Department for Levelling Up,
Housing & Communities

Closed consultation

The Future Homes and Buildings Standards: 2023 consultation

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Applies to England

Contents

This publication is available at https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation/the-future-homes-and-buildings-standards-2023-consultation

The Future Homes and Buildings Standards: 2023 consultation on changes to Part 6, Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for dwellings and non-domestic buildings and seeking evidence on previous changes to Part O (overheating)

1. Scope of consultation

1.1 Scope

1.1.1 Topic of this consultation

The government is committed to improving the energy efficiency and reducing the carbon emissions of new homes and non-domestic buildings. Energy efficiency requirements for new homes and non-domestic buildings are set by Part L (Conservation of Fuel and Power) and Part 6 of the Building Regulations 2010 (“the Building Regulations”). This consultation sets out our plans for achieving the Future Homes Standard and Future Buildings Standard. It sets out technical proposals for changes to the Building Regulations, the associated Approved Document guidance and calculation methods.

In December 2021, a new legal requirement was introduced in the Building Regulations (Part O) to reduce the risk of overheating in new residential buildings. We expect the majority of housebuilders will now have had experience applying Part O to real projects. The relevant parts of the industry should now have had time to understand how the new regulations and guidance are working in practice. As such, we see this as a suitable time to seek views and evidence on Part O.

The majority of this consultation has regard to new homes and non-domestic buildings. A small number of sections are also relevant to existing buildings. These are:

- Material Change of Use
- Some elements of Updated Guidance and Minimum Standards
- Real-world performance of homes: changes to Approved Document L, Volume 1: Dwellings and Approved Document F, Volume 1: Dwellings to improve the commissioning of fixed building services in new and existing homes.

- Part O (Call for Evidence)

1.1.2 Audiences

This consultation will be of interest to:

- Property developers and builders
- Construction industry professionals, for example, installers, architects, designers, engineers, surveyors and sub-contractors
- Manufacturers and suppliers of construction materials
- Environmental organisations
- Local authorities, other building control bodies and competent person scheme operators
- National representatives and trade bodies
- Professional bodies and institutions
- Research and academic organisations
- Energy sector professionals
- Public health professionals

Specific elements may be of interest to members of the public.

1.1.3 Geographical scope

This consultation relates to Buildings in England only.

1.1.4 Out of scope

Embodied carbon, the carbon emissions generated from the production and transportation of building materials, construction process and maintenance of a building - is beyond the scope of this consultation and the existing Building Regulations. We recognise, however, that embodied carbon is a significant contributor to the whole life carbon of a building and that it is therefore crucial that we take steps to address it. The government intends to consult on our approach to measuring and reducing embodied carbon in new buildings in due course.

Regulated energy use within the context of building regulations pertains to the energy consumption derived from intentionally designed and controlled building services and fixtures, encompassing vital elements such as space heating, cooling, hot water provision, and lighting. These are integral components of a building’s planned design, contributing to its functional efficiency. In contrast, unregulated energy use refers to energy consumption stemming from systems or processes that operate beyond the oversight of the Building Regulations and are therefore not addressed in this consultation.

Some buildings are exempt from the Building Regulations and are therefore out of scope of this consultation. Water efficiency and water scarcity are also beyond the scope of this consultation. As set out in the Plan for Water, the Government plans to review water efficiency options in planning, building regulations, and voluntary schemes for non-household buildings such as offices and hotels. Furthermore, the Government also intends to review the inclusion of water scarcity information within Energy Performance Certificates for buildings.

Policy relating to Biodiversity Net Gain, Local Nature Recovery Strategies and sustainable drainage systems are also beyond the scope of this consultation. The government has set out that developers in England will be required to deliver 10% “Biodiversity Net Gain” from January 2024 onwards when building new housing, industrial or commercial developments meaning by law they must deliver a net positive for the local environment, for example by creating new habitats and green spaces. Biodiversity Net Gain for small sites will still be applicable from April 2024, and implementation for Nationally Significant Infrastructure Projects remains planned for 2025.

The government have appointed 48 responsible authorities in England to lead on preparing a Local Nature Recovery Strategy for their area. Responsible authorities will work with other organisations and partners to agree what should be included in their local nature recovery strategies. The Levelling Up and Regeneration Act introduces the requirement for plan-makers, at all tiers of planning, to take account of relevant Local Nature Recovery Strategies with specific reference to the objectives and provisions outlined in the Environment Act.

New developments and the environment will also benefit from a reduced risk of flooding and pollution thanks to a new approach to drainage. The government has committed to requiring sustainable drainage systems in new developments, with implementation expected in 2024.

1.1.5 Impact assessment

Two impact assessments are published alongside this document.

1.2 Basic information

1.2.1 Body/bodies responsible for the consultation

Department for Levelling Up, Housing and Communities

1.2.2 Duration

This consultation was scheduled for 12 weeks from 13 December 2023 to 6 March 2024. This deadline has now been extended another 3 weeks to 11:59 on 27 March 2024.

1.2.3 Enquiries

For any enquiries about the consultation please contact: FutureHomesandBuildingsStandards@levellingup.gov.uk

1.2.4 How to respond

Responses to the consultation should be submitted using this survey link (https://consult.levellingup.gov.uk/energy-performance-of-buildings/fhbs-2023-consultation).

We strongly encourage responses via the online survey. Using the online survey greatly assists our analysis of the responses, enabling more efficient and effective consideration of the issues raised.

If it is not possible for you to use the online survey, you can respond through email. If you are responding in this way, please make it clear which questions you are responding to.

Email responses should be sent to: FutureHomesandBuildingsStandards@levellingup.gov.uk

Responses can be sent by post to:

> Future Homes and Buildings Standards consultation
> Building Systems and Net Zero Directorate
> Department for Levelling Up, Housing and Communities
> Fry Building
> 2 Marsham Street
> London
> SW1P 4DF

1.2.5 Acknowledgments

We would like to extend our gratitude to the members of the industry working groups and various trade bodies for extending their time and expertise, which has assisted officials from DLUHC and the BSR in developing this consultation.

1.2.6 About you

This consultation seeks views from a diverse range of stakeholders. When responding to this consultation please specify:

Question 1. Are you responding as / on behalf of (select all that apply):

- Member of the public
- Builder/Developer
- Building Control Approved Inspector/Registered Building Control Approver
- Competent Persons Scheme Operator
- Designer/Engineer/Surveyor
- Architect
- Energy sector
- Installer/Specialist sub-contractor
- Local authority
- Housing Association
- Manufacturer/Supply chain
- National representative or trade body
- Professional body or institution
- Property Management
- Research/Academic organisation
- Other

Question 2. If you are responding as a member of the public/a building professional, what region are you responding from? [drop down list of England regions + other]

Question 3. If you are responding as a member of the public, are you a [checklist: private tenant, housing association/local authority housing tenant, private landlord, homeowner]

Question 4. If you are responding on behalf of a business/organisation, what is the name of your business/organisation? [free text]

Question 5. If you are responding on behalf of a business/organisation, where is your business/organisation based/registered? [drop down list England regions + other]

Question 6. When you respond it would be useful if you can confirm whether you are replying as an individual or submitting an official

response on behalf of an organisation and include:

- your name,
- your position (if applicable),
- the name of organisation (if applicable),
- an address (including post-code),
- an email address, and
- a contact telephone number

Your personal data is being collected so that we can contact you regarding your response and for statistical purposes, an essential part of the consultation process. We may also use it to contact you about related matters. Please see the Privacy Notice in Annex A for further information on how we use this data.

2. Acronyms

c-MEV – Centralised Mechanical Extract Ventilation
DPER – Dwelling Primary Energy Rate
DFEE – Dwelling Fabric Energy Efficiency Rate
DER – Dwelling Emission Rate
dMEV – Decentralised Mechanical Extract Ventilation
DSM – Dynamic Simulation Model
HEM – Home Energy Model
IA – Impact Assessment
MVHR – Mechanical Ventilation with Heat Recovery
NCM – National Calculation Methodology
PCDB – Product Characteristics Database
PV – Photovoltaic
SAP – Standard Assessment Procedure
SBEM – Simplified Building Energy Model
TPER – Target Primary Energy Rate
TFEE – Target Fabric Energy Efficiency Rate
TER – Target Emission Rate

3. Introduction

The UK government has set a legally binding target of reaching net zero greenhouse gas emissions by 2050. From homes to offices, the UK's built environment is responsible for around 30% of the UK's greenhouse gas

emissions; decarbonising new buildings is an important part of that challenge. As set out in the Heat and Buildings Strategy (https://www.gov.uk/government/publications/heat-and-buildings-strategy), this also presents substantial opportunities for the UK: to grow skills, build diverse job markets, level up across the country, reduce bills by improving efficiency, tackle fuel poverty, have warmer and better buildings, and ensure our energy system is secure and fit for the future. The standards we set for the construction of new homes and non-domestic buildings can put us on the right path to net zero by 2050 and allow us to take advantage of these opportunities. Higher standards of energy efficiency and moving to cleaner sources of heat allow us to continue to improve the quality of our buildings and reduce running costs for occupants, keeping energy bills and down and ensuring buildings are warm and comfortable to live in. This will likely increase build costs, but there will also be wider benefits to local supply chains for renewable technologies and skills developments for the future. Making our homes and workplaces healthier and more comfortable also means making them resilient to the impacts of climate change.

