

**DECC consultation reference: URN 12D/330:
Renewable Heat Incentive –
Consultation on proposals for a domestic scheme**

A paper from CIBSE

Introduction

1.1 The Chartered Institution of Building Services Engineers is the professional body that exists to:

*'support the Science, Art and Practice of building services engineering,
by providing our members and the public with first class information'*

1.2 CIBSE members are the engineers who design, install, operate, maintain and refurbish the energy using systems installed in buildings, and will be responsible for a number of the installations already covered by the non-domestic RHI scheme.

1.3 As an Institution CIBSE publishes Guidance and Codes which provide best practice advice and are internationally recognised as authoritative. The CIBSE Knowledge Portal, which makes our Guidance available online to all CIBSE members, is the leading systematic engineering resource for the building services sector. Over the last year it has been accessed over 100,000 times, and is used regularly by our members to access the latest guidance material for the profession. Currently we have users in over 160 countries worldwide, demonstrating the world leading position of UK engineering expertise in this field.

1.4 CIBSE is pleased to respond to DECC's invitation to respond to the consultation on the Government's proposals for a Renewable Heat Incentive scheme for the domestic sector. In addition to responding to the questions posed by DECC, CIBSE has prepared this paper which it hopes will be helpful to DECC in its deliberations over the RHI (domestic) next steps. The paper focuses on the areas of interest from CIBSE's perspective and therefore does not cover every Chapter.

1.5 CIBSE's full response to the questions posed by the Department is attached as Appendix 1 to this document. To assist the Department we have responded to all the questions as posed, and there is therefore some overlap between this paper and the specific responses to questions.

1.6 The points in this paper are ordered under those chapter headings in the consultation document where CIBSE would like to make particular points relevant to its function as a professional body – eg technical standards and guidance; the importance of training for system designers and installers; the importance of commissioning and proper system maintenance; the gathering of performance data to help inform good practice and the next generation of RHI technologies/systems.

Chapter 1: Objectives and approach.

2.1 The stated objectives of RHI (domestic) are twofold: in the short term, to support households to move away from using fossil fuels for heating and to contribute to the UK's target on renewable energy deployment by 2020; and beyond 2020, to prepare the country for the mass deployment of renewable technologies in the next decade to help meet the Government's ambitious carbon reduction targets. DECC's preferred approach is to bring in a set of bespoke tariffs which would be designed to compensate for the additional upfront and ongoing costs of renewable heat, compared to the fossil fuel alternative and taking into account non-financial barriers such as the disruption involved in getting work done.

2.2 CIBSE has always been a strong supporter of the Government's renewable energy and carbon emissions reduction targets, and of measures to incentivise take-up of renewable energy and low carbon technologies. For large, well-engineered projects, especially biomass installations, a RHI type support structure offers advantages. However, some of these advantages are less apparent for small scale systems, especially heat pumps. New issues emerge which are not directly tackled just by receiving sums of money for heat delivered. This may be why this form of support is relatively uncommon on mainland Europe, although heat pumps have been successful promoted in Switzerland, Germany and Sweden, for example, for many years.

2.3 To stimulate growing investment where it is running at a slow rate (as is the case with renewable energy heating technologies), CIBSE take the view that the chances of success will be maximised if: the design of policy instruments is kept as simple as possible; customers have trust in the asset to be purchased; customers know where they stand with respect to the amount of public support they will receive over the supporting period; and customers are confident that the benefits (monetary and otherwise) outweigh the costs and inconvenience.

2.4 CIBSE is not convinced that the design of the tariff incentive in its current form meets these criteria. The tariff incentive as currently envisaged is complex and contains, as an essential budget control feature, inherent uncertainty about the level of support that can be counted on.

2.5 Given the scale of endeavour to decarbonise heat for the residential sector (of the order of 25m homes), the policy intervention should be strategic, holistic and commensurate with the scale of the challenge. It should be designed to:

- encourage equipment designers and manufacturers to improve performance and reliability and reduce capital and ownership costs over time;
- motivate and incentivise consumers to take on the costs and risks of ownership which these new low carbon heating technologies represent compared with current mass market solutions.

2.6 Without a holistic approach which addresses barriers and inadequacies, encourages development of the renewable energy heating technologies value chain, and fosters effective feedback and continuous improvement from early experience on the programme, public funds may be used to support products which are not improving and designs which are not taking account of operational performance.

2.7 It is unclear to CIBSE how the preferred tariff support instrument addresses these essential aspects of building a renewable energy heating technologies industry and driving consumer demand.

2.8 It is worth standing back and reflecting on the scale and nature of the renewable heat challenge over the coming decades. With a stock of 25 million homes and millions of potential customers, decarbonisation of space and water heating is one of the biggest technology transformation endeavours ever contemplated for the domestic sector since the move from solid fuel open fires to gas-fired central heating in the 1960s. Second, because energy efficiency, green energy and the decarbonisation of the economy are not top of mind for most people, the nature and effectiveness of low carbon policy interventions are going to be crucial to build critical mass of demand in the marketplace. This critical mass is, in turn, necessary to give investors confidence in the renewable energy and low carbon heat technology sector.

2.9 Whether we like it or not, big changes involving millions of decision makers usually take longer than we would like to admit – especially when those millions don't need to decarbonise their space and water heating systems and there are, as yet, no regulatory requirements to do so.

Decarbonisation of the heat we need as a nation will require a massive, consistent effort over time: marketing to explain why such a transformation is necessary; incentives to encourage individuals to take action and part with their hard-earned money; technology development; and training of the supply chain to reduce the risk of new technology failing to deliver what the customer asked for.

2.10 CIBSE consider, therefore, that rather than focus on just tackling the capital cost barrier (as is the case with the RHI heat subsidy) a holistic approach towards low carbon heating market transformation is required:

- (i) to incentivise take-up of current generation technologies, a grant/cashback scheme towards purchase and an annual payment towards, and to encourage, maintenance servicing would be a simpler approach;
- (ii) a product improvement programme would help ensure that the next generation of renewable heat products are better than those available today.
- (iii) training courses for domestic system designers and installer/servicing providers would help ensure installations are properly designed, installed, commissioned and maintained.

2.11 In this Chapter, DECC describe the domestic RHI as “a boiler replacement scheme”. This is not necessarily the case (the scheme replaces or augment the heat from boilers) and therefore the terminology could be misleading to consumers and policy makers alike. For example fossil fuel boilers operate at higher temperatures than renewable heat sources, and so are smaller, lighter in weight and easier to match to existing heating systems. In addition, the difference in operating temperatures means that larger radiators are required. Biomass boilers might be sold as being a replacement for gas boiler systems but the operation of biomass boilers is more labour intensive than is the case for a gas boiler, and they require fuel storage, which is not needed for a gas fired unit.

2.12 Recent media reports of heat pump systems failing to meet expectations appear to reflect inexperienced installation rather than a flaw in the technology. So the design of the support system needs to decide whether it is simply subsidising contributions to the UK 's renewable target, or addressing barriers to application that might stall the rapid roll out of the technology.

2.13 The word "tariff" is used to describe the support mechanism. The target market of potential customers for RHI support will be aware of "tariffs" in relation to the Government's feed-in-tariff scheme to incentivise installation of solar pv systems, and may, rightly or wrongly, associate the RHI "tariff" with this scheme. CIBSE understand that RHI is not a feed in tariff, but we doubt that the market or the commentating media will. CIBSE consider there is a real risk that potential customers may not trust any incentives referred to as "tariffs". This communications issue may have been further complicated by the recent announcements about simplifying utility company tariffs.

