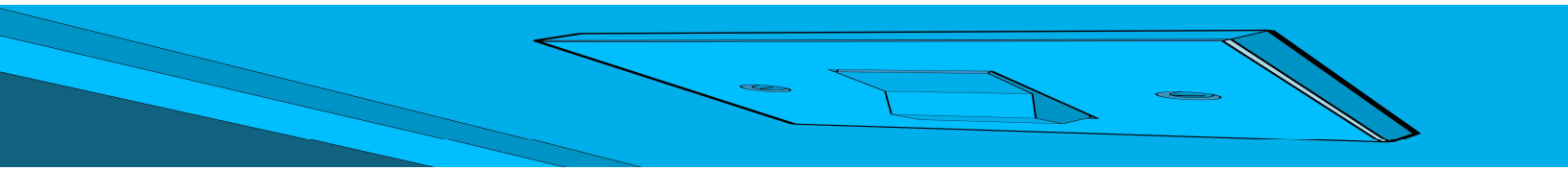

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UK ENERGY RESEARCH CENTRE

UKERC response to the DECC consultation on the proposed RHI financial support scheme

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THE UK ENERGY RESEARCH CENTRE

The UK Energy Research Centre (UKERC) was established in 2004 following a recommendation from the 2002 review of energy initiated by Sir David King, the UK Government's Chief Scientific Advisor at the time.

The UK Energy Research Centre's mission is to be the UK's pre-eminent centre of research, and source of authoritative information and leadership, on sustainable energy systems.

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To achieve this we are establishing a comprehensive database of energy research, development and demonstration competences in the UK. We will also act as the portal for the UK energy research community to and from both UK stakeholders and the international energy research community.

We are funded by three research councils: the Engineering and Physical Sciences Research Council (EPSRC), the Natural Environment Research Council (NERC) and the Economic and Social Research Council (ESRC).

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UKERC Response

The UK Energy Research Centre welcomes this opportunity to provide input to the to the DECC Consultation on the proposed RHI financial support scheme. The UKERC response addresses a number of the questions posed in the consultation document.

Summary

- The level of integration between the RHI and the Household Energy Management Strategy is weak, despite strong parallels between the policies. In particular the RHI proposal does not take into account wider energy policy goals.
- UKERC is concerned that the approach taken in the proposed RHI scheme assumes that the appropriate policy instrument is a kWh based subsidy rather than exploring a wider range options such as loans and grants.
- There is no clearly defined mechanism for funding the RHI in the proposal. UKERC suggests that some type of levy system is preferable to individual suppliers bearing the cost of the RHI.
- It should be clearer how the fuel poor will benefit from the RHI; will low-income families be able to obtain renewable heat equipment for free? If not it is difficult to see how they will benefit, given the high capital equipment costs.
- UKERC proposes that there should be a process for assessing and including emerging technologies that fall outside the list of technologies identified in the RHI proposal.
- Trigeneration and other innovative renewable cooling systems should be covered by the RHI as this would help to implement energy saving technologies and reduce CO_2 emissions.
- Heat metering should be applied for medium-scale and large-scale systems; the use of heat meters is well-established in other EU countries.
- The benefit of using heat pumps above 350 kW is questionable, especially if cooling will not be supported by the RHI, as normally high capacity heat pumps operate in both cooling and heating regimes.
- There are issues with the RHI tariff structure in relation to energy efficiency measures, these include: confusion over minimum insulation; discrepancies in household occupancy; and problems with RdSAP in EDCs.

Renewable Heat Incentive
Consultation on the proposed RHI financial support scheme

Please use the table below as a template to respond to the consultation. It will help us to record and take account of your views.

Also, please provide evidence for your answers and comments where possible.