The minimum energy efficiency requirements for new homes and non-domestic buildings are set through Part L (Conservation of fuel and power) of Schedule 1 and Part 6 of the Building Regulations. In 2021 the government implemented an uplift to Part L and introduced regulations to reduce overheating risk in new residential buildings (Part O), which came into effect on 15 June 2022. As a result of the uplift, new homes and non-domestic buildings are now expected to produce significantly lower carbon emissions compared to those built to the 2013 standards. The uplift represents an important step towards a cleaner, greener and safer built environment.

While progress has been made, the Heat and Buildings Strategy (https://www.gov.uk/government/publications/heat-and-buildings-strategy) outlines the need to eliminate virtually all emissions arising from heating, cooling and energy use in our buildings. The 2025 Future Homes and Buildings Standards aim to build on the 2021 Part L uplift and set even more ambitious requirements for energy efficiency and heating for new homes and non-domestic buildings. These standards will be in line with meeting our 2050 net zero target and will mean no further work will be needed for new buildings to produce zero carbon emissions as the electricity grid decarbonises. They can also reduce running costs, and, coupled with improvements already made to ventilation and energy efficiency standards, can prevent damp and mould, excess cold and heat, and improve air quality. Delivering warm, safe and decent homes is a priority for government in setting these new standards.

When we consulted on the 2021 Part L uplift, we also outlined our overarching vision for the Future Homes and Buildings Standards. We published our responses to the 2 stages of that consultation in January 2021 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attach

ment_data/file/956094/Government_response_to_Future_Homes_Standard_consultation.pdf) (PDF, 1.21 MB) and December 2021 (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1040925/Future_Buildings_Standard_response.pdf) (PDF, 3.05 MB). This consultation builds on the valuable feedback we received during that process and sets out more detailed proposals for the 2025 Future Homes and Buildings Standards.

The Building Safety Regulator (BSR) within the Health and Safety Executive was established by the Building Safety Act 2022 and has a key legal duty to keep the safety and standards of all buildings under review. The BSR provides the Department with technical advice on new proposals related to buildings. The BSR has worked together with DLUHC on the development of these proposals and produced the technical specifications for the Future Homes and Buildings Standards.

3.1 Summary of proposals

A summary of the main proposals in this consultation is provided below:

New buildings: Setting the performance requirements at a level which ensures new homes and non-domestic buildings have high fabric standards, use low-carbon heating and are ‘zero-carbon ready’ (meaning no further work will be needed for them to have zero carbon emissions once the electricity grid has fully decarbonised). Importantly we present options to reduce running costs, while maintaining thermal comfort, balanced against build costs.

Metrics: Retaining existing metrics for use in the national calculation methodologies as these effectively support our policy priorities for the Future Homes and Future Buildings Standards. We therefore propose that using the current metrics remains optimal for use in the national calculation methodologies. These metrics cover the most important aspects of building performance, but also do not excessively inhibit design flexibility for developers, designers and architects.

Guidance on fabric and fixed building services: Improvements to the minimum standards for fixed building services and on-site electricity generation. We also propose improving the guidance and minimum standards for heat losses from building services which directly support the installation of ‘zero-carbon ready’ technologies. This includes new guidance for the installation of smart meters (please see Section 10 (Smart Meters)). We do not propose to change the minimum building fabric standards for homes, provided through the Approved Document guidance, compared to the Part L 2021 standards. This is because we believe that the 2021 fabric

minimum standards provide a good basis for the Future Homes and Buildings Standards.

Material change of use: Seeking views on improved standards for dwellings created through material change of use. These dwellings contribute to our housing supply and affordable housing objectives but can perform less well relative to new build homes. These changes intend to protect consumers from high bills and reduce emissions as far as practicable.

Real-world performance of homes: Gathering evidence around 2 proposed measures to improve building performance in new homes against expected energy use: fabric performance testing and improving Home User Guides. Also proposing changes to Approved Document L, Volume 1: Dwellings and Approved Document F, Volume 1: Dwellings to improve the commissioning of fixed building services in new and existing homes. Ensuring that buildings and building services perform as designed will help to lower energy bills, improve housing quality and increase consumer confidence in new homes.

Heat networks: Supporting the expansion of cleaner heat networks. New homes and non-domestic buildings can be connected to existing heat networks, but they should uphold the performance requirements outlined in this consultation. This means that heat networks should produce sufficient clean heat to heat new homes and non-domestic buildings added to the network. At a minimum, the heat required by any additional homes or buildings connected to an existing heat network should match the low-carbon heat generation capacity of the network.

Accounting for exceptional circumstances: Changes to the regulations permitting local authorities to relax or dispense the energy efficiency requirements in cases where they judge that being required to fully meet the standards would be unreasonable. This is in recognition of the fact that as the energy efficiency requirements we set for new buildings become stricter the chances that a small number of buildings legitimately cannot be designed to meet them increases.

Legislative changes to the energy efficiency requirements in the Building Regulations: Changes to the Building Regulations to repeal redundant regulations and to reflect that reducing carbon emissions is a central aim of the Future Homes and Buildings Standards.

Review of our approach to setting standards: For domestic buildings, the government is separately consulting on the new ‘Home Energy Model’ (HEM), which will replace the Standard Assessment Procedure (SAP) for the energy rating of new homes. This consultation and associated documents are linked below.

Alongside this, for domestic buildings we are consulting on improvements to our current ‘notional building’ approach to setting energy efficiency requirements. This includes reviewing changes to standardised assumptions, heat pump sizing methodologies, weather, buildings containing multiple dwellings, secondary heating, window and door U-value calculations and thermal bridging.

For non-domestic buildings, a number of improvements and updates are proposed to the National Calculation Methodology used to assess building performance in non-domestic buildings. The National Calculation Methodology is implemented through both commercially produced Dynamic Simulation Models (DSMs) and the Simplified Building Energy Model (SBEM).

Transitional arrangements: We are consulting on 2 options for transitional arrangements, comprising a 6-month or up to 12-month period between the Future Homes and Buildings Standard legislation being laid (in 2024) and it coming into force (in 2025), followed by a 12-month transitional period. These transitional arrangements are intended to allow industry sufficient time to adapt whilst also driving forward progress towards our 2050 net zero target. We are also consulting on closing previous arrangements.

Overheating (call for evidence): Seeking evidence on implementation of the Part O building regulation introduced in 2021 to reduce overheating in new homes, and intent to extend this standard to homes created through conversions.

3.2 Additional documentation

We have published a number of documents alongside this consultation, which can be found at the Future homes and buildings Standards consultation page (https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation). These documents provide consultees with the necessary detail to respond to many questions in the consultation document. These documents are:

- Three draft Approved Documents:
  - draft Approved Document L, Volume 1: Dwellings
  - draft Approved Document L, Volume 2: Buildings other than dwellings
  - draft Approved Document F, Volume 1: Dwellings
- The Future Homes Standard 2025: dwelling notional buildings for consultation. This guide sets out summary specifications for the notional dwellings. The notional building specification for non-domestic buildings is found in the NCM modelling guide (below).

- The Department for Energy Security and Net Zero's draft Guidance for Smart meter installations in domestic new build premises.
- Two consultation-stage impact assessments, one for homes and one for non-domestic buildings. These impact assessments provide an appraisal of the potential impacts of the proposed changes, including carbon emissions, energy bills, and construction costs.

For domestic buildings, to help the reader evaluate the proposals in this consultation, the Department for Energy Security and Net Zero has also published the Home Energy Model: Future Homes Standard assessment consultation tool. A browser-based application, this consultation tool gives the opportunity to interact with the model by providing a basic user interface.

- A consultation tool (http://www.homeenergymodelconsultation.org.uk) to enable stakeholders understand whether different designs are likely to comply with the Future Homes Standard.

For non-domestic buildings we have published on the NCM website (https://www.uk-ncm.org.uk/):

- a consultation version of the National Calculation Methodology (in the form of a draft National Calculation Methodology Modelling guide).
- a version of SBEM (called cSBEM) which implements this methodology.

The Department for Energy Security and Net Zero has also published a series of documents related to this consultation, as well as their own consultations on the Home Energy Model (HEM).

