



Department for
Business, Energy
& Industrial Strategy

HEAT NETWORK (METERING AND BILLING) REGULATIONS 2014

PROPOSED AMENDMENTS

Closing date: 24 January 2020 (extended from 12 December 2019 due to election period and to allow additional time for stakeholder review of technical components)

October 2019



OGL

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Any enquiries regarding this publication should be sent to us at: heatnetworks@beis.gov.uk

Foreword

We are committed to achieving our net zero emissions target by 2050. Heat decarbonisation is the next big challenge to meeting this aim. Heat Networks are a crucial aspect of the path towards decarbonising heat and achieving net-zero commitment. They are uniquely able to unlock otherwise inaccessible sources of larger scale renewable and recovered heat sources such as waste heat and heat from rivers and mines. In the right circumstances, they can reduce bills, support local regeneration and can be a cost-effective way of reducing carbon emissions from heating.

There are at least 14,000 heat networks in the UK, including district heat networks which supply multiple sites, and communal heating systems which supply a number of units within a single building. Heat networks deliver heating, hot water, and/or cooling from a central source or sources to a variety of different customers such as domestic residential units, public sector buildings, shops, offices, sport facilities, universities.

This consultation sets out proposed changes to the Heat Network (Metering and Billing) Regulations 2014 (“the Regulations”). The current Regulations require heat networks to be notified to the Regulator, the Office for Product Safety and Standards (OPSS), and contain specific requirements related to the installation of heat meters and billing for customers on heat networks.

Heat meters support fair and transparent billing based on actual consumption and can drive energy efficiency savings and cost reductions. In some cases, the regulatory requirement to install metering devices (heat meters and heat cost allocators) is subject to a ‘cost-effectiveness’ test which is prescribed in the Regulations.

This consultation includes proposals for an updated methodology to assess cost-effectiveness, and a high-level description of the amended associated cost-effectiveness tool for heat suppliers. Heat suppliers would be obligated to carry out the assessment and install meters where required within a specified compliance period. These proposed changes will affect heat suppliers with buildings where a cost-effectiveness assessment is required but where the tool has not been available.

The consultation contains a significant amount of detail on the cost-effectiveness methodology. We are keen to get responses from across the industry and customer representatives to ensure that the estimated benefits and costs of installing meters are reflected as accurately as possible.

We are also proposing to extend provisions on meter accuracy, maintenance, and billing based on consumption to all metering devices currently installed. These requirements would therefore extend to some heat suppliers who under the current Regulations do not have to comply. Metering accuracy and maintenance, as well as billing based on consumption where cost effective, are fundamental to deliver and maximise the benefits of heat metering and should therefore apply to all installed metering devices.

We expect these changes to increase the number of customers who will have heat meters installed, allowing fair and transparent bills based on their consumption of heating, hot water, and/or cooling. This drive to increase transparency reflects the government’s commitment to raise consumer protections for those on heat networks.

Finally, the consultation contains several proposals which clarify areas where the current Regulations are unclear and includes a provision to support the enforcement of meter accuracy and maintenance.

Contents

Foreword	3
General information	7
Why we are consulting	7
Consultation details	7
How to respond	9
Confidentiality and data protection	9
Quality assurance	10
Introduction	11
Role of heat networks in the transition to low carbon heating	11
The Heat Network (Metering and Billing) Regulations 2014	11
EU Exit Implications	13
Revised Energy Efficiency Directive	13
Summary of key proposed policy changes	13
Rationale for intervention	14
Benefits of installing heat meters	14
Role of heat metering in delivering energy efficiency	15
EU guidelines on cost-effectiveness assessment	15
Update to the methodology for assessing the cost-effectiveness of installing individual meters and heat cost allocators	15
Accurate meters and billing based on consumption	15
Clarification of Regulations	16
Policy objectives	16
Maximise billing based on consumption and cost-effective energy savings for customers on heat networks	16
Heat supplier compliance with Regulations	16
Catalogue of consultation questions	18
Next steps	21
Proposals and consultation questions	22
1. Technical feasibility and cost-effectiveness	22
1.1 Proposed introduction of a system based on building classes	22
1.2 Proposed methodology for the cost-effectiveness assessment and amendment of the tool	25
1.3 Other costs	36
2. Compliance deadline and scope of amended Regulations	38

2.1 Deadline for installing individual consumption meters and billing based on consumption where technically feasible and cost-effective _____	38
2.2 Requirements related to accuracy and maintenance for all installed heat meters and heat cost allocators and billing based on consumption where technically feasible and economically justifiable _____	38
3. Further amendments to clarify the Regulations _____	39
3.1 Change of ownership of heat network _____	40
3.2 Buildings with only one final customer _____	40
3.3 Sanctions for inaccurate meters _____	40
3.4 Installation of heating controls where individual meters are mandatory without a cost-effectiveness test _____	40

General information

Why we are consulting

This consultation sets out proposals to amend the Heat Network (Metering and Billing) Regulations 2014 as amended¹ ('the Regulations') to ensure final consumption heat metering devices are installed on heat networks and billing is based on consumption where it is technically feasible and cost-effective to do so.

The Regulations were implemented to transpose Articles 9-11 and 13 of Directive 2012/27/EU (the 'Energy Efficiency Directive' or 'EED 2012') and set requirements for heat suppliers to install and maintain final consumption heat metering devices as well as minimum requirements for billing and billing information. Heat metering devices include heat meters and heat cost allocators. In some circumstances, the obligation to install heat meters or heat cost allocators is subject to an assessment of cost-effectiveness and technical feasibility.

We propose to amend the Regulations to introduce three building classes in line with guidelines published by the European Commission to minimise the administrative burden and cost on businesses of the cost-effectiveness assessment. We are consulting on the

- 'Viable' building class, where meters are always installed,
- 'Exempt' class, where meters/heat cost allocators do not need to be installed, and
- 'Open' class, where the requirement to install metering devices is subject to a positive outcome of the cost-effectiveness assessment.

We are further consulting on updating the cost-effectiveness methodology and associated tool to ensure consistency with the minimum requirements of the Directive and reduce burden on business.

Additionally, we are proposing to extend the scope of the current requirements on accuracy, maintenance and billing to all metering devices. This would include meters which were not installed under a duty of the Regulations, either before the Regulations came into force or voluntarily since then.

Consultation details

Issued: 17 October 2019

Respond by: 24 January 2020 (closing date extended from 12 December 2019 due to election period and to allow additional time for stakeholder review of technical components)

¹ <http://www.legislation.gov.uk/ukxi/2014/3120/contents/made>,
<http://www.legislation.gov.uk/ukxi/2015/855/contents/made>.

Enquiries to:

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Email: heatnetworks@beis.gov.uk

Consultation reference: <https://www.gov.uk/government/consultations/heat-network-metering-and-billing-regulations-2014-proposed-amendments>

Audiences:

Heat network industry, heat network trade associations, heat meter industry, including suppliers and installers, consumer groups, businesses supporting heat network notifications, businesses offering metering and billing services, private and social landlords, building owners, building owner associations, building managers, district heating providers, energy suppliers, energy service companies.

Territorial extent:

England, Wales, Scotland and Northern Ireland.

How to respond

Where possible responses should be submitted online via the link below. Responses via email or to the postal address should use the response form available via the link below.

Respond online at: <https://beisgovuk.citizenspace.com/heat/heat-network-metering-billing-regs-amendments>

or

Email to: heatnetworks@beis.gov.uk

Write to:

Heat Networks team
Department for Business, Energy and Industrial Strategy
1 Victoria Street
London
SW1H 0ET

When responding, please state whether you are responding as an individual or representing the views of an organisation. Please also state whether you are based or live in England, Wales, Scotland, or Northern Ireland and in which of these territories you operate.

Responses may be shared with relevant Devolved Administrations who have an interest in this area.