Chapter 2: Eligible properties.

3.1 Before considering eligibility of properties/tenures, it would be worth ensuring that the market is properly understood. Launching RHI across the whole potential residential market is a bold step. If the market has been well researched, the barriers well understood, the technologies work well as systems which customers can manage and the RHI is designed accordingly to address the barriers, then the risk of poor take-up will be low, other factors being equal. If, however, there is limited understanding of the market and barriers and if the technologies are not working as well as they need to be, then take-up could be disappointing and held back by negative publicity. This could undermine the whole scheme even if the difficulties are confined to one sector of the market, as the media are unlikely to reflect that confinement in their reporting and headlines.

3.2 CIBSE suggests that, given the significant differences between the private and social rented sectors, which include landlord tenant issues, and the owner occupier market, there would be significant administrative and budgetary benefits to be gained from early deployment of the RHI in the domestic market against a checklist of scheme performance factors, backed up by careful monitoring. For example, a pilot could focus on owner occupied homes off the gas grid, to establish viability where the incentive to adopt renewable heat is presumably greatest.

3.4 A major drawback of schemes like CERT is that there has been almost no feedback to improve installer and product performance. There is an opportunity to address this deficiency in RHI. Ideally, the wider roll out of feedback should follow after the pilot scheme (proposed above) has been evaluated. However, given that these trials should last over at least one heating season there may not be sufficient time to adopt this approach in full.

3.5 A RHI-structured scheme will only penetrate the rented sector where heat is included in the service charge such as in community heating. The landlords then naturally retain the income for an investment made by them. The complications of landlord tenant relationships may well obstruct wider participation in the scheme, much as they have thwarted other energy efficiency investments in rented property. This may be another reason why support schemes abroad (where owner occupiers are a smaller proportion of the housing sector) avoid a full RHI structure.

3.6 CIBSE consider that if the rented sector is included, then it is important to provide safeguards to tenants, so that they do not face either financial or other disadvantages following a landlord's decision to go ahead with an eligible technology investment.

3.7 Health and safety risks also need to be addressed from the tenants' perspective. For example, in the case of biomass boiler installations, the equivalent of a gas safety certificate should be provided as a legal requirement. This needs to cover both the boiler appliance and associated flues, but also the fuel storage facilities, given the known hazards of asphyxiation and mould growth which may arise. Management of these hazards may be a particular issue in rented accommodation.

Chapter 3: RHI technologies (domestic).

4.1 Generically, across all the eligible technologies, there is a paucity of independent information on installed performance, and in particular the gap between design expectations (on which the purchasing decision was made) and actual performance in use. Recent work on the gap between design expectations and actual outcomes in new homes, co-sponsored by CIBSE and published by the Zero Carbon Hub, addresses this in more detail. By comparison with fossil fuelled systems, the knowledge and experience of renewable and low carbon heating systems are thin.

4.2 There have been too few field trials of renewable and low carbon heating technologies; and those that have taken place (eg the EST's heat pump trial) have shown scope for technology and systems improvement. An independent analysis of the value chains for these heating systems would help define where each part of each value chain is in relation to where it has to be to become a significant contributor to a renewable energy and low carbon heating industry in which prospective customers would have confidence. Thus, the challenge is not just a matter of stimulating demand for the current generation of products by subsidy instrument. It is a market transformation challenge (as described in our

response to Chapter 1) with a number of defined elements which will need to be addressed in order to help lay the foundations of a renewable energy and low carbon heating industry.

4.3 The challenge is not just to stimulate demand for current products using a subsidy scheme which pays out a potentially indeterminate sum after consumers have taken the initial investment risk. It is a market transformation challenge with a number of defined elements such as, for example: programmes to reduce cost (capital and in use) and improve reliability; technical guidance to system designers and installers; guidance for system owners; and finally, and perhaps most important, a systematic gathering of performance information from monitored systems and maintenance service providers to feedback and inform continuous improvement. This holistic and strategic approach is less risky, more certain of a successful outcome and much more likely to help lay the foundations of a successful renewable energy and low carbon heating industry. A simple subsidy scheme would be less administratively costly, but it needs to be supplemented by the other elements of market transformation in order to help the emerging industry deliver the full potential for renewable heat.

4.4 It should be noted that 'renewable heat' embraces more technologies than 'heat from renewables'. Heat pump technology has until recently been seen as an extremely efficient means of using electricity to provide heat, much as combined heat and power is supported as a more efficient way to supply power. If it is deemed too difficult to measure heat flow in air systems an RHI approach risks distorting the market away from good engineering solutions. Presumably heat pumps could be supported in other ways while contributing to the renewable heat target through nominal performance figures (as already done for heat pumps in CERT).

4.5 CIBSE is currently preparing a Biomass Heating Systems Application Manual to guide those who are professionally involved in their design and installation. Whilst the primary aim is to address the need for guidance in the non-domestic sector, there are elements that will be equally relevant and timely for the domestic sector. The Institution will ensure that the Department is kept informed about publication. In addition to guidance to the professionals on system design, fuel quality assurance (as distinct from verification of the sustainability of biomass fuels) is another key requirement of a well-functioning biomass boiler based system, in order to reduce the risk of RHI incentivising capital investment only to leave consumers confused about which fuels they can use. Our response to Q.58 (on raising performance) is just one example of the kind of design detail which can make or break a biomass heating system.

Chapter 4: Tariff design.

5.1 As we have said earlier, the RHI is a complicated scheme and that in itself is likely to impact on take-up. A simpler approach such as a cashback/grant plus small but ongoing annual payments for those who agree to metering, regular maintenance and to submitting performance data, is more likely to attract and sustain customer interest and generate in use data on the systems. The common issue for feed in tariffs is that to initiate the market the opening tariff needs to be very attractive to kick start the scheme, but then retrenchment to a more balanced tariff once the market has taken off causes confusion and market collapse, as has been observed with several European feed in tariff schemes.

Chapter 5: Raising performance.

6.1 CIBSE believes it is well placed to comment on the principles of action to raise system performance. For these new and emerging technologies, there is a need for:

- (i) development of products suitable for UK conditions;
- (ii) creating and disseminating professional guidance on system design, sizing, installation, commissioning and maintenance;
- (iii) a means to capture and analyse customer feedback on scheme experience and systems performance in use.

6.2 For individual installations, metering and monitoring (of selected installations) would help improve performance. To ensure consistency in metering (and hence the data obtained from metering, it is advisable to develop protocols and issue guidance to installers. But that will not, on its own, help improve generic standards and system performance. What is needed is a strategic approach which gathers and analyses performance data at scale, makes this analysis available to the supply chain and stimulates the use of that analysis to improve system design, efficiency and reliability. This is needed not just for narrow RHI management reasons, but to develop a strategic, holistic approach to help an emerging value chain become an established part of the UK heating system supply chain. (It should be recognised that this is an international industry and therefore the UK is going to have to focus on those parts of the value chain where it has the best opportunity for commercial success.)

6.3 CIBSE consider that the UK would benefit from seeing how best practice in respect of these renewable and low carbon heating systems is developing in other countries and learn from their experiences.

Chapter 7: Assurance.

7.1 CIBSE welcomes the attention DECC is giving to assurance and consumer protection. It will be particularly important, given that these technologies are relatively new to most installers and the service providers are developing their knowledge and experience. An independent and impartial consumer protection scheme is what prospective customers will expect. There are a number of areas where consumer protection is likely to be needed - for example, mis-selling heating systems, claims about performance, running costs and reliability which may, or may not, turn out to be the case in practice. Furthermore, irrespective of what the Government says to make clear what RHI is and is not, RHI will be seen by potential customers as a form of generic brand endorsement of renewable and low carbon heat technologies.

