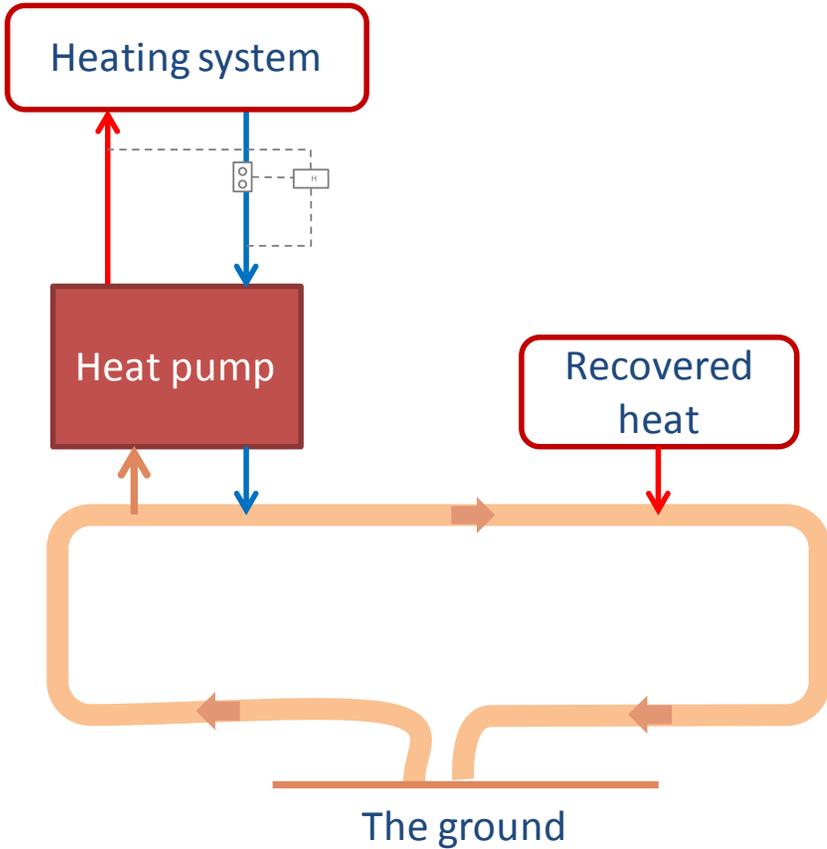
Recovered heat circulates the heat pump.

In this scenario the recovered heat is **eligible** for RHI support payments.

Example metering arrangement shown on diagram. Note that this is only a suggested metering arrangement. All metering arrangements are reviewed on a case-by-case basis when an RHI application is made.

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Scenario 3 – All recovered heat circulates the ground



Key points:

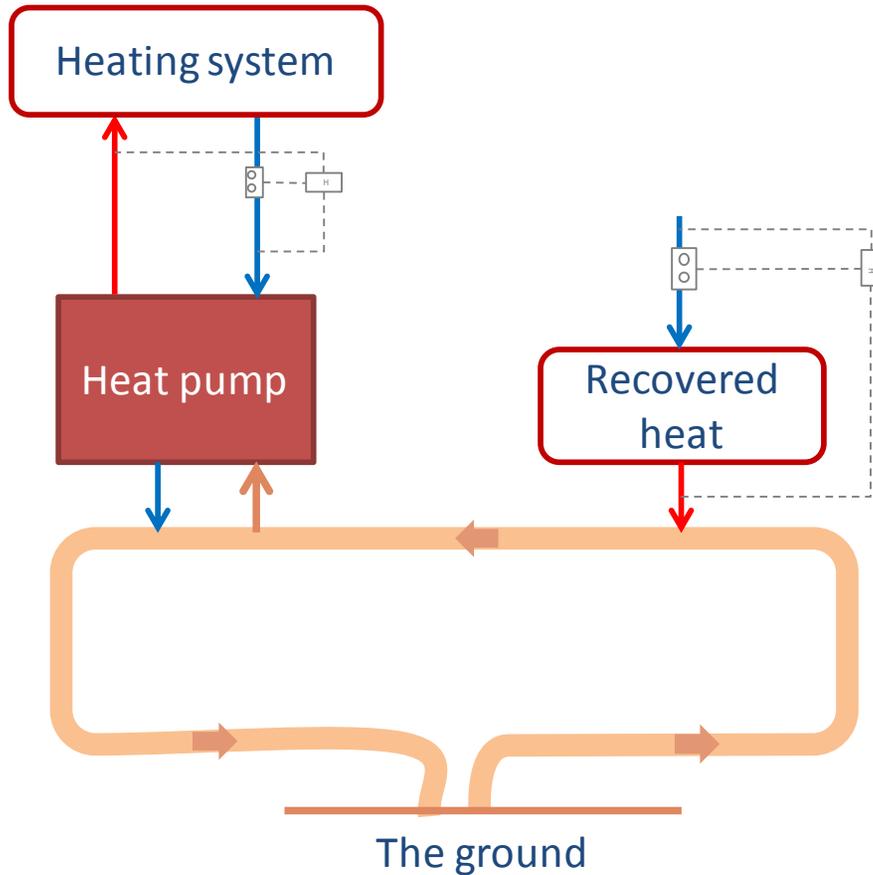
- Recovered heat circulates the ground first and may be included in the renewable proportion of heat.
- Recovered heat circulates the heat pump.