INTRODUCTION
Q1: Are there any issues relevant to the design or operation of the RHI that are not addressed in this consultation document? If so, how should we deal with them?
Yes COMMENTS ON THE RHI STRATEGY The need for financial support for renewable heat arises principally because the capital equipment for renewable heat is more expensive than that for fossil fuels (e.g. gas fired condensing boilers). In this sense, it is different to incentives for energy users to purchase renewable fuels, e.g. renewable transport fuels and renewable electricity from the grid, as renewable energy for heat is generally converted at the point of use and the additional cost is largely in the capital equipment not the purchased fuel cost. Whereas purchased renewable fuels require user subsidies to overcome the higher cost of fuel compared to alternatives, renewable heat needs subsidies primarily to support capital investment by the fuel user. (The same argument may apply to Feed in Tariffs for small scale renewable power generation, but these are outside the scope of this consultation). This critical difference seems to have been ignored in the approach to the RHI and the design of the incentive system. In our view, this is problematic, for reasons set out below. There are strong parallels and links between renewable heat and energy demand incentives policy. Both are concerned principally with energy in buildings (with all the barriers implied by that); and both require an increase in capital investment on the customer side of the meter. Given this, it is a concern that the level of integration with the recent Household Energy Management Strategy (HEMS) [1] is rather weak. Building energy performance (in terms of carbon emissions) is determined by a combination of the changes to the fabric, largely covered by HEMS, and the carbon intensity of energy used, which is the focus of the RHI. The two face similar barriers to implementation and therefore ought ideally to be considered together. This does not seem to have been done systematically. Specifically:

- HEMS sets out quite detailed proposals for funding, whereas the RHI funding mechanism is still open to consultation, despite the fact that the costs to consumers are potentially as material as the costs of fabric improvement.
- HEMS has clearly been influenced very substantially by concerns about the cost implications to energy users, and particularly fuel poor households, whereas this consultation largely ignores that dimension of building heating policy.
- HEMS seeks to address the cost and other barriers to building energy performance improvement, where the RHI proposals are restricted to the former.
- HEMS involves, or at least considers, a number of different incentive mechanisms for fabric improvement (grants, loans, standards etc), whereas the RHI assumes a single approach – kWh based payments – that do not feature at all for other building improvement measures.

We appreciate that HEMS is directed at housing issues, whereas the RHI seeks to provide incentives across the users of renewable heat (except for power generation and automotive power). However, buildings are the main users of heat and the dominant users of low temperature heat, and housing is the largest sector by a considerable margin. Better integration is therefore important. For these reasons we believe it would be sensible to revisit the RHI mechanism in the light of HEMS. We believe the fact is it modelled on renewable energy policy in other sectors rather than more strongly integrated with buildings is a serious weakness.

Our key strategic concern is that the RHI may not be fully effective in securing decarbonisation of UK heat supply. It is explicit that the policy aims principally at allowing heat to make a substantial contribution to the delivery of UK obligations in 2020 under the EU Renewables Directive. Whilst we recognise this is an important goal, we believe that it should be noted that the Directive itself is a part of a wider energy policy that seeks to decarbonise and improve the security of the energy system. We therefore believe that the RHI should also be designed with these goals in mind. A number of reliable UK studies have shown that demand reduction and large scale electrification of heat supply in the longer term by 2050 are likely to be critical to delivering these goals [2-4]. The consultation does not consider these longer term goals and whether the proposed RHI will be conductive towards their delivery. For example, the studies referred to above indicate that Air Source Heat Pumps (ASHP) in homes are likely to be a critical factor in delivering these goals, but the modelling outcomes in the consultation suggest that only 3% of UK homes will be converted to Air Source Heat Pumps (ASHP) by 2020 under the RHI. It is important to consider whether this is adequate, and whether alternative approaches might be more effective. Experience with other building technologies (notably condensing boilers) indicates that the

prospect of future regulation may be required to secure high market penetrations.

With this in mind it is important to consider the RHI in the light of the wider package of policy measures that will be needed to stimulate renewable heat. The modelling work accompanying the consultation [5, 6] indicates that, in the early stages of market development, provided there is sufficient financial incentive to support the niche of 'early movers', the constraints are largely on supply side growth rather than demand. The modelling of supply constraints takes a rather simplistic approach, setting maximum rates of expansion based on experience in other markets. As a modelling methodology this is justifiable, but this should not be confused with a conclusion that Government has no role in the supply side. The constraints that underlie assumptions about possible supply growth rates relate to skills, training, appropriate standards and accreditation, as well as the possibilities of effective demonstration and public procurement. Government can and should play an active role in these areas, if it wishes to increase deployment rates.