7.2 Another aspect of assurance is designer and installer accreditation. Ideas for schemes should be explored with the industry. (Given that assessing energy performance of buildings requires accredited assessors, it would look odd to consumers if the actual design and installation of systems – which is clearly a higher risk activity - could be left to unaccredited service providers under a Government scheme.)

8. Chapter 8: Customer journey.

8.1 CIBSE wish to commend DECC on its initiative to introduce the concept of a customer journey. Having done so, to get the most out of this concept, it would be necessary to gather information about how real customers fared on their journeys. From the consumer's perspective, which aspects worked and which did not? What does analysis of customer journeys (including those who decided to drop out or not even start) tell DECC about the effectiveness of RHI? How can RHI be made more effective as a result of the analysis of customer journeys?

9. Chapter 9: Budget management.

9.1 CIBSE fully understand that Governments needs to keep control over public expenditure and schemes like RHI where take-up rates are uncertain can make it very difficult to avoid the risk of high/low levels of expenditure in relation to the budget in year X and the opposite in year Y. Given DECC's preferred support instrument (a tariff for each type of renewable energy/heat pump technology), the proposed means of budgetary control is to have the right to reduce the tariff level if there are

pressures on the budget – ie depression. Whilst this may meet Government requirements on public expenditure management, it does little for customer confidence – as noted above. Any scheme which has the option to reduce the rate of incentive support at any time, particularly after investment decisions have been taken, is going to be unattractive from a potential customer's perspective. Having the flexibility to reduce tariffs every 2-3 months is going to cause prospective customers to ask whether they trust the Government to stand by its commitment on RHI or whether they may find themselves stranded after they have committed funds to the purchase of renewable heat equipment.

9.2 CIBSE take the view that a simpler scheme which incentivises purchase by providing a fixed grant towards the initial capital costs and a guaranteed support incentive to encourage the gathering of performance monitoring data and annual maintenance for the duration of the support regime would inspire confidence and motivate maintenance and provision of operating data.

9.3 The principle of such a scheme would be that support levels would be fixed for any given consumer so they know what support they would be getting over the RHI support period. (The principle could be applied to the tariff instrument as well as a grant and ongoing support to encourage maintenance.) However, the support levels don't have to be the same for all consumers. They just have to give certainty to each customer that whatever the level of support agreed at the outset will remain the same over the support period. Each technology category would have a given tariff band, and so each category could have a separate support level within that band.

9.4 RHI as currently envisaged has a complicated customer journey with plenty of "stage gates" for the customer and scheme provider alike. There is a risk that depression budget control options will raise doubts in the minds of customers about the value of RHI support over time. This is not the way to drive take up. CIBSE recommends DECC takes another look at this aspect of RHI scheme design.

**DECC consultation reference: URN 12D/330:
Renewable Heat Incentive –
Consultation on proposals for a domestic scheme**

CIBSE responses to DECC questions

Chapter 1: Objectives and approach: consultation questions

- 1 What are your views about the proposed approach of a universally available tariff scheme? Is a tariff scheme the most efficient way to drive down technology costs, increase innovation and value for money, together with developing a home grown supply chain? Please include reasoning for your response.** Whilst CIBSE strongly support the Government's renewable energy and carbon emissions reduction targets, it is not convinced that a system of tariffs is the simplest, value for money policy instrument. To encourage greater investment where investment is running at a slow rate (as is the case with renewable energy heating technologies), CIBSE take the view that the chances of success will be maximised if: the design of policy instruments is kept as simple as possible; customers have trust in the asset to be purchased; customers know where they stand with respect to the amount of public support they will receive over the supporting period; customers are confident that the benefits (monetary and otherwise) outweigh the costs and inconvenience. The design of the tariff incentive in its current form does not meet these guidelines. Neither is it a sufficient instrument to help develop the emerging renewable and low carbon heat sector. In CIBSE's view, the policy intervention should be strategic and holistic. It should encourage equipment designers and manufacturers to improve performance and reliability and reduce capital and ownership costs over time. Without a holistic approach which addresses technology and supply chain inadequacies and encourages development of the renewable energy heating technologies value chain, public funds will continue to support products which are not improving and designs which do not take account of operational performance and emerging best practice.

It is worth standing back and reflecting on the renewable heat challenge. First, with around 25 million homes, it is one of the biggest technology transformations ever contemplated for space and water heating in the domestic sector since the switch from open coal fires to gas-fired point and central heating in the late 1950s and 1960s. Second, because energy

efficiency, green energy and the decarbonisation of the economy are not top of mind for most people, the nature and effectiveness of low carbon policy interventions are going to be crucial to build the critical mass in the marketplace. This, in turn, is necessary to give investors confidence to invest in renewable energy technology businesses. As a general rule, assumptions about take-up and system costs tend to be optimistic. It takes longer than expected to go through the customer journey (equipment gets ordered but delays occur, installers fail to commission properly, there are more call-outs in the early stages of operation for a variety of reasons). And, the costs remain high because sales are too small to make investment in systemisation of manufacture and installation commercial sense. A scheme which is complex and which only addresses a sub-set of the market transformation barriers is unlikely to be successful and will probably fail a subsequent value for money test.

The tariff scheme approach as presented is complicated and its design contains uncertainties about the amount of support on offer. It doesn't communicate how customers will benefit by taking up RHI support, and fails to provide an incentive to manufacturers to invest in product development. Furthermore, it fails to provide visibility to the supply chain on the scale of interest and the pipeline of sales opportunities. Manufacturers, designers and installers are unlikely to see sufficient business to warrant investment in product development and cost reduction, training in system design, installation and maintenance.

- 2 Do you think that there would be advantages in phasing or piloting roll-out of the scheme? On what basis do you think it might make sense to phase or pilot the scheme?** Yes, a pilot makes sense. There is a paucity of information on the costs and performance of existing systems installed in recent years. How current generation renewable heating works in practice, what the benefits and problems are, and how to feed that knowledge into product development, system design and service provision improvement and expansion are big gaps in our knowledge of the renewable heat challenge which RHI seeks to address. Time and effort spent learning about real life experiences, cost in use, reliability and all the other questions consumers ask about new products will help get better value for money from RHI. We may know how these technologies work in a small number of cases but (a) the data sets are likely to be inadequate and possibly unrepresentative of mass market deployment; (b) we have little information on how the average user will use these technologies, or what they will find beneficial or irritating. Properly designed and implemented, pilots would provide beneficial feedback to manufacturers, system designers and installers - and policy makers. To be of most value, pilots would need to have resources for

monitoring performance in use, customer reactions, etc. A joint programme with TSB/DECC and the supply chain would have merit; as would customer research projects with the universities (eg those who have been selected for the RCUK's End Use Energy Demand Centres programme).

The residential heat market is dominated by gas. Homes on the gas grid will be a tougher market to address with renewable heat products than the off-gas grid market; and there will be potential for customers to switch back to gas if the renewable/low carbon technologies fail to meet their requirements. One option would be to start RHI in the off-gas grid market and see how that market develops and how well, or otherwise, RHI encourages take-up.

Meanwhile, given the urgency of responding to the "legacy" consumers, CIBSE suggests DECC should explore a short run scheme (eg: a one-off cash payment) to discharge the government's legacy obligations and reward early adopters and also to gain access to their experience and information via survey questionnaires. This feedback can then be used to inform further development of the domestic scheme.

