

Non-Domestic RHI



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Non-Domestic RHI

Background to the NDRHI

Heat pumps on the NDRHI

The application process

Key heat pump eligibility criteria

Common errors/delays

Ways to speed up the process

The Non-Domestic RHI

World first incentive scheme to promote the generation of renewable heat.

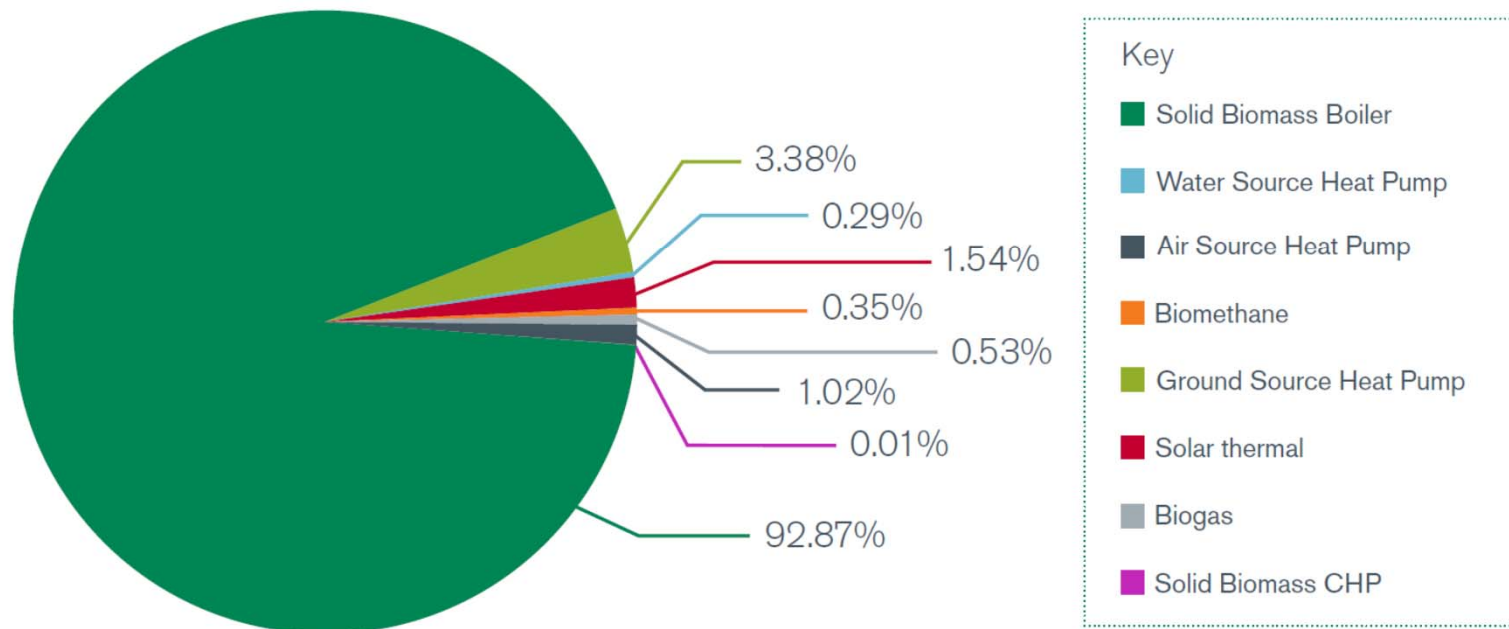
Payments made quarterly over 20 year period on basis of metered heat generation or MWh biomethane injected.

£500 million paid out.
Nearly 2 GW of renewable heat generated.

