Department for
Business, Energy
& Industrial Strategy

Heat Network (Metering and Billing) Regulations 2014 Proposed Amendments

Government response to the consultation

November 2020

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Contents

General Information

This document sets out the government's decisions following the Heat Network (Metering and Billing) Regulations 2014: Proposed Amendments consultation, which was published on 17 October 2019 and closed on 24 January 2020.

Following a general introduction, it provides a brief overview of where proposals have been amended as a result of the consultation before outlining the amended requirements and what they mean for heat suppliers. This includes information about the period for heat suppliers to comply with the amended Regulations and the amended cost-effectiveness assessment tool. Further detailed information can be found in the updated guidance document published by the Office for Product Safety and Standards (OPSS), which is the enforcement authority for the Heat Network (Metering and Billing) Regulations 2014. The impact assessment, which provides information about the impact of the amendments is published together with this document.

This document also summarises the 54 responses to the consultation and outlines the government's response to the main comments made. A diverse range of stakeholders provided their views representing 12 businesses, seven metering businesses, six trade associations, five local authorities, three property management companies, four bodies representing consumers, 11 social housing providers, and six individuals. We have analysed the stakeholder views and taken these into consideration during the finalisation of the policy, the analysis of the impact, and the cost-effectiveness assessment tool.

Since the end of the initial consultation in January 2020, the UK government has worked closely with the devolved authorities in Scotland, Wales and Northern Ireland to ensure consistency.

Contact details

For questions related to policy decisions or this document please contact: heatnetworks@beis.gov.uk

For questions regarding enforcement, implementation of the Regulations and the updated notification template please contact the Office for Product Safety and Standards (OPSS): heatnotifications@beis.gov.uk

Introduction

Along with transport, heat in buildings is one of the biggest sources of greenhouse gas emissions in the UK. In 2019 the UK government set a legally binding target to achieve net zero greenhouse gas emissions from across the UK economy by 2050. Meeting our net-zero target will require virtually all heat in buildings to be decarbonised, and heat in industry to be reduced to close to zero carbon emissions.

Heat networks deliver space heating, process heating, hot water, and cooling from a central energy source to multiple sites and buildings (district heat networks), or multiple dwellings and non-domestic units within a building (communal heat networks). Heat networks have the potential to reduce bills, support local regeneration and be a cost-effective way of reducing carbon emissions from heating. Heat meters support fair and transparent billing based on actual consumption and can drive energy efficiency savings, which in turn can result in cost reductions for customers on heat networks as well as reduce emissions.

The Heat Network (Metering and Billing) Regulations 2014 ('the Regulations') implemented the heat network specific requirements of Articles 9-11 and 13 of the Energy Efficiency Directive (2012/27/EU). The Regulations contain requirements related to the notification of heat networks and to the metering of heat and cooling as well as billing for customers on heat networks. The consultation document set out proposals to ensure final consumption heat metering devices are installed on heat networks and billing is based on consumption where this is technically feasible and cost-effective to do so. Several questions sought views on the methodology and approach for assessing the cost-effectiveness of meter and heat cost allocator[1] installation.

In addition, the consultation described proposals to ensure that the requirements which support customer protection can be enforced for all metering devices installed on heat networks.

We expect the amended Regulations to increase the number of customers who will have heat metering devices installed and receive bills based on their consumption of heating, hot water, and/or cooling. Furthermore, we expect the amendments to support the Office for Product Safety and Standards in their compliance and enforcement activities.

The sections below outline the policies which have been introduced through the amendments to the Regulations and what this means for heat suppliers, including:

- a description of the three building classes which support the assessment of metering requirements;
- the amended methodology and tool for assessing cost-effectiveness;
- amended requirements related to notifications, metering devices, billing, accuracy and on-going obligations; and
- transitional arrangements.

[1] Heat Cost Allocators (HCAs) are affixed to radiators and calculate the proportion of heating used in a dwelling/unit to support fair apportioning of heating costs to customers within a building.

In the final section, which summarizes the views expressed in response to the consultation, we also outline the rationale for where we have modified the proposals and why and where we have not been able to do so.

Overview of the Government Response

Since the October 2019 consultation, alterations have been made to the proposals to reflect feedback received from stakeholders. This section aims to provide a high-level summary of the main modification to the proposals since the consultation stage. Stakeholder comments, and a more detailed government response to each section, can be viewed in the second half of this document.

Firstly, it was evident from the responses that a six-month implementation period was considered unfeasible by many. As a result, there will now be a 21 month, two stage transition period, ending on 1 September 2022, after which heat networks must be able to show compliance with the requirements. Within the first 12 months, heat suppliers must have identified the class of the buildings on the heat network and, for those in the Open class, determined whether it is technically feasible and cost effective to install meters (or heat cost allocators). Heat suppliers will have until the end of the full 21 month period to install any required metering devices.

There will also be an updated notification template to support compliance and enforcement activities and to monitor and evaluate the impact of the amended Regulations. The notification will need to be submitted in an approved format and will include the cost-effectiveness assessment and outcomes where required. Where re-notification is due during this transitional period, heat suppliers must submit the notification by the end of that period, inclusive of all required information. Where an updated notification is due after this period, the four-yearly cycle for notifications remains unchanged.

A significant theme to emerge from the responses to this consultation and other engagement was the request by stakeholders for the ability to take into account heat network specific costs and input building level heat and cooling consumption, when assessing the cost-effectiveness of installing meters or heat cost allocators. We have carefully considered these comments, and as a result the cost effectiveness methodology has been amended and the cost-effectiveness assessment tool will allow heat suppliers to submit additional costs for their assessment. In addition, the methodology and tool now allow the option to use actual heat and cooling demand and fuel price where available as part of the calculations on cost savings.

Overall, stakeholders agreed with the proposal to introduce the concept of building classes, however, we have made some modifications to the Viable, Open and Exempt classes (explained further below).

There was broad support to make meter installations for new buildings with communal heat networks mandatory (Viable class). However, based on feedback we have received, we have amended the proposals so that for specific categories of buildings, heat suppliers may carry out a cost-effectiveness assessment to determine whether meters must be installed (Open class).

A further common theme from stakeholders was concern regarding the costs and impacts of requirements to install metering devices and billing based on consumption in connection with supported social housing and vulnerable customers. We have generally considered costs for metering and billing together and made modifications to the classes to take into account that estimated energy savings may not be achieved for this type of housing. We have taken a similar approach with purpose-built student accommodation (PBSA). We have also modified

the classes with regards to buildings where existing leases would require a variation to the lease for leaseholders to be billed for heat or cooling based on metered consumption.

Furthermore, with regards to buildings where there is more than one entry point for pipes into dwellings or non-domestic premises (or where the entry point is not known) the requirement to assess the cost-effectiveness of installing heat cost allocators has been retained.

To ensure consistency of the building classes we have clarified further elements of the proposals. Existing buildings where meters or heat cost allocators are already installed, but where this has not previously been mandatory, fall into the Open class. In addition, the metering requirements for each class are ongoing requirements, and continue to apply where meters need to be replaced (except where this would be technically impossible or the cost unreasonable).

Amendments to the Regulations

Introduction of building classes

The amended Regulations describe the criteria of buildings which fall into the Viable, Open and Exempt classes and the building class determines the metering requirement for that building. The concept of classes is based on the European Commission's published guidelines on good practice for cost allocation and billing of individual consumption of heating, cooling, and hot water, which was published in December 2016.

Why we are introducing building classes

The concept of building classes has been introduced to reduce the administrative burden on heat suppliers and the enforcement authority by providing a simplified approach to assess for which buildings:

- installation of final customer meters is always mandatory (Viable class);
- a cost-effectiveness assessment can be carried out to determine if metering devices must be installed (Open class); or
- a cost-effectiveness assessment need not be carried out as the outcome is expected to be negative (Exempt class).

What building classes mean for heat suppliers and metering requirements

A heat supplier identifies the building class for each of the buildings which they supply with heating, cooling or hot water through communal heating or a district heat network. For existing buildings, a heat supplier identifies the building class and determines cost-effectiveness and technical feasibility (where required) within 12 months of the amending Regulations coming into force. This does not mean that metering devices will have to be installed by this date as described in later sections.

The heat supplier must include information about the number of buildings in each building class and the outcome of the cost-effectiveness assessment, where carried out, in their notifications. This applies to a first notification for a new network and all re-notifications in the 4-yearly cycle. The heat supplier will have a duty to comply with the metering requirements of the building class for each building on an ongoing basis. A building will remain in its building class unless a change is made in relation to the building which places it in another class.

Description of the building classes: Viable, Open, Exempt

This section contains a brief description of the categories of buildings which fall into each building class. In line with the Regulations, the terms "district heat network" and "communal heating" include both the supply of heat and cooling.