To ensure that calculation methods are well suited to the technologies required of new, 'zero-ready homes', the Department for Energy Security and Net Zero has decided to undertake the first complete overhaul of the SAP methodology to ensure it is fit for Net Zero. We encourage stakeholders to provide feedback on this new approach through these separate consultations:

- Home Energy Model consultation (https://www.gov.uk/government/consultations/home-energy-model-replacement-for-the-standard-assessment-procedure-sap)
- Home Energy Model: Future Homes Standard assessment consultation (https://www.gov.uk/government/consultations/home-energy-model-future-homes-standard-assessment)

3.3 Timetable for implementation

We intend to publish the new regulations and associated guidance in 2024, with the standards coming into force from 2025. This timeline delivers on the government's net zero commitments, while also allowing sufficient time for the construction sector to develop the necessary skills and supply chains.

4. Performance requirements for new buildings

4.1 Background

The energy performance of buildings has an important contribution to make to meeting the government's target of net zero emissions by 2050. Homes and non-domestic buildings contribute 30%[footnote 1] of the UK's greenhouse gas emissions, primarily through energy used for space heating and hot water. What we build today will mostly still exist in 2050 and will make use of energy in the period up until that date. It is important, therefore, that new homes and non-domestic buildings are built in a way that puts us on the right path to achieve this net zero target while ensuring high-quality homes continue to be built. This is why the government has previously committed that new homes and non-domestic buildings built under these new standards will deliver significant carbon savings and be 'zero-carbon ready' – they will need no retrofitting to produce zero carbon emissions as the electricity grid decarbonises.

It is also necessary that these changes are deliverable by industry. It is cheaper and easier to install energy efficiency measures and low-carbon heating when homes and non-domestic buildings are being built than to retrofit them afterwards. Not all measures, however, are cost effective in reducing carbon; and not all changes we might make are practical for industry to deliver. These proposals have been developed with this in mind.

The way homes and non-domestic buildings perform can impact the energy bills occupants incur and the comfort they feel. More efficient heating, hot water and ventilation systems can reduce running costs, and the addition of renewable energy generation (such as solar photovoltaic panels) can reduce annual costs for occupiers by offsetting energy use and provide additional energy resilience. High performing homes also have considerable health and wellbeing benefits. Good building fabric and airtightness, coupled with adequate ventilation, can prevent damp and mould, excess cold and heat, and improve air quality. This is a priority for government in setting these new standards.

In 2021, we consulted on whether standards for non-domestic buildings should be subject to a phased implementation or be introduced together in 2025. Among respondents to the 2021 consultation, there was considerable support for a 2025 implementation date for all building types. Due to this, and significant developments in low carbon heating solutions which are well suited to more challenging building types in recent years, we intend to implement the Future Buildings Standard for all building types at the same time, subject to the transitional arrangements proposed in Section 14.

4.1.1 How does the government set new whole-building standards?

Through the Building Regulations the government sets whole-building, minimum energy performance requirements, which control the building's regulated energy usage and carbon emissions (and for homes also controls whole-building fabric efficiency). A review of this approach is set out in Section 13.

The current specifications of the notional buildings are set out in the SAP 10.2 Appendix R and the 2021 version of the National Calculation Methodology Modelling Guide for non-domestic buildings. These specifications describe a cost-effective way of meeting the performance requirements for common building types but is not a prescriptive standard. While some developers choose to follow these specifications closely, we know that many developers – particularly those building large numbers of homes and non-domestic buildings – choose to develop their own approaches to meeting the requirements. This offers flexibility to innovate and tailor designs to individual sites while ensuring all new homes and non-domestic buildings have the required level of overall energy performance. All of the standards should be met at the building level; currently there is no allowance for a wider site approach or for the offsetting of emissions.

Performance requirements for new homes and non-domestic buildings are set using a notional building approach. A notional building is a theoretical building the same size, shape and orientation as the actual building being designed, but with reference values used for many characteristics of the building. These reference values include features like the U-value (thermal transmittance) of a thermal element, the heating system or the ventilation system.

The notional building approach uses the national calculation methodologies (see Section 13). To determine compliance with the regulations, building modelling software uses these methodologies to compare results for the notional building against the results for the proposed building. The methodology used for homes, from 2025, will be the Home Energy Model: Future Homes Standard Assessment (replacing SAP). For non-domestic buildings, the methodology is outlined in the 2025 National Calculation Methodology Modelling Guide which is anticipated to be implemented through both the Simplified Building Energy Model (SBEM) and Dynamic Simulation Models (DSM).

Designers use the notional building to calculate performance requirements for their specific designs. The performance requirements are currently expressed through 3 metrics:

- the target primary energy rate
- the target emission rate
- (only for new homes) the target fabric energy efficiency rate

These metrics are discussed in Section 5. Since the performance requirements are set using the notional building (which is dependent on the size, shape and orientation of the actual building design being evaluated), they vary from building to building. A flat, for example, will have a different set of requirements to a detached home. These variations allow greater flexibility in the design of buildings, and account for the inherent variability across different building types.

4.1.2 Objectives in setting the Future Homes and Buildings Standards

To set the new requirements outlined below, we modelled many different building specifications to produce proposed notional buildings. We used different reference values and modelled different representative building types, engaging throughout with industry and other experts, until we were satisfied that we have identified building specifications that achieve the most appropriate balance of delivering:

- significant carbon savings.
- new homes and non-domestic buildings that are high-quality and affordable to run today, and over the long term, with efficient, low-carbon heating, the option of renewable generation, and good levels of building fabric.
- new homes and non-domestic buildings that are ‘zero-carbon ready’, meaning that because they use electric or other renewable energy sources, no work will be necessary to allow them to achieve zero carbon emissions when the electricity grid is fully decarbonised. This means gas boilers, including hybrid and hydrogen-ready boilers, will not meet the proposed standards.
- cost-effective, affordable, practical and safe building solutions, meaning they are deliverable by industry given likely capacity, skills and supply chains, on sites across the country.

Further information on the modelling can be found in the impact assessments which accompany this consultation.

4.2 Performance requirements for homes

For homes, we have developed performance requirements considering technologies best suited to each of houses, low-rise flats and mid- to high-rise flats. This is because each require subtly different approaches to meet our objectives of quality, affordability, carbon savings, and deliverability, given the physical differences of each building type. To note, these specifications are of the notional building and developers will continue to have flexibility to meet performance requirements in other ways.

There are 3 major variables across the specifications presented below:

4.2.1 Heat source

All performance requirements are based on notional buildings with an efficient air source heat pump or a 4th generation heat network that uses air source heat pumps. We considered other types of widely commercially available electric heating, such as direct electric and immersion heaters. While these achieve the goal of being ‘zero-carbon ready’ they can be more expensive to run than modern heat pumps, pushing up bills for households.

We found no practical way to allow the installation of fossil fuel boilers while also delivering significant carbon savings and ‘zero-carbon ready’ homes. As such, we do not expect fossil fuel heating, such as gas, hybrid heat pumps and hydrogen-ready boilers, will meet these standards. The standards proposed are also unlikely to allow the installation of biofuel systems, including wood and manufactured solid fuels.

New low carbon communal and district heat networks will likely be the preferred way of providing heating and hot water to blocks of flats under the Future Homes Standard.

Heat networks can be highly efficient ways of delivering heat because the heat pumps on the network can be paired with thermal stores allowing the heat to be produced at times of low-cost, low-carbon electricity; such function also reduces peak demand on the local electricity grid. The heat pumps in heat networks often have a higher seasonal coefficient of performance and can be run to optimise their coefficient of performance. A concurrent notional building is being proposed to set the standard for new heat networks, which can be seen below.

4.2.2 Solar PV panels

We are consulting on 2 options, one with and one without solar PV panels. Adding solar PV panels to the notional building decreases the target emission rate and delivers higher bill savings for households. Self-generation and consumption also offer households security from fluctuations in wholesale electricity prices and offsets some of the increased electricity demand on the grid from electrification of heat providing greater resilience. However, while the efficiency of solar PV panels has improved substantially over the last decade, the pace of electricity grid

decarbonisation means that solar PV panels make a relatively small contribution to the carbon savings of individual homes compared with the switch to low-carbon heating. Noting that electricity grid decarbonisation relies on significant increases in both large-scale and rooftop solar capacity. As with some other low-carbon technologies, the installation of solar PV panels represents a trade-off between upfront capital costs and longer-term benefit of reduced carbon emissions and bills to occupants. While we do not think either option will have significant impacts on housing supply and affordability, we are keen to hear evidence from consultees about possible impacts on viability and deliverability of housing developments as well as the benefits for occupants and grid resilience.

4.2.3 Fabric

The performance requirements in this consultation closely resemble the fabric standards in the 2021 Part L uplift to the Building Regulations. We investigated including better walls, floors, roofs, triple glazing and improved thermal bridging. However, the only cost effective and practical improvement we found could be made to the standard was an improvement in airtightness. This improvement in airtightness is matched with the change to a decentralised mechanical extract ventilation system, in line with Approved Document F, Volume 1: Dwellings.