COMMENTS ON ECONOMIC ANALYSIS AND INCENTIVE DESIGN

Despite the issues addressed above (Q1), we recognise that it will be important to provide incentives to users of renewable heat. We are concerned that the approach taken here is to assume that the appropriate policy instrument is a kWh based subsidy modelled on Feed in Tariffs rather than to explore a wider range options. It is not self-evident this is the most effective or cost-effective mechanism. Indeed our analysis below, drawing on the Government's consultants' reports indicates that is not.

We take as an example the case of ASHP in homes as, for the reasons set out above, it is particularly important to understand the implications of the RHI for this technology. However, the same general arguments apply to other types of technology and in other building types.

Based on the data in the consultation and consultants' reports [5, 6] and our own calculations based on these, the implications of the proposals for the economics of ASHP in homes are as follows:

Typical heat load		10 MWh/year
RHI tariff		7.5 p/kWh
Annual payment		£ 750
Lifetime		18 years
NPV of payment at	0%	£ 14,250
	3.5%	£ 10,459
	16%	£ 4,653
	30%	£ 2,554
Typical small system cost		£ 8,400

The choice of discount rates represented reflects the Government's own (3.5%), the

value used in the RHI consultation analysis [5, 6] (16%) and the value quoted therein as more representative of real consumer behaviour (30%).

The lifetime aggregate tariff payments, even discounted at the HMT Green Book rate, significantly exceed the cost of ASHP installation. As the fuel costs for an ASHP are lower than the alternatives (because the ASHP/boiler efficiency difference exceeds the projected gas/electricity fuel price difference), subsidy is only required for the capital costs. It would apparently be cheaper to subsidise the entire upfront costs of the system at the public sector discount rate than to support with kWh based revenue payments at the level of the proposed RHI.

Yet from the perspective of a consumer (at a 30% discount rate) the subsidy is less than one third of the capital costs, implying that the proposed approach may have rather a limited impact on the decision making process of most consumers. A discount rate of 30% is a much more realistic descriptor of current behaviour in households and most businesses than the value used as the central assumption in the consultation (16%). It is consistent with the 'maximum 3 year payback' criterion used by businesses for discretionary cost saving investment and significantly lower than the values required to secure household insulation investment in CERT. If anything, the evidence indicates that 30% is slightly lower than apparent in many relevant decisions.

The implied rate of installation of all supported technologies in 2020 is 15% of the heating installation market in homes and greater than 50% in the service sector (see Figure 4.1 in [6]). It seems unlikely that rates this high will be consistent with the proposed incentive mechanism, given real customer decision making processes. Our conclusions are therefore that the proposed approach looks likely to be neither very cost efficient, nor very effective.

The underlying problem is that the proposed mechanism seeks to use payments over a long period of time (in this case 18 years) to influence the spending decisions of consumers and businesses, most of whom are notoriously short term. This has long been recognised in incentive mechanism design for technology support in energy in buildings, which is why grants and loans (either directly from Government or from energy companies through regulated schemes) have been the preferred mechanism. The analysis is retained in HEMS, with the critical difference that new mechanisms are being sought for providing the upfront investment cost. It is not clear why a completely different approach is proposed for renewable heat in buildings.

The critical question for the RHI, as proposed, is therefore whether new financing mechanisms will emerge that will enable consumers to receive the incentive through an upfront payment from a third party, which is then recouped from the RHI revenue. A number of possible routes are set out on page 22 of the consultation. We agree that they are all potential sources of finance. However, the consultation (in question 2) seems to assume that such mechanisms are more likely than not to fall into place.

Experience in financing building energy performance improvement in this way is less encouraging. Debates about the feasibility of energy services markets for buildings have gone on since the early days of market liberalisation [7, 8], but the experience has been that such markets have not developed to any great extent. Energy suppliers, local authorities, banks and major retailers have all been cited as potentially transformative sources of 'demand side' energy finance, but none has delivered.