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

Confidentiality and data protection

Information you provide in response to this consultation, including personal information, may be disclosed in accordance with UK legislation (the Freedom of Information Act 2000, the Data Protection Act 2018 and the Environmental Information Regulations 2004).

If you want the information that you provide to be treated as confidential please tell us but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.

We will process your personal data in accordance with all applicable data protection laws. See our [privacy policy](#).

We will summarise all responses and publish this summary on [GOV.UK](#). The summary will include a list of names or organisations that responded, but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the government's [consultation principles](#).

If you have any complaints about the way this consultation has been conducted, please email: beis.bru@beis.gov.uk.

Introduction

Role of heat networks in the transition to low carbon heating

Heating is the single biggest reason we consume energy in our society and is responsible for over a third of the UK's greenhouse gas emissions. 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.

The Government has previously emphasised the central importance of decarbonising heat to achieve our Industrial Strategy and clean growth objectives, as we transition to a low carbon economy.² We will need to build on these commitments in light of the recently legislated net zero target.

The Government's approach to heat decarbonisation encompasses a range of programmes and initiatives to achieve a reduction in heat demand and substantial growth in no or low-regrets low carbon heating in the shorter term (supporting the deployment of heat networks and lower carbon heating solutions), as well as the development of a new policy framework for the long-term future of heat.

The Heat Networks Investment Project (HNIP) is a Government Major Project which will invest £320m of capital funding in heat network projects through grants and loans. This is provided as 'gap funding' to leverage around £1bn of private and other investment and pave the way for the continued growth of the UK heat networks market. Furthermore, Local Authorities are receiving government help to develop plans for heat networks that will maximise local strengths and support local growth.

Heat networks deliver space heating, process heating, hot water and cooling from a central energy source to multiple domestic and non-domestic sites, buildings, or units. District heat networks supply multiple buildings or sites while communal heat networks supply a number of units in a single building.

In the right circumstances, heat networks can reduce bills, support local regeneration and can be a cost-effective way of reducing carbon emissions from heating as they present an opportunity to exploit larger scale renewable and recovered heat sources.

The Heat Network (Metering and Billing) Regulations 2014

The Heat Network (Metering and Billing) Regulations 2014 as amended³ ('the Regulations') were implemented to transpose Articles 9-11 and 13 of the Energy Efficiency Directive 2012/27/EU⁴ ('EED 2012') and set requirements for heat suppliers to install and maintain heat metering devices as well as minimum requirements for billing and billing information. Metering devices include heating, cooling, and hot water meters as well as heat cost allocators on

² BEIS 'The Clean Growth Strategy' (2017): <https://www.gov.uk/government/publications/clean-growth-strategy>

³ <http://www.legislation.gov.uk/ukxi/2014/3120/contents/made>,
<http://www.legislation.gov.uk/ukxi/2015/855/contents/made>.

⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0027>

individual radiators. In some circumstances, the obligation to install meters or heat cost allocators is subject to being technically feasible and cost-effective.

Currently, approximately 14,000 heat networks have been notified to the Office for Product Safety and Standards (OPSS) under the Regulations. Based on published data, this includes approximately 12,000 communal heat networks (serving only one building) and 2,000 district heat networks (serving multiple buildings) with approximately 135,000 metered and 342,000 unmetered dwellings and units (domestic and non-domestic).^{5 6}

The recent Competition and Market Authority (CMA) Market Study makes recommendations on ways to improve transparency for customers on heat networks. We are taking these forward as part of our work on the consumer protection aspect of our long-term framework for heat networks. However, in the short term, heat meters support fair and transparent billing based on actual consumption which in turn drives energy efficiency and cost savings. The proposed amendments to the Regulations are expected to lead to a significant increase in the installation of final customer metering devices.

The Regulations apply UK wide but, generally, the devolution of heat policy and heat network regulation is more complex.⁷ This consultation sits alongside the UK and Scottish Governments' wider work to develop a long-term framework for heat networks. In December 2018 the UK Government published a document outlining priorities to deliver growth of the heat networks market in a way that protects consumers and delivers sustained investment as well as maximising the potential economic and environmental benefits from heat networks. This is expected to include additional UK-wide provisions on consumer protection, such as improvements on the transparency of billing and fair pricing.⁸ We expect to be consulting on the long-term framework for heat networks later this year.

The Scottish Government has announced in the Programme for Government (PfG), published in September 2019, that it will now move to introduce a Heat Networks Bill to regulate the heat networks sector in Scotland in a way that attracts investment in this key heat decarbonisation infrastructure. As the Scottish Government develops the Heat Decarbonisation Policy Statement, which it has committed to publishing in Summer 2020, the design of the wider policy framework to accelerate the deployment of low carbon heat will be considered.

Depending on the outcome of the consultation on the long-term framework for heat networks by the UK Government and the regulation of heat networks and the decarbonisation of heat policy in Scotland, the Regulations may be subject to further changes. We anticipate that these would be consulted on ahead of any such future amendment.

⁵ BEIS Energy trends, special feature article 'Experimental statistics on heat networks' (2018):

<https://www.gov.uk/government/publications/energy-trends-march-2018-special-feature-article-experimental-statistics-on-heat-networks>.

⁶ Over 18,000 Heat Networks notified the OPSS, however quality assurance was carried out on this database which reduced its size to approximately 14,000 heat networks. The Impact Assessment used this smaller quality assured dataset for analysis, but scaled up to account for the larger number of heat networks known to exist. Therefore, the estimated number of unmetered customers for the quality assured data set (342,000) has also been scaled up to the assumed total market size (442,000).

⁷ While heat policy is devolved in Scotland, consumer protection is reserved to the UK Government. With regards to Wales, all heat network regulation remains a reserved power of the UK Government and in Northern Ireland regulation and consumer protection are devolved to the Northern Ireland Assembly.

⁸ BEIS (2018) "Heat Networks: Ensuring Sustained Investment and Protecting Consumers" (available at: <https://www.gov.uk/government/publications/heat-networks-developing-a-market-framework>)

EU Exit Implications

On 23 June 2016 the UK voted to leave the European Union. We have reached agreement with the EU on an extension until 31 October 2019 at the latest, with the option to leave earlier as soon as a deal has been ratified. Until EU Exit, the UK remains a full Member of the European Union and all the rights and obligations of EU membership remain in force. During this period the Government will also continue to negotiate, implement and apply EU legislation.

We continue to represent the interests of the people of the UK in the EU agenda. The UK will continue to be a strong partner to the EU27 for the remainder of our membership and following EU Exit. The outcome of the negotiations will determine what arrangements apply in relation to EU legislation in the future once the UK has left the EU.

Revised Energy Efficiency Directive

The amendments proposed in this consultation seek to introduce a number of changes to the Regulations to align with the EED 2012 only. The EED 2012 was subsequently revised and came into force as the revised Energy Efficiency Directive 2018/2002/EU ('revised EED 2018') on 24 December 2018.⁹ Pending the UK's exit from the European Union, transposing the revised EED 2018 into UK legislation would require further amendments to the Regulations in addition to those proposed in this consultation. The transposition deadline for the relevant requirements in the revised EED 2018 is 25 October 2020.

Where relevant, the requirements of the revised EED 2018 are considered outlined in the context of the proposed amendments in this consultation. This includes the introduction of the concept of a "final consumer" of heat, who may not have a direct contractual relationship with the heat supplier. Furthermore, the revised EED 2018 introduces a staggered requirement for meters to be remotely readable, changes instances where cost-effectiveness determines the requirement to install final consumption meters and increases the minimum frequency of billing or consumption information. In addition, Member States will need to publish transparent rules for the allocation of costs in multi-apartment and multi-purpose buildings.