The decision to keep fabric standards largely the same is driven by several factors. Firstly, the level set in 2021 will ensure that (with adequate ventilation) new homes do not generally experience damp and mould or excessive temperatures; an increase in fabric beyond this level does not give significant additional benefit. Secondly, it allows efficient low carbon heating, including modern heat pumps, to function well. The move to low carbon heating is central to the government's commitments to decarbonise housing, and so fabric must be set at a level that allows these systems to work efficiently. Again, increasing fabric beyond the proposed level does not deliver significant gains to the efficiency of heating systems. Thirdly, because the electricity grid is decarbonising rapidly, and the efficiency of heat pumps significantly reduces energy demand, further reducing total energy use is relatively less important than switching to electric sources of heat in efforts to decarbonise. Grid decarbonisation also means that fabric improvements are increasingly not a cost-effective intervention to reduce carbon. This means that as we increase fabric beyond the proposed level, the monetary value of carbon saved by increasing fabric efficiency is less than the cost of installing that additional fabric. As such, there are other interventions that decrease carbon and consumer bills in a more cost-effective way, such as (above) switching heat source and including solar PV panels.

4.2.4 Domestic notional building options

We are consulting on 2 options. A summary of these notional buildings, and their costs and benefits, is shown in Tables 4.1 and 4.2. The government is

committed to minimising energy bills and making it cheaper for occupants to heat their homes. Both options would result in lower bills than typical existing homes because they include a high efficiency air source heat pump and good fabric standards to minimise heat loss from windows, walls, floors and roofs (the same as the standards set in the 2021 uplift to Part L) and high performance standards for domestic hot water storage.

Option 1 balances higher additional build costs against even lower consumer bills – by including solar PV panels, a wastewater heat recovery system, increased airtightness and a decentralised mechanical ventilation (dMEV) system. Option 2, which does not include those elements, would have lower additional build costs but be less beneficial in terms of consumer bills, although these would nonetheless be lower than bills in typical existing homes.

Option 1 is the most cost-effective option to maximise carbon savings, balanced against reducing energy bills for households. Although this option is cost-effective at reducing carbon overall, it comes with additional upfront costs for developers and may therefore affect overall housing supply.

Option 2 is the minimal approach to achieve 'zero-carbon ready' homes that deliver at least 75% carbon savings compared to 2013 energy efficiency requirements. While a home built to Option 2 would be more expensive to run than Option 1, Option 2 still delivers expected bill savings for households moving from a typical home.

Both options will deliver significant bill savings for consumers when compared to those for a typical existing home.

Ensuring all our new homes are net-zero ready also has a significant benefit to consumers in the longer term as it removes any future burden to retrofit to net-zero. By shifting the burden to developers at the point of construction, this will benefit households, who may be unable to afford retrofits.

We propose recognising the practical barriers of including solar PV panels and wastewater heat recovery in some circumstances. To do this, the Option 1 notional building for homes will have features that are removed dependent on the type of building. These are as follows:

- For blocks of flats over 15 storeys, solar PV panels will be removed. This is in recognition of the fact that where buildings have limited roof space this may be needed for plant, such as communal heating system components. Installing a very small amount of solar may also have disproportionate maintenance costs compared to the generation benefit. We would welcome views on the height threshold of 15 storeys.
- For single storey dwellings, including single storey flats and bungalows, wastewater heat recovery systems will be removed. This is in recognition of the fact that horizontal systems are less efficient and more expensive than vertical systems.

We are also consulting on a concurrent notional building for new homes connected to heat networks.

Full details of the notional buildings are included in The Future Homes Standard 2025: dwelling notional buildings for consultation published alongside this consultation. Please see draft Approved Documents and the separate 'Home Energy Model: Future Homes Standard assessment' (Section 3.2) consultation for the methodology used to produce these performance requirements. To test the notional building and the results produced by the new Home Energy Model, consultees are invited to use the Home Energy Model: Future Homes Standard assessment consultation tool (Section 3.2).

Table 4.1: Summary of proposed main notional building specifications for homes – Options 1 and 2. For full specification see The Future Homes Standard 2025: dwelling notional buildings for consultation.

Building Element	Option 1	Option 2
Roof U-value (W/m^2K)	0.11	0.11
External wall U-value (W/m^2K)	0.18	0.18
Floor U-value (W/m^2K)	0.13	0.13
Window U-value (W/m^2K) [1]	1.2	1.2
Door U-value (W/m^2K) [1]	1.0	1.0
Wastewater heat recovery	Yes[2]	No
Heat source	A notional air source heat pump equivalent to ErP A++	A notional air source heat pump equivalent to ErP A++
Hot water system	Hot water storage vessel, 120mm insulation	Hot water storage vessel, 120mm insulation
Airtightness		

Building Element	Option 1	Option 2
(m3/m2.h @ 50Pa)	4	5
Ventilation	dMEV	Natural ventilation with intermittent extract fans
Renewable energy	High efficiency solar PV panels covering equivalent of 40% of ground floor area[3],[4]	None

[1]For proposed changes to methodology for calculating door and window u-values see Section 13.3.5
[2]Removed for single storey dwellings
[3]Removed for flats over 15 storeys in height
[4]or for flats, dwelling floor area divided by the number of stories in block

Table 4.2 below summarises the costs and benefits of these options for a semi-detached home and presents a comparison to typical existing homes and homes built to the 2021 standards. A full assessment of impacts can be found in the impact assessment for domestic buildings.

Table 4.2: Impact of options on carbon savings, energy bills, and build costs

	Capital Cost Uplift for Developers (£)	Annual Heating & Hot water Bill (inc. Standing charges)	Change from 'typical' existing annual heating & hot water bill	Annual Average Operational Emissions (tCO2e) [1]	Cost to Consume to Retrofi to Net Zero (prior to any Gov subsidies
Typical Existing Home	N/A – already built	£1,430-£2,640[2]	Baseline	2.2-4.6tCo2e/yr	~£11,400-£12,650, higher if fabric retrofit needed
2021 Uplift	Baseline – current	£640	£790-£2,000	1.4tCo2e/yr	~£9,800 [3]

	Capital Cost Uplift for Developers (£)	Annual Heating & Hot water Bill (inc. Standing charges)	Change from 'typical' existing annual heating & hot water bill	Annual Average Operational Emissions (tCO2e) [1]	Cost to Consume to Retrofi to Net Zero (prior to any Gov subsidies
	standard		decrease		
FHS Option 1	~£6,200 (4%)	£520	£910-£2,120 decrease	0.05tCO2e/yr	£0
FHS Option 2	~£1,000 (1%)	£1,220	£210-£1,420		
decrease	0.1tCO2e/yr	£0			

[1]Based on the average annual carbon saving over the 60 year appraisal period.
[2]For bill and annual average emissions for existing home, different methodologies have been used to reflect the level of uncertainty related to an existing households energy usage. All bill calculations use Green Book 2025 retail prices[footnote 2]. Modelling often over-estimates actual usage as it does not reflect people choosing to underheat all or part of their home, periods when homes are unoccupied, or inaccuracies in modelling methodologies. Hence, the bottom of the range uses the Ofgem average regulated usage for a semi-detached home, whilst the upper end is based on a typical EPC D home calculated using similar government modelling methodologies used to calculate the FHS option bills. No matter the approach, it shows that moving from a typical existing home to an FHS Option 1 or 2 home would lower energy bills.
[3]These costs have learning rates applied – these are the rates that take into account the reduction in costs due to technological improvements. Also included are replacement costs. This is the full cost of retrofit while, in reality, many individuals will wait until the end of their gas boilers assumed 15 year asset life before replacing it with a heat pump.

The estimates in Table 4.2 are based on a representative 76 m2 3-bed semi-detached home, relative to an equivalent Part L 2021 home built with a gas boiler and solar panels. Capital cost estimates have been developed with support from expert industry consultants. They exclude gas connection costs in the counterfactual and are based on current (2022) prices. Regulated energy costs have been calculated using HMT Green Book retail energy values for 2025 and do not account for any interaction with other

planned government policies or objectives, such as energy price rebalancing. Regulated energy costs would be lower if analysing over a longer time horizon. The impact on operational carbon emissions is presented as annualised average savings relative to the counterfactual (Part L 2021 equivalent home constructed with a gas boiler) over the assumed asset life of the building (60-years) and have been calculated using HMT Green Book supplementary guidance emission factors.

The cost of retrofit for an existing home[footnote 3] only captures the costs of the installation of the heat pump and relevant components (including radiators) in a 'technically suitable' home. If fabric improvements were needed, these costs could be significantly higher. For the retrofit cost of a Part L 2021 home learning rates have been applied – these are the rates that take into account the reduction in costs due to technological improvements. Replacement costs are also included.