Viable class

For buildings that fall into the Viable class final customer meters must always be installed. This reflects current requirements with regards to district heating and also applies the requirements

to new buildings with communal heating. However, there are a number of exceptions for new buildings with communal heating.

The Viable class includes:

- A newly constructed building supplied by a district heat network (including buildings where this requirement applied since 2014);
- An existing building undergoing major renovation supplied by a district heat network (including buildings where this requirement applied since 2014);
- A newly constructed building with communal heating where the connection is made on or after the compliance date (at the end of the 21-month transitional period) unless the building falls into the Open or Exempt class as set out below.

Open class

Buildings in the Open class must have meters or heat cost allocators installed unless it is assessed not to be technically feasible or cost-effective.

The Open class includes:

- All new buildings connected to communal heating during the transitional period[2];
- A new building connected to communal heating after the end of the transitional period[3] where;
    - there is more than one entry point for pipes into dwellings or non-domestic premises;
    - the building (or a part of the building) is supported social housing, almshouse accommodation[4], or purpose-built student accommodation;
- All other existing buildings which do not fall into the Viable or Exempt class (this includes buildings where meters or HCAs are already installed).

For existing buildings where there is more than one entry point for the pipes into dwellings or non-domestic premises, or the entry point is not known, heat suppliers are only required to assess the cost-effectiveness of installing heat cost allocators. This also applies to newly constructed buildings with communal heating where there is more than one entry point for pipes.

In line with current requirements where a heat supplier has determined that it is not cost-effective to install meters or heat cost allocators, a further determination must be made within four years.

The term supported housing refers to low cost rental accommodation by a social housing provider where additional support is provided to the residents.[5] Examples include sheltered or extra care housing, emergency accommodation for the homeless, and accommodation which provides support to residents with a range of health conditions or vulnerabilities.

[2] Unless in the Exempt class.
[3] Unless in the Exempt class.
[4] An almshouse is residential accommodation which belongs to a charity and is provided exclusively to meet the charity's purpose such as but not limited to the relief of financial need or infirmity.
[5] Social housing provider is defined as appropriate for England, Scotland, Wales, and Northern Ireland.

Exempt class

The Exempt class covers existing buildings, on either a district heat network or with communal heating, which do not fall into the Viable or Open class and where it is presumed the assessment for cost-effectiveness under the Open class would be negative. In these cases, the installation of metering devices is not expected to be cost-effective. This can be because the expected financial consequences would outweigh the assumed cost savings or it is not expected the financial benefits can be achieved because of the type of housing provided in the building. Buildings in the Exempt class are therefore not subject to a cost-effectiveness assessment to reduce the burden on heat suppliers.

We have also retained two specific technical exemptions which apply to existing buildings with district heating (unless in the Viable class) and to existing and new buildings with communal heating.

The Exempt class includes:

- An existing building where the building (or part of the building)
    - is supported social housing, almshouse accommodation, or purpose-built student accommodation;
    - is covered by an existing lease which contains a provision which would prevent billing based on metered consumption (above a threshold of 10% of the total number of dwellings and non-domestic premises);
- A building not consisting mainly of private dwellings where heat is supplied by means of a system other than hot water or the cooling distribution system uses a transfer fluid other than water.

Replacement meters

The consultation proposed that “a building that is already metered, when replacements are required” would fall into the Open class. With the introduction of building classes, the expectation is that once the building class is determined for a building it will remain in that class and the requirements of that class continue to apply (unless the building ceases to meet the criteria for that class). However, in exceptional circumstances it may not be technically possible, or the estimated cost would be unreasonable, to replace some or all meters (this is in line with the current Regulations) in which case the heat supplier must be able to evidence this.

Amended methodology for assessing cost-effectiveness

Cost-effectiveness assessment tool

A new cost-effectiveness assessment tool has been developed to support heat suppliers in the assessment of the cost-effectiveness of the installation of heat meters, or where this is not considered cost-effective, heat cost allocators within buildings that fall into the Open class. The purpose of the tool is to provide a consistent way of carrying out the assessment based on industry standard methodologies and assumptions while also allowing heat suppliers to take into account building specific information.

The tool has been developed in Microsoft Excel and the completed tool is submitted with the notification template. Although the assessment is carried out at building level, all buildings on a specific network can be added for assessment in one document.

If the net present value of the estimated cost benefits is greater than the net present value of the estimated cost of installing and managing heat meters for a given building then the tool will indicate that it is cost-effective to install heat meters in such buildings.

If the present value of the costs is greater than or equal to the discounted benefits for meters then the tool assesses for heat cost allocators if the present value of the cost benefits outweighs the present value of the costs. If they do, then the tool will indicate that it is cost-effective to install heat cost allocators for all such buildings.

At the consultation stage, the approach and assumptions made within the proposed tool were set out in the consultation document with additional detail provided in the technical appendix[6].

There have been two primary alterations to the cost-effectiveness assessment tool since the consultation. First, it now includes an option to input actual building level heat/cooling consumption figures and fuel price where they are available and where they can be evidenced. This change has been made in response to stakeholders' comment that it would be preferable and more accurate to use actual data where available over estimated heat demand.

Secondly, the tool also contains an option for heat suppliers to submit additional building specific costs (or cost reductions) in line with what can be considered in accordance with the Regulations. These must not have been factored into the assessment already and heat suppliers must be able to evidence them.

In addition to these changes, the cost assumptions outlined in the consultation were updated to 2020 prices to reflect inflation or altered to reflect stakeholder feedback. A full description of the tool, including assumptions and calculations, can be found in the user guide published with the tool.

Amended requirements

In addition to the introduction of the concept of building classes, and the amended cost-effectiveness assessment methodology, a number of other requirements are also amended.

Notifications

As already outlined earlier, notifications will need to be submitted in a format approved by the enforcement authority. This will include the updated version of the current notification template and the cost-effectiveness assessment and outcomes where required. This does not alter the requirement that the heat supplier determines the cost-effectiveness.

In line with current Regulations, heat suppliers are required to submit updated notifications of their heat networks every four years and the additional information related to building classes and results of the cost-effectiveness assessment must be provided as part of this ongoing

[6] Link to the Technical Appendix to the Heat Network (Metering and Billing) Regulations 2014 Proposed Amendments: https://www.gov.uk/government/consultations/heat-network-metering-and-billing-regulations-2014-proposed-amendments

notification cycle. However, transitional arrangements are in place to enable heat suppliers who are due to re-notify during the compliance period, to supply all required information with their notification.

To summarise, notifications must:

- Include information as to the number of buildings in each building class on each network, the cost effectiveness determination for any buildings in the Open class and the number of meters/HCAs installed;
- Be in an approved format;
- Be submitted every four years apart from where transitional arrangements are in place.

A further amendment makes it explicit that a change of heat supplier does not alter the four-yearly period within which an updated notification must be submitted. It is the responsibility of the new heat supplier to submit the notification.

Installation of meters, heat cost allocators, and temperature control devices

By introducing building classes, the intention is for the requirements related to customer meters and heat cost allocators to be consistent and clear. Metering requirements depend on building class.

Where a building falls into the Viable class, the heat supplier must ensure that sufficient meters are installed to measure the consumption of heating, cooling, or hot water by each final customer occupying that building. Where a building is in the Viable class the heat supplier must also ensure that an appropriate temperature control device is installed.

Where a building meets the criteria for the Open class, the heat supplier must ensure that a sufficient meter or heat cost allocator is installed to measure the consumption of heating, cooling, or hot water by each final customer occupying that building, unless it is assessed to not be technically feasible or cost effective. Like the Viable class, the heat supplier must also ensure that temperature control devices are installed with meters or thermostatic radiator valves and hot water meters with heat cost allocators. If the heat supplier has determined that the installation of meters or heat cost allocators is not cost-effective, a further determination must be made within four years of the original assessment and every four-year period thereafter.

Where a building falls into the Exempt class, meters or heat cost allocators do not need to be installed.

Billing requirements

In line with current Regulations, billing based on metering is a mandatory requirement where meters or heat cost allocators are installed. This requirement now applies to all installed metering devices. Heat suppliers will have until the end of the transitional period to make any necessary changes where meters or heat cost allocators were previously installed other than in compliance with a requirement in the Regulations.

The exemption from this mandatory requirement to issue bills and billing information based on consumption to final customers has been updated and expanded. The cost threshold for when it is considered technically possible and economically justified to issue bills and billing information to final customers has been raised to £92. Furthermore, where final customers

occupy supported social housing, almshouses, purpose-built student accommodation, or properties with an existing lease, the mandatory billing requirement does not apply. This is consistent with our approach to these types of buildings in the classes.

In response to the consultation there were some concerns that mandatory billing based on consumption may have a negative impact on innovative billing models such as Heating as a Service. Government will therefore keep mandatory billing based on consumption under review in the context of emerging business models.