While the proposed amendments in this consultation relate to the EED 2012 alone, the text boxes throughout this document contain information on requirements of the revised EED 2018. We will explain these potential future requirements and the relevant implementation deadlines clearly in the relevant sections to outline potential future impacts on the current proposals. This is to help parties making changes to understand any potential future changes. This information should be read in the context of the UK's exit from the EU. Any potential future implementation of relevant requirements would be consulted on separately.

Summary of key proposed policy changes

We plan to amend the Regulations to ensure that individual consumption meters or heat cost allocators are installed on heat networks and that subsequent billing is based on consumption,

⁹ Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1546600922301&uri=CELEX:32018L2002>

where it is cost-effective and technically feasible to do so. This will ensure consistency with the requirements of the EED 2012 and the revised EED 2018 (2012/27 EU and 2018/2002/EU).

In line with guidance from the European Commission, which became available in December 2016¹⁰, we propose to introduce building classes to minimise the administrative burden and cost on businesses of the cost-effectiveness assessment for individual metering devices. Assessments on whether individual metering is required will only need to be carried out for one building class.

We propose to assign a range of categories of buildings to each of the following three building classes:

- 'Viable' class, where individual meters are always installed;
- 'Exempt' class, where meters/heat cost allocators do not need to be installed; and
- 'Open' class, where the cost-effectiveness test determines if individual heat meters or heat cost allocators must be installed.

We further plan to amend the cost-effectiveness test methodology and associated tool, in order to support heat suppliers to assess whether it is economically viable to install meters or heat cost allocators for final users in buildings in the 'Open' class. This will ensure that meters or heat cost allocators are installed, and billing is based on consumption where cost effective.

We are also consulting on extending the requirements on meter accuracy, maintenance, and billing to all customers with individual heat meters or heat cost allocators, including those where meters were not installed under a duty of the Regulations. Where meters were installed on a voluntary basis, the requirements of the Regulations currently do not apply. This extension of scope includes meters installed before the Regulations came into force, where they were not mandatory, and cases where the requirement depends on a positive outcome of an assessment of technical feasibility and cost-effectiveness where the tool was not available. This extension of scope is intended to ensure all customers on heat networks who have final consumption meters or heat cost allocators are protected by these provisions. The requirements would apply from the time when the amendments come into effect however, non-compliance will not be sanctioned retrospectively.

We further plan to include a provision to support enforcement on requirements on meter accuracy and maintenance and several clarifications where the current Regulations are ambiguous or unclear.

Rationale for intervention

Benefits of installing heat meters

Final customer meters and heat cost allocators enable greater transparency of consumption and charging as well as give greater control over energy use and cost. This also avoids cross subsidisation of high energy users by low energy consumers on the same network.

¹⁰ Empirica GmbH (2016) 'Guidelines on good practice in cost-effective cost allocation and billing of individual consumption of heating, cooling and domestic hot water in multi-apartment and multi-purpose buildings' (available at: https://ec.europa.eu/energy/sites/ener/files/documents/mbic_guidelines20170123_en.pdf)

Role of heat metering in delivering energy efficiency

Where billing for heating, cooling and hot water is based on actual consumption measured by individual meters and heat cost allocators, this can encourage behaviour change and incentivise energy savings and reduce bills. More efficient use of heating and cooling by consumers on a heat network reduces the amount of heat generated and therefore reduces carbon emissions and negative impacts on air quality associated with the heating system.

EU guidelines on cost-effectiveness assessment

It is a requirement to effectively implement the metering and billing requirements for heat networks as set out in the EED 2012. Guidelines on good practice in cost-effective cost allocation and billing of individual consumption by the European Commission became available in December 2016. This includes guidance on how the cost-effectiveness of metering could be assessed.¹¹ The EU recommendations include the use of building classes for specific categories of buildings. We have used these to develop the proposals in this consultation for a 'Viable' class where individual meters should always be installed, an 'Exempt' class where metering devices are not required, and an 'Open' class where the technical feasibility and cost effectiveness determines the requirement for meters. This is intended to help minimise the administrative burden on heat suppliers in that building classes include easily recognisable categories of buildings and a cost-effectiveness assessment is only required for buildings in the 'Open' class.

Update to the methodology for assessing the cost-effectiveness of installing individual meters and heat cost allocators

Following the implementation of the Regulations in 2014, the Department for Energy and Climate Change (DECC)¹² commissioned the "Heat Metering Viability Tool" to enable heat suppliers to assess whether it was cost effective to install meters or heat cost allocators, in line with the Regulations. However, the original tool used generic energy benchmarking and it became apparent that very few buildings would have been required to install final customer meters. In order to prevent an undue burden on business, due to the use of a tool where the outcome was expected to be negative, the tool was suspended in July 2015.

The proposed revised tool uses a wider range of variables, especially to estimate heat demand, than the original tool. This supports a more accurate assessment of the cost-effectiveness of installing meters or heat cost allocators. We are outlining the proposed approach in this consultation and will seek stakeholder views and evidence to help us develop the revised tool.

Accurate meters and billing based on consumption

Where individual metering devices are installed, it is essential both that the meters or heat cost allocators are maintained and accurately measure consumption, and that bills and billing information are accurate and based on consumption.

We further propose to extend the scope of the requirements in the Regulations on meter and heat cost allocator accuracy, maintenance and billing to all installed consumption meters and

¹¹ Empirica GmbH (2016) 'Guidelines on good practice in cost-effective cost allocation and billing of individual consumption of heating, cooling and domestic hot water in multi-apartment and multi-purpose buildings' (available at: https://ec.europa.eu/energy/sites/ener/files/documents/mbic_guidelines20170123_en.pdf)

¹² Now the Department for Business, Energy and Industrial Strategy (BEIS).

heat cost allocators including those which were installed voluntarily or before the Regulations came into force.

Clarification of Regulations

There are several issues where we consider clarification to the Regulations would be beneficial, including requirements related to change of ownership of a heat network, buildings with only one final customer, enforcement action on meter accuracy, and the installation of heating controls. These planned amendments to the Regulations are outlined at the end of the consultation for information.

Policy objectives

Maximise billing based on consumption and cost-effective energy savings for customers on heat networks

Accurate individual metering devices can support fair and transparent billing based on consumption and enable customers to understand their energy use. This can encourage behaviour change to identify and reduce wasteful consumption. Where heating controls are installed, metering and billing based on consumption provides customers with greater control over when to use their heating (and cooling) systems and at what temperature to heat their homes (and businesses), therefore controlling the energy they use and the amount they pay.

If a flat rate is charged to all customers on a heat network, for example in multi-apartment or multi-purpose buildings, this can lead to low energy users subsidising those with a high energy usage. If costs are based to some degree on measured consumption, it reduces cross-subsidisation across variation in heat consumption.

Metering and billing based on consumption is also expected to increase the transparency of the pricing structure and the charges for customers on heat networks, in part addressing the recommendations of the Competition and Market Authority's Heat Network Market Study (2018).¹³

Implementing the requirements of the EED 2012 fully is intended to meet the objective to maximise billing based on consumption and cost-effective energy savings through:

- The installation of final consumption heat meters and heat cost allocators on heat networks where it is cost-effective and technically feasible to do so;
- Billing information and billing based on consumption for all customers with individual metering devices; and
- Ensuring that the requirements for meters to accurately measure, memorise and display the consumption of heating, cooling and hot water can be enforced.

Heat supplier compliance with Regulations

The introduction of building classes and the amendment of the methodology and associated tool for assessing the cost-effectiveness of installing heat metering devices supports heat

¹³ <https://www.gov.uk/cma-cases/heat-networks-market-study>

suppliers' compliance with the Regulations. Where required, we propose a transition period to allow time for the cost-effectiveness assessment and installations to be carried out.

The clarification that, on change of ownership of a heat network, no re-notification or re-testing of technical feasibility and cost-effectiveness is required reduces the administrative burden of compliance.

Catalogue of consultation questions

Q1. Do you agree with adopting a system using building classes?

Q2. 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?

Q3. 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.

