

Renewable Heat Incentive

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Ministerial Foreword

The Renewable Heat Incentive (RHI) scheme is the first of its kind in the world. It will provide long term support for renewable heat technologies, from ground-source heat pumps to wood-chip boilers. The scheme will help drive around a seven-fold increase in renewable heat over the coming decade, which will help shift what currently is a fringe option, firmly into the mainstream.

The threats and challenges of climate change are clear and real. We must take action now to protect our environment. That's why we have signed up to carbon reduction targets and have committed to reducing our emissions by at least 80 per cent by 2050. At the same time, with diminishing North Sea gas reserves, we are becoming increasingly reliant on foreign imports. We must therefore diversify our energy supply, by turning to alternative forms of energy and move away from traditional fossil fuels. Ensuring our energy supply is safe and reliable is vital for the security of the nation.

Clearly the first step is to reduce our energy use. We know that sometimes we use more energy than we need to. The cheapest way of closing the gap between supply and demand, reducing our energy bills and carbon is through greater energy efficiency and a better understanding of energy use. However, energy efficiency alone will not solve the problem. We also need to green our energy supply and reduce our reliance on fossil fuels. This will require a mix of low carbon technologies, including new nuclear, carbon capture and storage and renewables. And for heat, it is renewable energy that holds the key.

Moving to a low carbon economy offers real opportunities which we must grasp from the outset. We want to see a green revolution that not only helps protect the climate and ensure energy security, but also helps re-build the economy on a longer, more sustainable footing. Britain can be a global leader in this transition. Increasing renewables will create new jobs throughout the supply chain: from research and development to manufacturing; renewable fuel production and supply; equipment installation and maintenance.

Some good progress has been made so far, but we need to accelerate drastically the pace of the switch to renewables. We need to work hard to remove the barriers holding back take-up and we understand that one of the key barriers to renewable deployment is cost. The current dominance of traditional fossil

fuel systems, means that it is often difficult for newer, innovative systems to compete. While industry needs to work hard to bring costs down, financial support is needed to help bring change.

We already have the Renewables Obligation and Feed-in Tariffs schemes to help drive an increase in renewable electricity, evidenced by the recent expansion in wind-farms and domestic solar panels. Similarly we have the Renewable Transport Fuel Obligation, to help transform our transport fuel use. However, until now, renewable heating has had limited support.

The heat used in our homes, public buildings, businesses and factories is responsible for around half of all the energy consumed in the UK, and accounts for roughly half of all the UK's carbon emissions. This huge drain on energy resources is not an issue we can ignore. Taking action now to switch from fossil fuels to cleaner and more sustainable green sources of heat will reduce the impact that our heat requirements have on the environment and help ensure the UK has an energy supply that is safe, secure and reliable.

It is for this reason that we are introducing the Renewable Heat Incentive, making renewable heat not just an environmentally sound decision, but also a financially attractive one. This support can help drive take-up of renewables now, stimulate the renewables industry, encourage further innovation and ultimately, bring down the cost of renewable heating.

Renewable heat is common sense. It allows us to draw energy from the world around us, taking a more holistic approach. Whether it is a wood-chip boiler with fuel sourced from a sustainable local woodland or producing biogas from organic waste, renewable heat will allow people to take control of their energy use, often at a more local level, and gain a greater and more complete understanding of energy and its impacts.

The RHI will make it a sound, commercial decision for communities, the public sector, not-for-profit organisations, business and industry to install renewable heat technology. We will put the financial framework in place, so organisations can come together to find local, innovative and sustainable solutions to their energy needs. This is an opportunity that we need everyone to grab with both hands.

Working together, we can help transform the way we heat this country.



Greg Barker
Minister of State
Department of Energy and Climate Change

Summary

Increasing renewable heat is key to the UK meeting its renewable energy targets, reducing carbon emissions, ensuring energy security and helping to build a low carbon economy. The Renewable Heat Incentive (RHI) will help accelerate deployment by providing a financial incentive to install renewable heating in place of fossil fuels.

The Government will take a phased approach to implementing the RHI. Initially, in the first phase, long-term tariff support will be targeted at the big emitters in the non-domestic sector. This sector, which covers everything from large-scale industrial heating to small business and community heating projects, will provide the vast majority of the renewable heat needed to meet our targets and represents the most cost-effective way of increasing the level of renewable heat. The Government therefore wants to provide support now in order to kick-start take-up in this sector.

As part of the first phase, the Government will also introduce *Renewable Heat Premium Payments* for the domestic sector. We have ring-fenced funding of around £15 million, which we will use to make premium payments to households who install renewable heating. These direct payments will subsidise the cost of installing qualifying renewable heating systems. In return for the payments, participants will be asked to provide some feedback on how the equipment works in practice and suppliers will be asked to provide a follow up service on any issues that are raised. This will boost confidence in the technology and the information we receive will help enable Government, manufacturers, installers and consumers to better understand how to maximise performance of the various technologies. The Renewable Heat Premium Payments will support a spread of technologies across all regions of Great Britain and will cover households using gas and other fossil fuels. We may consider focusing support for *primary* heating systems, such as heat pumps and biomass boilers, on households off the gas grid, where fossil fuels like heating oil are both more expensive and have a higher carbon content. We aim to launch the Renewable Heat Premium Payments in July 2011 and will announce further details in May 2011.

A second phase of RHI support including long-term tariff support for the domestic sector will then be introduced in 2012 to coincide with the introduction of the Green Deal for Homes. People in receipt of the Renewable Heat Premium Payments will be able to receive long term RHI tariff support once these tariffs are introduced as will anybody who has installed an eligible

installation since 15th July 2009.

In the second phase, we will also consider introducing support for a number of other technologies and fuels which are not supported from the outset.

Given the current economic climate it is more important than ever that the RHI delivers value for money and ensures there is a fair spread of technologies across a range of properties types. The Renewable Heat Premium Payments will help ensure that, before we commit to long term payments in a sector where it is difficult to predict levels of take-up and levels of performance of the different heat technologies, we manage their roll-out and learn more about them, as well as controlling budgets and ensuring the money goes where it is intended to.

The key aspects of the RHI tariffs from 2011 for the non-domestic sectors will be:

- Support for a range of technologies and fuel uses including solid and gaseous biomass, solar thermal, ground and water source heat-pumps, on-site biogas, deep geothermal, energy from waste and injection of biomethane into the grid;
- Support for all non-domestic sectors including: industrial and the commercial sector; the public sector; not-for-profit organisations and communities in England, Scotland and Wales;
- RHI payments to be claimed by, and paid to, the owner of the heat installation or the producer of biomethane;
- Payments will be made quarterly over a 20 year period;
- For small and medium-sized plants (up to and including 45kWth), both installers and equipment to be certified under the Microgeneration Certification Scheme (MCS) or equivalent standard, helping to ensure quality assurance and consumer protection;
- Tariff levels have been calculated to bridge the financial gap between the cost of conventional and renewable heat systems, with additional compensation for certain technologies for an element of the non-financial cost;
- Heat output to be metered and the support calculated from the amount of eligible heat, multiplied by the tariff level;
- Biomass installations of 1 MWth capacity and above will be required to report quarterly on the sustainability of their biomass feedstock for combustion and where they are used to

produce biogas;

- Eligible non-domestic installations completed on or after 15th July 2009, but before the start of the RHI, will be eligible for support as if they had been installed on the date of its introduction;
- The Gas and Electricity Market Authority (Ofgem) will administer the RHI including: dealing with applications; accrediting installations; making incentive payments to recipients; and monitoring compliance with the rules and conditions of the scheme; and
- The RHI will be funded from general Government spending, not through the previously proposed RHI levy.

From 2012, the Government plans to introduce a second phase of support, which will include RHI tariffs for domestic installations and a number of additional technologies and fuel uses, as outlined in *Annex 1*, where they represent a cost-effective way of increasing renewable heat uptake.

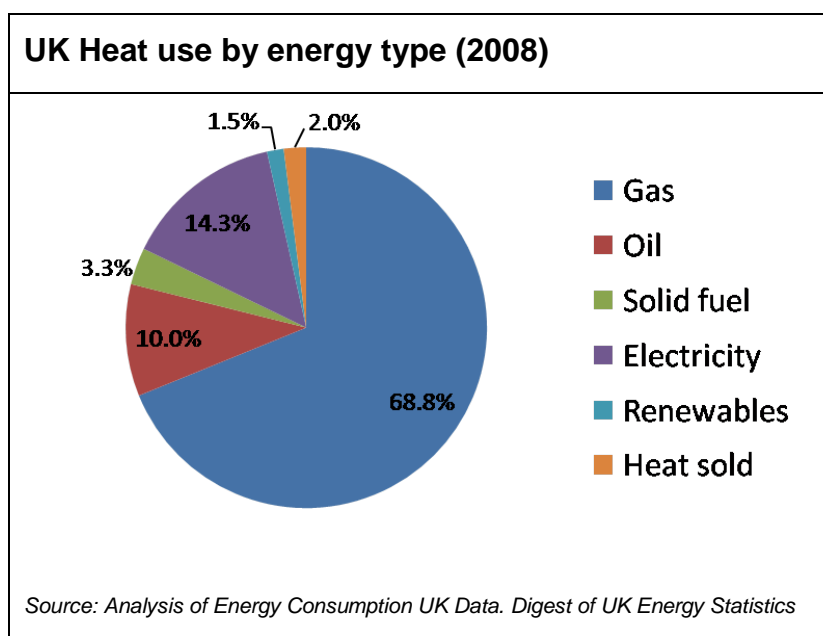
Chapter 1 - Introduction

Background

The desire to increase renewable energy consumption is shared across the European Union (EU), with the 2009 Renewable Energy Directive (RED) setting a binding target of 20 per cent of the EU's energy consumption coming from renewable sources by 2020. The UK share of this target commits us to consuming 15 per cent of our energy from renewable sources by 2020.

Heat

Heating accounts for 47 per cent of total UK final energy consumption and more than three-quarters (77 per cent) of energy use across all non-transport sectors¹. In terms of carbon emissions, heating accounts for 46 per cent. The most recent data show that approximately 69 per cent of heat is produced from gas. Oil and electricity account for 10 per cent and 14 per cent respectively, solid fuel three per cent and renewables just 1.5 per cent. Heat sold i.e. heat that is produced and sold under a contract (including CHP plants and community heating schemes) accounted for two per cent.



The Renewable Heat Incentive (RHI) will help change this picture. The RHI will help drive a significant increase in the level of renewable heat. The Government is committed to the ambition that by 2020, 12 per cent of heating can come from renewable sources and we estimate that the RHI could save up to 44

¹ Energy Consumption in the UK. DECC 2010

million tonnes of carbon (MtCO₂) by 2020 (36 MtCO₂ outside the EU(ETS) and 8 MtCO₂ inside the EU(ETS)). This works out as a saving of one million tonnes of carbon in the first carbon budget period (2008-2012), 15 million tonnes in the second carbon budget period (2013-2017) and 52 million tonnes in the third budget period (2018-2022).

Phased approach

Due to the wide range of technologies and fuel uses that could potentially be included within the RHI, the Government has decided to take a phased approach to implementing the scheme. In some areas, further work is required before a decision can be made as to whether support should be provided and as to the most effective way of providing support, whilst ensuring value for money. The Government does not want to hold up the entire scheme while this work continues and therefore will introduce **Phase One** of the scheme in 2011 and then a second phase from 2012.

For the initial phase, we are focusing on what is deliverable in the short-term. The scheme will support those technologies and fuel uses, which provide a cost-effective way of increasing renewable heat and where the Government believes they can be practically administered in the scheme (e.g. there is a clear means of measuring heat production). For further information please see the *Supported Technologies and Fuels* chapter.

The first phase of RHI tariffs will only support the non-domestic sectors. These sectors represent the most cost-effective way of delivering renewable heat, which will help us meet our renewables targets and reduce carbon emissions. We therefore want to introduce support now so installations can start being built.

From the initial framework, we will then introduce **Phase Two** of the RHI, where we will build in further elements to the scheme. Any additions made to the RHI from 2012 as part of the phased approach, will not be part of the formal review process, but will allow for the incorporation into the scheme of a limited number of elements of the RHI which, for the reasons described above, it will not be possible to introduce from the outset. All future changes will need to be affordable within the Spending Review allocation for the RHI. The Department's economic modelling suggests that this should be the case for sectors and technologies where it has been stated that there is a firm intention to introduce support from 2012. Further secondary legislation will be needed in order to implement any changes to the scheme.

Domestic installations

Almost half the energy used in the UK is used for heating, and 55 per cent of that is used for domestic heating; most of it for space heating, but also for hot water and cooking. At the moment, around 80 per cent of domestic heating is provided by 18-20 million gas boilers. These are currently replaced at a rate of about 1.2 million per year. The remaining two million or so homes are not on

the gas grid and largely rely on heating oil, liquefied gas or direct electric heaters. Only around one per cent of heat in homes currently comes from renewable sources.

The best and most cost-effective way to reduce emissions from domestic heating is to make our homes better insulated and more energy efficient. That is what the Green Deal will do when it is introduced in Autumn 2012. But we also need to promote a shift in the type of heat that we use. Increasing renewable heat is therefore a key objective for this Government. The Renewable Heat Incentive (RHI) will help accelerate deployment by providing a financial incentive to install renewable heating in place of fossil fuels.

As part of the first phase of the scheme, the Government will also introduce *Renewable Heat Premium Payments* for the domestic sector. We have ring-fenced funding of around £15 million, which we will use to make premium payments to households who install renewable heating. These direct payments will subsidise the cost of installing qualifying renewable heating systems. In return for the payments, participants will be asked to provide some feedback on how the equipment works in practice and suppliers will be asked to provide a follow up service on any issues that are raised. This will boost confidence in the technology and the information we receive will help enable Government, manufacturers, installers and consumers to better understand how to maximise performance of the various technologies. The Renewable Heat Premium Payments will support a spread of technologies across all regions of Great Britain and will cover households using gas and other fossil fuels. We may consider focusing support for primary heating systems, such as heat pumps and biomass boilers, on households off the gas grid, where fossil fuels like heating oil are both more expensive and have a higher carbon content. We aim to launch the Renewable Heat Premium Payments in July 2011 and will announce further details in May 2011.

A second phase of RHI support that will include long-term tariff support for the domestic sector will then be introduced in 2012 to coincide with the introduction of the Green Deal for Homes. People in receipt of Renewable Heat Premium Payments will be able to receive long term RHI tariff support once these tariffs are introduced, as will anybody who has installed an eligible technology since 15th July 2009.

By domestic installations, we mean installations where a renewable heating installation serves a single private residential dwelling only. This does not include multiple residential dwellings served by one renewable heating installation (e.g. district heating) nor residential dwellings which have been significantly adapted for non-residential use. For example, a house where someone works or runs a business from home would be considered domestic whereas a house converted to be a shop or bed & breakfast would be considered non-domestic and could receive RHI support. This means that if a company, private landlord or registered social landlord installs single renewable

heating units, in one or multiple residential dwellings, this would constitute a domestic installation and they will not be able to receive RHI tariffs from the outset, but will be able to claim from 2012.

Context

When developing the RHI, we have had to consider the current economic climate. The Coalition Government's top priority is tackling the UK's deficit, which is necessary to secure sustainable economic growth. Despite the financial pressures, in October 2010, the Government announced £860 million of new support over the spending review period to support renewable heat measures. Given the fiscal constraints, we need to ensure that this investment is spent carefully. We have therefore focused the scheme to ensure that the investment maximises the renewables and carbon savings delivered. The scheme will only provide support where it:

- **Represents value for money** - It is more important than ever that where we spend precious resources, there must be a clear benefit. This means we have to focus on the most cost-effective way of increasing the amount of renewable heat;
- **Helps us meet our renewables targets** - We can only support renewable heat. The renewable energy target is extremely challenging and, given the funding and time limitations, the RHI needs to focus on the technologies which can be counted to meet that target. This means we will not support non-renewable sources within this scheme, even where they are low-carbon. While we welcome all efforts to reduce carbon, such as utilising wasted heat or using fossil fuel combined heat and power, to include them within the RHI would increase costs, complexity and would blur the focus of the scheme. We will only support heat from renewable sources which can be counted towards our renewables target in accordance with the Renewable Energy Directive (RED). Should the European Commission reclassify technologies in future, we would consider them for inclusion as part of the regular reviews of the RHI; and
- **Provide additional renewable heat** - The RHI is not a reward scheme; it is an incentive, which means we must remain absolutely focused on encouraging new and additional renewables, which in turn, will help reduce carbon emissions. Where an installation would not provide additional renewable heat, unless it is replacing an existing renewable installation, we will not provide support through this scheme².

² The exception to this are eligible installations that were completed and first commissioned after 15 July 2009, see information on 'transitional arrangements' later in this chapter.

Emerging sector

To date, heating in the UK has been dominated by gas and other fossil fuels. Unlike mainland Europe where it has been more commonplace for a number of years, renewable heat is a relatively new sector to the UK. Many of the technologies are unfamiliar and new products and technologies are emerging all the time. In contrast to electricity, there is no national heat network, only a gas grid. There are a huge number of issues that we could factor in to the scheme, however, to do so could mean that the scheme could become unwieldy, impractical to administer and confusing for applicants. Therefore we have had to remain focused on maximising the amount of renewables deployed, value for money and what is practical to deliver in the short-term.

Timing for introduction

We are aiming to seek Parliamentary approval of the RHI regulations underpinning the scheme in July 2011, so we can engage straight away with applicants and accept applications for accreditation as soon as possible thereafter.

Transitional arrangements (i.e. eligible installations completed and first commissioned on or after 15th July 2009 and before the start of the scheme)

Non-domestic installations that meet the eligibility criteria that were completed and first commissioned³ on or after the 15th July 2009, will be eligible for support under the RHI once the scheme is introduced. The arrangements for these transitional installations are discussed in each of the chapters and are summarised in *Annex III*.

Domestic installations completed and first commissioned on or after the 15th July 2009, will also be eligible for RHI tariffs, once tariffs are available through the RHI, providing they meet the final eligibility criteria.

State Aid clearance

The RHI is subject to receiving state aid clearance from the European Commission.

How the RHI will be funded

The Coalition Government has decided that the RHI will be funded from general Government spending. The previous Government's plans for an RHI levy to fund the scheme were considered overly complex.

³ The legal definition will refer to the term 'commissioned' which means, for RHI purposes, the eligible installation is capable of operating and delivering heat to the premises or process for which it was installed.

This decision should alleviate the fears of a number of organisations and industries about the potential impacts on energy bills and the consequences for fuel poverty and energy intensive industries.