4.2.5 Heat network concurrent notional building options

A concurrent notional building is being proposed to set the standard for heat networks, which can be seen below. As described above, heat networks can be highly efficient ways of delivering heat because the heat pumps on the network can be paired with thermal stores allowing the heat to be produced at times of low-cost, low-carbon electricity; such function also reduces peak demand on the local electricity grid. The heat pumps in heat networks often have a higher seasonal coefficient of performance and can be run to optimise their coefficient of performance. See Section 9 (Heat networks) for information on sleeving for district heat networks.

Both options have the same fabric and heat network emission and primary energy standards and heat network. Option 1 also includes improved air tightness, wastewater heat recovery for multi-storey dwellings, mechanical ventilation, and high efficiency solar panels for buildings 15 storeys and below, while Option 2 does not. This mirrors the above notional buildings for dwellings not connected to heat networks.

Table 4.3: Summary of proposed notional building specifications for homes connected to new communal and district heat networks – Options 1 and 2. For full specification see The Future Homes Standard 2025: dwelling notional buildings for consultation published alongside this consultation.

Building Element	Option 1	Option 2
Roof U-value (W/m^2K)	0.11	0.11
External wall U-	0.18	0.18

Building Element	Option 1	Option 2
value (W/m^{2}K)		
Floor U-value (W/m^{2}K)	0.13	0.13
Window U-value (W/m^{2}K)1	1.2	1.2
Door U-value (W/m^{2}K) [1]	1.0	1.0
Wastewater heat recovery	Yes [2]	No
Heat source	4th generation heat network SCOP of plant 3.0 Primary losses 12%[3] Secondary losses 62W per dwelling	4th generation heat network SCOP of plant 3.0 Primary losses 12%3 Secondary losses 62W per dwelling
Airtightness (m3/m2.h @ 50Pa)	4	5
Ventilation	dMEV	Natural ventilation with intermittent extract fans
Renewable energy	High efficiency solar PV panels covering equivalent of 40% of ground floor area [4], [5]	None

[1]For proposed changes to methodology for calculating door and window u-values see Section 13.3.5
[2]Removed for single storey dwellings
[3]No primary losses applied for communal heat networks
[4]Removed for flats over 15 storeys in height
[5]or for flats, dwelling floor area divided by the number of stories in block

Option 1 has an estimated additional capital cost of £190 per dwelling. As with the proposed notional buildings for homes not connected to heat

networks outlined above, the inclusion of low-carbon heat will deliver significant carbon savings, while the addition of solar panels will push up capital costs while giving bill savings for occupants; Option 2 will be proportionately cheaper to build, at the cost of higher bills for households.

> **Question 7.** Which option for the dwelling notional buildings (for dwellings not connected to heat networks) set out in The Future Homes Standard 2025: dwelling notional buildings for consultation do you prefer?

a. Option 1 (higher carbon and bill savings, higher capital cost)
b. Option 2 (lower carbon savings, increase in bill costs, lower capital cost)

If you would like to caveat your response to Question 7 then commentary can be provided in response to Question 8. If you do not wish to state a preference between the two options, Question 7 can be left blank and comments can still be provided in response to Question 8.

> **Question 8.** What are your priorities for the new specification? (select all that apply)

☐ low capital cost
☐ lower bills
☐ carbon savings
☐ other (please provide further information)

Please provide any additional comments to support your view on the notional building for dwellings not connected to heat networks.

> **Question 9.** Which option for the dwelling notional buildings for dwellings connected to heat networks set out in The Future Homes Standard 2025: dwelling notional buildings for consultation do you prefer?

a. Option 1 (higher carbon and bill savings, higher capital cost)
b. Option 2 (lower carbon savings, increase in bill costs, lower capital cost)

Please provide any additional comments on the specification of the heat network in the notional building.

4.3 Performance requirements for non-domestic buildings

For non-domestic buildings we have also developed 2 sets of proposals: one for top-lit spaces in buildings and one for side-lit spaces in buildings.

Top-lit spaces have daylight illumination from above via rooflights; they are typically large-volume spaces such as warehouses and sports halls. Side-lit buildings spaces by contrast have daylight illumination from the side via windows and include the majority of spaces in most building typologies such as offices, hotels and schools. This distinction is familiar to industry and has been used in previous iterations of the energy efficiency requirements. It is outlined in more detail in the 'Activity Glazing Class' section of the National Calculation Methodology Modelling Guide.

We propose that the performance targets for new non-domestic buildings are based on a building with:

- Good fabric standards to minimise heat loss from windows, walls, floors and roofs. This would be mostly the same fabric requirement as currently required under the 2021 standards, except for warehouses and sports halls (both top lit-spaces) which would have enhanced levels of airtightness which supports the installation of low-carbon heating systems.
- A heat pump for side-lit spaces and radiant electric heating in top-lit spaces. For buildings connected to a heat network, standards are equivalent to a 4th-generation heat network.
- Enhanced efficacy of lighting
- Enhanced heat recovery efficiency

We are then presenting 2 options, as with the notional buildings for homes. Option 1 is the government's **recommended option**. This is because the impact assessment shows the overall benefit to society for Option 1 is significantly more than for Option 2, which would result in a net cost to society. Please see the Impact Assessment for further details. Each option includes the above and differs according to the coverage of solar PV panels.

- **Option 1 (recommended)**: Solar PV panel coverage equivalent of 40% of the building's foundation area for side-lit spaces and 75% for top-lit spaces.
- **Option 2 (not recommended)**: Solar PV panel coverage equivalent of 20% of foundation area for side-lit spaces and 40% for top-lit spaces.

We have produced estimates of the effect on costs of the new standard for some common building archetypes. These estimates are shown in Table 4.4 below.

Table 4.4: Estimated per-building impacts of Options 1 and 2 relative to the 2021 notional building

	Increase in capital, maintenance, and replacement costs	
Building type	Option 1	Option 2
Deep-plan, air-conditioned office	2.1%	1.9%
Shallow-plan, naturally ventilated office	3.9%	3.4%
Hospital	1.4%	1.3%
Hotel	3.7%	3.3%
Secondary school	3.1%	2.4%
Retail Warehouse	5.8%	2.5%
Distribution Warehouse	5.6%	2.2%

Full details of the proposed notional buildings for the Future Buildings Standard are included in the draft National Calculation Methodology Modelling Guide which is published alongside this consultation.

> **Question 10.** Which option do you prefer for the proposed non-domestic notional buildings set out in the NCM modelling guide?

a. Option 1
b. Option 2

> **Question 11.** What are your priorities for the new specification?

☐ low capital cost
☐ lower bills
☐ carbon savings
☐ other (please provide further information)

Please provide additional information to support your view on the proposed non-domestic notional buildings set out in the National Calculation Methodology modelling guide.

5. Metrics

5.1 Background

The metrics described in the tables below are used to set performance requirements using the notional building, as outlined in Section 4. The metrics are set by Building Regulations 26, 26A, 26C. Each metric allows the assessment and control of different aspects of building performance; there is a choice about what metrics we use depending on which aspects we want to prioritise. For more information on how metrics are calculated, please see Chapter 5 of the Home Energy Model: Future Homes Standard assessment consultation (https://www.gov.uk/government/consultations/home-energy-model-future-homes-standard-assessment).

Currently, performance requirements for individual homes and non-domestic buildings are set using a combination of complementary metrics set out below.

Table 5.1: Metrics used for homes

Dwelling Metrics	Target	What the metric assesses
Dwelling emission rate (DER)	Target Emission Rate (TER)	Greenhouse gas emissions (includes upstream emissions, e.g., at power station or via energy lost distribution network)
Dwelling primary energy rate (DPER)	Target primary energy rate (TPER)	Consumption of energy prior to conversion or transformation (takes account of upstream losses e.g., at power station or distribution network)
Dwelling fabric energy efficiency rate (FEE)	Target fabric energy efficiency rate (TFEE)	Useful energy demand for space heating and cooling of the dwelling (does not account for upstream energy losses or local losses from heating/cooling systems)

Table 5.2: Metrics used for non-domestic buildings

Non-domestic Building Metrics	Target	What the metric assesses
Building emission rate	Target Emission Rate	Greenhouse gas emissions (includes upstream emissions, e.g., at power station or via energy lost distribution network)
Building primary energy rate	Target primary energy rate	Consumption of energy prior to conversion or transformation (takes account of upstream energy losses, e.g., at power station or distribution network)

The purpose of each metric is set out below:

The **emission rate** quantifies the CO2 equivalent emissions associated with the dwelling or non-domestic building's use of space heating and cooling, water heating, pumps, fans, lighting and renewable generation. To deliver the government's commitment to net zero carbon emissions by 2050, we need to limit the direct emissions resulting from a building's use. The emission rate is a complementary metric to primary energy (below). Where primary energy drives efficient energy use across energy supply chains and buildings, the emission rate drives the absolute reduction of carbon emissions.