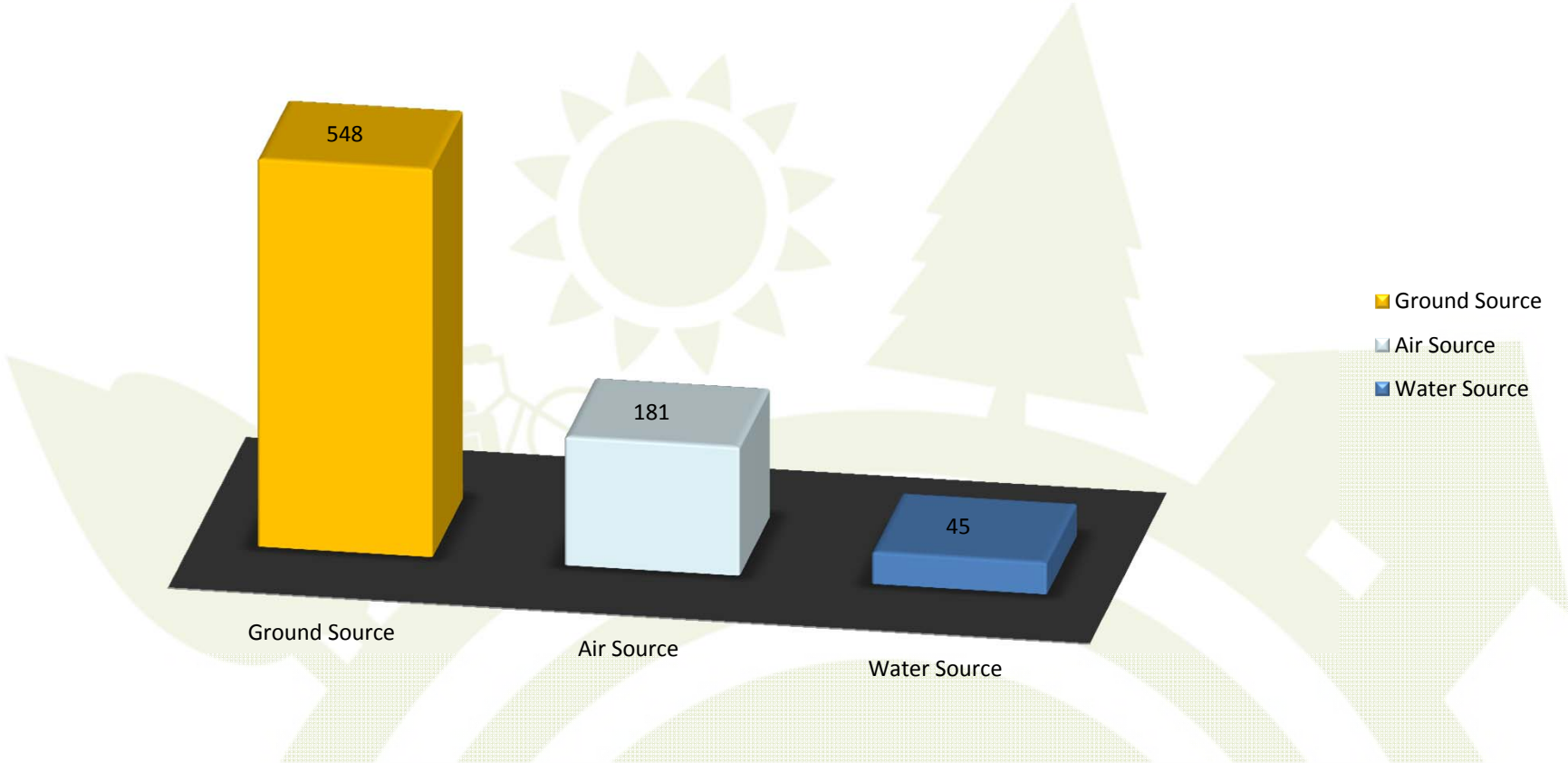
BEIS develop policy and establish legal basis for the scheme.
Ofgem administer the scheme.

Technology type of accredited installations (Aug 2016).

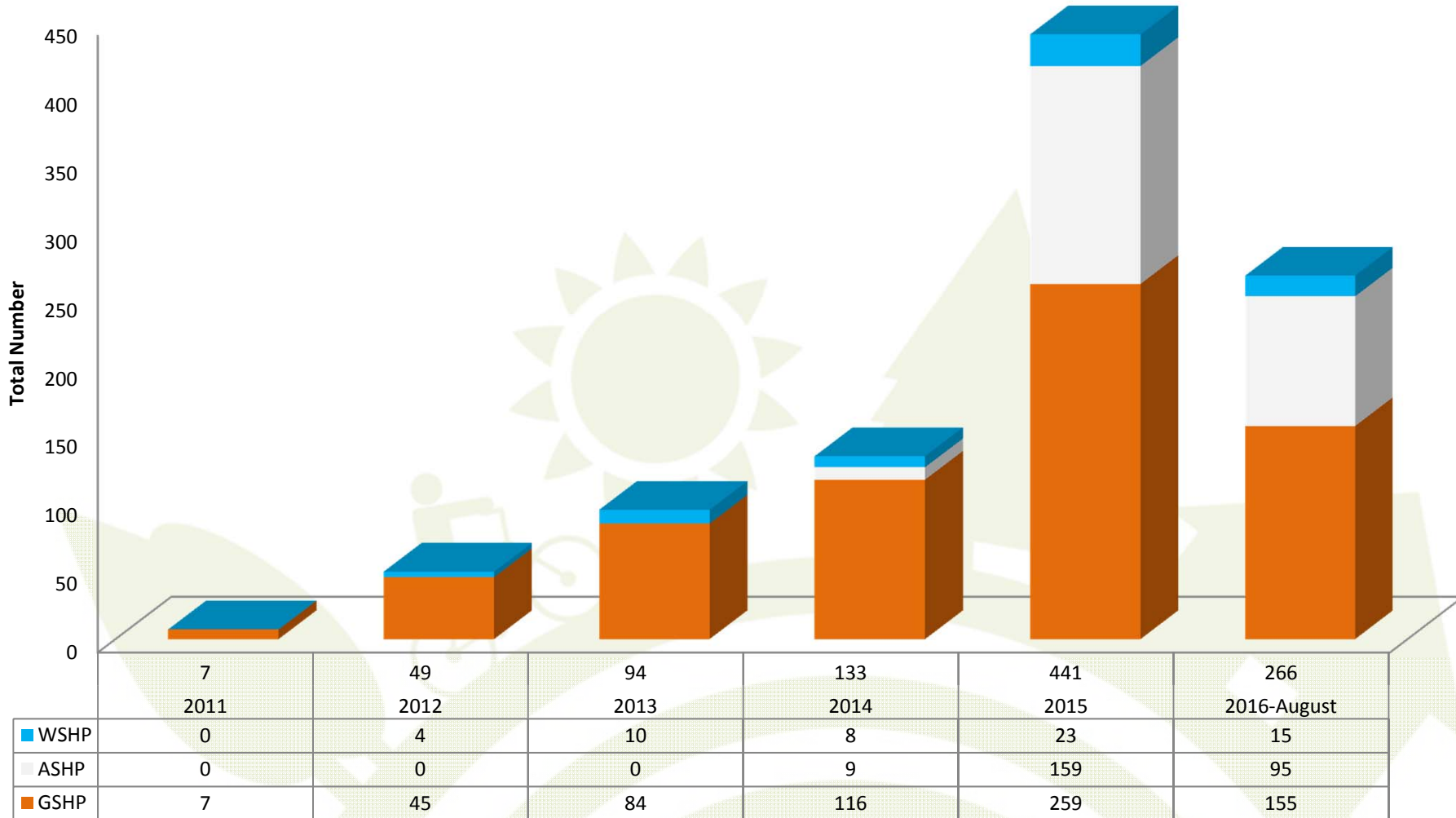
Chart 1: Proportion of accredited Non-Domestic RHI installations and registered biomethane producers by technology type (scheme to date)