There is a wealth of evidence now available to Government about the reasons for this, for example from the Energy Services Working Group report [9] and the Energy Efficiency Innovation Review [10]. These appear to have been neglected in reaching the unsubstantiated conclusion that "it is expected that the RHI will stimulate the market to provide a number of different financing options". Whilst the availability of significant revenue support may cause some potential energy services market actors to revisit their decisions, it would appear rather incautious to assume this in advance of the outcome of the Pay As You Save pilots. There is certainly nothing in the nature of 'renewables' as opposed 'efficiency' that guarantees a different market response. Thus it is possible that a greater level of private sector financing will emerge, depending on the effectiveness of mechanisms canvassed in HEMS, but certainly not proven.

It is worth noting that in the recently closed UKERC Research Fund Call one of the topics was "Investment and Business Models for Energy Services Provision in Households" [11], based on the analysis by the UKERC Research Committee that there are significant unknowns about different business models.

In any event, it seems indefensible to provide a revenue subsidy that exceeds 100% of system cost (by Government accounting methods) in preference to taking a more active role in ensuring that more effective upfront capital support is available at lower cost.

Our conclusion is that greater attention should be given to the mechanism through which consumers will receive payment and that this may require a much greater role for Government (e.g. placing obligations on publically supported banks) in ensuring an upfront capital payment (or loan), at a realistic level, but not exceeding 100% of the capital costs. Front loading RHI support could provide the nucleus of such a package and the broad enabling powers in Section 100 of the 2008 Energy Act would appear to allow such an approach.

Whilst the concept of Pay as You Save does not apply as directly to renewable heat as to energy efficiency (except where the fuel is free), using a levy of the type envisaged to fund the RHI kWh payment instead to support a capital payment is clearly feasible. Because of its creditworthiness, Government is at least as well-placed as any other market actor to maximise the capital value of such a guaranteed revenue stream, and we believe this approach should be seriously considered.

Two possible objections to this type of capital payment incentive are mentioned in the

consultation document and accompanying analysis and need to be considered:

1. That a capital grant might allow a recipient to benefit financially without retaining the system in good working order over the assumed lifetime. We do not believe this is a significant risk. In most cases, the system under consideration is the main heating system for the building and has a lower running cost than conventional alternatives. It is difficult to see circumstances in which failing to maintain a principal heating system would be a sensible course of action, other than financial inability to pay, which could be addressed by requiring maintenance insurance from an approved contractor.

2. That front loading of payments would front load the costs to energy consumers. This would certainly be the case if a mechanism modelled on FITs were to be implemented, but the consultation indicates that other options are now under consideration. There is certainly no necessity for building energy capital costs to be met from revenue payments by energy consumers, indeed it is recognition of this fact, and its importance for future support mechanisms, that has led Government to the conclusions about the undesirability of CERT as a mechanism for very large capital investment in the building stock and the preference for Pay as You Save. The same conclusions should apply to the RHI as discussed above.

<u>COMMENTS ON FUNDING ROUTE</u>

Unusually for a consultation on a well-defined policy instrument, there is no clearly defined mechanism for funding the RHI. We believe that this needs to be resolved rapidly.

The estimated total subsidy required is £3.4 billion in 2020 (see [10] page 16). This is significantly larger than the costs of other building energy policy instruments that have been funded out of energy supply obligations/ incentives historically. It would therefore have a significant impact on energy costs if funded out of supply prices. This adds to the importance of ensuring cost effectiveness.

Our working assumption is that Government will wish to ensure that the costs of the RHI are borne by consumers rather than out of general taxation. This would be consistent with other policies designed to support a low carbon economy, e.g. CCL, EUETS, RO, RTFO, CERT and CRC. In principle we support such an approach, as it is consistent with the polluter pays principle. It also recognises the current budget realities. PAYS provides an approach for costs to be met out of housing investment budgets (private and public) and we believe this is more likely to be acceptable than putting all costs on energy supply, as this will exacerbate fuel poverty.