Meter and heat cost allocator accuracy and on-going obligations

The 2014 Regulations contained provisions regarding the accuracy of installed meters, however, due to amendments made in 2015[7] these have not been enforceable. We are re-introducing the corresponding offence which means that non-compliance with accuracy provisions (covering both meters and heat cost allocators) can now be enforced for new installations[8].

The 2014 Regulations also describe on-going obligations related to meters and heat cost allocators. This requirement now applies to all installed metering devices. Heat suppliers will have until the end of the transitional period to make any necessary changes where meters or heat cost allocators were previously installed other than in compliance with a requirement in the Regulations.

These amendments to the Regulations do not introduce a legal requirement for metering devices to be remotely readable. However, we understand that many devices which are being installed already have this capability and we strongly support the installation of remotely readable devices. We will consider appropriate technical standards for remotely readable devices as part of our work on technical standards and intend to take forward the introduction of such a requirement in the context of our wider work on the legislative market framework for heat networks.

Transitional arrangements and compliance date

In order to allow time for heat suppliers to come into compliance with the amended requirements and to reduce cost and administration associated with notifications, transitional arrangements have been put in place for the period starting when the amending Regulations come into force and ending on the compliance date 21 months later.

Notifications and cost-effectiveness assessment

An updated notification template and cost-effectiveness assessment tool will be available when the amending Regulations come into force.

Where a heat supplier is due to submit the first notification for a district heat network or communal heating, that notification must include information as to the number of buildings in each building class and, where required, the technical feasibility and cost effectiveness assessment as well as the number of metering devices installed. It must also be submitted in an approved format set out by OPSS.

[7] Heat Network (Metering and Billing) (Amendment) Regulations 2015.
[8] And for existing meters from the end of the transitional period.

Heat suppliers with existing heat networks must determine the metering requirements for their buildings within the first 12 months after the amending Regulations come into force but may submit their updated notification in the approved format with all required information any time during the transitional period.

Where re-notification is due following the end of the transitional period, heat suppliers submit their updated notifications with all required information in the approved format within their four-yearly cycle.

Other amended requirements

Heat suppliers must also (where applicable) become compliant with all other amended requirements by the end of the transitional period after 21 months. This includes the installation of any additional temperature control devices and accuracy, on-going obligations relating to operation and maintenance, and billing requirements where metering devices were previously not covered by these provisions.

Further guidance and next steps

The amending Regulations come into force on the 27 November 2020 after which the transitional arrangements (as described above) come into effect. The transitional period ends on 1 September 2022.

The information in this document is aimed to be at a high level to provide a description of the responses received and the changes to requirements which are introduced through amending the Regulations. More detailed information about the compliance and notification timeline and how a heat supplier can become compliant will be available as part of guidance on the OPSS website from 27 November 2020.[9] This will also lay out in more detail how to determine the building class for a given building and what the metering requirements are for each class.

An updated notification template and the cost-effectiveness assessment tool with a user guide will also be available.

Furthermore, stakeholder events to support heat suppliers in relation to the new requirements are planned and will be published on the website in due course.

Also relevant to heat suppliers is our wider work to protect consumers and grow the market for heat networks – the next step in government plans to reach net zero emissions by 2050. The Government published the Heat Networks Market Framework consultation on 6 February 2020 which closed on 1 June 2020. We are planning to publish the government response to this consultation later this year. We are also considering how to align the metering and billing requirements in the revised Energy Efficiency Directive with our proposals for the future market framework for heat networks, particularly in the area of customer protection to maximise consumer benefits and minimise burden on heat network operators.

The devolved status of heat policy and heat network regulation in the UK is complex. While the amendments to the Regulations discussed in this document apply across the UK, this is not the case for the future market framework for heat networks. We will continue to work closely with the devolved governments where this is appropriate.

[9] https://www.gov.uk/guidance/heat-networks

Summary of Responses

The summary of responses has been grouped into the following sections:

- Questions 1-7: Proposed introduction of a system based on building classes
- Questions 8-18: Proposed methodology for the cost-effectiveness assessment
- Questions 19-23: Costs associated with heat meters and heat cost allocators
- Questions 24-26: Other costs associated with the amended Regulations
- Questions 27-32: Compliance deadline and scope of amended Regulations

At the end of each of the five sections above there is a government response to the main points raised. Within these response sections are highlighted changes made in relation to the initial consultation document.

Questions 1-7: Proposed introduction of a system based on building classes

Question 1: Do you agree with adopting a system using building classes?

Question 1	Response	Percentage
Yes	36	67%
No	3	6%
Comment only	4	7%
Blank	11	20%

Table 1

In response to this question, there was broad consensus that building classification is a practical and rational approach. Respondents commented that building classes would be less administratively intensive. Those who agreed with the approach did so because they believed meters supported consistency, transparency, fairness, and sustainability.

Some stakeholders raised concerns that billing based on consumption would present challenges for existing leasing arrangements and that contracts in place at the beginning of a scheme prevent charging residents for their consumption. A respondent suggested some leases may last for up to 35 years without amendments. Others welcomed a simplified approach, however called for further clarification of buildings in the proposed classes.

It was also noted that consideration should be given to the geographic location and that cost effectiveness should not be determined purely on building level. Some stakeholders, supportive of the concept of building classes, noted that there should be scope for increasing the Viable class over time due to technologies which may become increasingly available.

Respondents who disagreed with this question generally did so because they believed all consumers on heat networks should be treated the same irrespective of the building type. Others who disagreed raised concerns about additional costs passed to consumers.

Question 2: Do you agree that it is reasonable to assume that it would always be cost-effective to install individual heat meters in new buildings with a communal network?

Question 2	Response	Percentage
Yes	31	57%
No	12	22%
Comment only	0	0%
Blank	11	20%

Table 2

Those who agreed with this statement stated that it would always be cheaper / more cost effective to install into new buildings rather than retrofitting meters into existing buildings and this was true for both district and communal heat networks because it is easier to incorporate meters at the design and specification stage. Some respondents also noted that in many new buildings with communal systems meters are installed as a matter of course due to current building regulations.

Other supportive arguments included that the proposed approach supports fair and transparent charging and that the customer sees no difference between communal and district heating (where meters have already been mandatory) with respect to new builds. Related to this point a respondent called for *major refurbishment* to be added to the same category.

Those respondents who responded “no” to this question generally argued that other factors should also be considered. For example, the higher costs in different UK regions, capital costs, administrative costs, maintenance costs and management costs. Some respondents also noted the need to consider vulnerable consumer groups and how billing based on consumption may lead to increased fuel poverty.

Respondents who disagreed with the inclusion of communal heat networks into the Viable class mentioned that, even in new build situations, there should be exclusions on the basis of; vulnerable customers, keyworker accommodation, purpose built student accommodation and sheltered accommodation.

Question 3: Would you suggest other categories of buildings which should be included in the ‘Viable’ or ‘Exempt’ classes? Are there other technical reasons we should consider for the ‘Exempt’ class? Please supply evidence to support your answer.

To this question there was a strong response that supported social housing (including housing for vulnerable customers, emergency accommodation, and almshouses) should be placed in the Exempt class. The justification was that flat rate charging or inclusive rent was sometimes of more benefit to these groups in that billing based on consumption could unintentionally lead to vulnerable consumers using their heating less than they should and this could have adverse impacts on health and well-being. Furthermore, it was also considered unlikely that the estimated energy and cost savings would be achieved by these consumers.

The point was also made that purpose-built student accommodation should be placed in the Exempt class because assumptions around occupancy and estimated energy and cost savings do not apply.

There were comments for buildings with existing leaseholders to be exempt as the cost of varying leases to change how heating is charged for would be prohibitive. There were also concerns around the legality of requiring heat suppliers to bill based on metering in buildings where leases did not allow for heat to be charged in this way.

Similar to the point regarding leases, some stakeholders noted that in some keyworker schemes the landlord often enters into long term contracts with the tenant which have inclusive rents with no service charges and no ability to change the terms of the agreement. These respondents argued the contractual set up, and associated costs, in most keyworker accommodation meant that this type of accommodation should be placed within the Exempt class.

Regarding the Viable class, some respondents suggested that the current exemption of a system which uses a fluid other than water should be removed and placed into the Viable class as this was now not in line with developments in technology. Stakeholders also noted that, when replacement meters are required, this should not be used as an opportunity for meters to be removed or for billing to be returned to flat rate charging.

Question 4: Do you agree with the assumption that operating temperatures of a heat network above 90°Celsius significantly affect the accuracy of heat meters and the buildings?

Question 4	Response	Percentage
Yes	4	7%
No	16	30%
Comment only	5	9%
Blank	29	54%

Table 3

As shown in table 3, more respondents disagreed with this statement than agreed. 29 respondents did not answer the question, possibly because it required specific technical expertise. Respondents stated that secondary networks (flow and return pipes) run at lower temperatures than the primary network and that this was where meters would be installed. There was also consensus that high temperature meters can be specified during the design stage in any case. Finally, some respondents commented that exempting installation of meters above 90°Celsius could result in a perverse incentive for heat networks to run at less efficient temperatures.