Q4. 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 should therefore be in the 'Exempt' class? Should this exclude networks which only reach operating temperatures above 90°Celsius for limited periods of time (less than 10%)?

Q5. If you are a heat supplier, what percentage of buildings would you estimate to fall into the 'Exempt' class?

Q6. 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?

Q7. 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.

Q8. 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?

Q9. Do you agree with the proposed discount rate of 3.5% to calculate the net present value of costs and benefits?

Q10. Do you agree with the proposed tool's approach to estimating heat demand for buildings? Do you have suggestions for a different approach?

Q11. 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?

Q12. Do you agree that the 20% figure for average heat demand savings should be applied to domestic units?

Q13. Do you agree that the 10% figure for average heat demand savings should be applied to non-domestic units?

Q14. 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?

Q15. 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?

Q16. 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?

Q17. Do you agree that we should use the price for different fuels to estimate the costs and therefore benefit of savings?

Q18. 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?

Q19. 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.

Q20. 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?

Q21. Would you expect significant regional difference in supply and installation costs, e.g. in remote locations or areas with less developed markets?

Q22. 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?

Q23. 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? If this information is commercially sensitive and you prefer to send it in confidence, please send separately direct to our email address provided in the "How to respond" section and mark accordingly.

Q24. Do you agree with the assumptions made and the total cost for the familiarisation with the Regulations and dissemination of information?

Q25. Are there any other costs to business not discussed that should be considered (for example engagement with customers and changes to billing systems)?

Q26. 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?

Q27. 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.

Q28. 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.

Q29. Should heat suppliers ensure that all installed meters and heat cost allocators accurately measure, memorize and display consumption?

Q30. 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?

Q31. 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?

Q32. Would you consider a requirement for billing based on consumption to prevent a Heating as a Service model?

Next steps

We will review all responses and aim to publish the Government Response within 12 weeks of the close of the consultation.

We will consider the responses carefully to inform the amendments to the Regulations, and the cost-effectiveness assessment tool. The amended legislation will be introduced as soon as parliamentary time allows.

Proposals and consultation questions

1. Technical feasibility and cost-effectiveness

We are consulting on the introduction of building classes and an update of the methodology and tool for assessing the cost-effectiveness of the installation of individual meters and heat cost allocators on heat networks.

We are seeking your views and supporting evidence on the proposed approach for the new tool; especially, how to assess heat demand, savings and costs related to meters.

1.1 Proposed introduction of a system based on building classes

The European Commission developed EU-wide guidelines on good practice for cost allocation and billing of individual consumption of heating, cooling, and hot water, which was published in December 2016.¹⁴ This provides a framework but leaves it to Member States to determine how to assess cost-effectiveness. Based on these guidelines, this consultation proposes to introduce building classes and an amended tool which heat suppliers can use to assess cost-effectiveness.

The assessment of technical feasibility and cost-effectiveness may, in principle, be carried out for each individual building in a country. However, it will often be desirable to take a more aggregated approach, to minimise overall administrative effort and cost. The EU guidelines supports the use of regulatory approaches which declare entire classes of buildings as either 'Viable' or 'Exempt' from the provisions of the EED 2012 for individual metering, cost-allocation, and billing. Buildings which do not fall in either category are categorised as being in the 'Open' class, where the legal requirement for individual metering and billing is determined by technical feasibility and cost-effectiveness. The guidelines propose that these categories should be based on information which is easily available to building owners to avoid administrative burden.

We are consulting on the buildings class system, as outlined in the table below, which integrates current mandatory requirements and exemptions. The building classes will be defined in the amended Regulations.

The proposed categories of buildings included in the proposed 'Viable' class are based on mandatory requirements in the EED 2012 and the Regulations. In addition, we propose to include new buildings with a communal network in the 'Viable' class. This is based on the assumption that where the installation of meters is planned and included in the business case for new buildings at the development stage, there would be no disruption to service for the consumer, this would be technically feasible, and not add significant cost. This aligns with the requirement for new buildings supplied by a district heat network, where meter installation is already mandatory. There is scope to add other types of buildings to this class, if there is evidence that this would always be technically feasible and cost-effective.

¹⁴ Empirica GmbH (2016) "Guidelines on good practice in cost-effective cost allocation and billing of individual consumption of heating, cooling and domestic hot water in multi-apartment and multi-purpose buildings" (available: <https://ec.europa.eu/energy/en/studies/specific-guidance-sub-metering-thermal-energy-multi-unit-buildings-implementation-articles-9>)

The 'Exempt' class was defined using the technical feasibility criteria for exclusion, previously consulted on and established in the Regulations. However, we are aware that there may be other buildings where installing metering devices is not technically feasible or financially reasonable and we are consulting on the best route for heat suppliers to evidence that specific buildings should be considered exempt.

All other buildings, which are not considered either 'Viable' or 'Exempt', fall in the 'Open' class, where cost-effectiveness determines the requirement to install metering devices.

An amended cost-effectiveness tool will support heat suppliers in determining the requirement for buildings in the 'Open' class. It will not include the assessment of the technical feasibility of installing individual metering devices. It would be possible for heat suppliers to install meters without carrying out a cost-effectiveness assessment. In this scenario, the Regulations would apply as if a positive outcome of the tool has been achieved.

From speaking to stakeholders, we understand that the installation of metering devices and billing based on consumption may have unintended consequences for some social housing or vulnerable customers while not leading to significant energy and cost savings. We are not clear on the scale of this issue and whether it needs separate consideration or exemption. Please provide evidence you would like us to consider, in this context, in response the question below.

Table 1: Proposed building classes and metering requirements

Building class	Requirement to install individual meters or heat cost allocators?	Categories of buildings	Rationale for inclusion
Viable Class	Individual meters must always be installed	Newly constructed buildings supplied by a district heat network	Regulation 7(2)(a) of the Regulations based on EED 2012 Article 9(1)(b)
		Building supplied by a district heat network that undergoes major renovations relating to the technical services of that building	Regulation 7(2)(b) of the Regulations based on EED 2012 Article 9(1)(b)
		New-build buildings with a communal network	Pending consultation outcome on whether considered to always be technically feasible and cost-effective
Exempt Class	Individual meters or heat cost allocators do not need to be installed.	Buildings consisting mainly of domestic units on communal or district heat networks in which heat is distributed by means of water with a normal	Not considered technically feasible as described in Paragraph 4(b) of Schedule 1 to the Regulations

Heat Network (Metering and Billing) Regulations 2014 Proposed Amendments

		operating temperature above 90°Celsius.	
		Buildings on communal or district heat networks where there is more than one entry point for the flow and return pipes of the network into each private dwelling within that building or where the entry point is not known.	Not considered technically feasible as described in Paragraphs 4(a) and 5(b) of Schedule 1 to the Regulations
		Buildings, consisting mainly of non-domestic units, on communal or district heat networks in which heating is supplied by a system using means other than hot water.	Not considered technically feasible as described in Paragraphs 5(a) of Schedule 1 to the Regulations
		Buildings, consisting mainly of non-domestic units, on communal or district heat networks in which cooling is supplied by a system using a transfer fluid other than water.	Not considered technically feasible as described in Paragraph 5(c) of Schedule 1 to the Regulations
Open Class	Requirement to install individual metering devices subject to positive outcome of assessment of cost-effectiveness.	A building that is already metered, when replacements are required.	Regulation 7(3) of the Regulations based on EED 2012 Article 9(1)(a)
		All other buildings on existing communal and district networks.	Regulation 5 of the Regulations based on EED 2012 Article 9(1) and (3)

For the Impact Assessment, it is assumed that 25% of unmetered domestic and non-domestic units would not have heat meters installed, as the buildings are categorised in the 'Exempt' class. This estimate is based on information in the Office for Product Safety and Standards heat network notification database and a simplified cost-effectiveness test. However, there is significant uncertainty about these estimates, and we would be very interested to hear your feedback and receive further evidence on what percentage of buildings you would expect to be exempt from installing metering devices.