- 3 Do you think that there may be alternative or additional approaches to incentivising renewable heat deployment that we should pursue? What approaches do you think might add most value?** Yes. CIBSE consider the tariff scheme is complicated and is likely, as a result, to under-perform. A grant/cashback scheme towards the costs of buying the renewable and low carbon heating systems, and an annual payment towards, and to encourage, maintenance servicing would meet customer needs more simply and be more effective over time. In parallel, a product and systems design improvement programme would help ensure that the next generation of renewable heat products are better than those available today. Training courses for and accreditation of system designers and installer/servicing providers would help ensure installations are properly designed, installed, commissioned and maintained. All these additional steps would help de-risk the value proposition from the perspective of the potential consumer and that is what policy interventions have to do to secure success.

Chapter 2: Eligible properties: consultation questions

- 4 Do you have any comments on the proposed exclusion of second homes from the RHI?** Yes in principle, but it depends on how second homes are defined - and different definitions seem to apply in different circumstances. Whichever residence has the most usage factor during the year, and hence the largest potential energy/carbon savings should be deemed to be the main residence for RHI purposes.
- 5 Do you have any comments on the proposed approach to private landlords and their tenants under the RHI? Have you any suggestions about how to ensure that the RHI incentivises the installation of renewable heat in the private rented sector and does not disadvantage tenants?** The rented residential sector is a complex market. CIBSE believes that there is a need for further assessment of the market opportunities and the requirements to ensure that RHI installations in this sector benefit both landlords and tenants. As noted in our paper, there are specific technical issues around controlling hazards with biomass systems and storage which probably require an equivalent to gas safety inspections.
- 6 What are your views on our proposals for the treatment of legacy applications for installations between July 2009 and the opening of the scheme?** See our response to Q2 on a mechanism for obtaining useful feedback from legacy applications.
- 7 Are there any other legacy applicants (aside from those that have received RHPP, a Home Renewables Loan, or installed renewable heating systems since 15 July 2009) that you think we need to consider?** CIBSE have no view on this point.
- 8 What are your views on phasing legacy applications over the first year?** This approach would appear sensible. It would avoid causing peaks of applications to handle from this segment.

Chapter 3: RHI Technologies: consultation questions

- 9 Do you agree with the proposed approach to the selection of eligible technologies for the domestic RHI scheme? Please include reasoning for your response.** Yes this is an established technology classification which could be used for eligibility purposes. It will be necessary to check that this list is compatible with relevant EU RED legislation – as per the consultation document's reference.

The eligibility methodology is fine for current technology but it is a matter for debate whether all of these eligible technologies are “fully proven and commercially available”. Experience of these products in use is thin; and what information there is presents a mixed picture of performance, cost-effectiveness, and reliability. Therefore, CIBSE consider that in parallel with RHI, there should be a mechanism either to support product development and improvement or to support currently promising technologies. CIBSE recommend that DECC discuss this aspect of encouraging renewable and low carbon heat technologies with its technology innovation partners such as TSB.

10 Do you agree with the proposed eligible technologies set out above? Are there others that should be considered for inclusion?

This is a good set of technologies. However, heating is not supplied by single technologies but by systems. The concept of “eligible technologies” should be re-visited from the perspective of what end users actually want - ie a heating system, properly designed and sized to meet demand (demand which, as a condition of RHI support will have had to be reduced through fabric energy efficiency measures) and having due regard to the importance of preserving good air quality.

On a specific technology, individual biomass boilers, CIBSE is in the final stages of production of an Application Manual for biomass heating systems. Whilst it is intended to address the need for guidance in the non-domestic sector, there are elements that will be equally relevant and timely for the non-domestic sector. Meanwhile, CIBSE recommend caution because: (a) air quality and emissions issues can arise with biomass boilers, especially those which are not properly designed, installed and managed (and this applies just as much to the chimney design as it does to the boiler itself); (b) the fuel supply can be subject to variability in calorific value, availability and quality; and (c) the systems cost are significant. Recent experiences with biomass installations suggest that these issues may prove to be more significant than previously realised.

Other factors which should be taken into consideration are the effect of transport of the fuel in terms of cost and carbon emissions of the transport, availability of space for the plant and storage of fuel and ash removal and disposal and associated costs.

11 Do you agree that an approved suppliers scheme is the best option for domestic biomass heat installations to demonstrate their use of sustainable fuel? Please provide reasoning with your response. Yes. And the approved suppliers scheme should be accompanied by: (a) an installer accreditation scheme; and (b) a fuel

quality certification scheme. There are insufficient knowledgeable and experienced installers; and poor/variable fuel quality is a continuing issue for biomass systems. Boiler combustion performance is also an issue not just for energy efficiency reasons but for health reasons (incomplete combustion can enhance the risk of carbon monoxide emissions).

There are also issues around safety of biomass fuel stores, which would be covered by an approved suppliers scheme. The HSE recently issued a safety notice, which states: "The HSE is issuing this notice to those who use, install, maintain or distribute wood pellet boilers or manufacture /store/distribute wood pellets. Since 2002 there have been at least nine fatalities in Europe caused by carbon monoxide poisoning following entry into wood pellet storage areas. Although there have not been any incidents so far in the UK the use of wood pellets is increasing and awareness of this danger is required. Wood pellet boilers are used in homes and businesses as an alternative to oil or gas fired boilers. They are also being installed to replace coal-fired boilers, particularly in schools." <http://www.hse.gov.uk/safetybulletins/co-wood-pellets.htm>

- 12 Do you agree that as part of the approved biomass supplier list we should assume a level of boiler efficiency? Please provide evidence to back up your response.** To a first approximation, and in the absence of performance data, an assumed boiler efficiency would be satisfactory. However, it would be better to take a sample of new boilers and boilers in use and measure both boiler efficiency **and** emissions. (There can be a significant difference between manufacturer's claimed bench efficiencies and actual in-use efficiencies; and emissions from biomass boilers, particularly if not properly maintained, can be an issue.)
- 13 Do you agree that April 2014 is an appropriate date from which to start requiring users of domestic biomass heat installations to provide proof of meeting the sustainability criteria? Please provide reasoning with your response.** Sustainability criteria should be brought in as soon as practicable. April 2014 is 16 months away. That should be sufficient time to enable those responsible in the fuel supply chain to obtain the necessary proof to present to the user. The concern will be if application of the criteria causes shortages in approved biomass fuel. Depending upon sourcing, fuel availability could be a seasonal problem and shortages cannot be ruled out. How the use of non-approved fuels is handled under RHI (and by the boiler warranty provider) if and when approved fuels are not available needs consideration. Please also see the responses above in relation to biomass.