In this scenario the recovered heat is **eligible** for RHI support payments.

Example metering arrangement shown on diagram. Note that this is only a suggested metering arrangement. All metering arrangements are reviewed on a case-by-case basis when an RHI application is made.

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Scenario 4 – Recovered heat is added to the heat drawn from the ground



Key points:

- Recovered heat does not circulate the ground first and may not be included in the renewable proportion of heat.
- Recovered heat circulates the heat pump.

In this scenario the recovered heat is **eligible** for RHI support payments.

Example metering requirement:

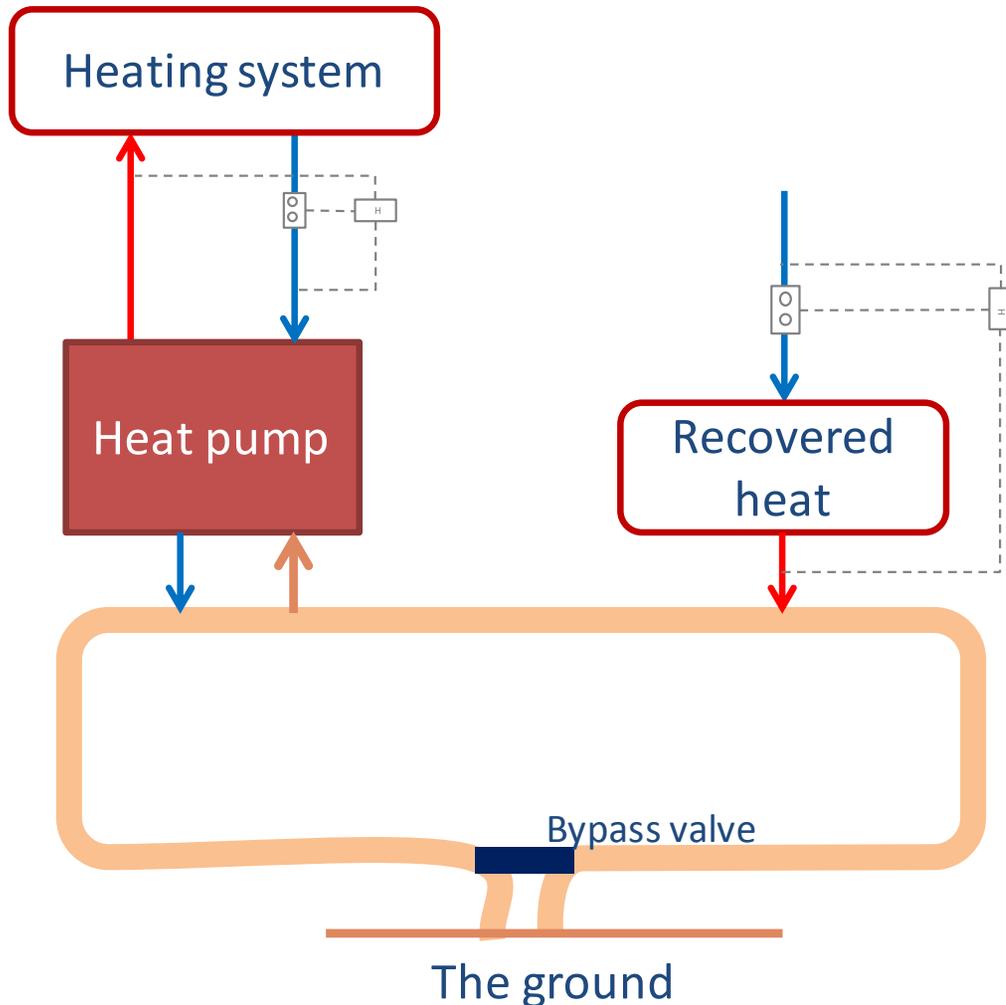
Meter on recovered heat as it enters the secondary loop.
Calculation using heating system side meter to determine total heat entering heat pump on evaporator side.

[as shown on diagram]

Example metering arrangement shown on diagram. Note that this is only a suggested metering arrangement. All metering arrangements are reviewed on a case-by-case basis when an RHI application is made.

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Scenario 5 – Bypass valve determines quantity of heat drawn from the ground in line with system requirements. Flow in secondary circuit in either direction.



Key points:

- The direction of flow in the secondary circuit may be in either direction.
- Recovered heat does not always circulate the ground first.
- Recovered heat circulates the heat pump.
- Some portion of heat is drawn from the ground at all times.
- When/ if the recovered heat circulates the ground loop this may be included in the proportion of renewable heat.
- When/ if the recovered heat does not circulate the ground first it may not be included in the renewable proportion of heat.

In this scenario the recovered heat is **eligible** for RHI support payments.

Example metering requirement:

Meter on recovered heat as it enters the secondary loop.
Calculation using heating system side meter to determine total heat entering heat pump on evaporator side. [as shown on diagram]

And/ or

Meter on recovered heat as it enters the secondary loop.

Meter on the ground loop as it leaves the ground.

Example metering arrangement shown on diagram. Note that this is only a suggested metering arrangement. All metering arrangements are reviewed on a case-by-case basis when an RHI application is made.

Appendix C – Feedback Questionnaire

Ofgem considers that consultation is at the heart of good policy development. We're keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the consultation?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

Please send your comments to:

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