However, UKERC recognises that some energy supply contribution may be required to

viable financial packages for renewable heat. The provisions of 2008 Energy Act allow RHI costs to be placed on fossil fuel suppliers (and therefore ultimately fossil fuel users), but with some flexibility about how this is achieved. However, the current provisions do not apparently include electricity supply, even where this is using as a heating fuel, and we can see a case for amending the Energy Act to include electricity suppliers in order to diversify the base over which costs are spread. We believe that some type of levy system is preferable to individual suppliers bearing the cost of the RHI, as this would penalise suppliers who support their customers to switch to renewable heat sources. A levy that falls differentially, and in proportion to expected RHI benefits, on supply licence holders according to sector supplied (i.e. domestic versus commercial and industrial) would appear to be the most obvious approach.

COMMENTS REGARDING THE FUEL POOR

Much greater attention should be given to the needs of the fuel poor. Low-income families will have to be provided with the renewable heat equipment for free, if they are to obtain the benefit of RHI. If this does not occur, in relative terms, fuel poverty will worsen, as the better-off get ever-cheaper fuel bills.

It would be useful to confirm that the RHI can be obtained when displacing electricity (for instance electric immersion heaters for hot water) as the text on p16 of the consultation document only talks about fossil fuels, not the electricity derived from fossil fuels.

COMMENTS ON THE TECHNOLOGIES

The proposed design does not appear to provide the flexibility for technologies to qualify if they fall outside the technical classification but still meet the objectives against which the renewable heat criteria are based. There is therefore an argument for the inclusion of an assessment process for less clear cut examples.

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[2] Climate Change Committee (2008). Building a low-carbon economy - the UK's contribution to tackling climate change.
[3] Ekins, P. and J. Skea (2009). Making the transition to a secure and low-carbon energy system: synthesis report, UK Energy Research Centre.
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[5] NERA (2010). Design of the Renewable Heat Incentive.
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Owen, G. and M. King (1997). A New World for Energy Services?
[7] Owen, G. and M. King (1997). A New World for Energy Services?
[8] Eyre, N. (1998). "A Golden Age or a False Dawn? Energy Efficiency in UK Competitive Energy Markets." Energy Policy 26(12): 963-972.

[9] ESWG (2003). Energy Services Working Group Final Report.
[10] EEIR (2005). Energy Efficiency Innovation Review - Household Report.
[11] http://www.ukerc.ac.uk/support/tiki-index.php?page=2nd+Call+for+Proposals%3A+Annex+D&structure=Research

CHAPTER 1: ACCESSING THE RHI

Q2: Do you see any barriers to such financing schemes coming forward? In particular, are there any limitations in leasing and finance legislation that you feel inappropriately restrict the development of RHI financing models?

Yes

RHI should cover existing domestic and non-domestic buildings. Involvement of the developers could restrict the development of RHI, as the cost of the new buildings would increase due to the installation of the renewable heat systems and this augmentation would not necessarily be proportional to the payments made by RHI to owners. In addition, large scale developers have the greatest opportunity for introducing more sophisticated approaches to heat provision (combining technologies, installing heat storage etc.), but no clear opportunity is apparent to support this.

The definition of owner should be the owner of the building, not, for instance, the developer. The buyer pays the builder for the costs of the building, including the renewable heat equipment and then receives all the RHI. To share it with the developer would be inappropriate and unnecessarily complex.

The situation with community-provided district heating or combined heat and power needs to be clarified on this point. Does the RHI go to the household that uses this source of heat, to encourage connection?

Q3: Do you agree with our proposed RHI registration and payment approach? If not, can you suggest how this approach can be improved?

No

See comments in Q2.

The proposed registration system does not protect householders sufficiently: the home-owner is not likely to know that only certified installers and equipment can be used. People may well lose out by having the work undertaken by an unqualified installer, so that they forfeit the right to the RHI, through ignorance. An extra stage in the system is required which involves the householder and Ofgem communicating directly, so that Ofgem have confirmed the householder understands what work will and will not carry the RHI payments.