Impact assessment

A full outline of the costs and benefits of the RHI are outlined in the impact assessment, which can be found on the Department of Energy and Climate Change (DECC) website – www.decc.gov.uk/rhi

Next steps

This document sets out the Coalition Government's policy on the design of the Renewable Heat Incentive (RHI). We are not consulting on the measures set out in the document.

The current draft of text for the RHI regulations that will underpin the scheme are published alongside this document. This is a working draft and the text will be subject to change before being laid as draft regulations. However, we will consider comments from stakeholders on practical application. Any views should be sent to DECC before **5th April 2011**.

We are also publishing our proposed amendments to the Energy Act 2008 definitions of biomass and biogas.

You may make copies of both documents without seeking permission. Electronic versions can be found on the Department of Energy and Climate Change (DECC) website – www.decc.gov.uk/rhi

Please direct any queries or comments you have to rhi@decc.gsi.gov.uk

Chapter 2 – Accessing Support

Summary

- **The RHI's objective is to increase significantly the level of renewable heat;**
- **Non-domestic sectors will be have an RHI tariff from the outset – the industrial and commercial sectors; the public sector, not-for-profit organisations and communities;**
- **RHI Premium Payments will be available in 2011 and RHI tariffs will be introduced from 2012 alongside the Green Deal for homes.**
- **Ofgem will administer the RHI tariff scheme; and**
- **Owners of eligible installations for the RHI tariff scheme to apply to Ofgem for support.**

What is the purpose of the RHI?

The objective of the Renewable Heat Incentive (RHI) scheme is to increase significantly the proportion of heat that is generated from renewable sources and, by encouraging a switch from fossil fuels, contribute towards our wider carbon reduction goals. We recognise that one of the most significant barriers preventing take-up is the higher costs of renewable heating technologies, compared with fossil fuel equivalents. Even where an organisation *wants* to install a renewable heating source, often it is deemed too expensive. The RHI will compensate for this additional cost, which will help make renewable heating an option for all. Over time, we expect the cost of renewables to fall as technologies enter the mainstream, benefit from economies of scale and become more efficient. Ultimately, renewable heat needs to be able to compete on its own without Government support.

What sectors are supported?

From 2011, all non-domestic sectors will be offered a tariff under the RHI: industrial and the commercial sector; the public sector; not-for-profit organisations and communities. For the domestic sector, the Government will also introduce *Renewable Heat Premium Payments*, which will subsidise the cost of installing qualifying renewable heating systems. (Please see the *Introduction* chapter for further information) Tariff support for domestic installations will not be available from the outset, but will be introduced during the second phase of support in 2012 alongside the Green Deal for Homes.

Industrial and commercial sector

To meet our share of the EU 2020 renewable energy target, we will need a large proportion of renewable heat to be delivered by the industrial and commercial sectors. These sectors provide the most cost effective way of increasing renewable heat. It is therefore crucial that renewable heat becomes a viable option for this sector.

Certain industries have a great opportunity to benefit from the RHI. For example, some can use the by-products of their business as a fuel, such as, breweries using waste from the brewing process or supermarkets using food waste to generate biogas. This will mean a reduction in the amount of organic waste going to landfill, using it instead to generate useful energy.

Commercial buildings will also be able to meet their space heating requirements using renewable technologies, while increasing the knowledge of their employees about renewables in the process.

Adnams Bioenergy Facility at Southwold, Suffolk

Adnams Bio Energy, a subsidiary of Bio Group Limited has begun producing biomethane – green gas – which has been transferred over to the National Grid, in what is the first anaerobic digestion (AD) facility built specifically to inject green gas into the gas grid in the UK.

The plant has an initial capacity of 12,500 tonnes of waste per annum and is planned to double in size in the next 12 months. It will process food waste and brewery waste from the nearby Adnams brewery, as well as from other businesses from around the area.

By diverting food waste from landfill, the facility will save nearly 60,000 tonnes of CO₂ equivalent emissions. In addition, the plant will provide gas as a vehicle fuel to Adnams Distribution Centre. Converting their distribution lorries to run on gas will, when complete, reduce Adnams carbon footprint by a further 26 per cent.

The facility will generate around one million cubic metres per annum of biogas, which is then cleaned using a cryogenic process to remove the carbon dioxide (CO₂) and other trace gases. The CO₂ is then captured using biomass (which is also used as a process for taking the nutrients out of the liquid digestate). About 600,000 cubic metres of biomethane will then be injected to the Grid every year.



Public and not-for-profit sector

The public sector and not-for-profit organisations, such as schools, hospitals and charities, can also make the switch to renewable heat. As we have already seen with the Feed-in Tariffs scheme, installing renewables provides an ideal opportunity for the public sector to take the lead in *greening* the local community. Installing renewables in public sector buildings will help demonstrate to the public their practical application. For schools in particular, it has an educational value, as children can learn about the systems, gain a better understanding of energy in the world around them and become the green pioneers of the future.

Communities and distributed energy networks

The support provided by the RHI will also enable communities to come together to find local solutions tailored to local energy needs. The opportunities are many, from setting up anaerobic digestion plants using local waste to establishing community-owned biomass cooperatives sourcing fuel from sustainable local woodlands.

In some situations, district and community renewable heating, whether as a central boiler for an apartment building, or as a network of pipes delivering heat from a central installation to a number of local households or businesses, can be a cost-effective alternative to installing individual heating systems in properties. By supporting this sort of application, the RHI will encourage investment and give developers confidence to install centralised plant.

Community Energy Online

The Coalition Government has recently launched the online portal, ***Community Energy Online***, to promote community energy schemes. The website is designed to guide potential developers through the stages of developing a low carbon or renewable energy project, outlining technology options, issues and solutions related to the procurement, installation and usage of different approaches. Developed together with community networks, the Local Government Group and industry bodies, it is aimed at helping users to understand the complexities of everything from feasibility assessments to finance solutions, and biomass boilers to business planning. The website can be found at <http://ceo.decc.gov.uk/>

Administrator

The Gas and Electricity Market Authority (Ofgem), through its E-Serve division⁴, will be responsible for administering the RHI. It will deal with applications for support, the accreditation process, making incentive payments to participants and ensuring compliance with the rules and conditions of the scheme. Further information on Ofgem's role as administrator is set out below and in the *Administration* chapter.

Who can claim the RHI?

RHI payments may only be made to the 'owner' of the installation used or intended to be used for the renewable generation of heat or a producer of biomethane, in accordance with the legislation underpinning the scheme⁵.

Owner

The word 'owner' has its standard meaning, so the owner of an installation will be the person with exclusive rights and liabilities in respect of that installation. The owner will therefore usually be the person who purchased and paid for the installation of the equipment.

However, where a hire purchase agreement, conditional sale agreement or other similar arrangement has been entered into to cover the cost of purchasing and installation, the legislation provides that the individual in possession of the plant under that agreement is the 'owner' and the payment would therefore be made to the recipient of the loan, despite the fact that the terms of the loan agreement may provide that they are not legal owner. There may be situations where the owner is not the person operating the equipment. In such cases, where the owner retained all rights and liabilities, including maintenance of equipment, the RHI payments would be paid to that owner.

A number of stakeholders have argued that participants should be allowed to assign and transfer payments to another person, as allowed under the Feed-in Tariffs (FITs) scheme, in order to help reduce the credit risk to lenders. The current legislation only allows payments to be made to the owner of the equipment. Therefore, in order to allow this form of assignment, the primary legislation (Section 100 of the Energy Act 2008) would need to be amended. While we appreciate these concerns, we are not convinced that the legislation should be changed, given the delays to implementation that this would cause. We are also not convinced that assigning payments would fully reduce the risk to lenders, as ultimately they would still be reliant on the 'owner' of the equipment meeting their obligations under the

⁴ Ofgem E-Serve was created in late 2009 to administer a number of environmental and social programmes within the UK.

⁵ Section 100 of the Energy Act 2008

scheme (e.g. maintenance, allowing inspections). In addition, the RHI payments cover the on-going costs of running the equipment (maintenance, fuel etc), which would still have to be met by the person operating the system.

Financing

RHI tariff support will be delivered in the form of payments made over a number of years rather than as an upfront payment. Options for financing the cost of installations will therefore be an important issue for those considering a switch to renewable heat. A number of stakeholders have highlighted this as a problem, that even if a business or organisation wanted to take part in the scheme, they could not raise the initial capital cost. We accept that this could sometimes be an issue, however, we expect the RHI will stimulate the market to provide a number of different financing options, which could cover both the capital costs (e.g. cost of installing the equipment) and ongoing operational costs (e.g. fuel costs) for the lifetime of the installation. Possible finance models include:

- **Energy suppliers** – providing renewable heating as an option alongside their current package of services;
- **Banks and other lenders** – lenders to finance upfront capital costs for an assigned proportion of the RHI through a contractual arrangement;
- **Energy service companies** – a combination of local authority, community and energy company expertise in a body that provides a finance package to deliver renewable heat technologies using RHI payments; and
- **Public sector financing** – local authorities are potentially able to take advantage of economies of scale.

Applying for support

Organisations that want to receive RHI tariffs will need to apply to Ofgem directly. Guidance on the application process for support will be set out in detail ahead of the introduction of the scheme by Ofgem.

User-friendly

We will work closely with Ofgem to ensure that the application process is user-friendly. The process will be straightforward and easy to follow, particularly as many RHI applicants will be non-energy professionals. This is something that stakeholders have argued is critical and we agree.

Online application

In the majority of cases we expect people to apply online. For those with internet access this should represent the quickest way to accessing support, as well as providing the most efficient and cost-

effective way of processing applications. However, while we will encourage online applications, applicants will also be able to apply in writing or by phone. For either approach, we will work with Ofgem to ensure support is available online, on the phone and in written guidance. Ofgem will publish details on when organisations may apply for support online once the scheme is introduced.

Accreditation

In order to receive support under the RHI tariff scheme an installation will have to be accredited. Accreditation is the process of Ofgem determining whether an installation meets the eligibility criteria of the scheme. In order to gain accreditation of an installation, an applicant will have to demonstrate that an installation meets all the appropriate eligibility criteria (e.g. acceptable heat-use, metering arrangements). The applicant must also meet the ongoing obligations required under the scheme (e.g. use of equipment, maintenance). In practice this will be dealt with through the application process. Once Ofgem is satisfied that all eligibility criteria have been met and the applicant will comply with the ongoing obligations of the scheme, it will then accredit the installation and the applicant will become a participant in the scheme; at this point the participant will become eligible for support.

Preliminary accreditation

We intend to allow applicants to apply for *preliminary accreditation*. In practice this would mean that an organisation can submit plans and evidence demonstrating that, once built, an installation would meet the eligibility criteria of the scheme. If Ofgem is satisfied that all eligibility criteria would be met, it would then grant preliminary accreditation. Providing that the installation is then built in line with the plans submitted, or, where changes are made, Ofgem is satisfied that the project still meets the eligibility criteria, the installation would then be granted full accreditation.

We think this could help provide extra certainty for investors that a future installation would receive support under the RHI once built, which in turn can help secure the financial investment needed to get the installation built. The appropriate tariff level will be set at the point at which full accreditation is granted and not at the point of preliminary accreditation.

Preliminary accreditation should not be necessary for simple installations, so we will consider setting a threshold for where it may be sought. This will be set out in the regulations underpinning the scheme.

Changes to installations

Where changes are made to an accredited installation, for example, where a participant adds additional heating equipment, the participant will need to inform and provide information to Ofgem, who will then decide whether the installation still meets the eligibility criteria.

Change in ownership

Where an installation is bought by another person, the new owner may receive RHI support for the remaining eligibility period providing it can prove to the satisfaction of Ofgem that ownership has been validly transferred to it, that all eligibility criteria are still being met, and that it will comply with the ongoing obligations required under the scheme. Where an installation changes ownership, the original participant will be required to provide such information Ofgem may require in order to perform its functions under the scheme. Any attempts to try and continue receiving payments while not in ownership and therefore not eligible, could constitute fraud and will be dealt with accordingly.

Agents not allowed

We do not intend to allow agents, such as installers, suppliers or other third parties, to apply for support from the scheme on an applicant's behalf. We appreciate that agents were allowed under the Renewables Obligation (RO) and some have argued they should be allowed for the RHI, however we do not believe it is necessary. The original purpose of allowing agents under the RO was to help small-scale participants deal with some of the complexities of that scheme. The RO was primarily designed for large scale generators and small-scale generators often struggled to deal with trading small numbers of renewable obligation certificates (ROCs); the RHI scheme should be more straightforward and the more complex information at the smaller scale can be provided by the certified installer. Enabling agents to apply on a organisation's behalf would add complexity to the administrative arrangements and cost of the scheme.

Payment calculation

Payments will be calculated by multiplying the appropriate tariff, depending on the technology and type and size of the installation, by the amount of eligible heat. Payments will be made over a period of 20 years. Details of tariff levels and our approach to measuring heat are set out in the *Support Levels* and *Measuring Heat* chapters respectively.

Payment frequency

A participant will receive payment for a quarterly period following the submission of the required periodic information. The late submission of data to Ofgem may cause a delay in payment.

Rural and off-gas areas

A higher proportion of rural than urban areas tend to lack access to the gas grid and organisations not connected to the gas grid, for example small rural businesses, tend to have higher heating costs due the use of more expensive fuels. Therefore, those off the gas grid will have the potential to benefit most from the RHI and this type of switching will also produce the greatest environmental benefit as off gas grid fuels have higher carbon emissions.

Rural stakeholder representatives have raised concerns about the potential negative impact of the RHI funding on rural heating bills. As the RHI will now be funded from Government spending rather than a levy on the supply of fossil fuels used for heating (which was likely to have increased fossil fuel prices), it will not impact upon bills. The Government believes this means there is great opportunity for organisations off the gas grid and in rural areas to benefit from the scheme financially. In addition, those in rural off-gas grid areas may have better access to biomass in particular and not face the same installation and biomass fuel supply barriers as those in urban areas.

Chapter 3 - Eligibility

Summary

- RHI will cover England, Scotland and Wales;
- Only non-domestic installations supported from the outset;
- Installations completed and first commissioned on or after 15th July 2009 eligible for support providing they meet the eligibility criteria;
- Heat must be usable and useful heat used for space, water or process heating to be eligible for support; and
- RHI participants will be required to meet a number of ongoing obligations, including maintaining equipment, providing information to Ofgem and allowing installations to be inspected.

There are a number of eligibility criteria that applicants must meet in order to receive support under the Renewable Heat Incentive (RHI). They are outlined in this chapter, the *Supported Technologies and Fuels* chapter and, where applicable, the *Bioenergy* chapter.

Geographical coverage

The RHI will provide support for eligible renewable heating installations in England, Wales and Scotland, as provided in the primary legislation underpinning the scheme – Section 100 of the Energy Act 2008. Installations in Northern Ireland are not currently covered by this scheme; it is a matter for the Government of Northern Ireland to decide whether to provide support.

Non-domestic sector supported

Only the non-domestic sector will be supported through the RHI tariffs from the outset for the reasons set out in the *Introduction* chapter.

What are domestic installations?

Domestic installations are those where a renewable heating installation serves a single private residential dwelling only. This does not include multiple residential dwellings served by one renewable heating installation (e.g. district heating) nor single residential dwellings which have

been significantly adapted for non-residential use. For example, a house where someone works or runs a business from home would be considered domestic whereas a house converted to be a shop or bed & breakfast would be considered non-domestic and could receive RHI support. If a company, private landlord or registered social landlord installs single renewable heating units, in one or multiple residential dwellings, this will constitute a domestic installation and will not be able to get support through the RHI tariffs from the outset.

Transitional arrangements: Non-domestic installations completed and first commissioned on or after 15th July 2009 and before the introduction of the RHI

The Coalition Government has decided that the cut-off date for eligibility for support under the RHI will be 15th July 2009. Only installations that are completed and first commissioned⁶ on or after this date, which meet all other eligibility criteria, will be able to claim support.

There are several parts to a renewable heating installation which are required for it to deliver heat to the premises or industrial process. For example, a ground source heat pump will need the ground loop, the heat exchanger, potentially auxiliary pumps to move the fluid in the system as well as the parts required for most heating systems such as the water cylinder, radiators and piping to distribute the hot water. All of these elements will have to be in place for a heating system to operate and so provide a date for when the installation is first commissioned. However, adding non-essential elements to the system, such as extra radiators, will not affect the first commissioning date.

The 15th July 2009 was the publication date of the Renewable Energy Strategy (RES), which set out plans to support renewable heat. There was a concern that following its publication, in the absence of any firm support for renewable heat, there would be a hiatus in the market as people awaited the start of the RHI. Therefore, in order to encourage people to continue to install before the introduction of the scheme, a statement was made that any installation after that date should be eligible for payment under the RHI. The Coalition Government has considered these arguments and has agreed that renewable heat equipment completed and first commissioned after 15th July 2009 will be eligible for support providing it meets the eligibility criteria of the scheme, as set out in this document.

Further details about transitional installations are outlined in *Annex III*.

⁶ In the February 2010 consultation document, the cut-off date for existing generators referred to installations 'completed' after 15th July 2009. The legal definition will refer to the term 'commissioned' which means, for RHI purposes, the eligible installation is capable of operating and delivering heat to the premises or process for which it was installed.

Installations commissioned before 15th July 2009

We appreciate the arguments that individuals and organisations have presented for allowing installations completed *before* 15th July 2009 to receive support, in particular that it may discourage potential early adopters of future technologies and that the possible increase in the price of biomass caused by increased renewables take-up, may put them at a competitive disadvantage relative to those who will receive the RHI. However, given the current tight fiscal climate, the money available for the RHI must be used in the most effective way possible to help deliver new, additional renewable heat. The RHI is not a reward, it is an incentive to drive the uptake of new renewable heat; paying for something which had been installed prior to the RHI being announced would not be an effective use of public funds and cannot be justified.

Eligible uses of heat

The Renewable Heat Incentive (RHI) will only support *useful* heat. It is not practical to provide an exhaustive list of all the acceptable heat uses which will be eligible. Instead, we can outline the broad principles of what we want to support:

- The utilisation of useful heat;
- The heat must be supplied to meet an economically justifiable heating requirement i.e. a heat load that would otherwise be met by an alternative form of heating e.g. a gas boiler;
- This heat load should be an existing or new heating requirement i.e. not created artificially, purely to claim the RHI; and
- Acceptable heat uses are space, water and process heating where the heat is used in fully enclosed structures.

The only exception to this approach is for biomethane injection, where we will not specify how the biomethane should be used, given it will be injected into the existing gas grid.

Ofgem will determine what constitutes an ineligible heat use in accordance with the RHI regulations.