The following consultation questions relate to different aspects of the proposed building classes. Please provide evidence or comments to support your answers.

Q1. Do you agree with adopting a system using building classes?

Q2. 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?

Q3. 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.

Q4. 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 should therefore be in the 'Exempt' class? Should this exclude networks which only reach operating temperatures above 90°Celsius for limited periods of time (less than 10%)?

Q5. If you are a heat supplier, what percentage of buildings would you estimate to fall into the 'Exempt' class?

Q6. 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?

Q7. 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.

Future requirements of the revised EED 2018:

Existing single occupancy buildings on heat networks will be required to install heat meters in all cases and would therefore be added to the 'Viable' class. Currently, this is subject to the cost-effectiveness test.

For both new multi-apartment and multi-purpose buildings supplied by a heat network, and new buildings with a communal network, individual consumption meters are only required where technically feasible and cost-effective. However, under the revised EED 2018 it would always be mandatory to install hot water meters for domestic units in new multi-apartment or multi-purpose buildings supplied by a heat network.

1.2 Proposed methodology for the cost-effectiveness assessment and amendment of the tool

This section describes the proposal for amending the assessment of economic viability for the installation of individual meters or heat cost allocators in buildings that fall into the 'Open' class.

Heat networks and the buildings supplied by them, as well as contractual arrangements between heat suppliers and customers, vary significantly. Any methodology and tool for the assessment of cost-effectiveness is therefore by necessity a generic assessment based on estimated savings and average costs.

In basic terms, the determination of cost-effectiveness is based on a calculation of projected cost savings due to reduced heat consumption resulting from behaviour change linked to having a metering device installed against the various metering costs incurred such as capital, installation, operational, and billing costs. The assessment of the costs and benefits is calculated at building level. If, over the assumed lifetime of the metering devices, the economic benefits are greater than the costs, installation of the metering device is deemed to be cost-effective.

While the original tool used generic energy benchmarking data to estimate heating and cooling demand, we propose that the amended tool uses a modular approach which allows the heat supplier to build up a profile of the network using information about the energy source(s) and easily available information about each building on the network. The proposed tool will then combine this user-supplied data with benchmarking data derived from general network information and building fabric information, building uses, and average temperatures by region. Compared to the original tool, this approach is expected to calculate a more accurate estimate of the heat and cooling demand for a given building.

The following sections outline the range of assumptions used in the original Heat Meter Viability Tool, and the proposed changes. This includes data used for calculating heat demand, network efficiency, and a range of costs associated with meters and heat cost allocators. Each section includes a brief description followed by a table summarising the issues and noting any proposed difference in approach or values and the rationale for change.

Assumptions used to calculate heat demand, energy savings, and costs are crucial for the accuracy of the cost-effectiveness assessment tool. We are consulting on the new approach, seeking your feedback on whether you agree with the approach and with assumptions on data and costs. Where your views differ from ours, we are interested in understanding your evidence, the data sources you have used and how these may be reflected in the cost-effectiveness tool. Please also provide information and evidence if there is anything else we should consider in this context.

We propose to reference the tool in the amended Regulations and contain data references and variables required for the assessment of cost-effectiveness within the tool. A user guide will be available to explain the tool and how it should be used.

We propose to review a number of the variables in the tool on a regular basis (annually or every two years). These could include fuel costs and carbon factors,¹⁵ costs related to meters, and average regional temperatures as they change over time. We would ensure there is clarity on which version should be used by the heat supplier.

We propose to make the use of the tool mandatory for the cost-effectiveness assessment for buildings in the 'Open' class. Heat suppliers will be required to keep a report of the outcome for their heat networks. Notification of whether the test has been carried out and the outcome

¹⁵ The proposed tool uses carbon factors to establish the hierarchy of plant used for the network if it contains more than one plant to generate heating and / or cooling.

at heat network level will be sent to OPSS as part of the four-yearly cycle of heat network re-notifications. However, OPSS may also request the information as part of compliance checks.

Cost-benefit calculation

The Regulations set out in general terms and with some specific variables how the cost-benefit should be calculated for the installation of individual metering devices. Schedule 1 considers the installation of heat meters or heat cost allocators to be cost-effective where the net present value (NPV) of the projected energy savings to all final customers in the building over the 10-year period subsequent to installation is greater than the NPV of the estimated costs associated with heat meters or heat cost allocators in that building. Thus, cost-effectiveness is determined by making a NPV calculation of the economic cost and benefit for each building.

Calculating the current value of costs and benefits over a specific accounting period is standard practice and will remain unchanged. We intend to keep the 10-year accounting period, which is based on the assumed life time of a meter.¹⁶ However, we propose to amend the discount rate, which is used to adjust for differences over time during the accounting period, from 9% to 3.5%. This change is intended to reflect both UK government and EU guidelines.¹⁷

Table 2: Discount rate and appraisal period

Description	Current	Specified	Proposed	Rationale for change
Discount rate for NPV	9%	Paragraph 11 of Schedule 1 to the Regulations	3.5%	Aligns with UK Government and EU guidelines (2016)
Period over which NPV is calculated	10 years	Paragraph 1(2) of Schedule 1 to the Regulations	10 years	No change

Q8. 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?

Q9. Do you agree with the proposed discount rate of 3.5% to calculate the net present value of costs and benefits?

¹⁶ DECC (2014) "Implementing the Energy Efficiency Directive: metering and billing of heating and cooling" (available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/379049/EED_Government_response_-_261114_version.pdf).

¹⁷ Empirica GmbH (2016) "Guidelines on good practice in cost-effective cost allocation and billing of individual consumption of heating, cooling and domestic hot water in multi-apartment and multi-purpose buildings" (available <https://ec.europa.eu/energy/en/studies/specific-guidance-sub-metering-thermal-energy-multi-unit-buildings-implementation-articles-9>).

Energy savings and associated cost benefits

The estimated economic benefit derived from installing metering devices is derived from the estimated energy savings, and hence cost savings, that arise as a result of the reduction in heating (and cooling) use by final consumers. The main components of the benefit calculation are: the estimated heat demand for a given building; the efficiency of the system; the fuel costs for providing this heat; and the estimated energy savings due to behaviour change by final consumers.

This section first describes the assumptions on energy savings and cost benefits of the current Regulations and the original tool and then outlines the approach of the proposed amended tool. The information is also laid out in table format.

The current Regulations reference benchmark data for the calculation of the heat demand of buildings. Paragraph 10 of Schedule 1 to the Regulations specifies benchmark heat demand rates (including space heating and hot water demand) and weather correction factors which must be used for unmetered domestic and non-domestic properties. These benchmarks are contained in the DECC (2014) publication “Assessing the cost effectiveness of individual metering: Energy Demand Benchmarks”.¹⁸ For domestic properties the benchmark data is segmented into eight property age bands and four property types (flats, terraced, semi-detached, and detached). For non-domestic properties the heat demand is categorized according to 26 use types as specified by the Chartered Institution of Building Services Engineers (CIBSE)¹⁹ and is calculated based on the size of the building in m².

The original tool assumed that heat networks operate with an overall thermal efficiency rate of 90% and that the efficiency of gas boilers was 85%. The original tool only considered gas boilers as this was the heat source used in the vast majority of heat networks at the time. Both assumptions were based on the DECC report (2015) “Assessment of the Costs, Performance, and Characteristics of UK Heat Networks”.²⁰ Similarly, the original tool only included gas fuel costs to calculate energy costs and estimated savings. The costs were taken from projection tables in the DECC Interdepartmental Analysts’ Group (IAG) publication.²¹

The Regulations (Paragraph 3 of Schedule 1) further stipulate projected energy savings of 20% of the benchmark unmetered heat demand rate for mainly domestic buildings over the ten years following installation of meters and heat cost allocators, except in the first year where a 10% rate should be used. For other buildings, projected energy savings of 10% and 5%

¹⁸ Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/379052/EED_requirements_-_benchmark_heat_demand_paper_-_261114_.pdf.