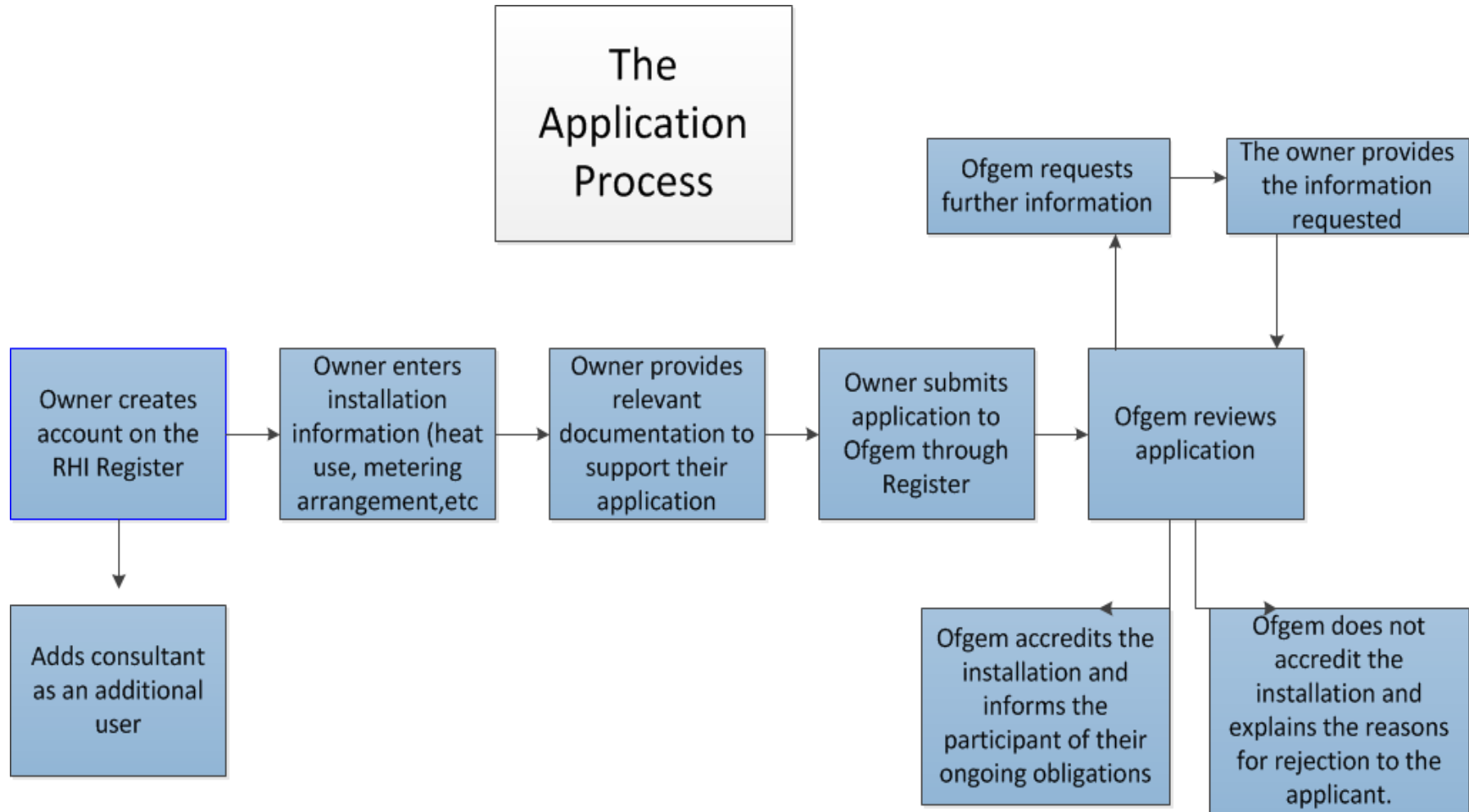


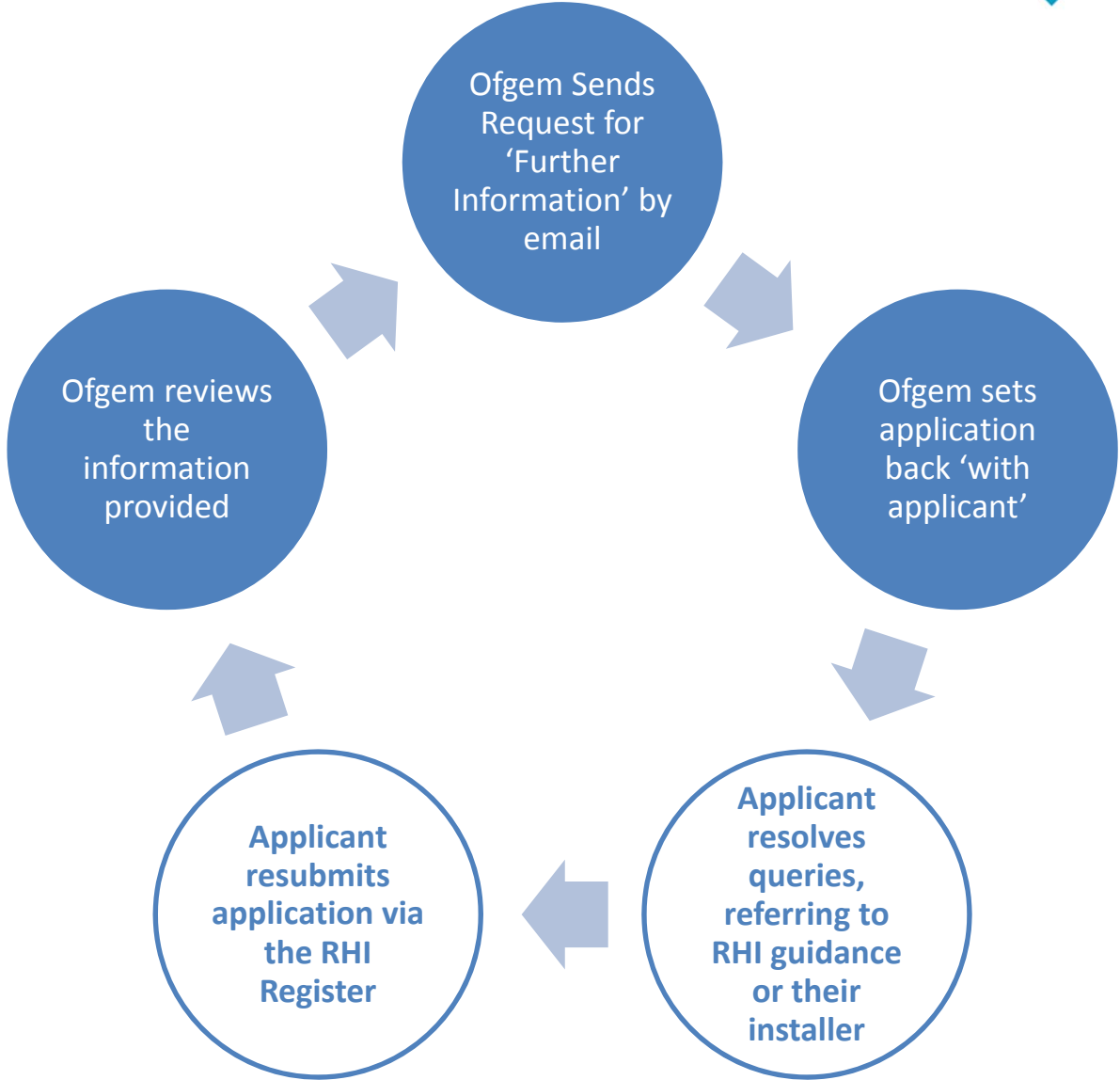
Heat pump applications accredited on NDRHI since scheme inception



Total Number of Heat Pump Applications received to date







Authorised Signatory	Additional Users
Creates the account	
Creates/ disables additional users	
Create/ edit and submit applications	Create and edit applications (cannot submit)
Create/ edit and submit periodic data	Create and edit periodic data (cannot submit)
Submits declarations	
Will be the primary contact for enquiries relating to the RHI application or periodic data	Can be an additional contact for enquiries relating to the RHI application or periodic data
Provides ID and bank account information	

* If you wish to discuss an application with Ofgem, you will need to be either the authorised signatory or an additional user

Key eligibility requirements

Measure	Minimum requirement	Definition
COP	> 2.9	<p>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.</p> <p>Condition of Accreditation.</p>
Design SPF	> 2.5	<p>The ratio of the heat pump's heat output to electricity input expressed as an average over a year.</p> <p>Condition of Accreditation.</p>
SPF		<p>The ratio of the heat pump's heat output to electricity input expressed as an average over a year.</p> <p>On going monitoring for life of scheme.</p>

Common errors and reasons for delay in applications for the Non Domestic RHI

Information required for an application to NDRHI

- Always provide with any application
 - Photographs of Nameplate(s) which clearly show model and serial number
 - Photograph of heat Meter(s) (all components, clearly showing serial number and details)