Question 5: If you are a heat supplier, what percentage of buildings would you estimate to fall into the 'Exempt' class?

In response to this question and the exemptions set out in the consultation, there was no consensus around a percentage perhaps due to the diversity of stakeholders who responded to the consultation and their experience. Although only 18 stakeholders provided an estimate, of those that did, nine suggested the Exempt class would account for 5% or less of the

buildings they described. Four suggested the Exempt class would account for less than 20% and the remaining answers were specific to individual circumstances and varied.

Two respondents noted that approximately 10-15% of their residents receive heat which is above 90°Celsius however both these respondents go on to say this should not be criteria for exemption.

Another respondent noted that their members would not be able to determine whether their buildings were in the Exempt class and would therefore need to assess cost-effectiveness via the tool.

Question 6: How could a heat supplier evidence that installing metering devices is not technically or otherwise feasible for a specific building if not already in the 'Exempt' class? Would you consider OPSS to be best placed to assess a possible exemption?

Question 6	Response	Percentage
Support for OPSS role	7	13%
No role for OPSS	2	4%
Comment only	24	44%
Blank	21	39%

Table 4

Regarding the first half of this question, there was consensus from respondents that heat suppliers should be able to submit evidence. A common response was that heat suppliers should submit a building report, survey, or technical review by an independent consultant. Another frequently made point was that heat suppliers should be able to submit evidence that meter installation is not feasible or economically viable because of other hidden costs such as developing specifications, procurement, project management, resident consultation, access, prelims.

Some respondents stated that cost effectiveness should be based on a net present value calculation as this will identify prohibitive costs and then the heat supplier should submit a copy of the tool with these costs included.

The second part of this question asks if OPSS are best placed to assess possible exemptions. Within the responses there was consensus that, at present, OPSS are the most appropriate body to assess exemptions.

Question 7: If you consider metering and billing requirements to be a significant issue for social housing, please provide specific evidence that would justify a different approach to assessing feasibility of meter installation and billing based on consumption in these dwellings.

Question 7	Response	Percentage
Support consultation approach	4	7%

Different approach suggested	21	39%
No approach suggested	29	54%

Table 5

As aforementioned, some respondents felt that supported housing and housing for vulnerable customers should be placed automatically within the Exempt class

There was wide concern shared amongst stakeholders that mandatory billing based on consumption for certain vulnerable consumers could lead to increased fuel poverty. This is because many vulnerable customers have higher heating and hot water needs and if they cannot afford their bills it will increase their vulnerability. Some respondents also raised concerns about the added burden of stress that billing based on consumption may lead to for vulnerable consumers who are used to fixed rates. Some also stated that it would affect resident's ability to financially plan for the month ahead.

The arguments for exempting vulnerable consumers were not limited to protecting consumers. Some stakeholders also noted the practical implications of metering these types of buildings. For example, a respondent stated that some social housing providers subsidise heat costs either directly or indirectly and that billing based on consumption in this context would create additional complexity.

Some respondents who disagreed with the consultation approach suggested alternative approaches for assessing feasibility in social housing including:

- Feasibility in social housing should be assessed on a case by case basis.
- The government should explore the possibility of different concession or subsidy schemes for vulnerable customers.
- Provide billing information with a comparison to equivalent fixed rate and then allow for a period of transition.
- There should be freedom to allocate flat rate tariffs to balance the impact on vulnerable residents.

In addition to the above approaches suggested by respondents, two respondents noted that the proposed regulations seem to overlook the requirement of social housing providers to consult their tenants regarding issues which may affect their tenancies. Therefore, any attempt to bill based on consumption would have to go through a consultation process with residents and take account of their views prior to approval.

Government response - Questions 1-7

There was broad consensus with the proposed building classes and we are therefore proceeding with this approach. However, we have made some amendments to the proposed classes to take account of stakeholder views.

Although the overall response to the principle of classes was favourable, those who disagreed with the building classification approach generally argued all consumers on heat networks should be treated the same irrespective of the building. The arguments were generally centred around fairness and the ability of some heat suppliers to claim to be exempt from the metering and billing requirements in the Regulations. However, it was not

the intention of the policy proposals to introduce a one-size-fits-all policy on metering and billing but instead to introduce building classes based on current requirements designed to strike a balance between reducing the burden on heat suppliers whilst supporting the installation of metering devices where this is technically feasible and cost effective to do so.

The consultation proposed that new buildings with a communal network are included within the Viable class (heat meters must always be installed) on the basis that it is expected to be cost-effective. Generally, stakeholders were supportive of this approach for new builds with arguments against generally focussed on costs and specific types of housing where it may not be cost-effective to install meters and bill based on consumption. Based on the feedback we have therefore amended the proposals so that a number of categories of new buildings with communal heating will fall into the Open class, meaning the heat supplier may carry out a cost-effectiveness assessment to determine whether meters must be installed. This includes buildings with supported social housing and purpose-built student accommodation. Where the communal system in a new building is configured in such a way that there are multiple entry points for pipes into dwellings, or non-domestic premises, they will also fall into the Open class.

A common theme from stakeholders was the call to exempt supported housing from the requirement to install meters. For these customers the assumed cost benefit resulting from billing based on consumption is argued not to apply and there were concerns that a requirement of billing based on consumption may lead to increased levels of fuel poverty. In these circumstances flat rate charging may be the preferred option as the cost of installing meters and billing may lead to higher bills (because assumed energy savings do not apply) and consumers are more able to plan their spending for the months ahead with flat rate charging. We understand these concerns and have therefore adjusted the proposals. As outlined above, new buildings with communal systems which contain supported social housing[10] can be assessed for cost-effectiveness. With regards to existing buildings on heat networks which include supported social housing, it is assumed not to be cost-effective to install metering devices and bill based on consumption and these buildings will therefore fall into the Exempt class.

In addition, purpose-built student accommodation (PBSA) was argued for inclusion within the Exempt class based on occupancy patterns, the rental model, and accommodation mix. Furthermore, assessments for cost-effectiveness are made at building level and PBSA buildings frequently include a mix of units which would need to be considered and those that do not fall within the scope of the Regulations. As a result of responses from stakeholders, and as outlined above, new PBSA buildings with communal systems fall into the Open class and can be assessed for cost-effectiveness. With regards to existing buildings on heat networks which include supported social housing or almshouses, it is assumed not to be cost-effective to install metering devices and bill based on consumption and these buildings will therefore fall into the Exempt class.

The consultation responses included feedback that buildings with leaseholders where the lease specifies how heat costs are apportioned and paid for should be included in the Exempt class. These buildings would require a variation to the relevant leases to move to billing based on consumption which would have associated costs. These costs could be higher if a leaseholder were not to agree to the variation or were to take a claim to tribunal for compensation for consequential loss. It was argued that billing based on consumption would therefore not be legally possible, the costs would be too high or it could lead to tribunal cases. We agree that existing leases can therefore make it not cost-effective to

[10] A building may contain only supported social housing or only part of the building will fall into this category.

install metering devices but understand that these costs can vary widely for different buildings. The cost of varying a small number of leases proportionate to the total number of dwellings or non-domestic premises in a building, however, is likely to be small relative to the total cost of a metering installation project and therefore could be cost-effective and should be assessed for, this becomes less likely as the number of lease variations required increases. Taking this into account, and to minimise the burden on heat suppliers, we have made the following changes to the proposed building classes. Existing buildings, where more than 10% of dwellings or non-domestic premises in that buildings are subject to an existing leasehold interest and where the lease would prevent billing based on consumption, the building will be placed in the Exempt class. If the percentage is below the threshold, the building remains in the Open class and the cost-effectiveness assessment applies. The amended tool will allow heat suppliers to input additional network specific costs, such as costs associated with lease variation, to be included in the calculations.

Another category requested for inclusion by some respondents within the Exempt class was “keyworker accommodation”. The arguments for exemption were primarily focus on long-term contracts to support development and the costs associated with varying existing contracts. However, defining buildings with key-worker accommodation is challenging for the purpose of this legislation and we believe that the cost-issue has been sufficiently addressed through an amendment to the tool which now includes an option to input additional costs to be taken into account in the cost-effectiveness assessment.

There was a strong response to our question relating to the existing technical exemption for metering of heat networks running at a temperature greater than 90°Celsius. Stakeholders from a range of backgrounds provided evidence that technology was now available to enable accurate metering of such networks. Furthermore, this exemption may provide a perverse incentive to run a system at inefficient temperatures. Therefore, this technical exemption has not been retained and buildings on heat networks, running at temperatures greater than 90°Celsius which fall into the Open class, are assessed for cost-effectiveness. Potential higher costs for meters can be taken into account in the cost-effectiveness assessment.