¹⁹ The data in the benchmark tables for domestic properties are based on DECC (2014) “Metering requirements for Heating, Cooling and Hot Water Networks, Impact Assessment (available: <http://www.legislation.gov.uk/ukxi/2014/3120/impacts>) and for non-domestic properties on CIBSE TM46: Energy Benchmarks (2008) (available: <https://www.cibse.org/Knowledge/knowledge-items/detail?id=a0q2000000817evAAC>).

²⁰ DECC (2015) “Assessment of the Costs, Performance, and Characteristics of UK Heat Networks” (available at: <https://www.gov.uk/government/publications/assessment-of-the-costs-performance-and-characteristics-of-uk-heat-networks>).

²¹ The original publication is no longer available, Now published by BEIS as “Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal, data tables 1-19: supporting the toolkit and the guidance”, tables 4-8 (available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/793632/data-tables-1-19.xlsx).

respectively should be used.²² The difference between the first and subsequent years is based on a behavioural assumption of a lag between meter installation and the full impacts of energy reduction taking effect. We are not proposing to change these assumptions on energy savings.

The original tool had the functionality to record heat usage at building level, however, this was not used in the evaluation of the cost effectiveness of installing metering devices. We are considering whether to allow the manual input of heat usage if it is known and can be supported by evidence (e.g. from building meters).

The proposed amended tool uses a modular approach and a wider range of variables which impact the heat demand of a building. The user builds up the network by entering easily available information about the network's heating and / or cooling plant, its buildings, and types of units within a building.²³ In this way the user is better able to tailor the assessment to their actual network and buildings.

The user enters information about the plant(s) on the network to build up a picture of the mix of energy used to supply heating and / or cooling to a given building. The user needs to make an assessment of the allocation of the heat and / or cooling generation capacity (kW) of the plant to each building within the network. The information required about the plant(s) supplying the network includes the type and cost of fuel, where not published by BEIS,²⁴ average distribution losses of supply to a building (for district heating schemes only), plant thermal and / or cooling efficiency as well as overall energy conversion efficiency,²⁵ plant availability to operate at its stated capacity in the year (e.g. only winter period), and for networks which include different technologies, the dispatch hierarchy of each plant (if not known this is derived by the tool based on carbon factors for each technology).

For each building, the user selects external wall, floor, and roof construction types (drop-down menu) from which industry averages of thermal efficiency are derived; however, these can be overwritten by the user if they have calculated their own values and are able to evidence such calculations.

The user further defines the types of units that are contained in a given building, reflecting different types of units with regards to size and use. The user selects a pre-defined archetype from a drop-down menu which best describes the use of that unit. We are working with CIBSE to determine what these should be. Degree days (which are used to determine when in the year a unit needs to be heated or cooled) and air change rates are derived from these archetypes. For each user-defined unit type, the user specifies the number of these units within the building and enters additional characteristics, such as average floor space and ceiling height as well as glazing type. Information is also required about the number of units in the building with external walls, floors, or roof, as well as the presence of heating controls and average number of radiators per unit.

²² http://www.legislation.gov.uk/uksi/2014/3120/pdfs/uksi_20143120_en.pdf

²³ The functionality would allow some copying of information entered about buildings, plant, and units within a network.

²⁴ Fuel costs for coal, electricity, gas, LPG, and oil to be taken from BEIS "Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal, data tables 1-19: supporting the toolkit and the guidance" (available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/793632/data-tables-1-19.xlsx); other fuel costs can be input by the user.

²⁵ The overall energy conversion efficiency reflects the possibility that the plant, e.g. a CHP plant, may be generating useful energy other than heat or cooling, namely electricity.

The proposed tool then calculates the estimated heat demand and costs related to meters per building on the network and presents the results on whether it is cost effective to install meters in a given building.

Table 3: Assumptions related to energy savings

Description	Current	Specified	Proposed	Rationale for change
Source of benchmarking data for annual domestic heat demand in properties	DECC (2014) "Assessing the cost effectiveness of individual metering: Energy Demand Benchmark"	Paragraph 10 of Schedule 1 to the Regulations	Differentiated approach to buildings combining user information and set of industry averages	More representative of buildings on network
Source of benchmarking data for annual non-domestic heat demands	DECC (2014) "Assessing the cost effectiveness of individual metering: Energy Demand Benchmark"	Paragraph 10 of Schedule 1 to the Regulations	Differentiated approach to buildings combining user information and set of industry averages	More representative of buildings on network
Average heat demand savings for mainly domestic buildings achieved through introduction of heat meters or heat cost allocators (first year in brackets)	20% (10%)	Paragraph 3 of Schedule 1 to the Regulations	20% (10%) for domestic units and 10% (5%) for non-domestic units in a building	Percentage retained
Average heat demand savings for mainly non-domestic buildings achieved through introduction of heat meters or heat cost allocators (first year in brackets)	10% (5%)	Paragraph 3 of Schedule 1 to the Regulations	20% (10%) for domestic units and 10% (5%) for non-domestic units in a building	Percentage retained
Assumed network efficiency	90%	DECC (2015) "Assessment of the Costs,	User input required	Allows for variation between systems and technologies

		Performance, and Characteristics of UK Heat Networks”		
Assumed boiler efficiency	85%	DECC (2015) “Assessment of the Costs, Performance, and Characteristics of UK Heat Networks”	User input required	Allows for variation between systems and technologies
Cooling efficiency	85%	Heat Metering Viability Tool	User input required	Allows for variation between systems and technologies
Cost of fuel	Cost of gas, Interdepartmental Analysts' Group (IAG) projections	Heat Metering Viability Tool	Cost of fuel, for coal, electricity, gas, LPG, and oil: Interdepartmental Analysts' Group (IAG) projections; for other fuels user input required; User input for all other energy types	Allows differentiation between cost of different fuels
Total heat supplied to building if building level meter installed	Recorded but not used in original tool's assessment of viability		Potentially allow manual input	

The following consultation questions relate to assumptions and sources linked to energy savings utilised in the assessment of the cost-effectiveness of the installation of heat meters and heat cost allocators. Please provide evidence or comments to support your answers.

Q10. Do you agree with the proposed tool's approach to estimating heat demand for buildings? Do you have suggestions for a different approach?

Q11. 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?

Q12. Do you agree that the 20% figure for average heat demand savings should be applied to domestic units?

Q13. Do you agree that the 10% figure for average heat demand savings should be applied to non-domestic units?

Q14. 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?

Q15. 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?

Q16. 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?

Q17. Do you agree that we should use the price for different fuels to estimate the costs and therefore benefit of savings?

Q18. 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?

Costs associated with heat meters, heat cost allocators, temperature control devices, and billing

The cost of the metering devices as well as their installation, operation, and billing information constitute another essential part of the cost-effectiveness assessment and are included in the cost-benefit calculation and the proposed tool. We are consulting on and seeking your views and evidence on all elements of these costs to ensure the amended tool are reflected as accurately as possible.

The costs for domestic and non-domestic meters and heat cost allocators, hot water meters, data gathering systems, temperature control devices and their installation, as well as operational costs are outlined in the table below. Costs for meter reading, data processing and billing are included in the operational costs. The difference between costs for domestic and non-domestic meters are based on 15mm and 50mm pipe diameters respectively. Details of whether the costs are per device or per domestic or non-domestic building unit are indicated.