- 14 Is the air quality approach set out above appropriate for the domestic RHI sector? Please provide your reasoning with your response.** On balance, Yes. The issue is in respect of location. Urban locations have tighter air quality/emissions standards than rural areas. For domestic installations in rural areas then may be a case for relaxing the standards. This would need to be the subject of further consideration with the relevant authorities. London has air quality problems in Tower Hamlets, in particular, and serious consideration should be given to the impact of RHI installations in the London area.
- 15 Do you have any views on our proposals for excluding certain technologies? If you would like to suggest changes, please provide evidence to support your view.** The current list looks fine for the initial phase of RHI. It would be better to start with those technologies likely to be the most popular and have a process of review for emerging technologies for eligibility. In parallel to RHI, consideration should be given to support for innovation via TSB, for example, so that currently excluded but emerging renewable/low carbon heat technologies can see a pathway to market and RHI support.
- 16 Do you agree with our proposed approach to efficiency requirements for heat pumps?** Yes.
- 17 Do you agree with our assumption that heat pump systems, using technology that meets MCS efficiency specifications, should meet an SPF requirement of 2.5?** Mass installation of heat pumps is being proposed as offering a route to substantial carbon emissions reduction. This is all right: (a) if the local system efficiency in use (SPF) is good (eg 2.5 or better); and (b) the electricity generation system efficiency increases and carbon intensity decreases. Otherwise, we may find that at the installation level, the switch to heat pumps looks good but nationally the picture is less good.
- 18 Do you think that the 'Green Ticks approach' to an energy efficiency requirement is appropriate to the RHI? Please provide reasoning for your response and further information on any exceptional cases you think might arise.** Yes, this is a good idea. Solid wall insulation apart (because it is so expensive, requiring action is likely to price RHI supported technologies out of the frame for most householders), every effort should be made to reduce the heat load before designing the system. Otherwise the system will be larger than it needed to be, will be more expensive to run, and will waste energy. And, upstream, the electricity

network carrying capacity will have to be larger also. Consideration should be given to co-promoting Green Deal and RHI – though that support should not be taken to be unalloyed endorsement of Green Deal (which has its own challenges ahead).

- 19 What are your views on our proposal to require consumers to have installed energy efficiency measures and provided proof to Ofgem before they become eligible for the RHI? Can you suggest an alternative approach that guarantees the installation of the green tick measures, but provides RHI subsidy at an earlier point?** CIBSE agree that eligibility for RHI support requires prior action to improve energy efficiency as per the green tick checklist. Evidence such as paid bills for energy efficiency measures should suffice. Or, if this is going to be administratively too costly, could DECC/Ofgem rely on positive promotion of why energy efficiency makes sense; coupled with random checking, with a higher checking rate initially and some visible sanctions (such as delaying RHI support until the energy efficiency measures had been installed). The checking process would have to be quick in order to enable customers to go ahead with their renewable heating system. A packaged scheme whereby consumers carry out green tick measures as appropriate, and can show to installers that they have already done so; and then get RHI support, would be seen as more “joined up”.
- 20 Do you think that solid wall insulation should be excluded from the energy efficiency requirements or be introduced in a phased way? Please provide evidence for your response.** This is not straightforward. There are pros and cons either way. If Yes then the heat losses from the dwelling would be high, a larger heating system would be needed, and the effectiveness of the RHI support would be reduced. If No, then the move to renewable heat becomes even more expensive because more heat will be required. Solid wall insulation for insulation reasons only is very expensive. Where the outer leaf requires attention, solid wall insulation treatment is justified. In those cases, solid wall insulation would be well worth having with or without the RHI. On balance, not having solid wall insulation should not be a bar to RHI support.

Chapter 4: Tariff design: consultation question

- 21 Do you think that 7 years is a suitable time period for tariff payments under the RHI to be made? Would a different time period for tariff payments suit different technologies? Please**

provide evidence to support your view. 7 years sounds reasonable on average, but this time period would not incentivise a commitment to annual maintenance and servicing over the 20 year assumed life of the product. However, it is CIBSE's view that a simpler support instrument, as part of a comprehensive approach to renewables and low carbon heat market transformation, would be likely to be more successful than RHI alone. This is discussed in greater detail in our accompanying paper.

- 22 Please provide evidence on the potential lifetimes for the different renewable heating technologies, particularly where they are expected to last less than the 20 year period that we are assuming.** CIBSE have insufficient evidence on the performance of these renewable and low carbon heating systems to say with confidence whether 20 years is a typical life for these systems. Undoubtedly, some components will require replacement or upgrading during that time; and much depends on whether the system has been properly maintained. As a first step, CIBSE recommend that DECC explores whether we could learn from experience in other countries. If no such information is available, one suggestion to get good information on this characteristic would be to support a joint project with equipment manufacturers to carry out accelerated life tests on a selection of systems at an independent, accredited test house.
- 23 What is the risk of switchback after the period over which tariff payments are made? Do you think this applies solely to biomass?** Switchback risk is higher if the technology fails to meet user expectations or users have an alternative heating option eg. to go back to gas if available. The technology risk is significant, especially in the early days. Consideration should be given to having the option to put a sanction on the system supplier if the system fails to meet expectations and the failure is not rectified. To ensure confidence in technologies supported via RHI, consumer protection should be no worse than exists in the conventional heating system technology market. Indemnifying the RHI for such cases could be part of the warranty. The process of accrediting or approving the supply chain, and commissioning of systems should mitigate this risk. Biomass boilers are probably more prone to this risk but heat pumps will not be exempt because there are, currently, relatively few knowledgeable designers or installers in the domestic sector and experience of heat pump systems in use in the residential sector is limited. (The EST heat pump field trial suggested that due to poor design and installation systems were incorrectly sized and running costs higher than expected.)

- 24 Do you think that either of the proposed solutions would mitigate the risk of switchback? Which approach would be better? Is there any other action we could take to ensure the continued use of biomass in this way?** CIBSE doubt that either proposed solution would be attractive to consumers. Waiting 20 years for help towards operating costs already paid would not be providing help when it is most needed – ie the early stage after installation. Some consumers may have moved on; or lost the original paperwork; etc. One alternative would be to offer a "loyalty bonus" at 10, 15, 20 years. This bonus could be linked to, or contribute to the annual maintenance costs. Using DECC approved maintenance service providers, when users have submitted 3 receipts from year 7-10, 5 each for 10-15 and 15-20, the bonus would be provided. This has the big advantage that systems purchased with RHI support will be properly maintained for the 20 year period. Poorly maintained equipment leading to outages will be one of the major technology problems facing the introduction of new systems.
- 25 What do you think are the other risks associated with paying a tariff over a shorter period, say 7 years, but assuming heat delivered for 20 years? How do you think we should mitigate these risks?** Poor performance of the heating system; for biomass, unreliable supplies of suitable fuel; for heat pumps, the risk that in rural areas increasing take-up of heat pumps may be too much for the local grid capacity; and generally, if the market for renewable and low carbon heating systems is insufficient to maintain the related goods and services industry. For these reasons, it is important that the RHI provides sufficient support not only to individual consumers but also to the embryo industry and supply chain. The first step is to understanding the complete risk profile of the renewable and low carbon heat challenge across the value chain, including consumers. Having a comprehensive policy intervention plan to address those risks is the second. Implementing that plan, and learning from it, is the third. Bear in mind the scale of the challenge as outlined in the answer to Q1 above; and take into account that in any market there are only a small % of "early adopters" willing to take the risk of ownership of new technologies. Unless there is a clear pathway to move from the "early adopter" segment to the mass market, there will be a risk that whatever market penetration is achieved by RHI will be insufficient to grow the market.