Questions 8-18: Proposed methodology for the cost-effectiveness assessment

Question 8: Do you agree that the assumption of a 10-year lifetime for a meter and heat cost allocators is reasonable and should be used as the period over which the costs and benefits are calculated?

Question 8	Response	Percentage
Yes	21	39%
No	7	13%
Comment only	8	15%
Blank	18	33%

Table 6

The general tone of stakeholder response to this question was that expected meter life will vary between 5-20 years depending on the type and specification of the meter. Stakeholders also noted that as industry shifts towards ultrasonic heat meters the life expectancy is becoming longer. Within the responses there were some requests for guidance documents to inform the market about meter quality so installers could pick longer lasting meters.

Question 9: Do you agree with the proposed discount rate of 3.5% to calculate the net present value of costs and benefits?

Question 9	Response	Percentage
Yes	19	35%
No	6	11%
Comment only	7	13%
Blank	22	41%

Table 7

The majority of those who responded to this question agreed that the proposed discount rate of 3.5% was reasonable. Many noted that lower rates would increase the requirement for meter installation. However, some stated that 3.5% is not realistic for all market sectors indicating that blended or separate rates would be preferred as 3.5% may be appropriate for public sector but not the private sector. Of those who responded “No” to this question, two stated that 3.5% was too low and another two respondents stated it was too high as a lower discount rate would result in more meters being installed increasing the amount of carbon dioxide saved.

Question 10: Do you agree with the proposed tool’s approach to estimating heat demand for buildings? Do you have suggestions for a different approach?

Question 10	Response	Percentage
Yes	11	20%
No	8	15%
Comment only	15	28%
Blank	20	37%

Table 8

The 11 respondents who answered yes to this question generally agreed that the tool considers all the basic requirements needed to make an estimate based on heat loss modelling. Those who responded with no general gave the reason that the tool was too labour intensive and expensive to complete. There also were arguments that existing methodologies and tools should be used in the first instance and the tool should only be a backup option.

The alternative approaches proposed by the respondents for assessing heat demand in buildings are list below in order of popularity.

- Use SAP/RdSAP and EPCs as the basis of the assessment and only use the tool if these are not available.

- Incorporate the use of actual energy consumption data when available in the first instance
- Thermal efficiency of heat networks (90%) and Boilers (85%) is optimistic and should therefore be reduced.
- Incorporate additional parameters into the tool to make it more scheme specific.
- Incorporate demand benchmarking across different domestic building types.
- Internal temperatures differ in new builds due to improved thermal efficiency and thermal gains. More granularity / flexibility required in the tool.

Question 11: Are you aware of additional characteristics which could be used to support the differentiation in the tool between existing buildings with regards to the capacity for energy efficiency?

Question 11	Response	Percentage
Yes	6	11%
No	11	20%
Comment only	6	11%
Blank	31	57%

Table 9

As shown above, nearly 60% of respondents to the consultation did not respond to this consultation question. Listed below are the suggested additional characteristics provided by respondents in answer to this question.

- 11 respondents' states that the heat demand calculation needs more work to support differentiation.
- Five stated the tool should allow for additional modelling to be incorporated about buildings.
- Four stated that the tool should include profiles of building use in the model.
- The tool should review how losses in secondary networks are calculated.
- Incorporate regional degree day data.
- Buildings with sufficiently good insulation levels would not see a substantial saving from metering.

Question 12: Do you agree that the 20% figure for average heat demand savings should be applied to domestic units?

Question 12	Response	Percentage
Yes	8	15%

No	14	26%
Comment only	17	31%
Blank	15	28%

Table 10

There was a strong response to this question that the 20% figure was either too high or too low. Some respondents made the case that metering would produce savings from behavioural change and therefore 20% is over optimistic, while others made the case that where there are poor system efficiencies there is scope for much larger savings. Some respondents supported the lower impact of behavioural changes with reference to energy savings from the smart meter rollout. These respondents were concerned that the behavioural change could worsen fuel poverty outcomes. A number of respondents provided evidence that the 20% saving was likely to be too low due to system inefficiencies not being rectified in unmetered networks. These themes emerged from respondents who answered both explicitly with a 'no' and those who provided a 'comment only' response.

Others stated that this figure would not be suitable to all domestic dwelling types as some charging types are contractually fixed and that pre-existing charging types with flat rate billing should be exempt. Examples mentioned frequently with respect to these dwellings included; sheltered housing, vulnerable housing and purpose built student accommodation.

Of the respondents answering 'yes' to this question, there was a variety of reasons provided however a common theme was that the savings figure could be improved by implementing usage displays.

Question 13: Do you agree that the 10% figure for average heat demand savings should be applied to non-domestic units?

Question 13	**Response**	**Percentage**
Yes	11	20%
No	5	9%
Comment only	13	24%
Blank	25	46%

Table 11

In response to this question there was consensus that the 10% figure for average heat demand savings is more feasible than domestic savings but the anecdotal supporting evidence from stakeholders was weaker. Those who did not agree generally did so because they felt the evidence to support the figure was too weak.

Many of the 'comment only' responses to this question did not believe they had a sufficient understanding of the behaviour of the non-domestic sector.

Question 14: Energy savings in the first year are estimated to be half of the savings in subsequent years, to take into account the assumption that behavioural change will not occur immediately. Do you agree with this assumption?

Question 14	Response	Percentage
Yes	13	24%
No	12	22%
Comment only	8	15%
Blank	21	39%

Table 12

In response to this question, there was split in opinion between “yes” and “no”. Although there was consensus that energy savings in the first year are likely to be less than subsequent years, there were comments that behavioural changes often require consumer engagement activities for change to be achieved in part or full. Some respondents also mentioned that consumers who had smart meter installed may benefit from the energy savings faster. Some respondents stated that the customer engagement required to achieve savings should be built into engagement costs in the cost effectiveness tool.

Question 15: There is limited evidence available on the energy savings generated by the installation of heat cost allocators. However, we are not aware of any reason to expect a difference in performance compared to meters in reducing energy use. Do you agree that the same percentage of energy savings should be used for heat cost allocators?

Question 15	Response	Percentage
Yes	13	24%
No	10	19%
Comment only	14	26%
Blank	17	31%

Table 13

In response to this question several respondents identified some key differences between meters and heat cost allocators. For example, some respondents noted that heat cost allocators are used to apportion costs rather than measure kWh and therefore they are more liable to be inaccurate and open to challenge. Respondents also commented that, due to the multiple input feeds from each unit, heat cost allocators may be more complex to administer than a meter and questioned whether this had been considered. There were also some broader concerns amongst respondents regarding the potential to tamper with heat cost allocators compared to meters.

Those who answered “yes” to the question agreed that, despite the differences with meters, it was still fairer to expect the same performance citing a lack of technical reasons to differ performance.

Question 16: Would you consider it useful if the tool allowed input of actual heat /cooling supplied to a building where a building level meter has been installed to calculate savings in multi-apartments or multi-purpose buildings?

Question 16	Response	Percentage
Yes	25	46%
No	1	2%
Comment only	7	13%
Blank	21	39%

Table 14

There was a strong positive response to this question. It was noted by one respondent that this information would be key for understanding secondary distribution system efficiency as losses of heat in communal non-heated spaces can be substantial. Many respondents also asked for this information to be made available to the industry for future market growth.

Question 17: Do you agree that we should use the price for different fuels to estimate the costs and therefore benefit of savings?

Question 17	Response	Percentage
Yes	27	50%
No	5	9%
Comment only	2	4%
Blank	20	37%

Table 15

Similar to question 16, there was general support for differentiation between different fuel types. Despite the general support, several respondents noted there was a difference between heat cost and fuel cost and this needed to be included in the calculation. There were also comments that there are fixed costs which the cost of fuel will not be able to account for and the tool will have to incorporate these fixed costs.

There were also general points made regarding the flexibility of this approach. For example, the cost of different fuels will likely change over time in response to market decarbonisation and some heat networks use multiple types of fuel on the same network. The tool would have to account for these factors.

Question 18: Are there any other comments you would like to add on the calculation of the benefit arising from energy savings in the cost-effectiveness assessment?

A prominent theme emerging from the responses to this question was the recommendation that the tool should take into account the regional cost differences when assessing cost effectiveness. Some respondents voiced concerns the tool was offering only a set price for an installation calculation methodology and would not account for more complex sites where an installation is not easy and therefore far more costly.

Another theme was that mandatory metering may actually increase heat prices in some scenarios so customers are unlikely to see any cost savings even if they reduced consumption. The reasons provided for this were largely due to the high upfront capital costs of meter

installation, disagreement of the energy savings figure and disagreement over the provided operational costs. Respondents making this point were mostly social housing providers or representative organisations.