The proposed costs for the supply and installation of heat meters per dwelling or non-domestic unit are taken from a report commissioned by BEIS Regulatory Delivery (now the Office for

Product Safety and Standards) and delivered by Sustain (2017).²⁶ Other costs related to heat cost allocators, water meters, data gathering systems, temperature control devices, annual operational costs, and billing are based on responses to the previous consultation prior to the implementation of the Regulations (2014)²⁷, the Impact Assessment for the Regulations (2014)²⁸, and the BRE Report (2012) on the cost-benefit analysis of heat metering in district heating.²⁹ The proposed costs for data gathering equipment in multi-unit buildings are per building unit, while the original tool used a graded system based on the number of units and floors in a building to estimate costs for the equipment and its commissioning.

In addition, the Regulations stipulate that billing must be based on consumption where metering devices have been installed and it is technically possible and economically justified to do so (regulation 9 of the Regulations). The latter is specified as not exceeding £70 per final customer (paragraph 6 of Schedule 2 to the Regulations). We propose to use the slightly higher value of £81 from the BRE Report (2012), which found this to be the median value of maintenance, data collection, generating and sending bills, and the collection of money from individual end users.³⁰

With regards to controls, the original tool assumes £50 per domestic unit, £50 per 100m² for a non-domestic unit, and £50 for a thermostatic radiator valve per radiator. The Regulations require temperature controls where heat meters are installed and thermostatic radiator valves for all radiators where heat cost allocators are installed.

The first column in Table 4 below contains the information used in the original Heat Meter Viability Tool and may vary from the original Impact Assessment for the Regulations. Where this information is no longer publicly available or too complex to include in the column it has been included in an annex as indicated.

Table 4: Costs associated with heat meters and heat cost allocators

Description	Current	Proposed	Rationale for change
Heat meter supply and installation (domestic)	£260-320	£372	Sustain Report (2017)
Heat meter supply and installation (non-domestic)	£1,560-1,620	£1,457	Sustain Report (2017)
Data gathering system supply (heat meters and heat cost allocators)	Data gathering equipment for buildings with up to	£64/building unit	Unchanged from Impact Assessment for Regulations, based on

²⁶ Sustain (2017) "Establishing the unit costs of heat meters" (not published). BEIS Regulatory Delivery appointed Sustain, part of the Anthesis Group, to undertake the task of researching and reporting relevant data pertaining to the cost of heat meters.

²⁷ DECC (2014) "Implementing the Energy Efficiency Directive: metering and billing of heating and cooling" (available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/379049/EED_Government_response_-_261114_version.pdf).

²⁸ http://www.legislation.gov.uk/ukia/2014/346/pdfs/ukia_20140346_en.pdf

²⁹ BRE (2012) "District Heating – Heat Metering Cost Benefit Analysis" (available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48389/5462-district-heating--heat-metering-cost-benefit-anal.pdf).

³⁰ BRE (2012) "District Heating – Heat Metering Cost Benefit Analysis" (available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48389/5462-district-heating--heat-metering-cost-benefit-anal.pdf).

Heat Network (Metering and Billing) Regulations 2014 Proposed Amendments

	<ul style="list-style-type: none"> - 8 dwellings £650; - 32 dwellings £800; - 64 dwellings £950; - 250 dwellings £2000; Receivers for every 4 units and 2 floors £200 		Consultation Response (2014) and BRE report (2012) inflated to 2018 prices
Data gathering system installation (for heat meters and heat cost allocators)	<ul style="list-style-type: none"> Commissioning £20-£50 (depending on number of units); Software setup £15/unit 	£96/building unit	Unchanged from Impact Assessment to Regulations based on consultation Response (2014) and BRE report (2012) inflated to 2018 prices
Operational costs (including meter reading, data processing and billing information) Heat meter annual costs/meter/year; Heat cost allocator annual costs/building unit/year	£70	£81	Based on mean value in BRE report (2012)
Water meter supply and installation cost /building unit	£150	£155	Consultation Response (2014), inflated to 2018 prices
Heat cost allocator supply/radiator	£40	£46	Consultation Response (2014) inflated to 2018 prices
Temperature control devices (installed) domestic controls/unit non-domestic controls/100m2 thermostatic radiator valves/radiator	£50	£50	Unchanged
Additional costs for billing where meters already installed		£35	Regulations Impact Assessment (2014)

Please provide your views and evidence on the proposed cost profile through the responses to the questions below.

Q19. 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.

Q20. 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?

Q21. Would you expect significant regional difference in supply and installation costs, e.g. in remote locations or areas with less developed markets?

Q22. 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?

Q23. 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? If this information is commercially sensitive and you prefer to send it in confidence, please send separately direct to our email address provided in the “How to respond” section and mark accordingly.

Future requirements of the revised EED 2018:

From 25 October 2020, billing and consumption information must be available to all final users where heat meters and heat cost allocators are installed. The definition of “final users” include final customers who purchase heating, cooling, and hot water for their own end-use and those who occupy a building or unit but do not have a direct or individual contract with the energy supplier.

Under the revised EED 2018, billing is no longer subject to an assessment of technical feasibility and cost-effectiveness. Furthermore, all heat meters and heat cost allocators installed after 25 October 2020 must be remotely readable devices where considered technically feasible and cost-effective to do so.

Heat suppliers may want to consider these potential future requirements for remotely readable meters and heat cost allocators when complying with the proposals set out in this consultation.

From 1 January 2027 all meters and heat cost allocators must be remotely readable, except where a Member State can show that this is not cost-effective.

Where remotely readable meters or heat cost allocators have been installed, billing and consumption information must be provided to final users with the following frequencies:

- From 25 October 2020, at least twice per year or quarterly, if requested or billing and consumption information is received electronically; and
- From 1 January 2022 at least monthly or via the internet and updated as frequently as allowed by the device (may be exempted outside the heating/cooling season).

1.3 Other costs

Administrative costs

The administrative costs outlined in this section are estimated costs to business as a result of the amendment to the Regulations. These administrative costs are a cost to the heat supplier and not included in the cost-effectiveness assessment of the installation of individual metering devices.

Heat suppliers will need to familiarise themselves with the amended Regulations and disseminate the information to staff. A standard cost model approach is used to estimate costs. It is assumed that at a cost of £24 per hour, one manager per business will spend 7.5 hours (one day) familiarising themselves and then disseminating information to other staff.

For information, we have included in the table below the cost to business for notification of the heat network to the Office for Product Safety and Standards (OPSS) and subsequent reporting, typically every four years. It is estimated that an estate manager or consultant would spend a total of 15 hours at an hourly cost of £23.³¹ However, this cost is not affected by the proposed amendment to the Regulations as the duty to notify remains unchanged.

The administrative costs currently do not include other potential costs as a result of the installation of metering devices, such as changes to billing software, disruption to operations during installation, or the need to consult or engage with customers on the way they are charged.

Table 5: Administrative costs per network

Description	Assumed Cost	Data source
Familiarisation with amended Regulations and dissemination of information to staff	Costs per hour: £24 Hours required: 7.5 Total cost: £180	ONS (2017)
Notifying OPSS and subsequent reporting (every four years)	Costs per hour: £23 Hours required: 15 Total cost: £345	ONS (2017)

Q24. Do you agree with the assumptions made and the total cost for the familiarisation with the Regulations and dissemination of information?

Q25. Are there any other costs to business not discussed that should be considered (for example engagement with customers, changes to billing systems)?

³¹ ONS (2017) "Annual Survey of Hours and Earnings: 2017 Provisional Results" (available at: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupatio n4digitsoc2010ashtable14>). The 15h estimate is based on evidence submitted to OPSS in 2016 by a sample of businesses that undertook assessments under the current Regulations.

Costs for technical feasibility and cost-effectiveness assessment

The assessment costs relate to the costs of undertaking the technical feasibility and cost-effectiveness assessments for the installation of individual heat meters and heat cost allocators. The assessment is carried out at building level for the whole of the building.

These assessment costs are a cost to heat suppliers and are not included in the cost-benefit calculation which determines the cost-effectiveness of installing individual metering devices.