Cooling

Heat used for cooling counts towards the renewables targets under the Renewable Energy Directive (RED) and therefore, provided it meets all other eligibility criteria, it will be eligible for RHI support. Many commercial and industrial users of energy consume comparable amounts of energy for heating and for cooling. Heat can be used to provide cooling through absorption chillers; this is quite common practice in commercial and industrial uses. Therefore, cooling delivered in this way will be supported under the RHI.

However, the scheme will *not* support cooling generated by heat pumps, as this does not count under the RED towards our renewables targets. Only the heat element of generation from heat pumps will be eligible.

Replacing existing renewables

Renewable heating systems that replace an existing renewable heating system will be eligible for the RHI support. Some stakeholders have claimed that owners of older installations, which are not eligible for the scheme (e.g. completed and first commissioned before 15th July 2009) would replace them, despite being fully functioning, with new installations in order to claim the RHI.

Clearly this would go against the intent of the scheme and would not represent value for money. However, this has been deemed as low risk given the up-front capital that would be required and the disruption caused. Furthermore, making replacement of renewable technologies ineligible would be difficult to enforce and would exclude those with a genuine need to replace old or failing equipment. However, we will keep this situation under review and monitor the types of installations claiming the RHI. If there is evidence that a significant number of new installations are replacing well functioning renewable heating systems, we will take action.

Definition of an installation

While the RHI applies to a wide range of sectors, the scheme will need to define an installation in order to establish the relevant capacity of the renewable heating equipment in order determine a number of eligibility criteria and tariff bands.

The RHI tariffs are banded by the type and size of renewable heating equipment; the tariffs are higher for smaller installations (see the *Support Levels* chapter for further information). Therefore, where multiple units of the same type of heating equipment are installed, there will be an incentive for the owners to claim those units as smaller individual installations rather than as one larger installation, in order to claim the higher tariff. Clearly defining what constitutes an installation is important for ensuring people do not game the system.

An RHI installation can be comprised of one or multiple units of the same heating technology connected to a common heating system.

Where multiple units of the same technology are installed within a 12 month period, their combined capacity will be considered for the purpose of the level of tariffs they receive. Different renewable technologies on a single site will be treated as separate installations in order to allow for differentiation between tariffs and certain eligibility criteria.

Installation capacity

For the purposes of the RHI, the installation capacity will be the total installed peak heat output of the installation. Ofgem, as administrator of the scheme, will require details of installed capacity as part of the accreditation process (see the *Accessing Support* chapter for further information on the application and accreditation process).

Installation capacity will be simple to establish for standard equipment as it will be part of the information provided by manufacturers. For bespoke equipment it may be more difficult but the output capacity of the installation as commissioned will have to be proven to the satisfaction of Ofgem from technical evidence provided by the applicant as part of the accreditation process. Where the installed peak output capacity is provided with the equipment by the manufacturer, that will be used to rate it for the RHI.

Adding capacity to an existing RHI installation

It is likely to be relatively common that renewable heating capacity is increased as further units are added to installations. This may happen as additional heating is required, or more capital becomes available for investment in renewable heat or businesses replace multiple fossil fuel heating equipment incrementally as it reaches the end of its life.

An RHI participant adding capacity of the same renewable technology or additional plant of a different technology to an RHI installation will have to meet the eligibility criteria and apply for accreditation if they wish to receive support on the additional capacity or plant. In such cases, the additional plant or capacity will undergo a similar process of accreditation to a separate installation, with additional checks to verify how it interacts with the existing installations. If the participant does not want to apply for RHI support on the additional capacity or plant, they still must inform Ofgem of the change and provide updated information on the accredited installation (e.g. schematic, other installations on-site) in order for Ofgem to determine whether the installation still meets the eligibility criteria.

We need to cater for situations where more units of the same technology are added and determine which tariff they should receive. Additional capacity may take an installation over a tariff threshold as the *total* capacity of the installation is counted (e.g. a 600kWth biomass boiler added to another 600kWth biomass boiler will take the capacity over a 1MWth tariff threshold). Also if tariffs are changed as a result of degression or a review (see the *Support Levels* chapter for details of degression and reviews), then a different tariff may apply to new heating units of the same size. Therefore, adding capacity to an installation will be treated as follows:

- **Additional capacity installed and first commissioned within 12 months**

Where additional capacity is first commissioned within 12 months of the commissioning date of the original installation, it will be treated as a single installation. Therefore, the total capacity of the

installation will be counted for the purpose of the tariff. For example, a 600kWth biomass boiler added to another 600kWth biomass boiler within the same 12 month period, will mean that the installation will be treated as a 1200kWth installation. This means it will fall into the tariff band for the higher capacity but at the rate which applied when the first boiler was accredited. The lifetime of the installation will be determined by the date that the first boiler was first accredited. The additional capacity and the original installation will have to be metered separately.

- **Additional capacity is first commissioned more than 12 months after the previous installation**

Where additional capacity is completed and first commissioned more than 12 months after the previous installation, the first part of the installation will continue to be treated as before. The additional capacity will be rewarded on the basis of the total capacity of the installation and will receive the current tariff level. Using the above example, the first 600kWth boiler will receive the 600kWth tariff available when it first commissioned. The second 600kWth boiler will receive the 1200kWth tariff available when it is first commissioned. In this case, the tariff lifetime of the additional capacity will start from when the additional capacity is commissioned. Each boiler will have to be metered separately so that the output of each one can be appropriately rewarded.

The table below outlines an indicative illustration of the example above where capacity is added to an installation more than 12 months after the original installation.

<i>Illustrative example of support for additional capacity</i>				
	Year installed	Capacity	Tariff	Lifetime
Biomass boiler 1	2012	600kWth	600kWth tariff in 2012	20 years from 2012
Biomass boiler 2	2014	600kWth	1200kWth tariff in 2014	20 years from 2014

Only capacity which is RHI accredited or applying for the RHI will count towards installations capacity and total site capacity for the purpose of the scheme. Existing or future renewable capacity which does not receive support under the RHI will not be considered as total installation capacity when determining which tariff band the installation falls into nor for other capacity related eligibility criteria.

Conversion

Only new equipment (or where it is completed and first commissioned on or after the 15th July 2009 and the equipment was new at the point of commissioning) will be eligible for the RHI. The tariffs have been calculated on the basis of the installed costs of new equipment. While we recognise that new equipment

may not always be the most efficient way of utilising a renewable resource where conversion of existing equipment is an option, we do not have sufficient evidence at present to incorporate it into the scheme. Many conversions at the large scale will be highly bespoke and it is difficult to classify what would be eligible and calculate the appropriate level of incentive. However, we will gather evidence and consider further whether and how conversion could be made eligible for the RHI in future.

On-going obligations

In addition to the installation specific eligibility requirements, such as acceptable uses of heat and eligible technologies, there will be a number of on-going obligations that applicants will need to agree in order to receive support. These obligations will help ensure the scheme achieves the desired renewables output and carbon savings and represents value for money as well as enabling the effective administration of the scheme. We regard these obligations as an essential part of receiving support. Participants will receive a significant level of financial support from Government, in return we expect them to meet their obligations and fulfil their side of the agreement.

Applicants will be asked to declare that they will agree to meet these obligations when applying for support and asked to re-declare that they are meeting them and will continue to do so on a regular basis. Should a participant fail to meet these obligations, they will risk losing support and being excluded from the scheme (see the *Administration* chapter for further information).

Maintenance

We need to ensure that the RHI represents value for money, with a clear return in terms of the amount of renewable energy produced for the money spent. As a condition of receiving support, participants will therefore be required to maintain their equipment to ensure it is working effectively.

Clearly, there is a natural incentive for a participant to keep their equipment maintained without any specific requirement, given it will provide their heating or be crucial to their industrial process, however we still believe there is a risk, albeit low, that some may not. There is a risk that poorly maintained equipment will be less efficient and may have a more harmful impact on the environment. We therefore believe a specific requirement is needed.

Views from stakeholders have been mixed as to what maintenance requirements should be put in place, ranging from those who felt an annual service carried out by a certified installer should be required, to those who warned against a 'one size fits all' approach, stressing that maintenance requirements varied considerably. Given the wide range of technologies, we do not think it is practical to specify in legislation a particular level of maintenance or frequency of servicing; what would be appropriate for a biomass boiler may not be for a solar thermal system. We think including such a provision risks being excessively burdensome or possibly misleading. Therefore, at this stage, we do not intend to specify a particular

level of maintenance and the requirement will simply be that the equipment is maintained in line with any manufacturer instructions where available.

Participants will be required to keep any evidence of maintenance work carried out, for example, servicing receipts and to provide this evidence, on request, to Ofgem. As part of any annual declaration, a participant will also be required to declare that the equipment is maintained. Where Ofgem is concerned that the equipment is not being maintained, it can then seek further evidence and where satisfied that it is not being maintained, take appropriate action.

Information and inspection

To ensure Ofgem is able to monitor compliance with the conditions of the RHI, applicants will have to agree up-front that they will provide any relevant information as requested by Ofgem and allow an inspection of the installation to ensure the eligibility criteria are being met. This may be up-front as part of the accreditation process, on a regular basis (e.g. an annual declaration that the participant continues to meet all eligibility criteria) or as part of an ad hoc spot-check.

Small-scale certification

All biomass, ground and water source heat pumps and solar thermal plants of 45kWth capacity or less, will need to be certified under the Microgeneration Certification Scheme (MCS) or equivalent schemes⁷, such as Solar Keymark for solar thermal installations. This means that *both* the technology and the company or person installing it will need to be certified under the MCS scheme or equivalent. When applying for support, applicants will be asked for details of MCS or equivalent certification.

Given the emerging nature of the renewable heat market, the Government believes there is a role for certification of small-scale renewable heat technologies as a safeguard against poor quality and inefficient installations. This requirement will help ensure that installations at that scale are of a good quality thereby improving environmental benefits, resulting in greater benefits to the participant and maximising value to society.

The Government believes owners of larger installations are more likely and able to obtain the necessary expertise to guide their choices to ensure high quality installations and value for money, so we will not be requiring the same standards for plants larger than 45kWth.

If changes are made to the MCS standards going forward we will consider whether to incorporate them into the RHI at that time.

⁷ As certified under European standard EN45011 (General requirements for bodies operating product certification schemes)

Microgeneration Certification Scheme (MCS)

The MCS is an independent, industry-led certification scheme accredited by the United Kingdom Accreditation Service (UKAS).

MCS certification bodies assess microgeneration products and installers against consistent, robust standards. By providing assurances as to the quality, durability and energy generation performance of microgeneration products and guarantees to consumers on the quality of their microgeneration installations, MCS aims to protect consumers in this emerging market.

Members of the MCS are also expected to comply with the standards set out by the Renewable Energy Assurance Ltd (REAL) Scheme's Consumer Code which is backed by the Office of Fair Trading.

The MCS is a response to the requirements placed on Member States by the Renewable Energy Directive to ensure that certification schemes are available for installers of renewable technologies. MCS and equivalent schemes under the European standard EN 45011 (which sets general requirements for bodies operating product certification schemes) provide a suitable set of standards for certifying installers and equipment for the RHI.

More information can be found at the MCS and REAL websites:

www.microgenerationcertification.org

www.realassurance.org.uk

We appreciate there have been some concerns over the role of the MCS. While many stakeholders are content with the scheme, some argued that while the MCS should be used, it needs significant reform to ensure it is 'fit for purpose' or that alternative schemes should be allowed alongside the MCS. Many of the concerns raised have been explored as part of the Microgeneration Strategy Consultation launched in December last year and are now being addressed. Two examples of this include MCS's review of its governance structure to make it more transparent and its streamlining of installer requirements to offer more flexibility to smaller installation companies.

In the period since April 2010, when the Feed-in-Tariffs scheme was launched, the number of certified installation companies in the MCS scheme has grown by 470 companies to over 1,800, of which around 800 are able to carry out heat installations. Additionally, MCS certification costs are coming down. The Microgeneration Strategy Consultation response will be considered and changes made to the RHI scheme in future where appropriate.

Transitional arrangements: Non-domestic installations completed and first commissioned on or after 15th July 2009 and the introduction of the RHI

Under our transitional arrangements, non-domestic eligible installations completed and first commissioned on or after 15th July 2009 will be allowed to apply for the RHI when the scheme opens for business. Our approach to MCS certification will be as follows:

- Provided that the renewable heating product has MCS certified or equivalent status at the time the scheme starts, the product will be eligible for support under the RHI.
- The installer of the product needs to have been MCS certified or equivalent at the time of the installation of the product. It will not be possible for transitional installations, which have not used MCS installers to be retrospectively approved by MCS and such installations will not be eligible for the RHI.

In order to prepare for accreditation under the RHI, those wanting to receive support once the scheme has started, should ensure they have documentary evidence that their renewable heat installation is MCS certified, both in terms of the product and installer. Practically, this information will be captured on the MCS certificate that is issued following installation. We also ask potential applicants to retain any invoices and receipts, which can provide further evidence of installation.

Non-eligible uses of heat

We need to ensure the RHI represents value for money. Therefore, some uses of renewable heat will be specifically excluded from the scheme.

Electricity generation

Heat which is used for the generation of electricity will not be eligible for the RHI, as this is a heat specific scheme not intended to support electricity generation. From the point at which the heat is metered for the purpose of calculating its RHI support it must not be used to generate electricity. This does not preclude heat capture in a CHP plant, for example, where the heat has been used to generate electricity but will then be used for other purposes. Financial support for renewable electricity generation can be claimed under the Feed-in Tariffs⁸ scheme or Renewables Obligation⁹.

Process heat

The RHI will only support a unit of heat once. Process internal heat that is part of the efficient operation of the plant will be excluded from the RHI and will not receive support. For example, condensate returns within a system and heat from the biogas boiler/engine used in the operation of an anaerobic digester

⁸ www.decc.gov.uk/fits

⁹ http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/policy/renew_obs/renew_obs.aspx

will not be eligible for the RHI. The way in which we expect eligible heat from a heat installation to be measured is set out in the *Measuring Heat* chapter.

We will keep under the review the heat uses supported under the RHI and may exclude uses that the Government deems inappropriate and do not represent value for money.

Chapter 4 - Supported Technologies and Fuels

Summary

- **Phase One of the RHI, will support a range of technologies and fuels including biomass, solar thermal, heat-pumps, on-site biogas, deep geothermal, energy from waste and injection of biomethane into the gas grid;**
- **Eligibility of some technologies will be limited to certain capacities;**
- **Only technologies and fuels classified as renewable under the Renewable Energy Directive will be eligible; and**
- **Fossil fuel heat recovery and fossil fuel CHP, transpired solar panels and co-firing won't be supported.**

Technologies supported

The primary objective of the Renewable Heat Incentive (RHI) is to encourage the installation of renewable heating equipment and generation of renewable heat in order to meet the UK's share of the EU 2020 renewable energy target. Therefore, the RHI will only include technologies which the European Commission considers to be renewable under the Renewable Energy Directive (RED)¹⁰. The renewable energy target is extremely challenging and, given the funding and time limitations, the RHI needs to focus on the technologies which can be counted to meet that target. Should the Commission reclassify technologies in future or develop methodologies for their inclusion in statistics, we would consider them for support in scheduled reviews of the RHI.

We will only provide incentives for technologies which are in commercial use in the UK. Similarly to the Renewables Obligation (RO), the RHI is not intended as a mechanism to support innovative technologies in development or early deployment phase; the intention is to support technologies which we are confident can make a significant contribution to meeting the UK's renewables target.

¹⁰ This also excludes technologies regarded as passive systems or technologies for which there is no methodology or insufficient data to be counted under national statistics.

Phase One of the RHI will support the fuels and technologies listed below from its launch in 2011.

Biomass boilers

Biomass boilers generate heat through burning organic matter, primarily wood. The heat is usually used to produce hot water or steam, the latter being more suitable for industrial applications. The wood, derived directly from forestry, or as a forestry by-product is commonly supplied in the form of wood chips, logs or pellets.

Solid biomass will be eligible for the RHI only where that heat is generated using biomass boilers specifically designed and installed to burn biomass. Biomass boilers with a capacity of up to and including 45kWth will have to be certified under the Microgeneration Certification Scheme (MCS) or equivalent scheme. For biomass boilers larger than 45kWth, Ofgem will verify eligibility based on the required documentation provided by RHI applicants as part of the accreditation process.

We appreciate that some stakeholders have concerns regarding supporting biomass. Issues raised by stakeholders include concerns about the UK supplies and sustainability of world supplies, the potential negative impacts on habitats around the world, water pollution, air pollution and biodiversity, and that some argue that there are better alternative uses of biomass. However, the increasing demand for biomass should create a better supply market in the UK and our focus on the sustainability and greenhouse gas savings from biomass will help ensure that any negative impacts are minimised or avoided. There are a number of issues specifically related to bioenergy, such as sustainability, which are discussed in detail in the *Bioenergy* chapter.

Energy from waste combustion (the biomass proportion of municipal waste)

Rather than being sent to landfill the waste we produce can be reused, recycled or burned to produce heat. More than half of the rubbish households throw away is organic, renewable matter, such as food or paper products. Although it is usually better from an environmental perspective to reuse, recycle or produce biogas from these materials, this is not always possible and combustion can offer a better option than disposal to landfill, which generates harmful greenhouse gas emissions. Due to its renewable biomass proportion, currently around half the heat produced by burning municipal waste is renewable heat.

Heat from solid biomass contained in municipal waste will be eligible for the RHI and the solid biomass content will not have to be combusted in a separate boiler. Regardless of the RHI, such plants have to comply with waste incineration and environmental permitting legislation. For all installations Ofgem will verify RHI eligibility based on the required documentation provided by RHI applicants as part of the accreditation process, such as schematic diagrams and details about system configuration.

Heat pumps (ground, water source)

Heat pumps are electrically (or occasionally gas) driven heat exchangers that extract renewable solar heat from the air, ground or water. The heat pump extracts low level heat from outside and upgrades the temperature so that it is warm enough to heat space and water inside the building.

Ground and water source heat pumps will be eligible for the RHI provided they meet certain eligibility requirements. However, air source heat pumps will not be eligible at the start of the RHI (see *Annex I* on future eligibility of air source heat pumps). Eligible heat pumps will be required to have a coefficient of performance (COP¹¹) of 2.9 or above, as a proxy for the EU standard for renewable energy measured. This is to help ensure that heat pumps provide a good return in terms of renewable output and that ultimately, they represent value for money.