Some respondents also made the point that heat metering is almost always required for future performance improvement projects. Respondents making this point were suggesting that, in addition to the billing based on consumption, the installation of meters was an investment in the future. This was echoed by other respondents who stated that real time visualisation of consumption is vital for energy savings. Another respondent made a related point which was that energy savings can reduce operation and maintenance costs which would further reduce heat costs.

A prominent theme to emerge from many questions throughout the consultation was a concern that energy savings from reduced heating could have unforeseen negative impacts on health especially for vulnerable customers. Respondents who raised these concerns were keen to emphasise the importance of the amended Regulations not steering customers away from using their heating if they need to have it on.

Government Response: Questions 8-18

One of the most significant amendments made to the proposed methodology has been to incorporate actual heat and cooling consumption and fuel price into the tool where this is available. There was a strong signal recommending this change in response to question 16 and we agree this would be appropriate and have therefore incorporated this change into the amended Regulations in the cost effectiveness methodology (and the tool). Heat suppliers will be able to input their actual energy consumption and fuel price data into the tool where this can be evidenced. If this information is not available, the heat supplier can use the tool to calculate an estimate of the building's heat demand. More information can be found in the accompanying tool guidance.

On life expectancy of meters, a reasonably strong case was made that metering devices are now readily available with longer life expectancies than ten years. It is unlikely that meters with a life expectancy of greater than ten years would be installed in all cases, unless metering standards specifying life expectancy are introduced in the Regulations. As we are not introducing metering standards at this time, we will continue with the proposed approach and retain the ten year life expectancy for cost effectiveness assessments, however we will review this as part of our work on standards.

The proposed discount rate change, from 9% to 3.5%, was generally favoured by respondents to the consultation. However, some raised concerns that this does not reflect commercial rates and that costs will be passed through to consumers on private sector networks and increase the cost of public sector networks. However, the adjustment is appropriate when considering the costs of complying with carbon reduction regulations and reflects our requirement to incentivise the carbon reductions driven by metered consumption of heat.

Within the responses there was a strong signal to incorporate SAP/RdSAP and EPCs as a basis of the assessment as an alternative to the tool. This request is easy to understand as many of the parameters required for the tool are also contained within SAP/RdSAP calculations. Unfortunately, this is not a viable option in practice due to the technical complexity as cost effectiveness is determined at building level rather than an individual unit or dwelling level as well as the cost implications of accessing the required databases. However, this would not prevent heat suppliers using their EPCs and compliance reports to

inform their understanding of their building stock which would simplify the cost-effectiveness assessment.

Although there was some disagreement regarding the 20% figure for estimated heat demand savings, the evidence was not sufficiently strong to support a higher or lower alternative. We acknowledge that there are categories of housing where it is not expected to achieve this degree of savings without detriment, such as increasing fuel poverty or impacts on health with consumers striving for unrealistic fuel savings. We have therefore modified the building classes and mandatory billing requirements to take this into account while also retaining the 20% estimated heat demand savings.

Similar to the domestic 20% estimated heat demand savings figure, there was insufficient evidence provided to support a change to the 10% figure for estimated heat demand savings for non-domestic units. As was common throughout the responses to this consultation, stakeholders focussed primarily on domestic consumers and less evidence was provided for non-domestic. The 10% energy saving figure for non-domestic units has therefore been retained.

With regards to energy savings in the first year being half of those of subsequent years based on the assumption that behavioural change will not happen immediately, the responses were split. Respondents were generally agreeable in principle to this though suggested that there should be capacity within the tool to allow for the addition of engagement costs. The evidence did not provide sufficiently consistent support for a change to the Regulations and the tool and the energy savings assumptions for the first year will remain 10% for domestic and 5% for non-domestic properties.

Within the consultation we also asked for specific evidence on the difference in performance between heat cost allocators (HCAs) and meters specifically associated with energy savings. Little specific evidence was provided however general comments were made on the difference between HCAs and meters. On balance, there was insufficient evidence to pursue a different approach for HCAs over meters.

Questions 19-23: Costs associated with heat meters and heat cost allocators

Question 19: Do you agree with the costs as provided in Table 4 above? Please provide evidence and comments and specify which cost you are referring to.

We have tabulated stakeholder response to this question (see table 16 and 17 below). A key message from a broad range of stakeholders was that variability in costs is high and this was noted in a range of costs associated with; technical issues, wired / wireless connectivity, upfront meter cost, logistical cost and economics of scale. Also evident from table 16 is that many respondents believed the costs, as mentioned in the initial consultation document, were too low and therefore need to be raised accordingly.

Three respondents were also unclear as to whether the “billing costs” included payment transaction charges, customer service call centre costs and VAT. Another three respondents clarified that costs would vary over time as more metering companies enter the market.

Two respondents commented that, where heating and hot water are supplied separately these costs will increase. A further two commented that heat cost allocators involve greater admin and site survey costs than indicated.

	Meter cost	Installation costs	Data gathering	Data gathering	Total Capex	OPEX/year	Heat cost allocator	OPEX/year
Too low	6	6	7	7	8	5	1	0
Too high	1	1	2	3	1	1	1	0
Agreed with proposed costs	10	10	8	7	8	11	1	3
Evidence of actual costs provided	11	11	4	7	17	8	2	1

Table 16 *provides the number of respondents who indicated the costs in each category were; too high, too low or correct (agree row). The table also indicates how many respondents provided their own cost estimate per column and provides an average. This data was supplied for domestic dwellings.*

	Meter cost	Installation costs	Data gathering system	Data gathering installation	Total Capex	OPEX/year
Too low	1	1	1	1	1	1
Too high	0	0	0	0	0	0
Agreed with proposed costs	3	3	5	5	3	5
Evidence of actual costs provided	0	0	0	0	1	0

Table 17 *presents the same information as table 17 but for non-domestic premises.*

Question 20: Would you expect the cost profile for domestic and non-domestic units in a mixed purpose building to be the same? Are there other characteristics which would better indicate the cost of heat meters, such as floor space in m2?

Question 20	Response	Percentage
Yes	3	6%
No	9	17%
Comment only	17	31%
Blank	25	46%

Table 18

In response to this question there was consensus that domestic and non-domestic units will be different, but it was not clear from the respondents whether they thought this would result in more expensive metering costs. The reasons provided for the difference were generally that different usage and access profiles will lead to different heat demands and metering cost profiles. Of the respondents who provided answers to this question, five suggested that other determinations would be better such as floor space or pipe diameter.

Question 21: Would you expect significant regional difference in supply and installation costs, e.g. in remote locations or areas with less developed markets?

Question 21	Response	Percentage
Yes	26	48%
No	7	13%
Comment only	2	4%
Blank	19	35%

Table 19

In answer to this question, there was a strong response that remote areas are more expensive because of the nascent market and price difference in labour costs. There were also related comments that, if GSM signal is weak or there is no broadband, then signal booster options may have to be included within the costs. Some respondents also made the point that installation costs in London and other larger conurbations would be more expensive and there would be cheaper installation costs in smaller urban areas.

Separately there were comments, from six respondents, that Northern Ireland is more expensive because the metering market is less developed and there is a higher proportion of heat networks using oil as a fuel. On a related theme two respondents commented that the supplier base in some areas was small and would have difficulty in delivering the number of meters that could be required in time and this may lead to a drop in standards.

Question 22: Do you agree with the proposed £81 operational costs, including billing? And do you agree that this should constitute the cost threshold of cost-effective billing per dwelling?

Question 22	Response	Percentage
Yes	17	31%
No	13	24%
Comment only	7	13%
Blank	17	31%

Table 20

Costs for meter reading, data processing and billing are included in the operational costs as set out within the consultation document. Those who supported the proposed cost suggested it was the most sensible approach and that wireless reporting would also help further reduce the cost over time. Those respondents who disagreed with the approach provided alternative

figures or scenarios however the message was that the operational costs will vary greatly depending on the billing setup and regional location. Two respondents also commented that inflation since 2012 has not been accounted for within the calculation of £81 and therefore the figure should be revised upward to £92.

Question 23: Do you have evidence for the cost of a complete metering and billing service per unit? If so, could you state if this includes or excludes the installation of the metering devices. Would this vary with geographic location?

For the cost of metering and billing services, a number of organisations provided detailed responses. The costs provided to us reflected a wide range of possible services and cost variations across the market. The amounts consulted on fell well within the range of those provided for standard operation costs for credit billing. It was also indicated by a number of respondents that increases in costs to include maintenance and meter leasing would shift these costs to the higher end with a reduced upfront cost. It was also noted that retrofitting meters could increase costs substantially and that data communication costs in areas of poor signal could also do so.

In addition to specific cost breakdowns, several respondents also made the general point that costs of metering did vary greatly according to location.