CHAPTER 2: ELIGIBILITY AND STANDARDS
Q4: Do you agree with our approach of requiring products and installers for installations up to 45kW within RHI to be accredited under MCS or equivalent?
Yes Comments: -
Q5: Where MCS product and installer certification is extended beyond this limit, do you agree that we should introduce the requirement of using certified installers and equipment for eligibility for the RHI?
Yes Comments: -
Q6: Can you provide details of any UK or European standards that should count as equivalent to MCS? How should we recognise these standards for the RHI?
Comments: -
Q7: Do you agree with our proposed approach to eligibility of energy sources, technologies and sites?
No Cooling is important as well as heating. Cooling contributions to energy consumption are significant and growing, but technologies are less developed. Whilst we agree that cooling in residential buildings is very limited and should not be encouraged, air conditioning is already common in larger service sector buildings, and therefore retrofitting of renewable cooling would be beneficial in these cases. Trigeneration is a more advanced technology compared with conventional chillers or split type cooling systems. Trigeneration and other innovative renewable cooling systems should be covered by RHI as this would help to implement energy saving technologies and reduce CO_2 emissions. Deemed cooling loads could be developed to mirror the approach proposed for heating to discourage 'over-cooling' and we would expect deemed cooling loads for homes to be zero.
Q8: Do you agree with our proposed approach on bioliquids? Are you aware of bioliquids other than FAME that could be used in converted domestic heating oil boilers? If so, should we make them eligible for RHI support, and how could we assess

the renewable proportion of such fuels to ensure RHI is only paid for the renewable content of fuels?
The use of bioliquids should only be incentivised if they meet environmental and sustainability standards, such as those proposed in the European Commission. The production of bioliquids is an energy demanding process; therefore it is less sustainable than solid biomass fuel. A possibility is to enforce a similar system to that in Switzerland whereby the bioliquid should have quantifiably lower lifecycle carbon emissions than conventional fuels in order to authorised for use. We would support the inclusion of FAME if it meets these criteria. Enforcing these restrictions may be very difficult and therefore it may be more appropriate to exclude other technologies from the scheme. Pyrolysis liquids, and other bio-oils from thermal or chemical treatment of biomass may be suitable to be used heating oil and may need to be considered as potential fuel.
Q9: Do you agree with the proposed emissions standards for biomass boilers below 20MW? If not, why, and do you have any evidence supporting different ones, in particular on how they safeguard air quality?
Yes Comments: -
Q10: Do you think the RHI should be structured to encourage energy efficiency through the tariff structure (in particular the use of deeming), or, additionally, require householders to install minimum energy efficiency standards as a condition for benefiting from RHI support?
Yes In principle, access to RHI funding should be dependent upon the adherence to increasingly strong energy performance standards, which might require additional energy efficiency improvements. This would avoid inhibiting investment in renewable heat whilst favouring more efficient technologies. In practice, in the absence of energy efficiency standards for existing buildings we support the approach of deemed compensation as proposed. There are some major and minor issues related to the proposed tariff structure including: 1. the tariff does not encourage energy efficiency improvements before the renewable

heat equipment is installed;
2. nor is it adjusted if the energy efficiency improvements take place later;
3. the level of loft insulation required is described as 125mm on p35 and 150mm on p84 respectively in the consultation document. In both cases, this is well below the 270mm normally required by policy (e.g. the Low Carbon Buildings Programme).
4. similarly, the average household size is now about 2.3-2.4 people per household, not the 2.9 pph cited on p85 of the consultation document;
5. the use of deeming discourages good maintenance (the same payment is made, even if the equipment is not working), whereas the proposal for an upfront payment does;
6. the difference between primary, delivered and useful energy is not clear in the document. Much of the text discusses useful energy, whereas it might be intended to mean delivered energy;
7. the team should confirm that it has the correct understanding of the difference between SAP, RdSAP and EPCs. The statement that 'using the heat load from the EPC rather than a deemed average from SAP/SBEM will be more appropriate for new buildings' (p44) reads rather oddly. RdSAP (a reduced version of SAP) is the basis for EPC bands;
8. there are substantial problems with the RdSAP used in EPCs. For instance, it provides figures in primary (not delivered) energy; it bases the calculation on the deemed occupancy of the building, not actual (for instance a 190m^2 home is assumed to have 5 people living in it, not the 2 who actually occupy it).
9. If RdSAP is to be used to deem the amount of RHI to be paid, there will have to be a method of reducing the assessed amount of payment, otherwise households will be over-compensated. This could combine with point 1 above, e.g. deem the amount of heat required is for one band of the EPC above the actual assessment (e.g. C not D).
10. By making an upfront capital payment, not an annual income payment, many of these problems related to deeming would be avoided.