The EU standard, given in *Annex VII* of the RED is based on the total useable heat delivered, the average seasonal performance factor and the efficiency of electrical generation. The Commission has committed to providing guidance on how these factors should be measured and we may review our approach once the Commission issues this guidance. To avoid introducing a potentially complex system in advance of the Commission's guidelines, rather than referring to usable heat or seasonal performance, the RHI will require a COP of 2.9¹². Applicants will be required to demonstrate, to Ofgem's satisfaction, that the heat pump meets a COP of at least 2.9; this will usually be part of the equipment documentation supplied by the manufacturer.

Heat pumps with a capacity of up to and including 45kWth will have to be MCS, or equivalent, certified. For heat pumps larger than 45kWth, Ofgem will verify eligibility (e.g. COP) based on the required documentation provided by RHI applicants as part of the accreditation process.

Some organisations questioned why heat-pumps are deemed to be renewable given their electrical or fossil fuel input. Heat pumps are classed as renewable in the RED because they extract renewable solar energy stored in the air, water or ground. Although they use energy to extract that heat, the total energy output exceeds the electrical or gas energy input. However, heat pumps are only classed as renewable if their source of energy is naturally occurring heat in the air, water or ground, meaning that if the heat source is artificially heated, the output is not considered renewable and would not be eligible for the RHI.

Government is also aware of the concerns regarding the performance of heat pumps in situ and preliminary results from heat pump field trials carried out by the Energy Saving Trust showed variable

¹¹ All heat pumps have a "coefficient of performance" (COP), defined as the ratio of the amount of heat output per unit of energy input.

¹² The MCS requires COP greater than 2.9. The method for measuring COP is set out within the MCS standards. Any MCS equivalent products will also be required to achieve a COP of 2.9 or above.

performance, albeit at the domestic scale which will not be supported from the outset. Some of the reasons for the poorly performing heat pumps are understood and solutions are being tested as these trials continue. The industry is also working to improve the design, installation and consumer understanding of these systems and, at the small scale, the MCS can provide assurance about product and installation quality. We will continue to monitor and review the performance of heat pumps in situ.

As explained in the previous chapter, cooling function of heat pumps is not eligible for the RHI. Therefore, only the metered *heat* generated using heat pumps will be eligible for the RHI¹³. Exhaust air heat will also not be eligible for the RHI (see below for further information).

Deep geothermal

Geothermal systems use energy stored in the form of heat deep underground. Normally this heat has to be extracted from several hundred metres below the surface. Hot water or steam are produced by extracting the underground heat using pipes carrying water. Geothermal systems are large scale and can have a variety of heat uses, including district heating.

Deep geothermal systems¹⁴, sometimes also referred to as enhanced geothermal or hot dry rocks, will be eligible for the RHI. Geothermal systems tend to be relatively large and there are no MCS or equivalent standards so, for the RHI, Ofgem will verify eligibility based on the documentation required from RHI applicants as part of the accreditation process.

Deep geothermal will receive the same tariff as ground source heat pumps (see the *Support Levels* chapter for further information).

Solar thermal

Solar thermal technologies collect heat from the sun onto a collector which transfers the heat energy to a working liquid. This liquid can then be used directly to provide hot water within a building, or an exchanger can transfer the heat from the working liquid to the water.

Solar thermal panels (liquid filled flat plate or evacuated tube solar collectors) will be eligible for support. Solar installations with a capacity of up to and including 45kWth will have to be MCS, or equivalent, certified. For solar thermal installations larger than 45kWth, Ofgem will verify eligibility based on the documentation required from RHI applicants as part of the accreditation process.

¹³ We will not require the metering of input electricity just the heat output of the heat pump.

¹⁴ An installation which extracts naturally occurring heat located at least 500m beneath the surface of solid earth.

Solar thermal installations¹⁵ will be eligible below 200kWth capacity only. Additional solar thermal capacity added to an existing installation, bringing the total capacity above the tariff threshold of 200kWth, will not be eligible for the RHI. We will consider introducing support for solar installations above this scale from 2012.

Heating from biogas combustion

Biogas is gas produced from renewable materials such as food waste, commercial waste, farm waste or sewage, most commonly through the anaerobic digestion of those materials. For the purpose of heat generation, biogas can be burned and used to create heat directly or to boil water and produce steam.

Generation of heat from the combustion of biogas in boilers or engines will be eligible for the RHI. Biogas can also be upgraded to make biomethane, as set out in the section on biomethane below, or used directly to produce heat. The RHI will be supporting the direct production of heat for installations up to 200kWth. and biomethane injection of all capacities through a single biomethane injection tariff

Where an installation exceeds the threshold because additional capacity has been added the original installation (provided it is less than 200kWth) would still be eligible for support. For example, if a 150kWth biogas boiler already receives the RHI and another 150kWth boiler is added as part of the same installation (thereby exceeding the 200kWh threshold) the first boiler will remain under the RHI while the second boiler will be ineligible. Further explanation of the reason for this limit is provided in *Annex II* on details of tariffs.

Several stakeholders noted that the definition of biogas in section 100 (3) of the Energy Act 2008 would only have allowed for the support of biogas through anaerobic digestion. We will support biogas produced by a range of methods including: anaerobic digestion, also gasification, pyrolysis and from sewage gas. We will amend the primary legislation through the RHI regulations and proposed text for draft regulations to effect this amendment are published alongside this document. However, we will not support landfill gas from the launch of the scheme. Subject to affordability and ongoing work on tariffs, we intend to support landfill gas in future (see *Annex I* for further information on possible future changes to the scheme).

Currently, there is no MCS or equivalent standard which exists for biogas, but such plant will need to comply with relevant waste and environmental permitting legislation irrespective of the RHI. For all installations, Ofgem will verify eligibility based on the documentation required from RHI applicants as part of the accreditation process. This will include checking the technical information regarding the combustion equipment, such as accrediting the biogas boiler or engine and verifying its capacity.

¹⁵ The concept of an installation for the purpose of the RHI is explained in the chapter on eligibility.

Biomethane injection into the grid

An alternative to burning biogas involves removing the carbon dioxide and other impurities from biogas in a process known as scrubbing, and ensuring that the calorific value, or energy content, closely matches that of the natural gas in the network. The resulting gas can then be odourised and compressed, and the processed biomethane injected into the gas grid. Injecting biomethane is a way of making the gas in the gas grid more renewable and has the advantage of using existing gas infrastructure.

Biomethane for injection into the gas grid will be eligible for the RHI. As in the case of biogas combustion, biomethane produced from landfill gas will not be supported from the launch of the scheme. Subject to affordability, we intend to support landfill gas which is converted to biomethane pending ongoing work on setting appropriate tariff levels.

Once the biomethane is in the gas grid it will receive no further Government incentives for its use.

There are existing regulations governing the composition of biomethane and its injection into the gas grid (Ofgem, National Grid and the Health and Safety Executive have responsibility in this area). There is no MCS or equivalent standard which exists for biomethane injection as all such installations have to comply with the existing regulations but we will continue to ensure these regulations remain fit for purpose. For the RHI, Ofgem will require specific information from the applicant with regard to the biomethane production process as part of the registration process.

Renewable district or community heating

District heating, whether in the form of a central boiler for an apartment building, or as a network of pipes delivering heat from a central installation to a number of local households or businesses, can be a cost-effective alternative to installing individual heating systems in individual properties. The renewable heat for this type of heating can be produced using any of the technologies listed here, though biomass boilers are commonly used. There is an extra cost associated with such heating where new networks have to be built.

District heating will be eligible for the RHI, where the heat is produced by an RHI-eligible installation. District heating will be treated in the same way as an installation for that technology and fuel type providing heat for on-site use. 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.

There will be no specific 'uplift' for district heating installations. Whilst we recognise that the cost of district heating (or other off-site use of heat) will often be higher than the cost of using the heat from a similarly sized installation on-site (due to the costs of pipe-work to transport the heat, and other cost factors), further consideration is needed before any additional cost is provided, to ensure this is

necessary and represents good value for money. See the *Support Levels* chapter for more information about support for district heating.

Renewable combined heat and power (CHP)

Heat produced from renewable combined heat and power plants will be eligible for the RHI, where the fuel or technology used is eligible for support under the scheme. This will apply to biomass (including municipal solid waste), biogas and geothermal installations. CHP will have to meet the eligibility criteria for the equivalent dedicated heat technology (e.g. biomass CHP will have to meet the biomass eligibility criteria). CHP installations will not need to meet the CHPQA standard in order to claim the RHI as we do not propose to give preferential treatment to CHP plants under the scheme. The Government believes the RHI will be a sufficient incentive to optimise generation of heat from CHP.

Where a renewable electricity generating plant converts to heat capture to become a CHP plant, the part of the plant generating heat will be eligible for accreditation, provided it meets all the other eligibility criteria of the scheme.

For further information on the interaction between the RHI and the Renewables Obligation, see the *Support Levels* chapter.

Technologies and fuels that will not receive support from the outset

There are a number of technologies and fuels that will not receive support from the outset of the RHI. See *Annex I* for further information on what additional areas we are considering introducing from 2012 as part of Phase Two of the scheme. It will be necessary for all future changes to be affordable within the Spending Review allocation for the RHI. DECC's modelling suggests that this should be the case for sectors and technologies where it has been stated that there is a firm intention to introduce support from 2012.

Air source heat pumps

Air source heat pumps will not be supported from the outset, as more work is needed to better understand the costs associated with the technology and, for air to air heat pumps, as described below (*Direct air heating*), we have not yet developed a means of measuring direct air heating, as we have for water and steam. Subject to the successful conclusion of the work and affordability, we will look to extend eligibility for air to water source heat pumps from 2012.

Direct air heating

Technologies which deliver 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. We will, however, look at whether and how these technologies could be included in the RHI from 2012.

There are a number of reasons for not including these technologies from the start of the scheme, which are primarily practical. Our methodology is to meter the heat generated and pay the RHI on that basis, however, there are practical difficulties with metering direct air heating, rather than water and steam. Furthermore, there is insufficient evidence of the costs of these technologies on which to base the RHI tariffs. Given they could be installed in significant numbers, we need to gather further evidence about the costs and operation of direct air heating equipment in order that we can set the correct tariff. Finally, we need to ensure we have the right strategy for supporting air to air source heat pumps specifically given that a large number are installed already for cooling (air conditioning) purposes.

Bioliquids

Biomass can exist in liquid form or be processed to produce a fluid known as a 'bioliquid' when used for heat and electricity, and a 'biofuel' when employed in transport. Bioliquids typically have a very high energy density and can either be burned directly to produce heat or blended with a mineral fuel component with the resulting fuel blend being burned.

Bioliquids will not be eligible for support from the outset of the RHI. We recognise there are valuable uses of bioliquids in renewable heat generation and combined heat and power, including those developed from wastes such as used cooking oil and those made from advanced technologies.

However, before we 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. 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.

In addition, we will need to ensure we meet our legal commitments under the Renewable Energy Directive¹⁶ and develop sustainability criteria for the RHI.

Working through these complex issues will take time which means that we will not support bioliquids in 2011 but will consider them further for introduction in 2012.

¹⁶ The Renewable Energy Directive sets out mandatory sustainability criteria which bioliquids used to generate heat must comply with before they can receive a financial incentive such as the RHI.

Technologies and fuels excluded from the scheme

Co-firing of biomass with fossil fuel

We will not be supporting the co-firing of biomass with fossil fuels in single boilers under the RHI, apart from where the fossil fuel is part of municipal solid waste (further details about RHI requirements for biomass combustion are explained in the *Bioenergy* chapter). We recognise its importance to electricity generation but believe there is a smaller need to co-fire for heating and want to encourage a more wholesale switch to renewables.

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 RED as they do not rely solely on outside air and therefore will not be eligible for the RHI.

Transpired solar thermal panels

A small number of stakeholders have argued that direct air heating or transpired solar panels should be supported under the RHI. These technologies will not be included as they are not counted as a renewable technology under the RED.

Fossil fuel fired CHP

Some stakeholders have argued that gas-fired CHP should receive support under the scheme as it represents a more efficient use of energy. The Energy Act 2008 only allows the RHI to support renewable energy and therefore we will not support gas-fired CHP under the RHI.

Waste heat from fossil fuel

In most cases heat generated as a by-product of fossil fuelled electricity generation or other processes is wasted. It would be more efficient to capture that heat to meet a heat demand somewhere else. However, the RHI will not support the capture of such heat or the building of infrastructure to transfer it to where the heat is needed. Waste fossil fuel heat is not renewable and therefore does not count towards the UK's renewable energy targets.

Chapter 5 - Bioenergy

Summary

- **Bioenergy is crucial to the RHI, contributing over a third of the more than seven-fold increase predicted growth in renewable heat by 2020;**
- **Sustainability of feedstock is key to minimising adverse environmental and social impacts; our phased approach will involve an initial period of sustainability reporting followed by the introduction of mandatory criteria;**
- **Government will introduce a proportionate enforcement regime which is informed by the established renewables incentives schemes, yet which also reflects the situations of different groups of participants in the RHI; and**
- **Recognition of the air quality impact of burning biomass**

Bioenergy approach

Solid and gaseous biomass have the greatest potential of all of the renewable heating solutions to deliver significant and cost-effective carbon savings in the short to medium term; this is particularly the case for commercial and industrial applications.

The combustion of biomass to produce either heat or combined heat and power (CHP) will typically deliver an energy conversion efficiency of 75 per cent and above; this compares to an expected efficiency of 25-30 per cent when used for dedicated electricity generation. So the same amount of biomass could be used to generate around three times the quantity of heat or combined heat and power compared to the quantity of dedicated electricity it could generate.

Solid and gaseous biomass typically deliver high greenhouse gas savings, particularly when used in heat generation. The majority of solid biomass feedstocks give rise to GHG savings in excess of 60 per cent when compared to the EU fossil fuel average emissions and this figure is significantly higher for forestry residues by-products and waste biomass.

Biomass heating can also deliver several other important benefits for users, including lower fuel costs and reducing the impact of fossil fuel price volatility. Biomass heat and CHP can also create new business and employment opportunities within the local fuel supply chains and make effective use of biomass waste and residues that could otherwise be sent to landfill.

As a result we expect solid and gaseous biomass to deliver over a third of the predicted seven-fold growth in renewable heat resulting from the RHI.

However, it is important that encouraging the uptake of bioenergy does not result in untoward environmental and social impacts. This has been a guiding principle in devising our policy approach.

The Government is working towards a co-ordinated, evidence-based bioenergy strategy during 2011, with coherent financial incentives reflecting the agreed best uses of bioenergy across heat, electricity and transport. Analysis of the best use of biomass forms part of this work. The review of waste policy currently being conducted by the Department for Environment, Food and Rural Affairs (Defra) is also considering the role of energy from waste in meeting the UK's renewable energy needs. In the meantime, the RHI aims to bring forward a responsible growth in bioenergy using sustainable feedstock to minimise adverse environmental and social impacts. Sustainability will be enforced using a staged and proportionate approach; after an initial period of sustainability reporting, mandatory criteria will be introduced.

The renewable heat market is relatively immature and there are limitations, such as the lack of sustainability certification schemes and reliable methods of establishing the renewable content of solid recovered fuel (SRF) and other mixed waste streams. These limitations have meant that we have had to take difficult decisions, such as excluding bioliquids and SRF (unless derived from municipal waste) from the start of scheme in 2011. It has also informed our approach to sustainability reporting for small-scale biomass combustion, where we have had to balance sustainability considerations against the cost and administrative burdens involved in demonstrating the use of sustainable fuels for small scale generators.

We understand the importance of consistency of approach between the RHI and the other renewable financial incentive schemes, particularly the Renewables Obligation (RO). Where appropriate, we have therefore aligned the treatment of bioenergy between the two schemes.

However, given the emerging nature of the renewable heat market and the expectation that the RHI will attract new groups of participants (such as schools, hospitals and community schemes) in addition to the professional energy companies shared with the Renewables Obligation (RO), there are some areas where we have decided to take a different approach. These include the RHI's approach to reporting on biomass sustainability and the fuel enforcement regime.

These have been pragmatic decisions, reflecting the fact that small-scale RHI participants will not generally have the necessary resources and expertise to provide detailed information on the sustainability aspects of their feedstock, or indeed, carry out monthly laboratory testing of their fuel. This contrasts with the large energy professionals who claim under the RO where such reporting is required.

Consequently, we have decided to develop a proportionate approach, which takes into account the different sizes of heat generator. The Government believes that, on balance, this is more important than maintaining consistency across the renewables incentives schemes. Our approach is set out below in the section titled *Ancillary fossil fuel use and fossil fuel contamination*.

We will continue to work with industry to set out a robust model for demonstrating compliance with the sustainability criteria for bioliquids set out in the Renewable Energy Directive (RED) if and when bioliquids are supported under the RHI. We will also monitor the development of bespoke sustainability certification schemes, including those which will help generators demonstrate their compliance with the RED criteria, with a view to incorporating these into the RHI sustainability criteria in the future.

Eligible bioenergy

Biomass, biogas combustion in installations below 200 kWth and biomethane injection will be eligible for support in the RHI from 2011 (although biogas and biomethane produced from landfill gas will not be supported from the outset – see *Annex I* for further information).

Biomass generators of 1 MWth and above, together with producers of biomethane will be required to report to Ofgem on the sustainability of their biomass feedstock at each year-end (see section below titled *Sustainability Reporting* for further information).

Waste

At the introduction of the scheme in 2011 all wastes used to create biogas through anaerobic digestion will be eligible for the RHI. Eligible waste feedstock for combustion, gasification and pyrolysis will be limited to solid biomass from municipal solid waste (MSW), including solid recovered fuel (SRF) from MSW. In addition, other wastes where at least 90 per cent of their energy content is comprised of solid biomass will receive support. Examples of such wastes include waste wood and residues from the paper manufacturing industry.

Participants who burn MSW will receive the biomass tariff, adjusted pro-rata for the solid biomass content of their waste. Unless participants prove a higher percentage of biomass content, the pro-rata content will be deemed at 50 per cent. Analysis into the possibility of a dedicated tariff for MSW is underway and we will consider introducing a specific tariff from 2012 providing sufficient evidence is available.

In 2011, eligible solid recovered fuel (SRF) in the RHI will be limited to SRF from municipal solid waste and SRF waste streams containing no more than 10 per cent fossil fuel. In due course we would like to extend eligibility to SRF from waste streams other than municipal solid waste. We have noted industry's concerns regarding the need for a more reliable and cost-effective methodology for establishing the renewable content of mixed wastes and work is underway to address this issue.