Government Response: Questions 19-23

Within the consultation document we provided costs associated with heat meters and heat cost allocators. It is necessary to make assumptions on costs to create a cost assessment methodology which is not overly burdensome for heat suppliers carrying out the assessment. While responses broadly agreed with most costs consulted upon, the range of evidence suggested that the proposed cost for HCAs was too high for both HCAs and HCA data gathering. The evidence indicated that the previous assumed cost for HCAs should be retained at £40 and that the cost for data gathering should be decoupled from the cost for metering and could be reduced to £5 per unit. A key theme from respondents was that costs will vary based on specific circumstances. We have therefore modified the tool so that while it uses assumed costs related to meters and heat cost allocators for the calculations, it now allows heat suppliers to submit additional costs (or cost reductions) within their assessment of cost effectiveness.

Variation of regional costs was a prominent theme to have emerged throughout the responses to these questions in the consultation. The degree of variation across the regions and nations were such that incorporating them into the tool directly was unfeasible. However, by allowing heat suppliers to submit additional costs (or cost reductions) within the tool, cost variation can now be accounted for. We appreciate that, with the market in its current nascent form, regional costs may play a proportionally larger role in the market. As the supply chain matures, and with further regulation under the upcoming market framework, we are hoping to bring more investment across the market to drive down costs.

The consultation also discussed the differing cost profiles between domestic and non-domestic units. Generally, the understanding from stakeholders was that there would be a difference largely as a result of usage patterns and pipe sizing. At this stage we believe insufficient evidence has been supplied to make a case to move away from what was proposed in the consultation so a continuation of the consultation approach with updated 2020 costs will be used within the cost effectiveness assessment. Enabling heat suppliers to

submit additional costs (or cost reductions) will enable heat suppliers to adjust the assessments to reflect their circumstances and use costs appropriate to them.

Aside from allowing suppliers to submit additional costs (or cost reductions), the costs laid out in table 4 within the consultation have now been updated to reflect 2020 costs and changes to HCA costs. This also means that the proposed £81 operational costs (which includes billing) has been updated to £92 per annum.

Questions 24-26: Other costs associated with the amended Regulations

Question 24: Do you agree with the assumptions made and the total cost for the familiarisation with the Regulations and dissemination of information?

Question 24	Response	Percentage
Yes	9	17%
No	10	19%
Comment only	9	17%
Blank	26	48%

Table 21

Of the respondents who provided a written answer to this question, the majority thought the assumptions made were too low, approximately a quarter thought they were reasonable, and one respondent thought the costs were too high.

The key themes to emerge within the respondents who thought the assumptions were too low were as follows:

- The time allocated to familiarisation was not long enough. The responses suggested a range for this time between 11.5 – 75 hours;
- Respondents also suggested the assumed cost per hour was not high enough. These responses suggested the hourly rate should be increased to between £35 - £70 per hour.

Question 25. Are there any other costs to business not discussed that should be considered (for example engagement with customers and changes to billing systems)?

Extra Costs	Number of Respondents
Maintenance	1
IT	1
Consultants	1

Access costs	3
Design & feasibility	3
Project management	6
Admin	7
Training	10
Legal costs	11
Customer engagement	21

Table 22

A total of 31 of respondents provided an answer to this question and raised several elements they felt were omitted from the costs to business (see table above).

Most of these responses mentioned the cost of customer engagement as a key omitted cost. This was generally relating to additional time and resource required to effectively engage with the customers to adhere to the Regulations. In particular, it was suggested time required to engage with elderly customers would be greater.

Legal costs were mentioned in 11 of the responses. These were related to the requirements to change contractual arrangements with clients and housing associations. There was also some mention of legal costs when altering billing systems and recovering lost revenues from unpaid bills.

Understanding regulation and training was mentioned by ten of the respondents to this question. This was largely referring to the time it would take for employees to familiarise themselves with the Regulation and the training that would be required to achieve this.

Additional administrative burden was mention by seven, relating to the likely increased administrative tasks resulting from complying with these Regulations. There were specific examples raised around co-ordinating installations, handling incoming inquiries, and helping to disseminate information. Given the nature of administrative tasks, its likely they cut across many or most of the themes and encompass many activities.

Project management was raised by six of these respondents. In almost all circumstances this was relating to the co-ordination required to effectively install the required meters and the associated cost. This will likely vary depending on the size of the customer base and number of meters that would need to be installed.

In addition to the above several further points were raised:

- Small and non-for-profit organisations raised concerns about the relative burden of the Regulations or not having the required expertise to effectively adhere to the Regulation and the cost of external consultants.
- Several respondents stated the need for greater customer engagement with specific customer groups and geographic locations leading to increased costs.
- A large number of respondents mentioned that the heat network market varies geographically as a recurring theme in response to different questions.

- The was also some mention of costs incurred when trying to access properties and additional cost when appointments are missed. Specifically, one response suggested around half of all appointments are not successful due to access issues.

Question 26. In the accompanying Impact Assessment analysis, we use the above time estimates in Table 6 to calculate the administrative costs of undertaking the technical feasibility and cost-effective assessment. Do you agree with these assumptions?

Question 26	Response	Percentage
Yes	7	13%
No	10	18%
Comment only	27	51%
Blank	10	18%

Table 23

Of the 27 respondents who provided a 'comment only' answer to this question, 13 thought the estimates made were too low, seven thought they were reasonable, and one thought the estimates were too high.

The themes within the respondents who thought the assumptions were too low:

- The most stated reason for this was the cost per hour was not high enough;
- Depending on the complexity it may require more expertise which comes at a greater cost and which may need to be procured externally;
- Location specific wages should be factored in (i.e. London uplift);
- Likely to require input from multiple internal staff, which was not reflected; and
- Suggested hourly rate should be £30 – 50/hour.

The time allocated to undertake the technical feasibility and cost-effective assessment was not long enough. The reasons stated for this were:

- This did not include time to visit the building to validate the information;
- The time required will vary significantly depending on the configuration; and
- Information required is unlikely to be in one place, so would require time to co-ordinate.

Government Response: Questions 24-26

The amendments are introducing new requirements and it will therefore take time for heat suppliers to become familiar with the requirements. As set out within the consultation document, the administrative costs are a cost to the heat supplier and not included in the cost-effectiveness assessment of the installation of individual metering devices. The same applies to cost related to the assessment of technical feasibility and cost-effectiveness. However, these costs are included in the impact assessment which accompanies these Regulations.

The responses to our questions were mixed, however some respondents felt the time allocated was not long enough and that the hourly rate was also too low. Heat suppliers also provided information on costs to business that we had not considered in this context. For the purposes of the impact assessment, the cost per hour has been updated to recent Office of National Statistics (ONS) estimates and 2020 prices and additional time has been included for specific administrative tasks. However, this is still lower than some respondents suggested. The ONS cost estimates were deemed the most representative of the average resourcing costs across the UK.

In addition, the evidence provided on the additional time required for administrative activities was largely specific to certain heat networks circumstances, therefore it was not appropriate to apply across all networks. The impact assessment explores the impact of higher or lower administrative costs (either higher resource costs or additional administrative tasks) through sensitivity analysis. The impact of increasing or decreasing these costs by 50%, only has a small impact on the overall net present value of the amendments to the Regulations.

Although administrative costs and those incurred as a result of carrying out a technical feasibility and cost-effectiveness assessment are not included in the assessment itself, heat suppliers will be able to submit some additional costs as a result of modifications to the tool where this is in line with the Regulations (e.g. access costs or some legal costs).

Questions 27-32: Compliance deadline and scope of amended Regulations

Question 27: Do you agree that a six-month implementation period, which includes one complete summer period, is appropriate? If you disagree, please state what length of implementation period you consider reasonable and why.

Question 1	Response	Percentage
Yes	4	7%
No	24	44%
Comment only	14	26%
Blank	12	22%

Table 24

As shown in table 24, there were 42 answers to the question. The “Yes” and “No” responses given in table 24 were provided explicitly in response to this question. However, it was clear that all but one of the 'comment only' points disagreed that a six-month implementation was appropriate. This means that 37 respondents disagreed with a 6-month implementation period.

Key points made by respondents who disagreed can be summarised as:

- The implementation period should allow realistic time; for assessment, costings, funding sources to be identified, accessing buildings, procurement, and adequate tenant consultation.

- The market supply chain would be unlikely to cope with six months without further education, training and planning activities needed.
- Shorter time periods would result in poorly installed meters leading to reputational damage to heat network market and impacting future investment.
- Different types and sizes of heat networks should be considered in the length of the implementation period.
- That six months is an unrealistic timeframe considering the complex technical and legal processes involved.
- A six-month implementation period may result in costs being passed on to consumers.
- Six months would be especially challenging for social housing and communal networks.

Only five respondents agreed that a six-month implementation period was enough time to install meters. However, one of these also recognised some would find it hard to implement in this time. One respondent considered six months too long and priority should be to decarbonise as quickly as possible while the remaining respondents did not provide explanation.

Of those who suggested a longer implementation period, the suggested length of time ranged from 12 to 28 months. The majority who provided a preferred length of time said two years would be needed.