Q11: Can you provide suggestions for how to ensure that developers do not build to lower energy efficiency standards as a result of the RHI in advance of 2013 and 2016 building regulations taking effect?

This can be ensured by assuming minimum energy efficiency requirements for new buildings. In advance of the zero carbon building standards, we suggest that the energy requirements (kWh/m^2) should be based on the carbon performance standard of the relevant requirement of Part L Building of the Building Regulations with the assumption of gas as the principal heating fuel. This should prevent under investment in the building fabric.

CHAPTER 3: TARIFFS
Q12: Do you agree with our proposals on where we should meter and where we should deem to determine an installation's entitlement to RHI compensation?
No Heat metering should be applied for medium-scale and large-scale systems.
Q13: Do you agree that a process based on SAP or SBEM for existing buildings or the Energy Performance Certificate for new buildings is the best way of implementing deeming? Do you have any suggestions on the details of how this assessment process should work?
Yes Comments: -
Q14: Do you agree that at the large scale/in process heating, where we propose metering, the risk of metering resulting in a perverse incentive to overgenerate is low? How could we reduce it further within the constraints of using metering, to ensure only useful heat is compensated? Do you see any practical difficulties concerning use of heat meters (such as on availability, reliability or cost of heat meters) and, if so, how should we address them?
Yes Large scale heat users would be expected to optimise heat use unless the RHI value exceeds the marginal cost of heat. Heat meters are necessary to ensure accurate heat load metering. The use of heat meters is well-established in other EU countries. However care must be taken measuring heat in large installations, as the total heat supply at the production side can differ from the heat load measured at the consumption side due to heat losses.
Q15: What is the right incentive level required to bring forward renewable heat from large-scale biomass including in the form of CHP while minimising costs to consumers?
The extension of Biomass firing to CHP through the use of steam turbines and biomass Integrated Gasification Combined Cycle (IGCC) technologies should be incentivised within the scheme.

Q16: What is the right incentive level required to bring forward renewable heat from biogas combustion above 200 kW including in the form of CHP while minimising costs to consumers? Do you have any data or evidence supporting your view?
Comments: -
Q17: Do you have any data or evidence on the costs of air source heat pumps above 350 kW or solar thermal above 100 kW?
The benefit of using heat pumps above 350 kW is questionable, especially if cooling will not be supported by RHI, as normally high capacity heat pumps operate in both cooling and heating regimes. A heat pump of 402 kW_{th} heating capacity demands about 141 kW_{el} electrical power, which requires high installation costs (based on ACM Kalte Klima heat pump data sheet [1]). REFERENCE: 1. http://www.acmonline.it/prodotti-eng.php
Q18: Do you agree with the proposed approach to setting the RHI tariffs, including tariff structure and rates of return? Do you agree with the resulting tariff levels and lifetimes? If not, what alternatives would you prefer, and on the basis of what evidence?
No The analysis in response to Q1 sets out our concerns about the tariff structures for renewable heat in buildings. The proposed RHI tariffs for large solid biomass installations are questionable and it is unclear whether this approach will bring forward these systems. There is not enough evidence provided that tariffs must be set as described in the proposal, as full Life Cycle Cost Analysis has not been conducted.
Q19: Do you agree with our proposed approach on mixed fuels? Do you agree with our proposal that, at larger sites, with the exception of EfW, RHI will require the use of a dedicated boiler for the renewable fuel? Where our approach is to follow the Renewables Obligation, do any aspects need to be adapted to account for the different situation of renewable heat?