 - Technical Manual for your heat pump
 - MCS Certificate if under 45kW
 - Schematic of the system
 - Non domestic evidence
 - Installer Declaration/Letter of Authorisation
 - Heat Loss Assessment (If applicable)
 - Up-to-date meter readings
 - Design SPF calculation

Any missing information will mean the application has to go back to applicant and will cause delays.

Accreditation Principles

Accreditation involves meeting a number of ***eligibility criteria***, which must be verified by Ofgem

- To ensure this can be achieved readily:
 - ***Understand*** the RHI eligibility requirements
 - ***Plan*** for the RHI requirements as part of the design and installation process
 - ***Obtain*** and ***retain*** documentation from manufacturers and installers
 - ***Complete*** the application ***fully***, with the ***correct evidence*** and ***level of detail***, seeking support from a third party (e.g. installer) if appropriate.
- Ofgem can help – ***Enquiry service, Easy Guides, Comprehensive Guidance by Topic, Summary Applicant Guidance Notes***

Common issues that require clarification

Main categories identified at review stage which cause delays:

- System capacity (Must be at 0/35 for GSHP, 10/35 for WSHP and 7/35 for ASHP) and consistent across all documentation.
- Metering eligibility / installation (Class 2 heat meter)
- COP/ design conditions discrepancy, no supporting documentation and/or not according to EN14511 or equivalent
- Eligibility of heat use
- Back up plant or immersion heaters not declared, we will question this with any system providing DHW.