- 26 Do the tariff ranges above accurately reflect the costs faced by consumers installing renewable technologies? Where possible we would welcome cost-based evidence that supports your views.** In the absence of good data sets, there is a tendency for models to be idealistic – eg, to justify the value for money case for the RHI budget. They can underestimate the real costs of ownership (initial purchase, hassles of early ownership, and ongoing operating costs), especially for early generation technologies. They also may not, alone, be sufficient to overcome the "why should I bother" barrier. The aim of RHI is to incentivise take-up of what will be for the vast majority of the market new and costly technologies. Until there is a body of evidence on the cost of ownership, the tariff ranges can only be best estimates. If the tariffs are perceived to be inadequate, irrespective of what the model says, take up will be low. If that turns out to be the case, the support parameters should be reviewed in order that RHI stands a chance of achieving the scheme objectives.
- 27 What are your views on the support for solar thermal as set out? What evidence is there to support a tariff higher than the renewable energy cap? Do you have any suggestions / views on other ways in which a subsidy for solar thermal could be paid, for example, through a capital grant or through increasing the tariff beyond the cap?** It is recognised that solar thermal systems for UK applications are a more expensive option, although solar thermal systems have been around for several decades. Rather than provide more RHI subsidy for solar thermal, it may be better to set a target installed cost which meets RHI value for money criteria and then invite the solar thermal sector to design and carry out a product development and cost reduction programme across the supply chain, with public support from low carbon technology innovation funding providers. Until then there should be no support for solar thermal over and above the standard rate proposed.
- 28 What are your views on the support for GSHPs as set out? What evidence is there to support a tariff higher than the renewable energy cap?** CIBSE have no evidence to support a tariff above the renewable energy cap. As with solar thermal, justification is needed for RHI to support technologies which are expensive without a parallel programme and incentives to help cut costs and raise reliability and performance.

- 29 What are your views on differentiated tariffs for GSHPs?**
See response to Q28.
- 30 Do you have any data that you can share on the current market split between borehole and ground array GSHPs, associated costs and the likely future demand of these?**
CIBSE has no such data.
- 31 Are there other factors which should be taken into account when calibrating the tariff levels for either air source heat pumps or biomass boilers if the value for money cap were to become applicable to those technologies?** The RHI is an intervention to help make what are uneconomic, new systems economically sensible investments and in so doing kick-start a major growth in the market and help meet the UK's carbon and renewables target). As part of the "exit strategy" for RHI, there needs to be further technology and systems development to improve efficiency/reliability and reduce costs (by technology improvement and growth in volume production). Any intervention designed to stimulate purchase of a new technology should be run in parallel with system development and cost reduction programmes, and training for designers and installers.
- 32 Do you believe that the introduction of a domestic RHI tariff for new build is appropriate? If so, what additional costs and/or savings should DECC take into account if setting a new build tariff?** Yes for homes built to pre-2016 zero carbon standards. But the level of support should reflect the reduced bulk costs which house builders will be able to secure compared with individual purchases. After 2016 (assuming the Government of the day remains committed to requiring zero carbon homes in the 2016 Building Regulations), a policy intervention should not be used to help reduce the costs of compliance with a related regulatory requirement. It is not clear how house builders will respond or which renewable/low carbon heating system they will select. Will they specify and install cheapest technology and leave the risks and downstream costs/hassle to the owner? Or will they adopt a different attitude and use their purchasing power to become a force in the developing low carbon heat market? Their bulk purchases (100s-1000s per development), would be significant in the market. To protect consumers, house builders should be obliged to use approved suppliers/installers and all the other consumer protection aspects of RHI. DECC should discuss this aspect with

NHBC, Home Builders' Federation and the technology providers. It is also relevant to the work being done by the Zero Carbon Hub to develop a quality assurance approach for new homes to close the gap between design and actual performance.

33 Do you have any evidence on the percentage cost reductions associated with fitting a renewable heating system into a new building, compared with retrofitting it?

CIBSE has no evidence. We would expect bulk buying to reduce the cost of purchase for new build. The inherent cost of retrofit may also be higher because of the demands for boiler and fuel storage space, if available, flue requirements and ash disposal and storage. Also, it would be assumed that new build fabric energy efficiency standards will meet the Green Ticks standard and therefore would not be an extra prequalifying cost to the consumer. It is hard to say by what % new build renewable heat systems would be cheaper but 10-15% would not be an unreasonable assumption - maybe more depending on the scale of discounts. However, running costs would be occupant and demand dependent. Claims about running costs would need to comply with consumer protection requirements for RHI – see CIBSE's responses to the questions in Chapter 4 on tariff design.

34 If you do not agree with a domestic tariff for new build along the lines proposed, can you propose alternative ways to incentivise the uptake of renewable heating in the sector?

See answer to Q33 and earlier responses on a holistic approach to market transformation for the renewable and low carbon heat industry.

35 In light of the above, do you think we should introduce a domestic RHI tariff for social landlords? Why/why not?

Whereas social landlords have been at the forefront of action to improve energy efficiency and thereby reduce emissions, the renewable and low carbon heat technologies are early stage technologies which carry early adoption costs and uncertain running costs. Given the client base of social landlords it would be unfair to encourage the installation of renewable and low carbon heat technologies until capital costs have reduced and operating costs better understood. On the positive side, social landlords may be able to offer better value for money from centralised installations providing heat and water (eg biomass boilers) to multiple tenants where the load density is sufficient to make investment in steam/hot water pipework sensible.

If the scheme cannot be delivered effectively in the social rented sector, then it raises serious questions about its viability and the likely quality and even safety for the private rented sector.

- 36 Do you think that the proposed 7 year period for tariff payments would be appropriate for social landlords too or would another timeframe within the assumed 20 year life of equipment be more appropriate?** See CIBSE's responses to the questions in Chapter 4 on tariff design.
- 37 Do you have any evidence on the percentage differences to costs/benefits of fitting individual renewable heating systems into social housing?** CIBSE has no such evidence.
- 38 Is there an alternative way in which you think we should incentivise renewable heat in the sector?** Consideration should be given to social landlords hosting renewable heat "centres of good practice" whereby funds are provided alongside RHI to enable installations to be monitored, user feedback etc etc. Learning by doing to build a library of good practice which is then disseminated to the wider community is an important part of reducing costs and improving performance and reliability. The costs of this activity will more than repay in terms of scheme effectiveness and extension to other market sectors. In addition, a means would need to be found to indemnify tenants against any higher heating costs than they currently pay.
- 39 Do you agree that deeming, as opposed to metering, is the most appropriate approach on which to base the calculation of RHI payments? If not, why not?** Although deeming is a cheaper option, and could be used as a first approximation, it would be better, given the absence of good data sets, to check the deeming results by metering. A calculation method based on assumptions may or may not give a reliable and accurate consumption figure. The evidence of the performance gap in new homes published by the zero carbon hub is ample evidence that design calculations may not reflect reality. Over time, when sufficient data is available consider whether a deeming calculation is appropriate or not.
- 40 Do you agree that a calculation by the MCS installer, or equivalent, is the best approach and that the above criteria are adequate for developing an effective calculation?** There may be reasons for adopting the approach, but it cannot be

considered the “best” way to do this, see answer to Q39. In time, a calculation could be appropriate, and, if so, an MSC approved installer could provide the calculation, provided they have had the necessary training.

- 41 Do you have any views on which calculation would be most appropriate for deeming heat? Please provide evidence to support your claim.** CIBSE would recommend in the absence of anything better that SAP is used. Consideration should be given to development of a version of SAP for use for RHI calculations.
- 42 Do you agree with the approach outlined here for the treatment of bivalent systems?** Yes.
- 43 Do you anticipate that financing offers will come forward from the market to provide support for renewable heat in conjunction with the RHI? If not, is there anything DECC could do to support this?** Much depends on the pace of take up in relation to the availability of systems and installers. High demand and low availability is unlikely to cause the supply chain to think about offering financial inducements. On the other hand, too many systems left on the shelf may drive some in the supply chain to offer financial inducements, assuming they don't go out of business first. But these inducements may not be sufficient to accelerate take-up. Bear in mind that some market inducements may not be trusted – eg, suppliers getting rid of slow moving products. The RHI support in the minds of many consumers endorses the view that renewable heat systems are “a good thing”. (Conversely, beware inappropriate selling and making claims about energy/cost savings which may not be met in practice.) DECC should work with the consumer bodies and the industry to agree codes of conduct which will protect consumers.
- 44 To what extent do you believe the ability for some consumers to fund their renewable heat installations through Green Deal and the RHI will improve deployment of renewable heat?** A combined “one stop” approach where Green Deal provides support to help customers meet the energy efficiency standards and the RHI incentivises installation of renewables/heat pump technologies would be a good one. However, it remains to be seen how good, or otherwise, take-up of Green Deal turns out to be. A low take-up under Green Deal may be indicative of the likely take up of the energy efficiency measures required for RHI eligibility.