DECC is currently working with Ofgem, the National Non Food Crops Centre (NNFCC), and industry stakeholders to develop a fuel measurement and sampling methodology using Carbon-14 dating¹⁷ techniques. A generator in the Renewables Obligation (RO) has applied to Ofgem to use this approach and Ofgem is currently evaluating the robustness of the methodology. If accepted by Ofgem, the Carbon-14 approach may be a cheaper and potentially more representative fuel measurement technique which could reduce the testing burdens on participants.

Defra and the Technology Strategy Board¹⁸ have also issued a call for proposals for equipment able to determine the biomass content of mixed waste or SRF streams. We will be tracking the progress of these and other methodologies with a view to being able to allow other waste streams into the RHI in future.

Sustainability reporting

From the start of the scheme, our approach will focus on mandatory sustainability *reporting*. This will allow time for participants to develop their procurement and reporting systems before specific sustainability criteria are introduced into the RHI and payments become linked to meeting these criteria.

From 2011, biomass installations with a capacity of 1 MWth and above and all producers of biomethane will be required to report quarterly on the sustainability of their biomass feedstock for combustion and where it is used to produce biomethane. This requirement will apply to both feedstock sourced in the UK and that imported from abroad. Smaller participants (i.e. below 1 MWth) will be exempt from this reporting requirement (this will include all RHI-eligible biogas combustion installations). On grounds of practicality and in line with the approach developed by the European Commission, where participants use the biomass element of eligible wastes as a feedstock, these feedstock will also be exempt from the reporting requirement.

The approach taken will be consistent with that initially used by the Renewables Obligation (RO), with participants providing information on their biomass feedstock including the country of origin, the source material and details of any applicable environmental quality assurance schemes.

¹⁷Carbon-14 dating is a radiometric dating method that uses the naturally occurring radioisotope carbon-14 to estimate the age of carbonaceous materials. The European standard CEN/TS 15747:2008 allows for standardised measurement of the biogenic fraction of a gas, liquid, or solid sample.

¹⁸ The Technology Strategy Board is an executive non-departmental public body (NDPB), established by the Government in 2007 and sponsored by the Department for Business, Innovation and Skills (BIS). Their role is to stimulate technology-enabled innovation in the areas which offer the greatest scope for boosting UK growth and productivity.

Following this initial sustainability reporting stage, it is anticipated that the RHI will consult on mandatory sustainability criteria, with a view to those criteria taking effect from 2013 onwards.

The Government will monitor the Renewables Obligation (RO) closely, when it introduces reporting on greenhouse gas emission savings and compliance with restrictions on using materials from land deemed important on carbon or biodiversity grounds (such as peat lands) from April 2011. We will draw lessons from the RO when we develop the mandatory sustainability criteria for the RHI e.g. on the balance to be struck between sustainability concerns and ensuring a cost-effective and easy-to-use regime for small-scale participants.

1 MWth threshold

There are two key considerations determining the amount of biomass feedstock which will be consumed by RHI generators. Heat generation is typically highly efficient, requiring only around a third of the biomass feedstock used by an equivalent capacity electricity plant. This is balanced by expectations that a number of small/medium sized RHI participants may come forward relatively quickly and collectively consume a significant volume of biomass.

The minimum 1 MWth threshold has been set as a pragmatic compromise in this context. We have decided that setting a minimum 1 MWth threshold will provide us with valuable information on the sourcing trends of medium/large participants and an opportunity to identify issues which need to be addressed when we design the RHI's sustainability criteria, whilst not placing an onerous data collection burden on smaller non-energy professional participants in the scheme.

Use of energy crops

As stated in the Waste Framework Directive, Government policy is to specifically deliver an increase in energy from waste through AD. We recognise that, at farm scale, some energy crops may be required in combination with slurries and that such crops can be grown as part of the normal agricultural rotation. Furthermore, there is land available which is not suitable for the production of food crops but which may, therefore, be used to supply energy-crop only AD plants. It is not our policy, however, to encourage energy crops-based AD, particularly where these are grown to the exclusion of food producing crops. If evidence shows that there is a large scale use of crops in AD and a resulting conversion or change in land used for crops to support AD, then measures will be considered to address this. DECC and Defra will discuss how such a mechanism could work in practice. The Government will, therefore, be investigating possible measures to exclude from RHI support, the large scale use of energy crops in AD.

Quality timber

We do not expect significant quantities of prime timber to be diverted into energy as a result of the RHI. However, should evidence show that high grade timber is being diverted into heat use, and that

turns out to be a perverse outcome from a greenhouse gas lifecycle perspective or causes concerns about deforestation, measures will be introduced to prevent it.

Ancillary fossil fuel use and fossil fuel contamination

Biomass combustion

In common with large-scale renewable electricity generation, some large-scale renewable heat installations may use feedstock which contain some fossil fuel contamination such as some forms of waste wood. There may also be a need for such installations to use some ancillary fossil fuel for certain legitimate purposes, for example, during the start-up stage.

In order to ensure that the RHI is paid only for genuine renewable heat generation, a fuel measurement and sampling approach will be put in place. We have decided to implement a two-tier, proportionate approach as follows:

- For the **large installations of 1 MWth and over**, we will mirror the existing procedures applied under the Renewables Obligation (RO) whereby participants receive a tariff adjusted for their fossil fuel use based on fuel measurement and sampling, as verified by Ofgem.
- **Installations between 45kWth and 1 MWth**, these installations will receive 100 per cent of the biomass tariff and will not have to submit to a fuel testing regime. However, use of ancillary fuel or fossil fuel contamination must not exceed 10 per cent by energy content, and we will require that these participants retain information on their fuel purchases for audit purposes and verify that they are using equipment which is designed specifically for biomass.
- **Installations up to and including 45kWth** will receive 100 per cent of the biomass tariff and will not have to keep fuel receipts. They will have to verify that they are using equipment which is designed specifically for biomass.

As stated previously, where possible, we have tried to co-ordinate RHI policy decisions with those in the other renewable financial incentive schemes in order to reduce the complexity faced by participants who claim under more than one scheme. However, the treatment of fossil fuel used in biomass combustion is one area where we felt the need for a simpler regime outweighed the need for a consistent approach.

We wish to reduce testing and reporting burdens for the non-energy professionals such as schools, hospitals and communities who we expect to apply for the RHI but who do not necessarily have the resources and expertise to be able to comply with the detailed fossil fuel measurement and sampling procedures which are currently applied to the large-scale electricity generators claiming under the RO.

We have assessed the risk of fossil fuel use by this group of participants to be low since the majority of these participants will be using wood chip and pellets as input fuels. We will therefore require a declaration from these participants that they are using equipment designed to use biomass as its primary

fuel source, supported by auditing of fuel receipts and on-site inspections. Going forward, we will review the information collected on an installation's fuel use in addition to their audit results to ensure that this risk-based regime continues to be appropriate.

Biogas combustion

Our approach for biogas combustion under 200kWth capacity applies similar principles to those used in the enforcement of small-scale biomass combustion and combustion of solid biomass from municipal solid waste:

- The tariff paid will not be adjusted for any ancillary fossil fuel used during combustion, although participants will be subject to a 10 per cent cap on this fuel as a condition of eligibility and also asked to retain information on the amounts used for audit purposes. This approach reflects the principles applied to the enforcement of small-scale biomass combustion.
- Where biogas produced from advanced conversion technologies such as gasification and pyrolysis is combusted, the tariff paid will be adjusted to reward only the biomass proportion of the feedstock used. This approach is similar to that taken on solid biomass contained in municipal solid waste.

For biogas produced from both AD and advanced conversion technologies, the eligible heat output will be reduced for any heat from an external source or which is returned to the process to heat the digester, gasifier or pyrolysis chamber.

Biomethane

The approach taken for biomethane injection will apply the above principles to the biogas used to produce the biomethane, except that the tariff will not be adjusted for any internal process heat returned to the digester or gasifier. The biomethane tariff paid will be reduced to take account of the propane used to upgrade the biogas to the standard necessary for grid injection.

Air quality and emissions

The Government recognises the importance of controlling emissions from the burning of biomass and that this is done as part of a coherent, strategic approach to dealing with air quality and national emissions. The burning of biomass has detrimental impacts on air quality where it replaces gas or electricity, but can have positive impacts where it replaces heating oil or coal. Air quality is also a more crucial issue in urban areas in which the health impacts of higher emissions are greater and where air quality is generally worse than in suburban or rural areas.

The RHI is going to incentivise the installation of biomass boilers, which will increase the amount of biomass burned for heat in such boilers above what would have been the case without a financial incentive. It is important to note that emissions from biomass boilers are much lower than when wood is

burned in open fires and larger boilers tend to have lower emissions than small ones. Also, even with the RHI, emissions from biomass will continue to be much lower than emissions from other sectors such as transport. Nevertheless, we recognise that we need to strike a balance between incentivising biomass on the one hand and mitigating against its harmful impacts on the other.

The most significant air quality impacts are expected to come from particulate matter (PM₁₀) and oxides of nitrogen (NO_x) emissions from the combustion of biomass. Therefore, we will work with Defra and the relevant Devolved Administrations to introduce emissions limits of 30 g/GJ for particulate matter and 150 g/GJ for NO_x.

However, as this is a technically complex area we feel it is right to work with stakeholders to establish the most appropriate way of enforcing and administering emissions limits. Therefore, we will be introducing these limits for RHI biomass installations below 20MWth in the next set of RHI regulations in 2012 so that we develop the best possible long term solution and allow industry to get their products appropriately tested.

We expect uptake of biomass under the RHI to be low in the first year of the scheme, and primarily outside urban areas, so the air quality impact of not introducing emissions limits in 2011 will be low.

Chapter 6 - Support levels

Summary

- **RHI tariff levels have been designed to bring forward a wide range of renewable heat technologies, including heat pumps, solar thermal and various types of bio-heat such as biomass and biomethane;**
- **The RHI focuses on cost-effective technologies and fuels such as large-scale industrial or commercial installations using biomass;**
- **The principle for setting the tariffs has been to base them on the costs of each technology plus providing a return on capital, in order to provide sufficient support but at the same time avoid over-subsidising; and**
- **Compensation is provided only for additional costs of renewable technologies over fossil fuel heating.**

In determining tariff levels for the Renewable Heat Incentive (RHI), the Coalition Government has sought to ensure the RHI can remain on track to deliver the renewable heat share of the renewables targets (73 TWh by 2020, or a seven-fold increase on 2009). At the same time, in light of the current economic climate, the policy has been designed to offer greater focus and value for money, by:

- Prioritising the most cost-effective technologies at the commercial and industrial scale;
- Providing support levels that enable industry to deliver our ambitious targets;
- Designing the RHI for the long term, by allowing for tariff level reductions over time (to ensure that renewable heat becomes cost-competitive), while at the same time giving the supply chain the long-term confidence to invest with certainty; and
- Offering enhanced support for biomethane, in line with the Coalition commitment to introduce measures to promote an increase in energy from waste through anaerobic digestion.

Level of support

Payments will be calculated by multiplying the appropriate tariff (depending on the technology and size of the installation) by the eligible heat use. The eligible heat use will be metered actual generation or use. Details of tariff levels are included below, and our approach to measuring heat is set out in the *Measuring Heat* chapter.

Table of tariffs

The tariffs levels that will be available at the introduction of the scheme are set out in the table below.

Levels of support					
Tariff name	Eligible technology	Eligible sizes	Tariff rate (pence/kWh)	Tariff duration (Years)	Support calculation
Small biomass	Solid biomass; Municipal Solid Waste (incl. CHP)	Less than 200 kWth	Tier 1: 7.6	20	Metering Tier 1 applies annually up to the Tier Break, Tier 2 above the Tier Break. The Tier Break is: installed capacity x 1,314 peak load hours, i.e.: kWth x 1,314
Medium biomass			200 kWth and above; less than 1,000 kWth		
		Tier 1: 4.7			
Large biomass	1,000 kWth and above	Tier 2: 1.9	2.6	Metering	
Small ground source	Ground-source heat pumps; Water-source heat pumps; deep geothermal	Less than 100 kWth	4.3	20	Metering
Large ground source		100 kWth and above	3		
Solar thermal	Solar thermal	Less than 200 kWth	8.5	20	Metering
Biomethane	Biomethane injection and biogas combustion, except from landfill gas	Biomethane all scales, biogas combustion less than 200 kWth	6.5	20	Metering

See *Annex II* for further information on some of the decisions underpinning these tariff levels.

How tariffs have been calculated¹⁹

We want the RHI to support to a wide range of renewable heat technologies and sizes but are conscious that we must not over reward.

Cost-based approach

To achieve this, we have adopted the principle of 'cost-based' tariffs, where tariff levels vary depending on the cost of the technologies at different scales. In particular, the tariffs are calculated to:

- compensate for the additional cost of the renewable technology over fossil fuel heating;
- provide an incentive to overcome non-financial barriers; and
- provide a return on the additional capital invested.

Within the range of renewable technologies, we expect the cheaper sectors (i.e. large-scale commercial and industrial installations) to deliver the largest proportion of overall renewable heat generation. We have also found a number of new ways of increasing the cost effectiveness of the RHI further. For example, by maintaining and strengthening support for some of the most cost-effective options relative to previous proposals (in particular heat from large scale biomass and large ground source heat pump installations).

Reference installation

The tariffs vary depending on technology and size in order to match actual cost levels as closely as possible. Nevertheless, even within the range of installations covered by any one tariff, the level of support that each installation actually needs will still differ, sometimes significantly. Differences arise, for example, depending on whether the building is a rural or urban building, or whether the building would use oil, coal or gas if it did not switch to renewable heat (e.g. if the alternative to renewable heat is oil or coal, which are relatively more expensive than some other fossil fuels, it would need less support in order to make the switch to renewable heat attractive than if the alternative is gas, which is cheaper). In order to find a compromise between these cost differences, we have calculated each tariff on the basis of a so-called 'reference installation', which represents (in most cases) roughly the mid-point of all the installations covered by the tariff in question²⁰.

¹⁹ For more detailed information on the overall approach to setting the RHI tariffs as well as the data and assumptions used, please refer to the Impact Assessment, the NERA report and the AEA report, published together with this policy document and available on the DECC website at www.decc.gov.uk/rhi.

²⁰ We have made an exception for large-scale biomass. This is the cheapest renewable heat option and we expect it to make one of the biggest contributions towards the overall effort. We have therefore set the tariff for this segment on the basis of a reference installation reflecting the maximum expected cost level for this band, i.e. the tariff for large-scale biomass should be high enough for all potential installations covered by this tariff. We believe this is justified to ensure we realise as much of the potential from this area as possible. This

Compensation for cost difference

The tariffs are calculated to compensate for the additional cost of renewable heat. This means that they do not compensate for the *full* cost either of the renewable heat equipment or any fuel used by the renewable heat equipment, but only for the *additional* cost of such equipment and fuel above that of the fossil fuel alternative.²¹ We refer to the fossil fuel alternative as the 'counterfactual' fuel. We have assumed that the counterfactual fuel would be gas and have calculated the tariffs accordingly.

Rate of return

Tariffs have been calculated on the basis of a required return on additional capital invested of 12 per cent for technologies and fuels except solar thermal. This reflects the fact that renewable heat is still relatively unknown in the UK and that from this low starting position, the renewable heat market needs a kick-start in order to encourage high growth quickly. The Government believes a 12 per cent rate of return represents the likely level of compensation that professional and commercial market participants will look for with this type of investment (i.e. any business considering renewable heat either for its own heat requirement or to produce for sale to others).

Solar Thermal

For reasons of cost-effectiveness, a different approach has been applied in order to determine the solar thermal tariff. Solar thermal heat is, at present, more costly per unit of energy than other technologies. If solar thermal received support in accordance with those costs plus a rate of return (as for the other technologies), we would risk dedicating significant proportion of the RHI budget to solar thermal, to the possible detriment of support available for more deployment of cheaper technologies. On the other hand, the costs of renewable heat across the sector are lower than those of renewable electricity, so the fact that solar thermal is expensive as a renewable heat technology should as such not lead to the conclusion that solar thermal should not be supported. The Government has therefore concluded that the tariff for solar thermal installations will be set at a level which is roughly equivalent, in terms of financial support per unit of energy output, to the level allocated to what is currently considered to be the marginal cost effective technology required to deliver the UK's 15 per cent renewable target, offshore wind. This results in a support level of 8.5p/KWh.

should equally reduce any perceived risk of biomass fuel price fluctuations, given that once a project starts receiving RHI support its support level will be fixed and will not respond to future fuel price changes (see further below in this chapter).

²¹ An exception is solar thermal, which does not usually fulfil the role of replacement of a primary heating system. Accordingly, for solar thermal the tariff does aim to compensate the full cost of the solar thermal equipment.

Tariff boundaries

For most technologies, a number of tariffs for different sizes of installations have been set, and the boundaries between these tariffs have been set primarily to reflect the economies of scale, but also to align more generally with the typical sizes of installations.

A number of stakeholders have warned that this approach could lead to a 'cliff-edge' effect, where the change in tariff levels between tariff bands, if too steep, could act as a disincentive to larger-scale installations or encourage 'gaming' (i.e. under-sizing of equipment to avoid falling into the larger-size tariff). Industry raised this in connection with large biomass and medium and large heat pumps. In response to these concerns, we have increased the number of tariffs and set the boundaries in a way we believe will help to reduce this risk. See *Annex II* for further information on tariff boundaries by technology.

A further, different type of tariff boundary applies within the small and medium-scale biomass tariffs. We are providing "tiered" tariffs in these two segments. This means that biomass installations covered by these tariffs will, each year, receive a higher tier 1 tariff for the initial proportion of their generation, followed by a lower tier 2 tariff for any generation exceeding the amount of heat covered by tier 1. We are adopting this approach to avoid any incentive to generators to generate excess or wasteful heat purely to maximise RHI payments.

The "Tier Break" – i.e. the point at which the tariff switches from tier 1 to tier 2 - is set at the amount of heat corresponding with a 15 per cent load factor of the installation. This means that if an installation generates over the year a quantity of heat equal to running the installation at full capacity for 15 per cent of the year, it receives the tier 1 tariff for this quantity of heat; any additional heat would be compensated by the tier 2 tariff. A 15 per cent load factor corresponds with 1,314 peak load hours (i.e. running the installation at full, or peak capacity for 1,314 hours over the year), and represents our estimate of a reasonable minimum level of usage that we would expect from a renewable heat installation used for space heating.

Tariff duration

All tariffs will be paid for a 20-year period, in line with evidence suggesting that all technologies should have an operational lifetime of this length. Having a uniform period across all technologies should help resolve some of the concerns raised by stakeholders that differing tariff durations by technology could have the undesirable effect of steering investors to one technology rather than another purely based on the duration of tariff payments. The uniform 20-year tariff duration also matches the support period for renewable electricity output of combined heat and power installations under the Renewables Obligation and Feed-In Tariffs.