Yes There is a risk that incentivising mixed fuel units will result in subsidising units where the use of biomass is not fulfilled as planned. This may, however, discourage investment into technologies where mixed fuel performance is superior that using dedicated units (including the use of less specialist equipment). Such cases may provide a further argument for a more detailed assessment process including a feasibility study for the biomass supply.
Q20: Do you believe that we should provide an uplift for renewable district heating?
Yes District heating is a very important enabling technology for CHP and large scale biomass units, and thus should receive an uplift. Again we believe that capital grants or loans may be more appropriate than revenue support, as high capital cost is a key barrier to CHP-DH.
Q21: Do you believe that an uplift should be available to all eligible district heating networks, or that eligibility should be determined on a case-by-case basis depending on whether a network contributes to the objective of connecting hard-to-treat properties (and, if the latter, how should we determine this for each case)? Do you agree that situations of one or a small number of large external heat users should not be eligible for an uplift, and, if so, what should be the minimum eligibility requirement for an uplift (expressed for instance as a minimum number of external customers)?
The notion that DH should not only be used as a technology to meet “hard to treat” cases is not necessarily correct. We expect mixed use, for example in inner urban locations with high heat densities, will be important applications. Incentives should be available to all biomass-fired district heating networks.
CHAPTER 4: THE RHI BEYOND 2011
Q22: Do you agree that RHI tariffs should be fully fixed (other than to correct for inflation) for the duration of any project’s entitlement to RHI support? Do you agree that we should include bio-energy tariffs, including the fuel part of those tariffs, in such a grandfathering commitment?
Yes Comments:

-
Q23: Do you agree with our proposal not to introduce degression from the outset of the scheme but consider the case at the first review?
Degression should be stated clearly, from the beginning. The experience of feed-in-tariffs in Germany is that the degression has the effect of forcing installers to become more efficient over time (and they do) and of encouraging householders to install the renewable heat equipment earlier.
Q24: Do you agree with our proposed approach on innovative and emerging technologies?
Yes Comments: -
Q25: Do you have any views on how we should encourage technology cost reductions through the RHI, particularly on solar thermal heat?
Solar thermal tubes and panels do not contribute to space heating. They make a useful contribution to hot water provision, displacing 40-50% of the original fuel source. They do this predominantly during the summer (eg April-September). There is insufficient heat in the sunshine/light to provide hot water during the rest of year and certainly insufficient to provide for space heating in winter.
Q26: Do you agree with our proposed approach to reviews, and the timing and scope of the initial review?
Yes Comments: -
Q27: Can you provide examples of situations that could be taken into consideration in determining criteria for an emergency review?

Comments: -
CHAPTER 5: INTERACTION WITH OTHER POLICIES
Q28: Do you agree with our proposed approach to allow access to RHI support to new projects where installation completed after 15 July 2009, but not before? Do you have any evidence showing that in particular situations RHI support for installations existing before this date would be needed and justifiable?
Comments: -
CHAPTER 6: ADMINISTRATION
Q29: Are there any parts of the proposals set out in this consultation that in your view would allow for unacceptable abuse of RHI support, or other unintended consequences? If so, how could we tighten the rules while keeping the scheme workable, and avoiding an overly high administrative burden?
No Comments: -
ANNEX 3: CALL FOR EVIDENCE ON DISTRICT HEATING NETORKS
Q30: Do you agree with our proposed overall approach to setting the level of the uplift? Can you provide evidence that would help us to determine the level of uplift? In particular: Can you describe typical district heating networks that would be appropriate as reference networks, and what are their network costs, heat loads, and customer numbers and characteristics? What proportion of the heat load of such networks is typically supplied to hard-to-treat properties? What proportion of the total network of the reference installation(s) supply heat to hard to treat properties? Should we choose one reference network and determine one uplift (in p/kWh) applicable to all sizes of networks, or should there be several based on a number of differently sized reference networks?
Comments: -