Common issues that require clarification

Main categories identified at review stage which cause delays:

- Metering arrangements (no additional plants represented, not detailed)
- Schematic with no building boundaries or insufficient details
- Integrated immersion heater(s) not declared as additional plant
- Cooling option not commented on
- Heat loss assessments not provided or incorrect.
- No design SPF calculation provided.
- No installer declaration or installer declaration inconsistent with wider application.

How to describe your system

- 2 free text questions on the application:

HH120: *'Give a description of how heat generated by your installation is used'*

HK120: *'Please provide a comprehensive description of your installation'*

- Consistency is key: The system should be described so that the arrangements are clear to someone who has never visited the site

HH120:

‘Give a description of how heat generated by your installation is used’

- All answers should include:
 1. Type of building (confirming that it is wholly enclosed if there could be any doubt).
 2. Use of heat
 3. Any external pipework (make and model of insulation and length)
- All responses should ideally be between 50 – 100 words



Good ways to answer the question:

'Heat is used for space heating and hot water in Cottage 1; and for space heating in Cottage 2. These are both labelled on the schematic. Both Cottage 1 and Cottage 2 are permanent and wholly enclosed structures. A 13m underground external pipe runs from the plant room to each cottage. The underground pipework is 50mm Rehau duo. The source of heat is 100% naturally occurring heat in the ground.'

'Heat is used as space heating for a poultry shed which is labelled on the schematic (PL1) There are vents required to regulate temperature in the shed. These vents are automatic and closable. Heat is generated and used in the same building. Heat from the ground and heat rejected from a cooling process is the source, in accordance with RHI Regulation 8(3)(b)'



Poor ways to answer the question:

Old cow shed and house. 44 cows. Cows are used for milking.

HK120:

‘Please provide a comprehensive description of your installation’

- All answers should include:
 1. Make, model and capacity of the heat pump
 2. Any ineligible plant (including integrated immersion heater), explanation if/ how they are metered/ if they can be considered isolated;
 3. Information on heat meters (including *e.g.* inhibitors)
 4. Lengths, make and model of external pipework
 5. Cooling function information – if disabled, how?
- All responses should ideally be between 150 – 200 words

A good way to answer the question:



Plant room comprises:

- 1 86kW GSHP pump using naturally occurring heat from the ground Kamstrup Multical 602. Ultraflow54 Integrated flow meter: flow meter and integrator.
- Flow meter installed on return pipe (as shown on schematic)
- Anti-corrosion inhibitor (Sentinel) present at 1%. The heat meter is suitable to be used with inhibitors, see the uploaded statement from the manufacturer.

Buried Pipes:

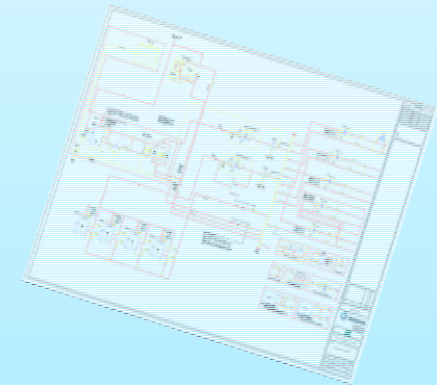
- Rehau, Rauvitherm Duo pre insulated district heating pipe
- 7m – as shown on schematic

Other information:

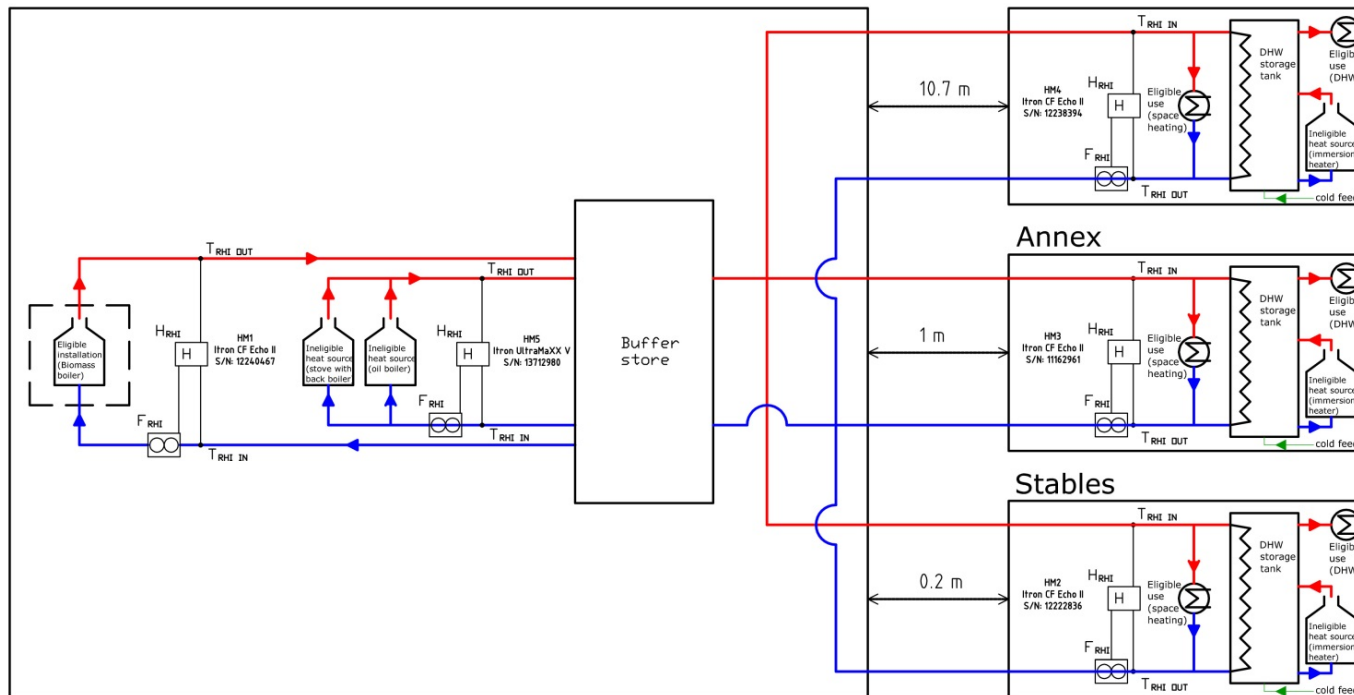
- Cooling option available, but it has to be specified at time of the order – the option was not ordered;
- No Integrated immersion heater available for this model; please see attached HP manual. Immersion heater located in DHW tank as shown on schematic.