Question 28: Do you agree with the assumption that from October 2020 most newly installed metering devices should be remotely readable? If you disagree, please provide additional information.

Question 1	Response	Percentage
Yes	30	56%
No	1	2%
Comment only	5	9%
Blank	18	33%

Table 25

Many respondents stated this was a logical and sensible statement. As shown in table 25, thirty-six provided a response to this question. Of these, 32 agreed with the statement and only three disagreed. Some respondents commented that the capability is already in place and billing based on manual readings of meters is now considered inefficient so this requirement should be made mandatory. One respondent said the definition should be firmer than ‘readable’ and that regulations need to amend this to: ‘readable and connected’ to make the most of the emerging technology.

Although the responses were broadly positive to this question, there were also some qualifying comments. One respondent who disagreed said rural areas could struggle for capability with this requirement citing poor signal and connectivity issues. Another suggested data handling and consumer protection safeguards should be in place and consumers should be aware what the data is used for.

Question 29: Should heat suppliers ensure that all installed meters and heat cost allocators accurately measure, memorize and display consumption?

Question 29	Response	Percentage
Yes	36	67%
No	2	4%
Comment only	7	13%
Blank	9	17%

Table 26

The response to this question was broadly positive with many respondents pointing out that customers would be able to moderate their own consumption and therefore have greater control. There were, however, some concerns that the measures may introduce additional administrative costs (calibration etc) which would then have to be borne either by heat supplier or by consumers. Some also commented on a lack of skills needed to meet the requirements effectively.

Some respondents commented that these requirements should only be in place for meters but not for heat cost allocators as the precision of the metering devices was different and it would be more costly to apply requirements to heat cost allocators.

Despite the mentioned concerns, respondents were generally in favour with the requirement that all installed metering devices should accurately measure, memorize and display consumption and that this should be the minimum across all heat networks, as it can be the lack of the information that can lead to complaints from consumers.

Question 30: Should heat suppliers ensure, so far as possible, that all meters and heat cost allocators installed are (a) continuously operating, and (b) properly maintained and periodically checked for errors?

Question 30 a) Continuously operating b) Maintained / checked	Response a) / b)	Percentage a) / b)
Yes	31 / 31	57% / 57%
No	0 /1	0% / 2%
Comment only	0	0%
Blank	23 / 22	43% / 41%

Table 27

It is evident from table 27 that there was broad agreement with both elements of the question.

In general, the respondents commented that it should be the responsibility of heat suppliers to ensure that meter and heat cost allocators were continuously operating, properly maintained, and periodically checked for errors. These respondents stated that billing based on incorrect

data would be unfair and potentially costly to customers. Four respondents also noted that site visits may not always be required and that monitoring can be carried out remotely.

Although responses to the question were positive, some respondents noted there was a potential for consumers to tamper with meters and HCAs and refuse access and that this may incur additional costs for maintenance and checking meters. There was also some concern that any additional costs could then be passed on to consumers.

Also, respondents noted that where the market is less mature it may make these requirements harder to meet for smaller organisations and the ability of companies to operate systems may vary according to geographical region.

A couple of respondents also stated there was currently no appropriate or cost-effective means of testing accuracy on-site and that there should be focus on simple checks to determine if a meter is working and reflecting the customer's energy use if heat suppliers were mandated to ensure meters and HCAs were operational and continuously operating.

Three respondents agreed with the requirements set out in the question stating this was in line with existing rules as laid out by the Heat Trust.

Two respondents stated that the minimum checks and frequency for "periodically checking for errors" must be defined. For example, this could be every 24 months. Furthermore, the question was raised how the check would be carried out in practice. Although the question did not specifically ask for a recommended period interval for the frequency of accuracy checks, five respondents mentioned two years and one gave the reason that suppliers warranties often last approximately two years.

Question 31: Do you agree that billing should be based on consumption for all installed meters and heat cost allocators where this is technically possible and economically justified?

Question 31	Response	Percentage
Yes	35	65%
No	7	13%
Comment only	0	0%
Blank	12	22%

Table 28

Respondents generally agreed, but some added caveats. Most agreed that billing based on consumption was the most fair and transparent approach and would provide the most clarity on the tariff. They stated that billing based on consumption would likely lead to a reduction in bills and energy use due to a change in consumer behaviour. Some respondents stated there would be no point installing heat meters unless there was a requirement to then bill based upon consumption.

Other respondents agreed with the statement but with qualifications. For example, some stated that billing based on consumption should not prevent innovative tariffs or a Heating as a Service model. Others emphasised that billing based on consumption should only occur when it is shown to be technically and economically justified. There were also some concerns over

applying the same requirement to billing based on consumption to all installed metering devices as there are technical differences between heat cost allocators and meters.

Of the respondents who disagreed, there was a strong response that billing based on consumption may result in increased levels of fuel poverty for some occupancy types. For example, one stakeholder commented that, for elderly consumers who may use their heating proportionally more than the average consumer, billing based on consumption could create an adverse impact on their wellbeing because it may present added pressure to use their heating less than they need to. In this example a fixed rate tariff may be more suitable due to the type of occupancy. Similarly, some respondents argued that some residents in supported housing find the regularity of fixed heating bills easier for financial planning reasons and that billing based on consumption would present an added burden.

Question 32. Would you consider a requirement for billing based on consumption to prevent a Heating as a Service model?

Question 32	Response	Percentage
Yes	10	19%
No	13	24%
Unclear	10	19%
Blank	21	39%

Table 29

As demonstrated in table 29 above, responses from stakeholders to this question were mixed. Although there was no clear theme to emerge from the stakeholders a couple of themes do emerge. Firstly, many stakeholders commented that for a heating as a service model (HaaS) heat metering would be required in order to acquire the relevant data.

Regarding billing based on consumption and a HaaS model, six respondents commented that they are not mutually exclusive and that they can occur simultaneously. However, seven respondents commented that new regulation should not stifle research and innovation and that legislation would have to be well written to avoid investment risk. Three respondents made that point that the HaaS model is still in its infancy so a determination of the impact of these Regulations is difficult to make at this early stage.

Government Response: Questions 27-32

It was clear from stakeholder responses that a six-month implementation period was seen as unfeasible by the majority. As a result of the feedback from the consultation, we have amended the proposals to allow heat suppliers more time to become compliant with the amended requirements. We are introducing a two-stage transitional period. After the amending Regulations come into force, heat suppliers must determine the metering requirements for their buildings within twelve months, based on the building classes. They will have until the end of the compliance period (21 months) to; complete the installation of metering devices where required and comply with all other requirements.

The earlier deadline for determining metering requirements ensures that the necessary activities are prioritised while the longer compliance period allows the market and heat suppliers to respond to the scale of the installations needed. We have also considered it

important to include two complete summer periods in the compliance period to minimise disruption to existing customers on heat networks.

Information about the number of buildings in each class, the outcome of the cost-effectiveness assessment and the number of metering devices installed will be included in the updated notification template. We have put transitional arrangements in place for heat suppliers where re-notification is due during the compliance period while heat suppliers due to re-notify after the compliance date remain within their four-yearly notification cycle. New networks will continue to be notified on or before their first day of operation. This approach will minimise the notification burden on heat suppliers while supporting audit and enforcement activities. The data on building classes, cost-effectiveness, and installation of metering devices will also be used to monitor and evaluate the impact and outcomes of the amendments, providing a measure of success against the intended benefits, as well as providing evidence for future policy development.

Supported by the positive response from stakeholders to “extend the scope” of the provisions on accuracy, on-going obligations, and billing, we are implementing the proposals with regards to operation, maintenance and billing requirements to all installed metering devices. To achieve the policy outcome in the simplest and most consistent way, we are implementing this through the building classes. All buildings where meters or heat cost allocators are already installed (unless where it was previously mandatory) will fall into the Open class. The metering requirements for buildings in the Open class will continue to apply, which means that meters or heat cost allocators must be installed where it is cost-effective.

As this means that mandatory billing requirements will cover all installed metering devices, we are taking account of stakeholder concerns regarding vulnerable and supported customers, students, and those with existing leases, where it may not be economically justified to bill based on consumption. We have therefore amended the proposals to allow heat suppliers flexibility on billing where customers occupy certain types of housing or non-domestic premises.

As outlined in the consultation, we have included a corresponding offence for non-compliance with the accuracy requirement for installed meters to ensure this can be enforced to support customer protection through accurate billing.

These amendments to the Regulations do not introduce a legal requirement for metering devices to be remotely readable. However, we understand that many devices which are being installed already have this capability and we strongly support the installation of remotely readable devices. We will consider appropriate technical standards for remotely readable devices as part of our work on technical standards and intend to take forward the introduction of such a requirement in the context of our wider work on the legislative market framework for heat networks.

This publication is available from: www.gov.uk/government/consultations/heat-network-metering-and-billing-regulations-2014-proposed-amendments

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