Chapter 5: Raising performance: consultation questions

- 45 Do you agree that a metering and monitoring service package like the one we have outlined would be effective at driving long-term system performance improvements?** Metering and monitoring of individual installations will help improve performance. But it will not, on its own, help improve generic standards and system performance. What is needed is a strategic approach which gathers and analyses performance data at scale, makes this analysis available to the supply chain and stimulates the use of that analysis to improve system design, efficiency and reliability.
- 46 Do you think that the additional financial support in option 1 should be distributed as a flat-rate increase to the RHI tariff, a one-off upfront payment or in some other way?** Some form of incentive to install metering and monitoring service packs is required. A one-off up front payment towards costs is one option, Another is a hybrid whereby say 50% of the payment is made up front and the rest would be paid as an annual fee in exchange for data and evidence of annual maintenance. That approach would also reinforce the policy goal to discourage switching; and, if linked to evidence of maintenance, would encourage owners to keep systems in good operating condition.
- 47 Do you offer a system that already provides some of the requirements outlined in option 1? If so, please can you provide details of how your system works and whether you would be interested in helping us develop this proposal further.** CIBSE has no such system.
- 48 Should consumers' RHI tariffs for heat pumps vary according to the measured or estimated performance of the system? Do you think installers would offer performance guarantees if this was offered in the RHI? Please comment on the method we have described in option 2.** Yes. If the differential is big enough it might be an effective way of getting manufacturers and system designers to warrant minimum standards of performance in use, subject to for example regular maintenance and other factors. However, it will be difficult to do this in practice because there can be a big difference between design performance and in use seasonal performance and manufacturers will not wish to warrant a minimum standard which may not be achieved in practice for a variety of reasons. We need to understand better why there are these differences and what might be done to narrow the gap.

- 49 Do you think that setting a minimum SPF higher than the EU minimum for air source and ground source heat pumps could be an effective driver of performance? What figure do you think might be suitable?** In principle, yes, but CIBSE has no data upon which to base comments.
- 50 If we took this approach, should the minimum SPF required increase over time? Please comment on how quickly you think the required SPF should rise and to what level it should rise.** In principle, yes, but CIBSE has no data upon which to base comments.
- 51 What are your views on the use of the RHI budget to pay for metering equipment to be installed for the purpose of policy evaluation?** Good idea. It will be money well spent to get: (a) information to inform policy; and (b) performance data which can be used to improve performance of next generation systems.
- 52 What are your views on the proposal that we should share data with MCS Certification Bodies so that it can be used to improve MCS installer surveillance?** Yes. Good idea. But not only to inform surveillance but also to gather and share good practice. Important that surveillance is not just about anti-fraud or "Big Brother". It should focus on improving service quality by sharing best practice.
- 53 What are your views on the requirement to make all installations 'meter ready' and the use of an Installer Checklist?** Very good idea. Metering should really be a standard part of the system to help monitor and manage performance. A checklist, based on experience informing good practice is a good way of raising standards. Professional bodies such as CIBSE and the representative body MCS could work together on this in partnership with DECC/Ofgem.
- 54 Do you agree that there should be a financial penalty for consumers who do not ensure their installation is 'meter ready'?** Yes. But must give due warning and explain why metering is important. Worth considering who should be penalised - the consumer or the installer. A simpler way forward would be to ensure meter readiness is a condition of RHI support. The amount of RHI support should reflect a contribution towards the cost of meter installation.

- 55 Should the penalty for consumers who do not make their installation 'meter ready' be the loss of the first year of their RHI payments or a reduction of all of their payments? What other penalty might be appropriate?** Meters can help monitor system performance and given the paucity of information, they should be included in the heating system specification as a condition of RHI support – together with financial support. At the very least require meter readiness and make any ongoing payments conditional on installing a meter within the first year, and preferably at the time of installation when it would be cheaper.
- 56 What are your views on providing a tariff uplift for systems where solar thermal is installed alongside other renewable technologies.** Yes provided the total system reduces the amount of centrally delivered energy to the dwelling(s) at acceptable system efficiencies and costs.
- 57 Do you have any evidence on the size of tariff that should be provided in order to encourage the deployment of these systems.** CIBSE has no data upon which to base comments.
- 58 Are there any other approaches that you think could drive continued improved performance of renewable heating systems?** Training and accreditation. Currently there are few suitably experienced designers, installers and maintenance providers for the domestic market compared with the demand RHI seeks to stimulate. This needs to be driven by government.

Training schemes devised in Austria and elsewhere for biomass systems are worth looking at. For example, training of chimney sweeps is significantly above UK equivalents. They test chimneys before first use, and issue licences for the attached boiler to be used. Annually, they check combustion - not just CO₂ and CO, but NO_x and other contaminants - using flue test equipment of far greater capability, including built-in data logging, than current UK practice. They report the installed equipment and combustion data back to the customer and to a central data gathering point. Designers and installers know the licencing system, and building owners / occupiers insist on compliance. This example may seem extreme when compared with the UK situation but the Austrians, and others, with greater experience of biomass systems than we have to date have come to the conclusion that to reduce the risk of system failure or inefficiency, a systematic approach to maintenance is part and parcel of a good quality supply chain. uch

There is also a need to consider how the overall programme may help to

- develop design models based on real performance data.
- stimulate innovation programmes to accelerate the development of next generation products.
- explore where community based systems offer advantages over individual installations and incentivise them.
- obtain feedback from existing similar systems if possible.

Chapter 6: Delivery: consultation questions

- 59 What are your views on the above options for the proposed pattern of payments?** If there has to be a tariff scheme, CIBSE would support the combination of quarterly payments in arrears as being a way of balancing budget management and fairness to the customer considerations. However, this may not be attractive to recipients who may want more regular payments, or an up-front lump sum to coincide with where the highest costs occur (ie purchase).

Chapter 7: Assurance: consultation questions

- 60 Do you think that MCS (or equivalent schemes) will provide sufficient consumer protection for the RHI or should additional consumer protection be built into the scheme? If you think more is necessary, please explain what you think is required.** It depends whether the MCS is seen by consumers and commentators in the popular media as independent of the renewable heating sector or is seen as a trade body. This perception needs testing with the market and prospective customers.

It is worth noting that European experience of introducing renewable technologies has involved significant government backed customer assurance programmes for initial design and installation with subsequent back up when performance did not live up to expectations. CIBSE can offer further information on request.

- 61 Do you agree that our proposed approach of an annual consumer self-declaration, supported by supplementary spot checks is the best way to ensure that equipment installed under the RHI continues to be operational and generate heat optimally over time? What should the penalties for non compliance be? If you think that the proposed approach is not the best or could be**

improved, please set out your reasoning and any evidence to support that. In principle, yes but safeguarding schemes will only be effective if there is a realistic chance of wrongdoers getting caught and proven wrongdoing is subject to a large penalty. The 'Gold Standard' should be data from the meter plus an invoice from the maintenance provider. Government needs to be comfortable that their checking system is robust and not open to abuse. Self-declaration can be open to misuse.