Where we have changed the tariff duration compared with previous proposals, this will not change the overall amount of financial support provided through a particular tariff. For example, where the final tariff duration of 20 years is less than the duration proposed earlier, this is balanced by a higher tariff per unit of energy.

Renewable combined heat and power (CHP) and district heating

The RHI tariffs will also apply to the heat output from renewable combined heat and power. Equally the tariffs will apply both where heat is used on-site or where it is exported and used off-site, for example where the heat from a combined heat and power station is used in a factory nearby, or where a district heating system supplies a variety of domestic, commercial or public sector properties.

The tariffs have been calculated on the basis of dedicated heat generation costs only. We recognise that the cost of heat from CHP may not be the same as that of dedicated heat generation and that the cost of district heating (or other off-site use of heat) will often be higher than the cost of using the heat from a similarly sized installation on-site (due to the costs of pipe-work to transport the heat, and other cost factors). For CHP, there will be a coordinated review of the support available both for the electricity and heat output from CHP, and we will align this work with the ongoing 'Banding Review' of the Renewables Obligation (RO) (see below).

There will be no specific 'uplift' for district heating installations. Whilst we recognise that the cost of district heating (or other off-site use of heat) will often be higher than the cost of using the heat from a similarly sized installation on-site (due to the costs of pipe-work to transport the heat, and other cost factors), further consideration is needed before any additional cost is provided, to ensure this is necessary and represents good value for money.

Inflation

The tariff levels set out above are based on 2010 prices, and will be updated to reflect 2011 prices before the start of the RHI. After the start of the scheme, tariff levels will be adjusted automatically each year in line with the Retail Price Index (RPI). This adjustment will be applied both for new and existing projects.

Support for non-domestic equipment installed during the transitional period (15th July 2009 and start of the scheme)

Non-domestic installations that were completed and first commissioned between 15th July 2009 and the start date of the RHI will be able to receive the RHI, providing they meet the eligibility criteria as set out in this policy document and gain accreditation from Ofgem. If they do not meet these criteria, they will not be eligible (see the *Eligibility* chapter for further information). The tariff levels and duration of support will be the same as for those installations commissioned after the start of the scheme. Support will be from

the date of accreditation and not backdated to the date of commissioning. See *Annex III* for an overview of transitional arrangements.

See also further below for more specific information on transitional situations involving CHP installations and the uplift for CHP heat currently available under the Renewables Obligation.

Interaction of the non-domestic RHI with grants

To ensure value for money and to stay within the European Commission's rules on State Aid we have considered the position of renewable heat installations that have received public funding from sources other than the RHI. We recognise that this issue will be particularly important for installations completed on or after the 15th July 2009 (and before the introduction of the RHI) as they may have received public funding from a variety of sources including grants from Central and Devolved Government schemes as well as grants and other forms of support from public authorities at regional or local level, or under European schemes. Our decision is based on the principle of no double public funding, but we will make provision for installations that had received public funding during the transition period i.e. between 15th July 2009 and the point at the which the RHI regulations come into force.

RHI support will only be available if the installation in question has not received (and will not receive) any other public funding, or, where it has received public funding up to the point at which the RHI regulations came in to force, it has paid this back. If the project receives other public funding after that date, it will not be eligible for RHI support and cannot become eligible by paying it back. Public funding means:

- any public funding (other than RHI) as grants or benefit provided, for example under central or devolved government schemes or by public authorities at regional or local level, or under European schemes; and where;
- such public funding contributes to the direct costs of the renewable heat installation or its operation.

This approach on grants and other public funding is subject to State Aid clearance.

Interaction with the Renewables Obligation and Feed-In Tariffs

For combined heat and power (CHP) installations, the Renewables Obligation (RO) currently provides support for both renewable electricity and heat. We have been considering whether we should phase out heat support under the RO and support it under the RHI instead, with effect from the next review of RO support levels (bands) in 2013.

As explained further above in this chapter, CHP will be eligible for the relevant RHI tariffs (i.e. for instance the biomass tariffs in case of biomass CHP). With the RO currently providing support for renewable heat (in the form of the RO uplift for "good quality" renewable heat from CHP), this means that at least for a period of time there will be two support options for renewable heat from CHP.

Consideration of the future of renewable heat support under the RO will take place as part of the next 'Banding Review' of the RO. The next RO Banding Review²² will:

- come into effect in 2013,
- publish the proposals for revised RO bands (including proposals on the future of heat support under the RO) expected in the first half of 2011, and
- publish final decisions shortly thereafter.

Industry stakeholders have argued strongly that in view of the long lead times of CHP installations, they require a long period of transition from RO support to RHI support. We appreciate that because of pending decisions on the RO Banding Review, there is currently uncertainty for investors as to the future support levels for heat from CHP. Equally, the tariff levels for heat under the RHI have been calculated on the basis of dedicated heat installations and we recognise that these may not represent appropriate levels of support for CHP heat.

We therefore intend to consider whether we should provide different, specific RHI tariffs for renewable heat from CHP. However, any decision on tailored RHI support for renewable heat from CHP cannot be taken in isolation from decisions on the RO and the CHP uplift in the RO, and will therefore be taken along the same timeline as that set out above for the RO Banding Review. We would envisage such revised RHI support levels for CHP heat taking effect at the same time as the RO Banding Review.

Installations will not be able to claim both RO CHP uplift and RHI support (this is in line with the above statement on interaction between RHI and grants). At the start of the RHI, installations will also not be able to switch from the RO uplift to the RHI, i.e. if installations are receiving or at any point have been receiving the RO uplift for heat from good quality CHP, they will not be eligible for RHI support. We will, however, consider whether at a later stage we will allow CHP installations completed after 15th July 2009 which are or have been claiming the RO uplift to switch from the RO to the RHI. We intend to consider this issue on the same timescale as outlined above for the RO Banding Review and the analysis on possible RHI tariffs specifically for CHP heat. Heat from CHP installations that are not and have not been receiving the RO uplift will be eligible for RHI (subject to other eligibility criteria).

The Feed-In Tariffs (FITs) provide support for renewable electricity installations up to 5 MW. They do not provide support for renewable heat, and the RHI will not contain any limitations on receiving RHI for

²²Renewables Obligation Banding Review - The bands for renewable electricity technologies are reviewed at regular intervals to ensure that as innovations come in and market conditions within sectors change and evolve, developers will receive a level of support that maintains investment in the renewables industry. It is expected that the 2013 review will have implications for the RHI (in connection with the CHP uplift for heat). The timetable for the current review has been accelerated which means Government expects to consult on changes proposed early in 2012

renewable heat where (CHP) installations are receiving FITs for renewable electricity. This may be the case with biogas combustion CHP installations. However, as stated in the *Eligibility* chapter, any heat used for electricity generation will not be eligible for RHI support.

Interaction with other Government policies

Financial incentives such as the RHI, the RO, the FITs (and grants) aim to promote take-up of renewable energy technologies. A number of policies other than financial incentives also have an impact on renewables deployment, such as those aimed at reducing carbon emissions or increasing energy efficiency through regulation. The RHI will not make any special provisions for such schemes but an overview of these and how they might interact with the RHI follows below.

Policies (other than financial incentives) affecting renewable heat

Sustainable Business and Resource efficiency – a voluntary scheme for businesses to report their greenhouse gas emissions. It provides a benchmark of a business's own resource efficiency which can enhance its reputation and brand value, and for companies falling under the Companies Act 2006, such environmental reporting is a requirement. Companies replacing fossil fuels with renewable energy such as that produced under the RHI will have lower GHG emissions.

CRC Energy Efficiency Scheme – The CRC is designed to increase energy efficiency in large public and private sector organisations by driving behaviour and infrastructure change to achieve carbon reductions. Where renewable electricity receives financial support (under the RO or FITs), such electricity does not count towards compliance with the CRC obligations. This is to avoid detracting from the CRC's primary purpose of increasing energy efficiency. At present, renewable heat, however, does count as "zero rated" (i.e. can be counted as reducing carbon consumption in compliance with the CRC). The Government may review this position for the future.

Zero carbon new non-domestic buildings – The Government ambition is that all new non-domestic buildings be zero carbon from 2019, with the public sector leading the way from 2018. Progress towards this is driven by upgrading Part L of the Building Regulations, and the responses to the consultation on these proposals were published in December 2010. We will consider the impact on the RHI as these proposals develop.

Degression

Over the years we expect the costs of renewable heat equipment to fall as the industry matures and economies of scale are achieved, both in the UK and globally. As a result we would look to reduce RHI support levels for new projects, to ensure that the scheme delivers value for money. There are two ways support levels could be reduced. Firstly, through scheduled or early reviews and secondly through degression. Under the degression approach, once triggered, support levels would automatically drop by

a given percentage for new projects accredited under the scheme. Whereas changes to support levels through a review would require a change to the legislation following analysis of the current market and consultation with stakeholders. In either case existing projects would retain their current level of support and so would be unaffected.

In addition to falling costs we also need to ensure that spending on the RHI is affordable. We have therefore decided to include degression and reviews as part of the scheme. Degression will be built into the legislation and so allow tariff levels to be reduced in a controlled but timely manner in order to, as far as possible, manage costs. Reviews will allow a longer term approach where tariff levels and degression triggers can be reviewed and any necessary changes made to the legislation. Degression will only be triggered when a particular pre-set point is reached, for example, megawatt hours of generation or megawatts of installed capacity. This means that, should the renewable heat market need more time to develop, degression would not start prematurely; but equally, should uptake be higher than expected, degression will start sooner and will help ensure costs are controlled. We intend to introduce degression in 2012 and the details of how it will work will be subject to consultation. The use of degression may need to vary between the different tariffs as the impacts of this approach may be different depending on the size and technology which it is applied to.

Reviews would be used in addition to degression to look at tariff levels and review the degression levels which would be set out in the regulations.

Reviews

Scheduled Reviews

We intend to monitor and evaluate the RHI closely to ensure that it delivers our ambitious plans for renewable heat. It is the Government's intention that that the scheme remains open to new installations until at least 2020, therefore we will have opportunities to make changes to improve its operation. In particular we will: monitor uptake under the scheme; progress towards the 2020 renewables target; cost-effectiveness; fraud prevention; and how well the administrative processes are working.

However, we are mindful that in order to provide certainty to investors and developers, it is important that changes to the scheme are not made unnecessarily or too often. We therefore intend to undertake scheduled reviews every four years with the first review starting in 2014 for implementation in April 2015.

Reviews

We expect the review process to be as follows:

January 2014	Review formally initiated
January to June 2014	Informal consultation with stakeholders and analysis
July to September 2014	Formal consultation on proposed changes
December 2014	Final decisions and draft regulations published
January 2015	Draft regulations laid before Parliament
April 2015	Review changes implemented through regulation

Reviews will look into all of the tariff setting elements, as described in the accompanying Impact Assessment, as well as other aspects of the scheme (e.g. eligibility, metering etc).

Reviews will not just be an opportunity to review tariff levels but to also look at other aspects of the scheme to ensure that it is operating effectively. Just as the RHI on introduction will be set out in legislation, any changes made to the scheme will also need to be set out in legislation and be subject to Parliamentary approval.

Early Reviews

In addition to scheduled reviews, the Secretary of State may need to call an early review so that adjustments can be made to a part or whole of the scheme, to deal with any significant change to the assumptions which underpin the RHI. For example, a significant and unexpected uptake of a particular technology or a significant change to the relative cost of renewable and fossil fuels. We are mindful that scope for an early review introduces a level of uncertainty to the scheme but experience from both the Renewables Obligation and the Feed-in Tariffs scheme suggests that such flexibility is necessary. However, to provide assurance that early reviews will only be called where there are significant changes to the assumptions which underpin the RHI, we intend to set out a specific set of circumstances under which an early review could occur. We intend to consult on the criteria for early reviews as part of the consultation which will take place to consider aspects of the RHI which are being introduced in 2012 as part of the phased approach.

Fixed levels of support following review changes (Grandfathering)

In order to provide the certainty required for sustained growth in renewables the Government is committed to the principle of 'grandfathering', where support levels for existing installations are

guaranteed. The intention of grandfathering is to provide certainty to those investing in renewable heat installations about the level of support they will receive under the RHI. This means that any changes to support levels resulting from a review would only affect new projects accredited on or after the date that new tariff levels are implemented. For example, if an installation is accredited from March 2015 and the tariff level received for that technology is changed in April 2015 following a review, that installation will continue to receive the same tariff level regardless of any change made. However, an installation accredited in May 2015 would be given the new tariff level.

Treatment of installations under construction during a review

Whilst grandfathering is intended to provide certainty to installations already accredited under the RHI, we are aware that the lead-in time for some projects can be a number of years and that changes to tariff levels between financial close and completion could mean that the financial assumptions upon which they would have started the project would no longer hold. Equally, if as a result of a review, tariff levels will be raised it could result in projects, which are due to come on line ahead of the review being implemented, stalling until the tariff levels are raised so that they can take advantage of the higher level of funding. This could result in a hiatus in projects coming on line so affecting the levels of renewable heat generation in the short term. However, we need to balance decisions on the levels of support for such projects against controlling costs for the scheme as a whole and the impacts that this could have on other projects coming forward. As the first scheduled review is not due to start until 2014 with implementation in 2015 we intend to consider this matter further with a view to any appropriate measures being included from 2012.

Chapter 7 - Measuring heat

Summary

- **Heat will be measured through metering**
- **For biomass boilers – meters will be required but a two-tier tariff system will reduce incentive to over-generate**
- **Heat meters will need to be installed at the point of generation and, where appropriate, at the point of usage also**
- **Meters will be required to meet certain standards to provide confidence that payments are based on accurate measurements and that the devices are reliable**

Issues with measuring heat

RHI support will be paid on the basis of multiplying the kWhth of metered renewable heat by the relevant tariff. Having considered the concerns with heat metering - cost of meters and a possible perverse incentive to over-generate (useless) heat in order to maximise support we now believe that these are manageable in most cases.

Commercial considerations should reduce the risk of a perverse incentive to waste heat and the large-scale RHI tariffs should, in the majority of cases, be lower than the cost of corresponding input fuels (such as the cost of the biomass fuel), avoiding a perverse incentive to generate more heat than needed.

Metering of system outputs encourages operators to keep their equipment well maintained and ensures an accurate reward. Generally, stakeholders from industry did not foresee any problems with the availability or reliability of heat meters. For systems rated at 300 kWhth or above, heat metering was seen as common practice and the purchase and installation costs of heat meters would usually represent a small proportion of the overall operating cost. Metering is also appropriate in the case of solar thermal as, once the equipment is installed, the amount of heat generated is not controlled by the owner.

For district heating and biomethane injection, where the generation of heat will be led by demand from third parties, rather than the intention to claim RHI payments, the perverse incentive should be lower risk, so payments will also be based on metering (similar to renewable electricity).

We do, however, believe that the risk of a perverse incentive to over-generate remains in the small-commercial and medium-commercial biomass segment of the tariffs. Due to the complexity of building

occupancy and usage, it is not feasible to establish a suitable methodology for estimating (“deeming”) heat demand in these sectors.

So, in the absence of a procedure for carrying out deeming assessments, we have adopted the suggestion raised by some stakeholders of linking the amount of energy that will be compensated with the full tariff each year to the capacity of the installation. We will apply a higher "tier 1" tariff followed by a lower "tier 2" tariff. See *Annex II* for further explanation on how the two-tier biomass tariff approach will operate.

In the case of installations generating renewable heat from municipal solid waste, installations above 1 MWth using solid biomass and producers of biomethane, will receive a payment pro-rata of the relevant meter reading(s) as set out in the *Bioenergy* chapter.

Meter requirements

As RHI payments will be made on the basis of heat meter readings, the Government will require participants to use meters that have met certain standards to provide assurance that payments are based on accurate measurements and to consumers that their devices are reliable. Tampering with meter components (to influence the meter reading) constitutes fraud and will be dealt with accordingly.

A wide variety of different types of heat meters are available commercially. The Government will allow those who wish to claim the RHI to choose to use any heat meter that meets the Class 2 requirements listed in *Annex MI-004* of the EU Measuring Instruments Directive (MID) 2004.²³ Requirements for measuring steam are covered separately below.

Metering of heat generated and used

The RHI regulations will describe the circumstances in which participants will be allowed to meter heat at the point of generation only and describe the circumstances where participants will be able to meter the heat generated by more than one plant using a single meter. In systems where only the heat generated is metered, heat meters will be need to be located to ensure that the contribution of the renewable plant can be calculated. Fossil fuel installations on the system do not need to be metered, but their generation must be kept separate for metering purposes from the generation of each metered renewable heat installation. Where different renewable technologies are installed (for instance biomass boilers and heat pumps), separate meters will be required to determine the heat generated by each renewable technologies. Where additional capacity is added to a heating system later, participants will have to meter the additional capacity separately from the originally installed capacity.

²³ See: http://ec.europa.eu/enterprise/sectors/legal-metrology-and-prepack/documents/europ-standards/index_en.htm

Participants using heat pumps to provide both heating and cooling will need to ensure that their metering arrangement does not count any cooling generated by the reverse operation of the heat pump. Participants will need to measure the eligible renewable heat generated, and provide the appropriate cumulative meter reading(s) to Ofgem. They may also need to provide an explanation of how their metering arrangement has enabled this figure to be calculated.

Where additional meters are required for the RHI, all generating installations feeding heat into the heating system (including fossil fuel plants) will need to be metered. Participants will be required to meter the proportion of heat used for space, water or process heating to ensure that payments are not made for heat that is wasted or ineligible for RHI support.

Metering of biogas and biomethane injection to the gas network

In addition to the relevant metering requirements described above, where plants generate heat from biogas, participants will have to additionally meter:

- any heat directed from the combuster to the biogas plant;
- any heat to the biogas plant derived from any source other than the biogas itself.

These measurements will be deducted from the meter reading on which RHI support is claimed. Both the cumulative meter reading and the supporting calculations must be provided to Ofgem.

Biomethane producers who wish to receive RHI support will be required to measure to Ofgem's satisfaction the volume and gross calorific value of biomethane injected to the gas network and convert the resulting measurements to a kWhth figure. Measurement of the volume and gross calorific value of any propane added to the biomethane is also required. The biomethane producer claiming the RHI will be required to measure any external heat input to the biogas plant which made the biogas used to produce biomethane (such as heat from natural gas or other renewable heat technologies). The RHI participant will have to deduct these elements from the meter reading and provide the cumulative kWhth figure to Ofgem together with details of all individual measurements.