Schematics

- **Building boundaries** This may not seem important we will require it to ensure the payment formula used is correct, to save time add building boundaries even if all in one building.
- **All RHI-eligible meters** should be marked and labelled.
- For each heat meter, we need to see the placement of:
 1. flow meter
 2. integrator
 3. both temperature sensors
- **Comprehensive key**, consistent with wider application.
- **All sources of heat** e.g. Back-up boilers/immersions.
- **Immersion heaters** clearly shown and labelled
- Add and label any lengths of any **external pipework**



Schematics



Legend:

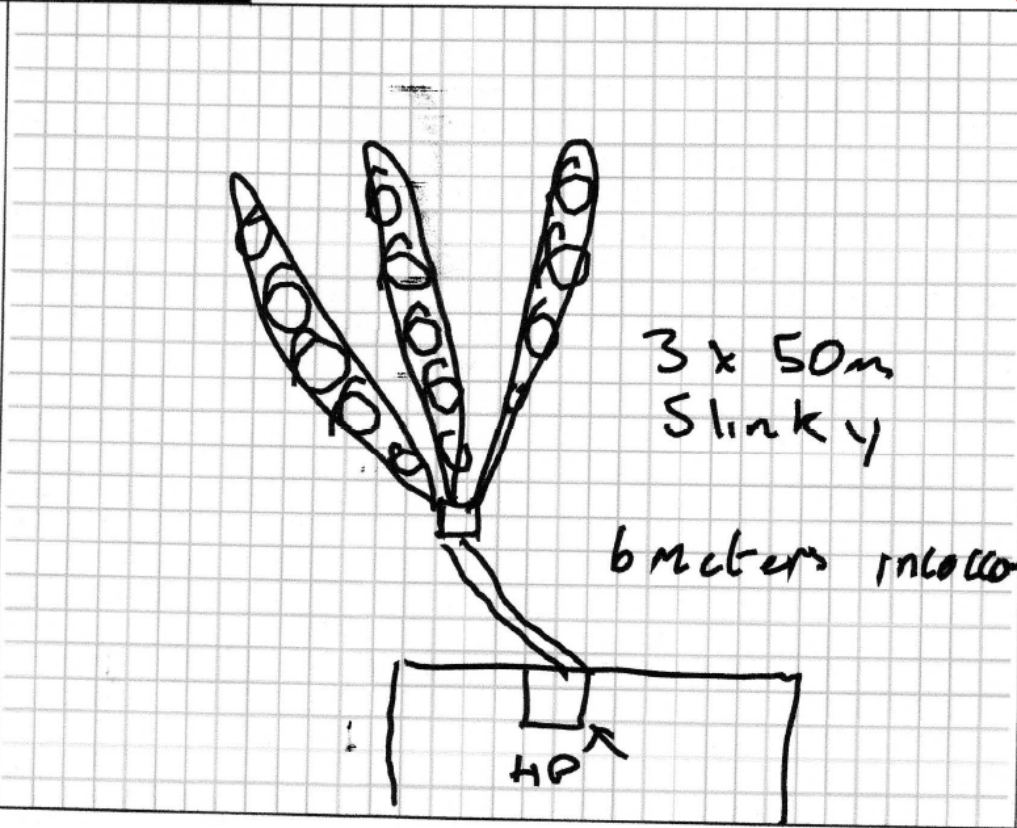
- Integrator
- Flow meter
- Temperature sensor
- Heat use
- Heat source
- Flow pipework
- Return pipework
- Cold main pipework

- All heat meter components shown
- External pipework & lengths indicated and buildings labelled
- Clear legend included



Ground Loop Installation

Space for Ground Loop



Integrated Immersion Heaters

Heat pumps with integrated immersion heaters are eligible on the scheme but the immersion must be metered if their output can be read by the RHI heat meter. This applies even if the immersion is never used.

- No standard for meter, can be metered by clip on electricity meter reading KWs or heat pump controller reading hours of use.
- Meter recording integrated immersion must be declared on application form as a heat meter, NOT an SPF electricity meter.

SPF

- Suitable evidence for ‘Design SPF Calculation’
 - Installations of 45kWth and under: Calculation in line with methodology outlined in MCS 021 heat emitter guide or if commissioned post 26/03/2016 the MCS SCOP value.
 - Installations over 45kWth: possible standards include EN 14825 for space heating-focused systems (‘Seasonal Coefficient of Performance’(SCOP)) and EN 16147 for hot water systems
 - Some software design packages though subject to certain minimum parameters, please check with us beforehand.