Primary energy quantifies the energy associated with the dwelling or non-domestic building's use of space heating and cooling, water heating, pumps, fans, lighting and renewable generation, taking account of upstream energy uses and allowing energy sources to be compared on a like-for-like basis using a common metric. Primary energy is defined as energy that has not undergone any conversion or transformation process. This means primary energy takes into account the efficiency of providing energy to the building. This considers processes such as:

- the efficiency of the building's heating system
- fuel combustion for electricity generation
- the energy used to produce the fuel and deliver it to the building

The use of primary energy supports energy conservation by placing a value on the energy content of different fuel types and allowing comparison between different energy sources. Forms of energy that have been produced efficiently, for example with little energy wasted in extraction of raw materials or through conversion from another fuel, have a lower primary energy value. This discourages the inefficient use of energy sources which may be more appropriate to use elsewhere in the economy and supports energy security.

The **fabric energy efficiency** is a measure of the ‘useful’ energy demand of the dwelling. It is affected only by the fabric of the dwelling and quantifies the space heating and space cooling energy demands. A fabric-specific metric helps drive a fabric-first approach to dwelling energy efficiency and will help to reduce excessively high or low indoor temperatures throughout the year. Fabric energy efficiency is technology agnostic. Therefore, using it to set whole-dwelling performance requirements reduces the risk of compensating low-performing fabric with high-performing building services, which could lead to unintended consequences like high bills and poorer health outcomes.

5.2 Desired outcomes from the Future Homes and Buildings Standards metrics

As we transition towards a decarbonised energy system, we need to ensure that metrics we use continue to drive the right policy outcomes. We have identified 5 policy outcomes that the metrics used for the Future Homes and Future Buildings Standards need to achieve. In order of priority:

1) Protect occupants against high energy bills.

2) Reduce energy demand of homes and non-domestic buildings by requiring high performing building fabric and building services in new buildings, thereby improving energy security.

3) Reduce total operational carbon emissions and produce net-zero ready buildings by requiring low-carbon heating and increasing general electrification of buildings.

4) Are simple to understand and use by industry and provide developers with flexibility in meeting consumer preference regarding design, form and operation. Our primary audience for these metrics is building control bodies, developers and system designers. We do not intend for these metrics to be used by home buyers, occupants or landlords, where other metrics such as those used by Energy Performance Certificates may be more appropriate.

5) Consider peak electricity demand to reduce costs associated with national and local grid infrastructure upgrades.

5.3 Our assessment against these outcomes

We have assessed the ability of the current metrics, and an alternative metric, to support the priority outcomes above by modelling a series of homes in the Home Energy Model and reviewing the designs that pass each metric. Better performing metrics are those that select homes that support the above outcomes. The analysis performed was limited to a selection of models describing some common home types. We considered a range of fabric packages, heating and ventilation systems and different PV generation output capacities. We have also considered feedback received from our 2019 consultation The Future Homes Standard: 2019 Consultation on changes to Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for new dwellings, and 2021 consultation The Future Buildings Standard Consultation on changes to Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for non-domestic buildings and dwellings; and overheating in new residential buildings in our final recommendation.

Target emission rate (TER)

The results of our analysis suggest that TER effectively supports our policy priorities. TER selected homes with comparatively lower fuel costs, lower grid electricity demand and lower peak power demand. TER selects for homes with relatively low emissions while allowing a variety of specifications to be used.

Target primary energy rate (TPER)

The results of our analysis suggest that TPER effectively supports our policy priorities. TPER was often the single most effective metric, more so than TER or FEE, for selecting homes that support the policy priorities.

TPER selected homes with comparatively lower fuel costs, lower grid electricity demand and lower peak power demand, compared to the designs selected by TER, FEE and Delivered Energy (below). TPER selects for dwelling designs with relatively low energy usage while allowing a variety of models and specifications to be used.

Energy Use Intensity and Delivered Energy

Industry and stakeholders have expressed some interest, including through the 2021 consultation, in an Energy Use Intensity (EUI) metric. This is the total energy consumption of a dwelling, including both regulated and unregulated end-uses of energy, per square metre of the floor area of the dwelling. An argument for using such an EUI metric is that it can be verified by measurements of the dwelling’s energy meter during occupation. An alternative energy consumption metric is one based just on the regulated end-uses of energy: Delivered Energy.

Other proposed benefits, of both Energy Use Intensity and Delivered Energy include:

- measuring what can be controlled – both TER and TPER are calculated using emission and primary energy factors which cannot be influenced by the building's constructor or occupant. Whereas delivered energy and EUI do not use these factors in their derivation so the constructor has more control on the metric's outcome.
- clarity to industry – delivered energy and EUI do not change, unlike emission and primary energy factors. This allows for simpler comparison through time and between buildings, although the move to delivered energy would not overcome difficulties in comparison caused by redevelopment of energy models (for example the change from SAP 10.2 to the Home Energy Model).
- accessibility for consumers – delivered energy and EUI correspond more directly to metered and billed energy use, although delivered energy does not include unregulated uses. These metrics may be more easily understood than Primary Energy. However due to the variability in use of heating and hot water, for example from weather and people's personal preferences, it would not allow for the direct comparison of the design intent of their building to the metered bills.

We consider that metrics which include unregulated loads are not a suitable because designers and housebuilders have little or no control over these end uses of energy. Furthermore, while we recognise the value of the other benefits highlighted, the Future Homes and Future Buildings Standards are principally for compliance with the Building Regulations rather than as information tools. Energy Performance Certificates (EPCs) are the primary information tool for building users and already include estimates of delivered energy.

Finally, our internal analysis compared a delivered energy metric against TPER to consider whether it offers additional benefits for compliance. The results of our analysis suggest that overall TPER is more effective at supporting the policy priorities than delivered energy.

Delivered energy does not include the export of energy to the electricity grid, focussing only on energy use in the home. In contrast, primary energy gives a value to the export of energy to the grid. This means that primary energy values generation, such as through solar PV panels, exported for use across the economy and reduces the primary energy and emissions of the grid. In other words, it is taking account of the wider societal benefit of renewable generation. It can be argued that this societal benefit is also considered in the emission rate metric. Primary energy particularly supported the policy priority of low bills, this is again because of the export of generated electricity and the money that householders would receive for this. We would welcome stakeholder views on the way that exported electricity is valued in our metrics.

Target fabric energy efficiency rate (FEE)

Results of our analysis suggests that FEE as a metric supports our policy priorities. FEE demonstrated some selection for dwelling designs with comparatively lower fuel costs, lower grid electricity demand and lower peak demand.

There are potential improvements to the FEE that could allow us to better reflect energy efficiency. FEE currently includes both space heating and cooling demands and focusses on building fabric only. As such, it does not recognise the benefits of building services such as MVHR, which effects space heating demand. The cooling demand within FEE tends to be small. It may also be less relevant to assess cooling using FEE demand now that Part O seeks to reduce cooling demand. Alternative options to FEE include a space heating demand metric without any normalisation to the model so it can reflect ventilation system benefits. Another option is using the heat transfer coefficient.

Summary

Following our analysis of the suitability of TER, TPER and FEE, we believe that the existing metrics effectively support the policy priorities for the Future Homes and Future Buildings Standards. We believe that using the current metrics remains optimal for use in the national calculation methodologies as it covers the most important aspects of building performance, but also does not inhibit design flexibility too much for developers, designers and architects. Any change in metrics can create a burden for developers, who need to understand these metrics and how dwelling design is impacted by them.

We therefore propose not changing the metric selection used in the Future Homes and Buildings Standards but would like to hear stakeholder views on the suitability of the proposed metrics and their alternatives outlined above.

> **Question 12.** Do you agree that the metrics suggested above (TER, TPER and FEE) be used to set performance requirements for the Future Homes and Buildings Standards?

a. Yes
b. Yes, and I want to provide views on the suitability of these metrics and/or their alternatives
c. No, I think delivered energy should be used
d. No, I think FEE should be changed
e. No, for another reason (please provide justification)

6. Updated guidance and minimum standards

6.1 Background

In addition to setting whole-building performance requirements, the Approved Documents include additional guidance for the energy efficiency of both fabric and fixed building services. This additional guidance helps secure delivery of the performance requirements in practice. It includes minimum standards for individual elements of the building (such as roofs, floors and walls) and the building services (such as heating and cooling). Changes to this guidance can be found in full in draft Approved Document L, Volume 1: Dwellings and draft Approved Document L, Volume 2: Buildings other than dwellings.

This guidance is only applicable in common situations and represents only one route to meeting the energy efficiency requirements in the Building Regulations. The minimum standards are set at the level of minimum ‘backstops’. This means that standards should not drop below this level and best practice should achieve higher efficiencies than the minimum standards.

6.2 Updated guidance and minimum standards for homes

Under the Future Homes Standard all space heating and hot water demand should be met through low-carbon sources. This means fossil fuel heating will not meet this standard (including hydrogen-ready and hybrid boilers). Guidance in draft Approved Document L, Volume 1: Dwellings has been updated to include more details for common low-carbon technologies.