The estimated time requirements have been informed by evidence submitted to BEIS Regulatory Delivery (now OPSS) in 2016 by a sample of businesses that undertook assessments under the current Regulations.

In order to assess the cost-effectiveness of installing heat meters or heat cost allocators, heat suppliers will need to collect data for each building on the network and calculate the associated costs. It is assumed this task will be undertaken by an estate manager or consultant, taking 12 hours at a cost of £23 per hour.³²

Technical feasibility assessments must also be carried out to ensure the building is suitably designed for the installation of meters. It is assumed this task will be undertaken by an estate manager at a cost of one hour per building and at a rate of £24 per hour.³³

This gives total costs for the assessment of technical feasibility and cost-effectiveness of installing individual meters or heat cost allocators as £303 per building.

Table 6: Costs for technical feasibility and cost-effectiveness assessment per building

Description	Assumed Cost	Data source
Cost-effectiveness assessment	Costs per hour: £23 Hours required: 12 Total cost: £276	ONS (2017), OPSS sample data (2016)
Technical feasibility assessment	Costs per hour: £24 Hours required: 1 Total cost: £24	ONS (2017), OPSS sample data

Q26. 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?

³² ONS, (2017), 'Annual Survey of Hours and Earnings: 2017 Provisional Results', available at: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupatio n4digitsoc2010ashtable14>

³³ ONS (2017) 'Annual Survey of Hours and Earnings: 2017 Provisional Results', available at: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/occupatio n4digitsoc2010ashtable14>.

2. Compliance deadline and scope of amended Regulations

This section of the consultation seeks your view on the length of the implementation period of the amended Regulations and a number of different issues related to the scope of the Regulations.

2.1 Deadline for installing individual consumption meters and billing based on consumption where technically feasible and cost-effective

We propose that the implementation period, following the amended Regulations coming into force, will last for six months and will include at least one complete summer period to minimise disruption of service. This means that, depending on the time the amended Regulations come into force, the compliance deadline is likely to fall in late 2020.

The implementation period allows heat suppliers to carry out a viability assessment and installation of heat metering devices and billing based on consumption where required.

We expect to publish the amended cost-effectiveness tool prior to the amended Regulations coming into force to allow for a longer period of familiarisation.

Q27. 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.

As indicated earlier in the consultation, should the revised EED 2018 be transposed into UK legislation, this will introduce a requirement that all new heat metering devices installed from 25 October 2020 are remotely readable. Furthermore, all existing heat metering devices would need to be remotely readable by 1 January 2027, except where Member States can show that this is not cost-efficient.

This potential requirement for new metering devices to be remotely readable will overlap with the implementation period planned for the amendments proposed in this consultation. We expect that by the time the amended regulations come into force, it is likely that most newly installed meters will be remotely readable in any case. However, we strongly urge heat suppliers to take this into consideration when complying with the amended Regulations.

Q28. 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.

2.2 Requirements related to accuracy and maintenance for all installed heat meters and heat cost allocators and billing based on consumption where technically feasible and economically justifiable

We are also consulting on extending the requirements on meter accuracy, maintenance, and billing to all customers with individual heat meters or heat cost allocators, including those where they were not installed under a duty of the Regulations. Where metering devices were installed on a voluntary basis, the requirements of the Regulations currently do not apply. This extension of scope includes meters installed before the Regulations came into force, where they were not mandatory, and cases where the requirement depends on a positive outcome of an assessment of technical feasibility and cost-effectiveness and the tool was not available.

Where the Regulations mandate that a heat supplier installs heat meters it places a duty on the heat supplier to ensure that these devices accurately measure, memorise and display the consumption of heating, cooling, and hot water by the final customer (regulation 5 to the Regulations as amended). Where heat cost allocators are mandated, there is a duty on the heat supplier to ensure that the devices accurately measure, memorise and display the consumption of heating (regulation 6(6) to the Regulations). Furthermore, where meters or heat cost allocators are mandated by the Regulations, the heat supplier must, so far as possible, ensure that they are continuously operating, maintained, and periodically checked for errors (regulation 8 to the Regulations).

The Regulations also require that, where it is technically possible and economically feasible, bills and billing information must be based on consumption where the installation of heat meters or heat cost allocators are mandatory (regulation 9 to the Regulations). We are interested to hear your view on whether you consider a requirement to bill based on consumption to exclude a Heating as a Service model.

We believe that these requirements linked to accuracy, operation and maintenance as well as billing based on consumptions are fundamental to deliver and maximise the benefits of heat metering and should therefore apply to all installed meters and heat cost allocators, whether mandated by the Regulations or installed voluntarily or before the Regulations came into force.

With regards to billing based on consumption, this will remain conditional on being technically possible and economically feasible, as described in the section on metering costs above (Section 1.2).

This proposed extension of scope only applies from the time when the amended Regulations come into force, which means that a heat supplier cannot be sanctioned for non-compliance occurring prior to the amended Regulations, and therefore the extended scope, coming into force.

Q29. Should heat suppliers ensure that all installed meters and heat cost allocators accurately measure, memorize and display consumption?

Q30. 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?

Q31. 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?

Q32. Would you consider a requirement for billing based on consumption to prevent a Heating as a Service model?

3. Further amendments to clarify the Regulations

We further intend to clarify a number of issues that may appear unclear or ambiguous in the current Regulations. These are set out below for information.

3.1 Change of ownership of heat network

There is no requirement in the current Regulations to re-notify or re-test for viability of heat metering devices on change of ownership of a heat network. The amended Regulations will retain and clarify this position.

3.2 Buildings with only one final customer

The Regulations require that heat meters must be installed in buildings with one final customer, which are supplied by a district heat network, unless it would not be technically feasible and cost-effective to do so. If it is not technically feasible or cost-effective, there is no requirement to install heat cost allocators, thermostatic radiator valves and hot water meters in buildings with one final customer. The current requirement to assess the economic viability of heat cost allocators applies only to buildings with more than one final customer which are supplied by a district heat network (regulation 6(1)-(3) to the Regulations).

We propose not to amend the Regulations at this time to align the requirements to install heat cost allocators, radiator valves, and hot water meters in buildings with one final customer. Future requirements of the revised EED 2018 would supersede this requirement if and when they are transposed, which is likely to be before the end of the compliance period proposed in this consultation.

Future requirements of the revised EED 2018:

Existing single occupancy buildings on district heat networks would be required to install heat meters in all cases and would therefore be added to the 'Viable' class. Following implementation of this requirement in the revised EED 2018, there would no longer be a requirement to assess the viability of installing heat meters or heat cost allocators.

3.3 Sanctions for inaccurate meters

The Regulations stipulate that, where meters or heat cost allocators are installed under a duty of the Regulations, the heat supplier must ensure that the metering devices accurately measure, memorise and display the consumption of heating, cooling or hot water by a final customer (regulation 5 and 6(6) to the Regulations). Due to a drafting error, non-compliance with this requirement for heat meters is currently not listed as an offence and can therefore not be sanctioned. We plan to rectify this by inserting the necessary reference in the list of offences (regulation 11 to the Regulations).

3.4 Installation of heating controls where individual meters are mandatory without a cost-effectiveness test

Temperature control devices are important to enable customers to control their consumption of heating or cooling and realise the benefits of reduced consumption. The installation of heating controls is currently only required where the assessment of cost-effectiveness and technical feasibility creates a duty under the Regulations to do so (regulation 4(8) to the Regulations). This category of buildings falls into the new 'Open' class. There is currently not the same obligation to install heating controls where individual meters are mandatory without an assessment of the cost-effectiveness and technical feasibility, covering buildings falling into the new 'Viable' class.

We plan to amend the Regulations to align the requirement to install temperature control devices in all cases where meters are installed under the Regulations.

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

If you need a version of this document in a more accessible format, please email enquiries@beis.gov.uk. Please tell us what format you need. It will help us if you say what assistive technology you use.