Installer should be encouraged to set up a system to remind the customer when annual maintenance is due. This kind of customer service is commonplace in the auto industry where garages, especially the dealer linked garages, see commercial benefit in developing an ongoing relationship with their customers. This could be a requirement of installer accreditation. If it is decided that regular competent maintenance is to be one condition of ongoing payments under the scheme, then it is necessary for installers to be required to set this up and to have to report systems that are not, apparently, being maintained (although clearly a customer must be free to use an alternative maintenance provider).

- 62 Are there other risks of fraud or gaming that we have not identified in the table above?** There is always a risk of fraud where significant sums of money are involved – eg installations supported by RHI are sold on and deemed to be new installations eligible for RHI or other support. (Ask organisations like EST who have managed Government subsidy programmes to promote carbon emissions reduction and energy efficiency improvements.)

Chapter 8: Customer journey: consultation questions

- 63 In terms of communicating the RHI scheme to consumers and other interested parties, what do you consider that the role of government should be?** First, the efforts to think about a customer journey are to be commended. It should serve as a "baseline" from which to improve the customer experience in the light of feedback. On communications, this should not be Government alone. For whatever reason, some people may not trust Government, even though they may support the need to move to a low carbon economy. Government in partnership with a consumer and a green body would therefore be a more effective combination. Set up a communications programme which also tracks take up and provides customer experience feedback so deficiencies can be rectified and mis-conceptions corrected.

We should bear in mind the sheer scale of the endeavour; the huge hold fossil fuels have over the market for heat; and the influence the big energy companies have over the emerging renewable and low carbon heat systems market. It will require a major and sustained effort to convince people of the importance of RHI in the bigger picture challenge of moving to a low carbon economy. Government has a role to work with the big energy companies to secure their practical support for RHI.

- 64 Do you have any comments on how RHI information to support and guide consumers along the journey should be provided? If so, please set them out.** In addition to the standard guides for owners, something more interactive might be of interest. One idea is a free phone App which: tracks the journey and shows the customer the key milestones of their journey; continues to record key operating information; and shows the nearest other RHI supported systems with the option to build a network of users. The App could include a facility to show: what a hypothetical journey looks like; a section to submit real data on their own journey; and suggestions to improve scheme efficiency.
- 65 Do you have any comments on or additions to the identified events and issues affecting the consumer along the customer journey? If so, please set them out.** The current description is a good start. Additions should include procurement and delays in providing equipment and address possible delays in installation because skilled installers are few and far between. The risk of this journey is clear: the RHI process is complex; it takes too long; and you may not get the financial support you expected. A pilot scheme to iron out problems and demonstrate that it can work would help give confidence to prospective customers.
- 66 Are there any specific customer journeys that you feel would be helpful to analyse? If so, please set them out.** Yes. CIBSE think it is important to characterise the archetypal customer cohort and run virtual trials of the process to find out what motivates or discourages interest, test the description of the journey and their understanding, how committed they are to starting the journey and what they find irritating /encouraging or would make them drop out or not apply. It is important to use socio/behavioural techniques to be sure the target market is as well understood as possible. The work of the social science team on the EPSRC funded CALEBRE project, led by Prof Denis Loveday at Loughborough University may be highly relevant.

67 Do you have any comments on or additions to the actions identified here? If so, please set them out. See answer to Q66.

68 In particular, do you have any comments on how to make the RHI and Green Deal relationship as seamless as possible in order to minimise disruption to the consumer? If so, please set them out.

1. Identify any pre-qualification steps within RHI that could be completed in parallel with the Green Deal energy efficiency work. Devise a Green Deal certificate to present to the RHI installer as proof of energy efficiency work done.

2. Promote the idea with the RHI and GD supply chains of common service providers to offer a turnkey, one stop operation. Talk to the respective service providers about setting up turnkey operations providers - however, liabilities for the respective steps in the customer journey from energy efficiency through to installation of heating systems would have to be made clear.

Chapter 9: Budget management: consultation questions

69 Do you agree that the system of degression described would provide us with a sufficient means of controlling the costs of supporting the domestic RHI scheme? If you would prefer a different approach to budget control then please set out what that might be and how it might operate. If a tariff scheme is adopted, then degression is one way of controlling costs but it could lead to a lack of customer confidence because the tariff could change mid-way through the lifetime of the support provided under RHI. Coming after the Feed-in Tariff for solar pv experience a year ago, consumer, and industry, confidence is likely to be fragile. Reducing tariffs will get publicity and not only would existing customers lose some of the RHI support they expected but also prospective customers would not take their interest further – with adverse consequences for the industry. A different approach would be to allocate funds according to tranches of RHI support using assumptions about scale and longevity of the installations. The key feature would be that support under each tranche would be fixed for the customers in that tranche so they knew where they stood for the whole period of support. Tranche 1 would have a fixed budget ceiling out of the total RHI. It would be for the first year's applications and would cover the total costs of RHI support over the period of support up to the limit. Applications which cannot be covered within the tranche 1 budget would be held over for Tranche 2.

Those responsible for the scheme budget can decide what rate of support will be offered - eg either the same or less than Tranche 1. Similarly for successive tranches.

- 70 Do you agree that we should build in greater flexibility to the system such that depression might not occur if overall deployment levels are low? If yes, how do you think this could be achieved?** If tariffs and the option to reduce tariffs mid-way through the support timeframe (depression) are the chosen approach, then Yes. If deployment levels are low, RHI support may have to increase. It would be worth having the flexibility to offer more/less according to the market take up. However, a grant or cashback scheme would be simpler and more effective.
- 71 How do you think we should set triggers which would result in tariff reductions to ensure fairness, value for money and certainty? Do you agree with the options presented, or would you prefer we took an alternate approach?** A possible alternative approach to supporting renewable/low carbon heat technologies as sketched out in answer to Q69 and elsewhere in this response.
- 72 Would you prefer a system which announces any tariff rate reductions every two months (with up to a one or two week notice period before the reduced rate comes into effect), or on a quarterly basis (with up to a months' notice period)? If you would prefer a different period please set this out and explain why.** Having a system whereby tariffs can be reduced is going to cause prospective customers to ask whether they trust the Government to stand by its commitment on RHI or whether they may find themselves stranded after they have committed funds to the purchase of renewable heat equipment. A guaranteed tariff level for a given set of projects to remain fixed for those projects; and then a new tranche with a new guaranteed tariff comes into play. With a new scheme which has a complicated customer journey with plenty of "stage gates" for the customer and scheme provider alike, there is a risk that depression budget control options will raise doubts in the minds of customers about the value of RHI support over time. This is not the way to drive take up. CIBSE suggest DECC should think again.
- 73 Do you agree that the system should specifically recognise legacy applicants when calculating whether trigger points have been met? Do you agree with the options presented, or would you prefer we took an alternate approach? If yes, then please provide details.** Please see answer to Q69.

74 Do you agree that we should base degression calculations and triggers on pounds spent, or do you consider it would be more appropriate to use an alternative approach, such as installed capacity and renewable heat produced? Please provide reasons for your preferred approach? Please see answer to Q69.

75 Do you agree that we should not apply EPA or a similar option to the domestic scheme? If not, why not? How could this work? CIBSE take the view that the overriding problem here is the potential for degression. Consumers will not have confidence in the RHI if they think the level of tariff support might reduce after the initial project has been costed and the original tariff level factored into the net project costs to drive an investment decision is no longer available. Unless the Enhanced Preliminary Accreditation device locks the tariff level for that consumer and that heat project, the underlying risk remains unaddressed.