Some of the proposed changes below will apply to existing as well as new homes. These changes are:

- heat pump efficiencies and controls
- comfort cooling efficiencies
- ventilation system efficiencies
- lighting efficacies and fixed external lighting controls -guidance on pipework insulation

6.2.1 Minimum efficiencies for new homes

Table 6.1 outlines the proposed changes to the minimum standards for new homes, as set out in draft Approved Document L, Volume 1: Dwellings.

Table 6.1: Proposed changes to minimum building services efficiencies and controls for new homes

Building service	Current Part L 2021 standard	Proposed Part L 2025 standard
Heat pump efficiency	Air heating products, cooling products, high-temperature process chillers and fan coil units ≤12 kW should follow Ecodesign No. 2016/2281. Minimum Coefficient of Performance (COP) for other types of heat pump: space heating COP 3.0, domestic hot water heating COP 2.0.	To reflect Ecodesign product regulations, the guidance is updated as set out in Table 6.1 of draft Approved Document L, Volume 1: Dwellings. To note, this is not an increase in minimum efficiency.
Continuous mechanical extract ventilation systems: Specific fan power (SFP)	0.7W/(L.s).	To reflect current systems available on the market: - maximum SFP for continuous **decentralised** mechanical extract ventilation systems changed to 0.2W/(L.s) - maximum SFP for continuous **centralised** mechanical extract ventilation systems changed to 0.5W/(L.s).
Continuous mechanical supply and extract ventilation systems: Specific fan power (SFP)	1.5W/(L.s).	To reflect current systems available on the market, maximum SFP for continuous mechanical supply and extract ventilation systems changed to 1.4 W/(L.s).
Comfort cooling systems efficiency	Seasonal Energy Efficiency Ratio (SEER): 4.0.	To reflect improvements in domestic comfort cooling products on the

Building service	Current Part L 2021 standard	Proposed Part L 2025 standard
		market the minimum SEER is changed to 5.1.
Lighting: efficacy	Indoor lighting: 75lm/W.	To reflect improvements in the efficacy of lighting products on the market, minimum efficacies changed to 105lm/W for indoor and external lighting.
Lighting: external lighting controls	Automatic daylight controls for all external lighting and automatic controls for occupancy if efficacy ≤ 75lm/W.	To better reflect how external lighting systems operate, guidance is now set in luminous flux. Automatic daylight controls for all external lighting. Automatic controls for occupancy if total luminous flux > 1200lm.
Underfloor heating systems: Thermal resistance of floor coverings	None.	To ensure that underfloor heating systems work as efficiently as possible, the thermal resistance of the floor covering should be 0.15(m2.K)/W or less.

> **Question 13.** Do you agree with the proposed changes to minimum building services efficiencies and controls set out in Section 6 of draft Approved Document L, Volume 1: Dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

6.2.2 Heat pump controls in new and existing homes

Controls for heat pumps are becoming smarter and more complex. It is important that the original manufacturer’s controls interact well with any additional controls and do not reduce the functionality of the original

controls. We therefore propose to introduce additional guidance in Section 6 of Approved Document L, Volume 1: Dwellings for heat pump controls that will apply to new and existing homes.

> **Question 14.** Do you agree with the proposal to include additional guidance around heat pump controls for homes, as set out in Section 6 of draft Approved Document L, Volume 1: Dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

6.2.3 Providing additional information about heat pump systems in new homes

It is important for heat pumps to be designed, installed and used correctly to ensure they deliver sufficient space heating and hot water.

To ensure that heat pumps continue to work efficiently and are maintained correctly throughout their lifetime and across different occupants, we propose that operating and maintenance information, as set out in Section 10 of draft Approved Document L, Volume 1: Dwellings, should be fixed to the heat pump unit or hot water storage vessel.

This information should include the heat loss calculations and design conditions, whether a member of an approved competent person scheme commissioned the heat pump, the size of the emitter circuit and the minimum set back temperatures.

Question 15. Do you agree that operating and maintenance information should be fixed to heat pump units in new homes?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 16.** Do you think that the operating and maintenance information set out in Section 10 of draft Approved Document L, Volume 1: Dwellings is sufficient to ensure that heat pumps are operated and maintained correctly?

a. Yes
b. Yes, and I want to provide additional suggestions or information to

support my view
c. No (please provide justification)

6.2.4 Changes to guidance to limit heat loss in new homes

Section 4 of draft Approved Document L, Volume 1: Dwellings also include other changes to facilitate the installation of low carbon heating systems by limiting heat loss.

The changes include:

- adding guidance on pipework insulation
- adding guidance for Heat Interface Units (used in Heat Networks)
- adding guidance on the placement of heat pumps to minimise heat loss
- new minimum standards for hot water storage vessel insulation (see Table 4.5 of draft Approved Document L, Volume 1: Dwellings)

Full details are included in draft Approved Document L, Volume 1: Dwellings.

Increasing insulation standards for hot water storage vessels is necessary to ensure the performance of heat pumps. Our cost-benefit analysis for insulation on hot water storage vessels (50 to 1000L) demonstrated that the increase in minimum standards is cost effective in dwellings, however we recognise the risk of disruption to manufacturers and consequently housebuilders. We would be interested in evidence of risks associated with this proposal. It should also be noted that the thickness of hot water storage vessel insulation in the notional building is higher than minimum standards.

> **Question 17.** Do you agree with the proposed changes to Section 4 of draft Approved Document L, Volume 1: Dwellings, designed to limit heat loss from low carbon heating systems?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

We also propose updating guidance on the sizing of domestic hot water storage vessels. This is set out in Section 5 of draft Approved Document L, Volume 1: Dwellings.

> **Question 18.** Do you agree with the proposed sizing methodology for hot water storage vessels for new homes?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

6.2.5 Lifts, escalators and moving walkways

Proposals for energy efficient lifts, escalators and moving walkways are outlined in Section 6.3 below on non-domestic buildings. These proposals would also apply to these services in communal areas of flats and mixed-use buildings. Comments on these proposals as they may relate to these building types should be provided in the relevant question on non-domestic buildings.

6.3 Updated guidance and minimum standards for non-domestic buildings

For non-domestic buildings, under the Future Buildings Standard all heating and hot water demand should also be met through low-carbon sources. Guidance in Approved Document L, Volume 2: Buildings other than dwellings, has been updated to include more details for these technologies.

6.3.1 Minimum efficiencies and controls

Table 6.2 outlines the proposed changes to the minimum standards for non-domestic buildings, with further detail in Approved Document L, Volume 2: Buildings other than dwellings. The proposed heat pump efficiencies and lighting efficacies apply to existing non-domestic buildings as well as new non-domestic buildings.

Table 6.2: Proposed changes to minimum building services efficiencies and controls for new buildings

Building service	Current Part L 2021 standard	Proposed Part L 2025 standard
Heat pump efficiency	For air-to-air heat pumps ≤12 kW, a Seasonal Coefficient of Performance (SCOP) rating of at least D in BS EN 14825. Other types for space heating COP 2.5; all types for domestic hot water heating COP 2.0, absorption COP 0.5; gas-engine COP 1.0.	Heat pumps should follow Ecodesign Regulations, set out in Table 6.1 of draft Approved Document L, Volume 2: Buildings other than dwellings. Heat pumps not covered by Ecodesign Regulations

Building service	Current Part L 2021 standard	Proposed Part L 2025 standard
		should have a minimum Coefficient of Performance (COP) of 2.5.
Heat pump controls	Only for outdoor fans and heat pumps installed in buildings with other heat sources available.	Addition of controls to make consistent with Approved Document L, Volume 1: Dwellings, set out in Table 6.2 of draft Approved Document L, Volume 2: Buildings other than dwellings.
Lighting efficacy	95 lm/W for general internal lighting, 80 lm/W for display lighting.	105 lm/W for general internal lighting, 95 lm/W for display lighting.

> **Question 19.** Do you agree with the proposed changes to minimum building services efficiencies and controls set out in Section 6 of draft Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

6.3.2 Limiting heat losses from building services in new communal areas of flats and non-domestic buildings

BS 5422 specifies thermal insulation thicknesses for heating and hot water pipework. Heating distribution pipework installations will typically require greater insulation thicknesses than those in BS 5422 because the pipework is in continuous operation and can contribute to overheating when insulation is inadequate.

Approved Document L, Volume 2: Buildings other than dwellings includes the relevant guidance for communal areas of flats and it is proposed to be updated to reference the CIBSE CP1 Heat Networks: Code of Practice. This provides standards for building heat distribution systems in buildings that contain multiple dwellings to address this risk. It is proposed building heat distribution system installations in new buildings that contain multiple dwellings should be insulated in accordance with the insulation thicknesses provided in CIBSE CP1 Code of Practice for Heat Networks.

To include other types of non-domestic buildings that are not covered by CIBSE CP1 Heat Networks: Code of Practice, we propose that pipework insulation thicknesses in BS 5422 for secondary systems of district heating systems should be applied. Draft guidance on building heat distribution system insulation is in Section 4 of draft Approved Document L, Volume 2: Buildings other than dwellings.