Measuring steam

Accurate measurement of steam is possible but represents particular challenges. In particular, it requires a higher degree of accuracy and entails higher costs. Where boilers are used to produce steam rather than hot water, the regulations will require measuring equipment that accurately measures flow rate, temperature and pressure. Participants must provide the appropriate metered steam figure to Ofgem having deducted any condensate returned to the boiler or steam used for ineligible purposes. This could be achieved by metering these items separately.

Guidance on choice of appropriate steam measuring equipment and installation and maintenance can be found in the Good Practice Guide (GPG018) available from the Carbon Trust.

Metering requirement for transitional installations (15th July 2009 and the start of the scheme)

For all eligible installations completed and first commissioned during the 'transitional period', we will require use of a Class 2 heat meter or steam measuring equipment that meets the criteria in the RHI regulations on metering. Where the owner of a renewable combined heat and power plant is applying to receive RHI support and the installation was first commissioned during the transitional period and is accredited under CHPQA²⁴, the existing meters will be allowed for metering heat generated by the plant and, where appropriate, heat used.

Maintenance requirements for meters

The RHI regulations will require that heat meters used to claim RHI payments are installed in accordance with the manufacturer's instructions. Where meters are supplied as a package, comprising a flow meter, a pair of temperature sensors and a computer/integrator, they should be recalibrated or replaced in accordance with the manufacturer's instructions.

For solar thermal, where appropriate, heat meters will need to be calibrated at the point of installation for any water/ethylene glycol mixture in the collector.

Periodic calibration of meters should be carried out by the manufacturer or by United Kingdom Accreditation Service (UKAS) accredited organisations working within the scope of National Accreditation of Measurement and Sampling (NAMAS) procedures. Other devices should also be appropriately calibrated, for example static pressure gauges and temperature sensors.

New or replacement units should be accompanied by a calibration certificate from the manufacturer. Evidence of calibrations of steam (or heat) flow meters, including the primary flow device, would be expected to be available if a site were audited.

The participant will need to ensure that these requirements have been satisfied as part of the RHI accreditation process and, where appropriate, provide evidence to Ofgem.

Verification

For all participants seeking accreditation for the RHI, Ofgem will require submission of a schematic diagram of the plant. The schematic will need to include details of the plant and the location of meters and associated components. Where additional capacity/plant is added or there are any changes to the metering arrangements participants will need to provide a revised schematic diagram (and possibly other

²⁴ 'CHPQA' means the Combined Heat and Power Quality Assurance Standard, Issue 3, January 2009, as published by the Department for Environment, Food and Rural Affairs.

information) to Ofgem showing the position of the additional generation facilities and any changes to metering.

In certain circumstances, Ofgem will require an independent site report to be undertaken by a competent person to verify the schematic diagram. The RHI regulations and Ofgem guidance will set out where this applies. The cost of providing this information will be borne by the participant.

Reporting

The frequency of submission of meter readings will be set out by Ofgem. No payment will be made by Ofgem until a meter reading has been submitted for the relevant period.

Participants will need to submit their meter readings manually to Ofgem. Automation of submission of meter readings will not be possible for the start of the scheme due to the additional cost to Government. However, we will consider further whether there is scope to automate submission of meter readings in the future.

Chapter 8 - Administration

Summary

- **Ofgem will administer the scheme, including application, accreditation, making payments and ensuring compliance;**
- **Detailed guidance to be produced outlining how the scheme works and approach to ensuring compliance;**
- **Risk-based approach to monitoring compliance;**
- **Range of measures to ensure compliance, including inspection, withholding payments, suspending and excluding participants from the scheme;**
- **Fraud referred for prosecution; and**
- **Ofgem to collect data to monitor effectiveness of the scheme.**

Role of the administrator

The Gas and Electricity Market Authority (Ofgem), through its E-Serve division, will be responsible for administering the Renewable Heat Incentive (RHI)²⁵. It will deal with applications for support, the accreditation process, making incentive payments to participants and ensuring compliance with the rules and conditions of the scheme.

Ofgem has administered the Renewables Obligation (RO) for a number of years and, from April 2010, has been responsible for the administration of the Feed-in Tariffs (FITs) scheme. Both of these schemes are similar to the RHI, in that they offer financial support to increase the deployment of renewable energy, in both cases, electricity. Ofgem can build on its experience of running these schemes and structures already in place (e.g. IT systems) to help ensure that the RHI operates as effectively and efficiently as possible.

A number of stakeholders have questioned whether other bodies could administer the RHI instead of Ofgem, arguing that it does not have experience in dealing with large numbers of non-energy professionals. However, whilst there have been suggestions for alternative bodies, generally these have only been in relation to a particular element of the scheme or sector, suggesting that a number of different organisations would be involved. It is not clear what other existing bodies could carry out the *full*

²⁵ The DECC Delivery Review is considering all the programmes currently and projected to be undertaken by Ofgem.

administration of the scheme, dealing with accreditation and making payments, but also the more regulatory aspects, such as ensuring compliance. Instead we intend to work closely with Ofgem to ensure the scheme is as user-friendly and as straightforward to access as possible.

Out-sourcing

Where areas of RHI administration fall outside Ofgem's core areas of business, it may decide to engage the services of external providers to advise it in performance of its functions, where this makes financial sense or represents value for money.

Compliance

While we expect the vast majority of participants to comply with the rules of the RHI, it is important that there is an effective compliance regime in place for those that do not. The Government has a duty to ensure that the RHI represents value for money. Abuse and non-compliance of the scheme could compromise this. Not only will it damage the reputation of the RHI and Government, but it is also likely to damage the reputation of the renewables industry more generally.

As with any scheme, there will be a spectrum of potential non-compliance, ranging from more minor infringements to more serious breaches. Consequently, Ofgem will have a regime that is effective, proportionate and sufficiently flexible to identify and deal with the full range of non-compliance.

We expect stakeholders to play their part in identifying abuse. Where there appears to be scope for abuse, we want them to tell us. If loopholes emerge, which mean people are gaining against the spirit of the scheme, we need help identifying them and discouraging this. It is in everyone's interests to maintain the credibility of the scheme.

Tackling non-compliance

Ensuring compliance with the conditions of the scheme can be dealt with in a number of ways, including: advice and guidance; up-front checks when assessing applications for support; on-site inspections; and ultimately, through formal sanctions, such as reducing payments or in the most serious cases, excluding a participant from the scheme and seeking prosecution.

Guidance

Guidance will play a key role in ensuring the eligibility criteria are met, by providing participants with information on what is allowed so that they are clear of their obligations.

Accreditation checks

When applying for support, applicants will be asked to declare that their installation meets the eligibility criteria for the scheme and in certain cases will be asked to provide evidence. For example, details of the MCS or equivalent certified installer and equipment; details of the meter specification and schematic diagrams of the installation.

On-going checks

In addition to the up-front checks, participants will also be required to provide information and confirm that they are still meeting the relevant rules and will do so for the duration of their participation in the scheme.

In particular, participants in the scheme will be asked to complete an 'annual declaration'. This will help ensure that participants are reminded of the eligibility criteria of the scheme and will provide a positive declaration that they continue to meet the eligibility criteria, which will help prevent participants claiming they had forgotten about a particular requirement and will provide a clearer basis on which Ofgem can take more formal action should it be necessary at a later stage.

In addition to the regular annual declaration, Ofgem will be able to make ad hoc requests for information where it is concerned or suspicious that one or more of the eligibility criteria are not being met or as part of a random or targeted audit.

Inspections

Ofgem or agents authorised on its behalf, will also carry out on-site inspections of installations, where it is concerned that one or more of the eligibility criteria are not being met and to ensure compliance generally with the RHI scheme. Inspection is a key means of both identifying non-compliance and preventing it. Knowing that a site could be inspected at any time will help deter participants from breaking the rules, where they might otherwise have been tempted to.

Where a participant unreasonably refuses Ofgem access to the installation or is uncooperative or obstructive during an inspection, they could be deemed to be failing to meet the terms and conditions of the scheme. This could result in the participant being subjected to one of the various sanctions within the RHI scheme, including exclusion.

Enforcement

Overall we expect the need for formal enforcement to be low. However, where non-compliance is identified, Ofgem will be given the power to impose a range of sanctions. Formal enforcement and the threat of it serves several purposes. It is important in deterring and ending non-compliance; recovering any financial benefit gained through that abuse; and acting as a deterrent against further abuse, both for the participant in question and others in the scheme who may be tempted to break the rules.

Ofgem will have a range of sanctions so it can tailor its response to the nature of the non-compliance. When deciding on what action to take, Ofgem will consider the nature of the abuse and any aggravating or mitigating factors. Where Ofgem decides enforcement action is needed, it may impose one or more of the sanctions outlined below. The regulations will not specify which sanctions can be used for particular breaches; this is for Ofgem to determine based on the nature of the case.

Compliance notice

Ofgem will be able to issue a compliance notice to a participant as a warning that they have broken the rules of the scheme. Where appropriate the letter will also outline any action the participant should take to remedy the failure and state the possible consequences of the participant failing to put right the non-compliance or repeating it.

Power to temporarily withhold payment

Ofgem will be able to *temporarily* withhold RHI payments where a participant has failed to comply with one or more eligibility criteria or obligations or where it has reason to suspect they have failed to comply, and needs to investigate further. In such cases we do not believe it would make sense to make the payment where there is a chance that the money may have to be recouped at a later stage. Ofgem will only make the payment once it is satisfied that all eligibility criteria are being met.

Power to permanently withhold payments

For more serious or repeated cases of non-compliance, Ofgem will also have the power to *permanently* withhold a payment which is due but which has not yet been paid out. Ofgem will be able to withhold payment for the period of non-compliance. Unlike the temporary withholding provision, where a payment is permanently withheld, a participant will lose that payment, and it will not be paid even when a participant later meets all eligibility criteria.

Power to reduce future payments

Ofgem will also have the power to reduce future RHI payments. Again, we envisage this power being used for the more serious or repeated cases of non-compliance, where Ofgem considers it necessary to apply a stronger sanction. This should help deter further abuse from the participant and other participants in the scheme, who will know that they risk losing money if they fail to comply with the rules of the scheme.

Power to suspend RHI payments

Ofgem will also have the power to suspend RHI payments where it believes there is a failure to meet one or more of the eligibility criteria or obligations. This sanction will only be used where Ofgem believes the participant could again meet the eligibility criteria or obligations (hence them not being excluded from the scheme). The suspension may be imposed where Ofgem discover non-compliance or where a participant voluntarily reports that it will be unable to meet the eligibility criteria or obligations for a period, but still wishes to use the equipment e.g. unable to source eligible fuel, or perhaps where due to staff shortages with required expertise, the participant is unable to guarantee compliance. Ofgem will only be able to lift the suspension once it is satisfied that all eligibility criteria and obligations are being met. Where the participant fails to ensure that the eligibility criteria and obligations are met within a specified time period, they risk being subjected to other sanctions within the scheme, including exclusion.

Power to exclude participants

There will also be the power to exclude a participant from the scheme. Where non-compliance has been serious or repeated, Ofgem may take the decision that the participant should no longer receive payments. Once excluded, the person will not be eligible for any further RHI payments in respect to the installation in question.

Ofgem will also have the power to exclude any other installations owned by the participant, which are also receiving support under the RHI and prohibit them from re-joining the scheme. This will be a discretionary power, which Ofgem would only use in the most serious cases.

Recouping and adjusting payments

Where a participant has been overpaid, either as a result of non-compliance (e.g. incorrect meter reading), or due to a mistake, Ofgem will have the option of either asking the participant to repay the money through a repayment notice or allow for the over-payment by adjusting the future payment accordingly, or a combination of both.

Where a participant fails to repay an over-payment, Ofgem can look to recover it through the civil courts.

Prosecution

Deliberate attempts by participants to gain financially by providing false information could constitute fraud and will be dealt with accordingly. Where Ofgem believes fraud has occurred it will be able to report such cases to the relevant authorities who will decide whether or not to prosecute. Fraudulent activity risks undermining the credibility of the scheme and would mean government money is wasted. It is crucial therefore that for the most serious and deliberate attempts to cheat the system are tackled with the full weight of the criminal law and that a clear message is sent out that fraud will not be tolerated.

Internal Review

Imposing one of the sanctions described above could have a significant impact upon a person or business, who may have invested a large amount of money on an installation. It is therefore important that there are procedures in place that enable a review of Ofgem's decisions.

Where Ofgem imposes a sanction, it will be required to inform the person of the decision within a specific time-frame. It must also provide reasons for the decision and outline any available review procedure. Where appropriate, Ofgem will also be required to outline any steps that the person must take towards compliance.

An internal review process will be established in relation to sanctions imposed by Ofgem in its role as administrator of the scheme. We will work with Ofgem to ensure that the internal review process is straightforward and user-friendly, to ensure it is accessible to all.

Some stakeholders have suggested that appeals should be heard by a body or panel independent of Ofgem, as they were concerned that an internal appeal would mean Ofgem hearing an appeal against its own decision. While we appreciate the points made, we feel the extra layer of process and the cost of setting up such a body is unnecessary given the nature of the powers available to Ofgem. We are confident that the internal review process provided with the ultimate backup a judicial review of a decision is sufficient.

Complaints

In addition to appeals against the specific decisions as described above, participants may also wish to complain about Ofgem where it is not satisfied with the way it has behaved more generally and not necessarily in relation to a specific decision. Ofgem has existing complaints processes, which we intend to utilise. Where a person has followed this route and is not satisfied, they may complain to the Parliamentary Ombudsman who can decide whether to carry out an investigation.

Compliance guidance

Ofgem will publish compliance guidance, setting out its approach to auditing, inspection and enforcement. This will outline the circumstances in which it is likely to want to verify information, carry out inspections or take more formal action such as imposing a sanction. It will include details of the sanctions that it may impose and the factors taken into consideration when deciding what action to take.

Certified installers

At the smaller scale, only MCS or equivalent certified equipment, which is installed by MCS or equivalent certified installers, will be eligible for support under the RHI. There is a risk that installers could breach the conditions of the scheme, for example, by incorrectly declaring that the equipment they've installed meets the eligibility requirements, which could mean the customer is not eligible for RHI support. If a certified installer is found to be breaking the rules of the RHI, we expect the relevant certification body to take action against them. This could include them losing their certification status, which would have a significant financial and reputational impact on their business. Such breaches may also fall foul of consumer protection law.

Data collection

Both as part of their application process and during subsequent reporting on, for example, fuel measurement and sustainability, RHI participants will be required to provide Ofgem with data. The data collected will include:

- Type of installation;
- Cost of installation;
- Amount of heat generated;

- The type of heating that the RHI participant is switching from;
- Demographic information (e.g. location); and
- Information on fuels used by large generators and their sustainability

This data will be used by DECC to monitor the effectiveness of the RHI scheme in terms of its contribution towards our renewables targets. It will also be passed, where appropriate, to the Devolved Administrations to allow them to track their progress against their own renewables targets.

The data will also be used to predict funding costs for the scheme and to track fuel sustainability trends. Data Protection principles will be applied to the use of this data to ensure that commercial confidentiality isn't breached and consideration will be given to ensuring that the burden of data provision on participants isn't excessive.

Chapter 9 - Devolution

Summary

- **The RHI will operate across England, Scotland and Wales**
- **The Devolved Administrations have their own policies to increase use of renewable energy and the RHI will complement them**

Geographical coverage of the RHI

The Energy Act 2008 provides statutory powers for the RHI to be established across England, Wales and Scotland. When it comes to the nations and regions of the UK, the proposed regulations are likely to cover partly devolved and partly reserved matters. We have engaged closely with the Devolved Administrations and will continue to work closely with them to finalise the regulations that will underpin the scheme.

In addition, the Devolved Administrations are developing their own policies and measures to increase their use of renewable energy. We are working closely with them to ensure that the RHI complements their policies.

Scotland

As heat is devolved to Scotland, Section 100 of the Energy Act 2008 provides that Scottish Ministers will be consulted, and, where appropriate, their consent obtained, before the regulations establishing the scheme are implemented. This is to ensure that Scottish interests are appropriately taken into account in the design of the scheme. Scottish Ministers attach a high priority to the development of a policy on renewable heat. This is evident in the Climate Change (Scotland) Act 2009, which mandates the Scottish Executive to produce a plan for the use of heat from renewable sources and to report regularly on its progress.

Scottish Ministers see a particular opportunity for communities and businesses in rural off-gas grid areas to benefit from switching to renewable energy sources, where the economic and environmental case for doing so is strong. Individual solutions based on micro-renewables such as biomass, solar thermal and heat pumps will be particularly important. In urban and suburban locations there are greater opportunities for the use of renewable district heating.

The Scottish Renewables Action Plan, published in July 2009, identifies collective actions by the Scottish Executive, its agencies and partners, to ensure that by 2020 at least 20 per cent of Scotland's energy

comes from renewable sources.²⁶ This is supplemented by a more detailed Renewable Heat Action Plan for Scotland, published in November 2009, which sets out a framework for activity across a wide range of areas to achieve a target for 11 per cent of Scotland's heat demand to come from renewable sources by 2020.²⁷

The Low Carbon Economic Strategy for Scotland was published on 15th November and can be found on the Scottish Government's Energy pages.²⁸

Wales

The Welsh Assembly Government's energy policy statement '*A Low Carbon Revolution*' published on 15th March 2010²⁹ sets out the actions that will be taken to accelerate the transition to an efficient, low-carbon-energy based economy in Wales. The Statement illustrates how by 2020, Wales could generate around 2.5 TWh of renewable heat per annum from biomass. By 2050, at the latest, the Welsh Assembly Government wants to meet almost all its energy needs, whether for heat, electrical power or vehicle transport, using low carbon energy.

The Welsh Assembly Government has also secured European funding to support community scale renewable energy projects and a Wood Energy Business Scheme that will support renewable heat installations across Wales.

Northern Ireland

Northern Ireland will not be included in the RHI as the province is not currently covered by the legislation in the Energy Act 2008.

²⁶ www.scotland.gov.uk/Publications/2009/07/06095830/0

²⁷ www.scotland.gov.uk/Publications/2009/11/04154534/

²⁸ www.scotland.gov.uk/Topics/Business-Industry/Energy/Action/lowcarbon.

²⁹ <http://wales.gov.uk/topics/environmentcountryside/energy/renewable/policy/lowcarbonrevolution/?lang=en>

ANNEX I - Areas for further consideration

As set out in the *Introduction* chapter the 2011 RHI will provide a broad framework on which we can build going forward. From this initial framework we intend to add some of the more complex aspects of the scheme in Phase Two of the implementation of the scheme. Where appropriate, we will look to include some of these elements from 2012. An overview of the technologies and fuel sources and other features of the scheme, which we will consider introducing from 2012 are outlined below. All future changes will need to be affordable within the Spending Review allocation for the RHI. DECC's economic modelling suggests that this should be the case for sectors and technologies where it has been stated that there is a firm intention to introduce support from 2012. Further secondary legislation will be needed in order to implement any changes to the scheme.