Cooling

- GSHP and WSHP can provide cooling as well as heating,
- Provided we can be satisfied that only heat is being metered for payment purposes.
- Cooling itself is not eligible for payments, but the heat extracted during cooling can be transferred to the ground and become an eligible source of heat for the heat pump.
- Some ground or water source heat pumps may have a simultaneous operation in which heat extracted during the cooling process is used directly for heating elsewhere on the heating system, by-passing the ground loop. For installations capable of this operating mode it will be required to measure the heat drawn from the ground
- ASHPs must not be designed to provide cooling.

Common reasons for delay

- Inadequate or inconsistent information, always better to provide too much than too little, make sure all answers are consistent.
- Poor quality photographs. If we can't read any information we will require new photographs. Also ensure photographs are of correct component, if in doubt provide more than one.
- No immersions declared in question HJ100 (immersions count as 'backup plant')
- Integrated immersion not declared or metered.
- Poor schematic with no building boundaries or heat meters shown
- No design SPF calculation - the application does not ask for this but always provide it.
- Integrated immersion heater not metered

Managing Expectations

- NDRHI is not an automated process so can take much longer than the domestic scheme.
- Every application has to be individually reviewed which does take time.
- Applications missing information will require further information and will then need to be re-reviewed, this may then require subsequent further information.
- Highly technical or novel installations may require review by multiple teams so may take longer.

How to speed up the process

- Submit all information first time, any information that will not upload can be sent via email, quoting the RHI reference number.
- Refer to easy guides
- Provide Design SPF calculations.
- Provide Design Heat Load calculations if the system provides cooling
- Take clear focussed photographs
- Provide a clear schematic that shows all relevant details
- Declare all immersion heaters/inhibitors/backup boilers.
- If highly technical or not covered clearly by the guidance contact us for a meeting before applying for RHI funding.
- Attend workshops

Guidance Materials

- Rhi Guidance Vol 1+2
- Easy guide to heat pumps
- Heat pumps with integrated immersions



Easy guide to heat pumps

Background

Ground source, water source and air source heat pumps are eligible for Non-Domestic Renewable Heat Incentive (RHI) support. The RHI Regulations sets out the requirements for the efficiency of heat pumps that need to be demonstrated at accreditation stage. There are also specific metering requirements for heat pumps.

This document will explain the efficiency and metering requirements in relation to heat pumps.

Please see our [RHI Guidance Volume 1](#) for other eligibility requirements.

Eligibility

Applicable

- Ground source for RHI
- Heat meters stored in the ground

Applicable and the

4 Decree

- Air to water following those that from a building
- The following solar and solar panels and is situated on the roof
- Heat from solar panels
- Heat from solar panels

Heat Pumps with Integrated Immersion Heaters: Applicant Guidance Note 1

Introduction: This guidance note is for applicants to the Renewable Heat Incentive (RHI) whose installation is a ground or water source heat pump that includes an integrated immersion heater. For Ofgem E-Serve's administrative purposes the term 'integrated immersion heater' refers to immersion heaters which are incorporated within the heat pump unit itself.

This guidance note explains the additional requirements for RHI applicants resulting from the use of heat pumps with integrated immersion heaters. Text in red refers to wording which will appear on the 'Renewable Heat Incentive Register'.

Background: Heat pumps with integrated immersion heaters are not excluded from the RHI. However, the primary legislation which underpins the scheme¹ only allows support for the "renewable generation of heat". Therefore, the RHI scheme requires non-renewable heat to be metered for 'complex' installations², while for 'simple' installations the scheme requires that metering excludes heat produced from fossil fuel sources. Class 2³ accuracy heat meters are required in both cases.

For integrated immersion heat pumps Ofgem E-Serve requires metering to ensure that any heat produced from the immersion heater can be accounted for. This heat will not be eligible for RHI payments. Due to the technically challenging nature of measuring this heat by means of a heat meter, alternative means of measuring the heat from the integrated immersion are considered acceptable. These are detailed below.

How can I measure heat produced by an integrated immersion heater?

The principal two methods by which heat from an integrated immersion heater could be measured are:

1. **Heat Pump Controller:** Where the heat pump control unit has the capability to log the number of hours the immersion heater is used in a given time period, the heat produced can be calculated by recording this 'total hours of immersion use' figure for the quarterly submission period⁴ and multiplying by the rating of the immersion in kW⁵ to give the heat produced from the integrated immersion in Kilowatt-hours (kWh).
- Where a unit has more than one integrated immersion, with different ratings, the control unit would have to be able to log the number of hours each different immersion heater has been utilised in order to use this approach⁶. If this is not the case and you wish use this approach please make contact with the RHI operational team.

2. **CT Monitoring Coil:** A 'clip on' current transformer (CT) monitoring coil connected to a kWh meter can be applied to the internal wiring for the immersion heater(s). This should be fitted by a qualified electrician or heat pump engineer in order to ensure this is undertaken safely and is located correctly.

The kWh figure measured by either of these methods will be used to represent the heat output from the integrated immersion⁷ for the quarterly periodic data submission period. You are welcome to propose an alternative methodology and Ofgem E-Serve will consider these on a case by case basis. If you wish to propose an alternative approach, please make contact with the RHI operational team prior to submitting your application for accreditation. N.B. Ofgem E-Serve does not require CT monitoring coils of any given standard or advocate the use of any particular brand. Our only requirement is that they must be able to provide a kWh reading for the electrical input to the immersion heater(s).