Domestic

As part of the first phase of support, the Government will also introduce *Renewable Heat Premium Payments* for the domestic sector. These direct payments will subsidise the cost of installing qualifying renewable heating systems. In return for the payments, participants will be asked to provide some feedback on how the equipment works in practice. This information will help enable Government, manufacturers, installers and consumers to better understand how to maximise performance of the various technologies. We aim to launch the Renewable Heat Premium Payments in July 2011 and will announce further details in May 2011. A second phase of RHI support that will include long-term tariff support for the domestic sector will then be introduced in 2012 to coincide with the introduction of the Green Deal for Homes. Given the current economic climate it is more important than ever that the RHI delivers value for money and ensures there is a fair spread of technologies across a range of properties types. The Renewable Heat Premium Payments will help ensure that before we commit to long term payments in a sector where it is particularly difficult to predict levels of take-up – and levels of performance - of different heat technologies, we manage their roll out and learn more about them, as well as controlling the budget and ensuring the money goes where it is intended to.

Bioliquids

We recognise there are valuable uses of bioliquids in renewable heat generation and combined heat and power, including those bioliquids which have fewer sustainability concerns such as used cooking oil and those made from advanced technologies. However, before we can support bioliquids in the RHI, it will be necessary to both ensure that sustainability reporting in accordance with the Renewable Energy

Directive³⁰ and is properly addressed and also, 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, such as transport. Working through these complex issues will take time which means that we will not support bioliquids in 2011 but will consider introducing them from 2012.

Biomass sustainability

As discussed in the *Bioenergy* chapter, ensuring the sustainability of feedstocks is key to minimising adverse environmental and social impacts. The RHI will look to consult on mandatory sustainability criteria for biomass as part of the any scheme changes from 2012, with the criteria taking effect from 2013 onwards.

Biogas combustion and CHP

Work to assess the appropriate level of support needed for heat from biogas combustion is ongoing, and will consider a range of factors such as size and type of installations, feedstock, and whether installations will likely be dedicated heat or combined heat and power installations.

We will take these factors into account in making changes to the RHI from 2012. In the meantime, biogas combustion below 200kWth will be eligible under the tariff provided for biomethane injection. Larger biogas combustion installations would likely only come forward in the form of combined heat and power installations, and on the basis of current analysis we cannot assess the appropriate support level for these. The Government believes that their support requirement may, however, be lower than that of biomethane injection, so it would not be appropriate for biogas combustion at this scale to be eligible under the biomethane injection tariff while the analysis of biogas combustion costs is ongoing.

Landfill gas

Work is still underway to consider the costs of biogas or biomethane injection from landfill gas. In many cases this regards landfill gas sites which are already producing electricity, and would likely have lower costs of switching to heat or biomethane than other biogas options. It would therefore not be appropriate to include landfill gas within the general tariff for biomethane; pending the outcome of our work on landfill gas. Landfill gas will therefore not be eligible at the start of the scheme.

Large biomass and CHP

Stakeholders have emphasised that the tariff proposed for large scale biomass, calculated on the basis of dedicated heat installations, would be insufficient to incentivise heat from CHP installations, in

³⁰ The Renewable Energy Directive sets out mandatory sustainability criteria which bioliquids used to generate heat must comply with before they can receive a financial incentive such as the RHI.

particular because the proposed tariff was said not to cover the loss of income resulting from the drop in electricity generation where a plant increased its heat output. As explained, our analysis of this and other factors determining the cost of and support required for heat from CHP is still ongoing. This analysis will be coordinated with the current Banding Review of support for renewable electricity under the Renewables Obligation. In line with the timing of the RO Banding Review, we therefore intend to publish decisions on tailored RHI support for heat from CHP in 2011, and where such decisions would lead to any amendments to the RHI we would look to make these from 2012.

Non-boiler biomass

Support for 'non-boiler biomass heat' (such as heat from kilns) is complicated by difficulties around the measurement of fuel and metering of heat output. Non-boiler biomass will therefore not be eligible from the start of the RHI in 2011 while work to resolve these complications is ongoing. Subject to successful conclusion of this work, we expect to extend eligibility to these types of biomass uses, as part of the additional elements of the scheme we plan to implement from 2012.

Air-source heat pumps

Air source heat pumps will not be supported from the outset because more work is needed to better understand the costs associated with the technology and, for air to air heat pumps, work is ongoing to develop a robust methodology for measuring heat delivered in the form of hot air. Subject to successful conclusion of this work and other factors (such as the role of cooling as opposed to heating in such systems) we intend to extend eligibility to this technology from 2012.

Conversion

At the launch of the RHI only new equipment will be eligible for the RHI. Although we recognise that new equipment may not always be the most efficient way of utilising a renewable resource where conversion of existing equipment is an option, we do not have sufficient evidence at present to incorporate it into the scheme. Many conversions at the large scale will be bespoke and it is difficult to classify what would be eligible and calculate the appropriate level of incentive. Nevertheless, we will gather evidence and consider further whether and how conversion could be made eligible for the RHI in future. The work on conversion and non-boiler biomass will be closely linked given non standard equipment such as furnaces are unlikely to require complete replacement in order to burn renewable fuels.

Waste

Industry has raised concerns regarding the need for a more reliable fuel measurement methodology for ascertaining the renewable content in mixed waste streams, such as solid recovered fuel. We will be tracking ongoing technological developments in this area, with a view to being able to allow other waste streams into the RHI from 2012.

Air Quality

The Government recognises the importance of controlling emissions from the burning of biomass and that this is done as part of a coherent, strategic approach to dealing with air quality. The burning of biomass has detrimental impacts on air quality where it replaces gas or electricity, but can have positive impacts where it replaces heating oil or coal. Air quality is also a more crucial issue in urban areas in which the health impacts of higher emissions are greater and where air quality is generally worse than in suburban or rural areas.

However, as air quality and controlling biomass emissions is a technically complex area, we feel it is right to work with stakeholders to establish the most appropriate way of enforcing and administering emissions limits. Therefore, we will be introducing these limits for RHI biomass installations below 20MWth in 2012 so that we develop the best possible long term solution and allow industry to get their products appropriately tested.

Large solar thermal

Cost data for larger solar thermal installations is sparse, making it difficult to set appropriate tariff levels. Work on larger-scale tariffs is ongoing, and subject to successful conclusion of this work, we will consider providing larger-scale solar thermal tariffs from 2012.

Deep geothermal

We currently do not have sufficient cost data for production of heat from geothermal sources at a commercial level. For the time being, we have therefore included deep geothermal heat as being eligible under the ground source heat pump tariffs. We intend to consider whether specific tariffs for deep geothermal heat can be introduced from 2012.

Degression

Degression is a measure which will be used within the RHI to help ensure the scheme delivers value for money. The detail of how degression will work is covered in the *Support levels* chapter. However, in brief, once triggered, degression allows support levels to automatically drop by a given percentage for new projects accredited under the scheme. Existing projects would retain their current level of support and so would be unaffected. We intend to introduce degression in 2012. The use of degression may need to vary between the different tariffs as the impacts may differ according to the size and technology to which it is applied.

Criteria for Early Reviews

The *Support Levels* chapter sets out details for scheduled reviews and our intention that the Secretary of State may need to call an early review so that adjustments can be made to a part or whole of the scheme, to deal with any significant change to the assumptions which underpin the RHI. We are mindful that scope for an early review introduces a level of uncertainty to the scheme and to provide assurance

that early reviews will only be called where there are significant changes to the assumptions which underpin the RHI, we intend to consult on what the specific set of circumstances under which an early review could occur should be with a view to these being finalised and in place for 2012.

Treatment of installations under construction during a review

The principle of grandfathering – where support levels are retained for existing installations accredited under the RHI when tariff levels are reduced following a review This is set out in the *Support Levels* chapter. Whilst this provides certainty for installations already accredited under the RHI, we are aware that the potential change to tariff levels resulting from a review could cause uncertainty for projects which are under construction. This is discussed in more detail in the *Support Levels* chapter and we intend to consider this matter further with a view to any appropriate measures being included in 2012.

ANNEX II - Details of tariffs

The *Support Levels* chapter sets out the overall approach we have used to set the tariffs. This Annex provides some more detailed explanations of the specific tariffs, by technology type and scale. In all cases, the final tariffs set out in this policy document reflect updates and corrections to our technology cost data and assumptions, using the latest input received from stakeholders and research by our technical consultants AEA.

Biomass

In response to concerns expressed by stakeholders to avoid a so-called 'cliff-edge' of a sharp reduction in consultation tariff levels at inappropriate size thresholds, we have set the final biomass tariff size thresholds at 200 kWth and 1,000 kWth. These tariff thresholds allow us, on the one hand, to provide a relatively gradual (rather than sudden) reduction of support as installation size increases; and on the other, will allow most typical installation sizes to sit closer to the middle than the edge of the size band. This will reduce the incentive to change the installation size marginally in order to qualify for a higher tariff. The resulting structure for biomass consists of three tariff bands (small, medium and large).

For the small and medium biomass tariffs, we have decided to provide a 'tiered' tariff structure. The *Measuring Heat* chapter explains in more detail the potential risk of there being a perverse incentive to over-generate heat, which is the reason for including the tiered tariff structure.

Under the tiered structure, a higher initial tier allows installations to receive most of the support needed, upon generating a minimum level of heat generation that any reasonable installation can be expected to require. Upon reaching a prescribed level of heat generation, the tariff drops to a lower tier 2 tariff, which ensures that participants still receive sufficient support to help with fuel costs of further heating requirements, but do not actually make a profit by generating heat purely for the purpose of gaining more support.

The large-scale biomass tariff will continue to be a single tiered tariff, as , we consider the risk of large scale generators over-generating to be lower.

Under the tiered tariffs, the tariff rate will drop from tier 1 to tier 2 when the amount heat corresponding to a 15 per cent of annual heat load has been reached. In other words, the kWh of heat generated corresponding to 1,314 peak load hours of generation.

For example, a 300 kW installation may generate 450 MWh (or 450,000 kWh) of heat in a particular year. Its "Tier Break" can be determined by multiplying 300 kW x 1,314 = 394,200 kWh. It will receive the Tier 1 tariff for 394,200 kWh, and the Tier 2 tariff for the remaining 55,800 kWh.

Heat pumps

As with biomass, our final decisions on the size boundaries between non-domestic ground source heat pumps reflect stakeholder feedback. We have concluded that cost reductions as a result of economies of scale are realised at comparatively small installation sizes, whereas larger systems will have fairly constant costs per unit of energy due to the modular nature of heat pump installations (i.e. larger systems consist of a number of smaller modules combined). Consequently, the final tariffs only distinguish between two tariffs, with the threshold set at the comparatively low size of 100 kWth.

The ground-source heat pump tariffs will also apply to water source heat pumps.

Biomethane injection and biogas

The final tariff for biomethane injection is significantly higher (at 6.5p per kWh over 20 years) compared to earlier proposals (4p per kWh over 15 years). We have calculated the final biomethane tariff on the basis of technology costs (as with the tariffs for other technologies) rather than parity with support available for renewable electricity. However, some significant biomethane cost factors, in particular so-called 'gate-fees' - where waste that can be used as a biogas feedstock is seen as a source of revenue rather than a cost - are highly uncertain, and as a result we have not been able to follow our cost-based methodology. We have set this tariff based on a 1 MW plant generating biomethane injection plant which, according to our best assessment, represents the lower end of the range of plants that are expected to come forward. The tariff level therefore should be sufficient for the majority of the diverse range of biomethane applications expected.

Work to consider support levels specifically for heat from biogas combustion is ongoing. For the time being, biogas combustion below 200 kWth will be eligible for the biomethane injection tariff. Larger biogas combustion installations would likely be CHP and may not need support at the level of 6.5p per kWh provided for biomethane, so pending the ongoing work to assess the costs of such larger biogas CHP installations and in order to avoid paying overly high subsidy levels, we are unable to include such installations within the RHI at the start of the scheme.

Work is also still underway to consider the costs of biogas or biomethane injection from landfill gas. In many cases, landfill gas sites which are already producing electricity, would be expected to have lower costs of switching to heat or biomethane than other biogas options. In general, landfill sites are likely to require lower capital support since they do not require the biogas generation equipment associated with, say, an anaerobic digestion plant. The general biomethane tariff would therefore not be appropriate for this technology, and we will consider providing one or more dedicated tariffs for landfill gas.

Other technologies

A number of technologies do not have dedicated tariffs. Some of these are covered by other tariffs and others may become eligible at a later stage. See also *Annex I* and the *Supported Fuels and Technologies* chapter. This regards the following technologies:

Technologies without dedicated tariffs at the start of the RHI	
Air source heat pumps	Not eligible at the start of the RHI
Biogas combustion	Eligible under the biomethane tariff below 200 kWth, not eligible at or above 200 kWth at the start of the RHI
Bioliquids	Not eligible at the start of the RHI
Biogas or biomethane from landfill gas	Not eligible at the start of the RHI
Deep geothermal	Eligible under the ground source heat pump tariffs
Municipal solid waste	Eligible under the biomass tariffs
Solar thermal	Eligible below 200kWth,
Waste other than municipal solid waste	Not eligible at the start of the RHI
Water source heat pumps	Eligible under the ground source heat pump tariffs

ANNEX III - Non-Domestic Transitional Arrangements

The non-domestic transitional arrangements are discussed within each chapter and are brought together in this annex for ease of reference.

Eligibility

The Coalition Government has decided that the cut-off date for eligibility for support under the RHI will be 15th July 2009. Only installations that are completed and first commissioned³¹ on or after this date, which meet all other eligibility criteria, will be able to claim support.

There are several parts to a renewable heating installation which are required for it to deliver heat to the premises or industrial process. For example, a ground source heat pump will need the ground loop, the heat exchanger, potentially auxiliary pumps to move the fluid in the system as well as the parts required for most heating systems such as the water cylinder, radiators and piping to distribute the hot water. All of these elements will have to be in place for a heating system to operate and so provide a date for when the installation is first commissioned. Adding non-essential elements to the system will not move or create another commissioning date.

The 15th July 2009 was the publication date of the Renewable Energy Strategy (RES). There was a concern that, in the absence of any firm support for renewable heat, there would be a hiatus in the market as people awaited the start of the scheme. Therefore, in order to encourage people to continue to install before the introduction of the scheme, a statement was made that any installation after that date should be eligible for payment under the RHI. The Coalition Government has considered these arguments and has agreed for non-domestic renewable heat equipment completed and first commissioned on or after 15th July 2009 to be eligible for support providing it meets the eligibility criteria of the scheme, as set out in this document.

³¹ In the February 2010 consultation document, the cut-off date for existing generators referred to installations 'completed' after 15th July 2009. The legal definition will refer to the term 'commissioned' which means, for RHI purposes, the eligible installation is capable of operating and delivering heat to the premises or process for which it was installed.

Microgeneration Requirements (Plants of 45kWth or less)

Under our transitional arrangements, eligible installations which were completed and first commissioned on or after 15th July 2009 will be allowed to apply for the RHI when the scheme starts. Our approach to MCS certification will be as follows:

- Provided that that the renewable heating product has MCS certified or equivalent status at the start of the scheme, the product will be eligible for support under the RHI.
- The installer of the product needs to have been MCS certified or equivalent at the time of the installation of the product. It will not be possible for transitional installations, which have not used MCS installers to be retrospectively approved by MCS and such installations will not be eligible for the RHI.

In order to prepare for accreditation under the RHI, generators wanting to receive support once the scheme has started, should ensure they have documentary evidence that their renewable heat installation is MCS certified, both in terms of the product and installer. Practically, this information will be captured on the MCS certificate that they will have been issued with following their installation. We also ask applicants to retain any invoices and receipts, which can provide further evidence of installation.

Support Levels

Transitional installations that were completed and first commissioned between 15th July 2009 and the start date of the RHI will be able to receive the RHI, providing they meet the eligibility criteria as set out in this policy document and gain accreditation from Ofgem. The tariff levels and lifetimes will be the same as those installations commissioned after the start of the scheme.

Measuring heat

For all eligible installations completed and first commissioned during the ‘transitional period’, we will require use of a Class 2 heat meter or steam measuring equipment that meets the criteria in the RHI regulations on metering. Where the owner of a renewable combined heat and power plant is applying to receive RHI support and the installation was first commissioned during the transitional period and is accredited under CHPQA, the existing meters will be allowed for metering heat generated by the plant and, where appropriate, heat used.

Applying for support

Those with transitional installations, which are eligible for support, will be able to apply to Ofgem for support once the scheme is introduced. Further guidance on the application process will be set out in due course. There is no further information available at this stage.

ANNEX IV - Glossary

AD	Anaerobic Digestion; a biological process which produces biogas from discarded food and farm waste.
Banding	A mechanism to provide different levels of support to different technologies
CHP	Combined Heat and Power; the simultaneous generation of useable heat and electricity in a single process.
CHPQA	CHP Quality Assurance Programme, provides a means to assess and monitor Good Quality CHP capacity.
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
Degression	a mechanism whereby tariffs are reduced annually to reflect, and to some extent encourage, expected decreases in technology costs
DUKES	Digest of UK Energy Statistics
EfW	Energy from Waste
EN 45011	General requirements set by national standards bodies for organisations operating Certification Schemes
Feedstock	Input material in process
FITs	Feed-in Tariffs
g/GJ	Grammes per gigajoule
GWh	Gigawatt hours
Grandfathering	Provides certainty for an investor by setting a guaranteed support level for projects for their lifetime in a scheme, regardless of future reviews
kWh	Kilowatt hour (heat output).
LCBP	Low Carbon Buildings Programme; a programme providing grants for the installation of microgeneration technologies
MCS	Microgeneration Certification Scheme
MWh	Megawatt hour (heat output).
NOx	Nitrogen oxide (gas emitted during combustion process)
Ofgem	Office of Gas and Electricity Markets

PM	Particulate Matter (particles emitted during combustion process)
RED	Renewable Energy Directive
RHI	Renewable Heat Incentive
RO	Renewables Obligation
ROC	Renewable Obligation Certificate
RTFO	Renewable Transport Fuel Obligation; an obligation on suppliers of road fuels to ensure a certain percentage of the fuel they supply is made up of renewable fuels
TWh	Terawatt hours (heat output).
UKAS	United Kingdom Accreditation Service

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