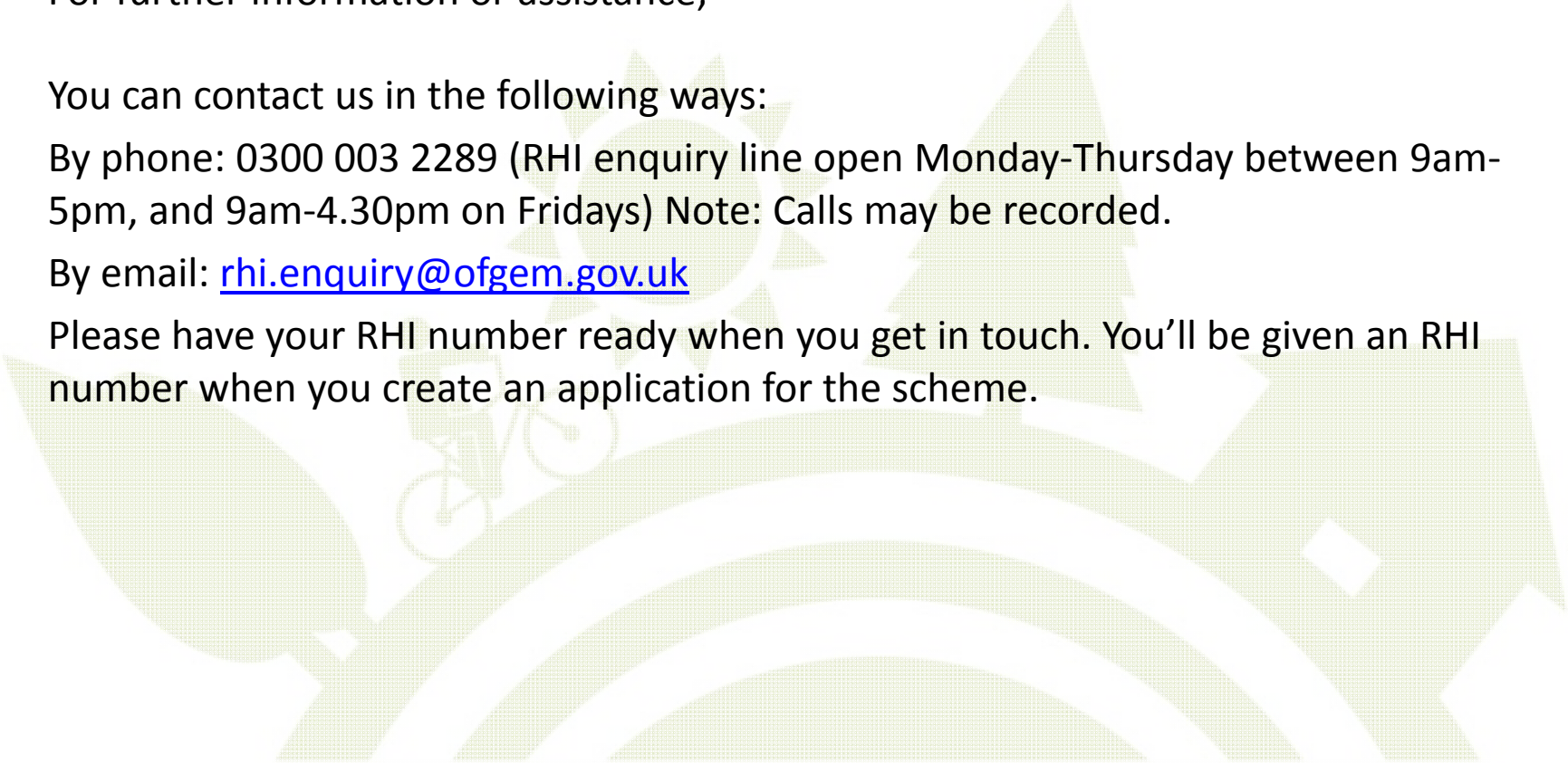
¹ An immersion heater located within a hot water cylinder, or in-line heater in the central heating circuit / buffer, would not be considered 'integrated' for Ofgem E-Serve's purposes. Heat from such immersion heaters may be required to be metered dependent on the metering classification (simple or complex) of the installation and heating system layout.
² The RHI IT system used for making applications to the scheme and submitting periodic data.
³ The Energy Act 2008, section 100.
⁴ Please refer to chapter 7, 'Metering Eligibility Requirements' of 'Renewable Heat Incentive Guidance Volume 1: Eligibility and how to apply'.
⁵ Under the Measuring Instruments Directive (2004).
⁶ Intended for installations with a capacity > 1 MWth.
⁷ Kilowatt-electric.
⁸ Otherwise in this situation we may require you to make a conservative assumption that the maximum rated immersion heater was in use at all times.
⁹ Since 100% of the electrical energy provided to the immersion is converted to heat energy.

Contact: RHI Operational Team Tel: 0845 200 2122 Email: RHI.Enquiry@ofgem.gov.uk

Contact Us

- For further information or assistance;

You can contact us in the following ways:

- By phone: 0300 003 2289 (RHI enquiry line open Monday-Thursday between 9am-5pm, and 9am-4.30pm on Fridays) Note: Calls may be recorded.
 - By email: rhi.enquiry@ofgem.gov.uk
 - Please have your RHI number ready when you get in touch. You'll be given an RHI number when you create an application for the scheme.
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