> **Question 20.** Do you agree with the proposed guidance on the insulation standard for building heat distribution systems in Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

6.3.3 Non–domestic buildings of low energy demand (not exempt)

Some buildings with low energy demand are exempt from the requirements of the Building Regulations. Others must meet the energy efficiency requirements in the Building Regulations. For these building types, Approved Document L, Volume 2: Buildings other than dwellings, provides specific guidance on compliance. We believe the guidance on these building types remains appropriate following the introduction of the Future Homes and Buildings Standard but welcome views on whether this guidance should be amended or removed.

> **Question 21.** Do you agree that the current guidance for buildings with low energy demand which are not exempt from the Building Regulations, as described in Approved Document L, Volume 2: Buildings other than dwellings should be retained without amendment?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

6.3.4 Other guidance changes

Other guidance in Approved Document L, Volume 2: Buildings other than dwellings has been amended to reflect current practices and keep the document up to date. Guidance has also been added in areas where currently no guidance is provided, where the energy use is not controlled by the notional building methodology, and where stakeholders have identified gaps or outdated information or references. In particular, additional

guidance is provided for external lighting and lifts, escalators and moving walkways.

Lifts, escalators and moving walkways

Low energy lifts, escalators and moving walkways are essential elements of an energy efficient building, with some estimates indicating as much as 40% of a building's energy demand may be used by these technologies at peak times. These services, however, are not covered by the notional building and National Calculation Methodology. The notional building, therefore, does not act as an incentive to install energy efficient lifts, escalators and moving walkways. To address this, it is proposed that minimum standards are set through approved document guidance, and that these services are included in the Building Regulations definition of 'fixed building services' for new buildings (including communal areas in flats/mixed use buildings though not where they are installed within a dwelling). These services will need to comply with the requirements of Part L, and in support of this new guidance on minimum standards is proposed to be included in Approved Document L, Volume 2: Buildings other than dwellings, using calculations and testing/commissioning standards made under the BS EN ISO 25745 standard (parts 1, 2 and 3). Information about these services and their maintenance would also need to be provided to the building owner. Further details are included in Approved Document L, Volume 2: Buildings other than dwellings.

Other areas of updated guidance

Updated guidance has also been proposed in a number of other areas in support of the installation of low carbon heating systems and the design of 'zero-carbon ready' non-domestic buildings. Areas where updated guidance is provided include:

- heating and cooling system circulators and water pumps
- internal lighting in hotels
- external lighting
- BACS systems
- Consolidation of minimum standards for loft insulation in Table 4

Further details are included in Approved Document L, Volume 2: Buildings other than dwellings. Updated guidance on methods assessing the U-values for windows and doors, as proposed for domestic buildings, is not currently included for non-domestic buildings. We welcome stakeholder views on whether this guidance is appropriate for any types of non-domestic buildings.

> **Question 22.** Do you agree that lifts, escalators and moving walkways in new buildings (but not when installed withing a dwelling) should be

> included in the definition of fixed building services?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 23.** Do you agree with the proposed guidance for passenger lifts, escalators and moving walkways in draft Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 24.** Do you have any further comments on any other changes to the proposed guidance in draft Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes (please provide comments)
b. No

7. Material Change of Use

7.1 Background

A Material Change of Use (MCU) is a conversion of a building from one purpose to another. It is defined fully in Regulation 5 of the Building Regulations 2010. In Approved Document L Volume 1: Dwellings standards are set when a dwelling is created or when the number of dwellings in a building changes. Common examples include converting an office to a residential block of flats or splitting a house into multiple flats.

The minimum standards set for a dwelling created under a MCU are lower than those for a new dwelling and are regulated separately to those of newly built dwellings. The emissions, fabric energy efficiency and therefore household bills of these newly created dwellings from a MCU can be worse

than newly built ones. MCU dwellings can be marketed and sold as ‘new’ dwellings without achieving the levels of energy efficiency required for new-build equivalents.

There were approximately 28,000 net additional dwellings created through building conversion in 2021-22 (~12% of the total net additional dwellings that year). The quality of these dwellings is controlled by planning and building regulations. Approximately 37% of the conversions created in 2021-22 were through permitted development rights where full planning permission was not required. In these cases building regulations are the only regulatory lever to control the energy efficiency of these dwellings. This means that an MCU residential conversion following current standard practice (i.e., relatively poor fabric and either gas boilers (low-rise) or storage heaters (mid- to high-rise)) would have £830 –£1,780 (84% - 180%) higher annual energy bills and produce 0.9 - 1.3 tCO2e (100% – 148%) more per year than new-build flats of a 2021 standard. Overheating standards (Part O) currently do not apply to MCU dwellings.

This consultation discusses and proposes illustrative ways of uplifting MCU standards. The new proposed MCU standards aim to protect consumers from high bills and reduce emissions as far as practical, while capitalising on building work already being done. This will be done by setting better fabric and building service standards, whilst also allowing appropriate scaling back of these standards where there are suitable mitigating circumstances.

7.2 Setting new standards for MCU

7.2.1 Using a whole-building approach

Buildings undergoing an MCU must already comply with Part L(1) of Schedule 1 to the Building Regulations. Currently, the Approved Document guidance provides minimum standards at an elemental level for MCU. This means minimum standards are set for each part of the building fabric (e.g., roofs, floors, walls) and for the building services (e.g., heating, ventilation). No overall performance standard is set, which means any type of building services can be installed without compensating for their high energy use or emissions.

In contrast, the standards for newly built dwellings are set at a whole-building level. This allows the energy efficiency of the different parts of the building fabric and the building services to be considered together. This means if a dwelling struggles to achieve a high level of performance in one building element they must compensate for this in other areas to achieve an overall high level of performance. As an example, if the target emission rate

cannot be met then improvements must be made to either the building services or building fabric to achieve the required target.

We are seeking views on whether we should move to setting whole-dwelling performance targets for MCU to drive better performance while still maintaining flexibility for design and occupant preference.

As an alternative approach to setting whole-building standards, elemental standards could initially be set, including the building services that should be used in an MCU. To provide flexibility, there could be an option for designers to diverge from these elemental standards if the dwelling primary energy usage and CO2 emissions are no greater than an equivalent notional building. This is a similar approach to that currently available for building extensions onto existing buildings for designers who wish to step away from minimum standards.

> **Question 25.** Should we set whole-building standards for dwellings created through a material change of use?

a. Yes
b. No, an elemental standard should be set with an option to use a notional building if the designer prefers
c. No, for another reason (please provide justification)

7.2.2 Scope of MCU standard

We are keen to hear views on the scope of a new standard. We want to improve MCU standards where there is clear evidence of poor performance. We recognise that MCU covers a variety of building types and scales, that can make it challenging to apply a one-size-fits-all approach to regulating MCU buildings. We also recognise the need to maximise potential of existing buildings for new homes, while giving developers flexibility to find the most appropriate solution that balances safety, performance and quality. Approved Document L, Volume 1: Dwellings currently sets standards for the following types of MCU:

- the building is used as a dwelling, where previously it was not (e.g. office to flats)
- the building contains a flat, where previously it did not (e.g. house to flats)
- the building, which contains at least one dwelling, contains a greater or lesser number of dwellings than it did previously

Approved Document L, Volume 2: Buildings other than dwellings, sets standards for other types of MCUs. While we are aware of the potential for improving the performance of homes being built from office to residential conversions and house to flat conversions, evidence of poor performance in non-residential conversions, e.g., to uses such as hotels and student or

patient accommodation, is weaker. We are also keen to ensure that houses in multiple occupation are being converted in line with our standards. As such, we currently consider that setting the new standards only for the types of MCUs already referred to in Approved Document L, Volume 1: Dwellings is proportionate.

The following types of buildings do not need to comply fully with the energy efficiency requirements where doing so would unacceptably alter their character or appearance: buildings that are listed in accordance with s.1 of the Planning (Listed Buildings and Conservation Areas) Act 1990; those in a conservation area designated in accordance with section 69 or that Act and those included in the schedule of monuments maintained under section 1 of the Ancient Monuments and Archaeological Areas Act 1979.

> **Question 26.** Should the proposed new MCU standard apply to the same types of conversion as are already listed in Approved Document L, Volume 1: Dwellings?

a. Yes
b. No, standards should also apply to non-dwelling accommodation e.g., student or patient accommodation, care homes, and hotels
c. No, the standard should be clearer that it applies to houses of multiple occupation (please recommend specific building types you think the standard should apply to and provide justification)
d. No, for another reason (please provide justification)

7.2.3 Categorising buildings undergoing an MCU

As for new homes, there are 3 main variables for improving energy efficiency and reducing emissions from MCU buildings: heat source, fabric and energy generation. The opportunity to improve these 3 variables will vary across building types. For example, it may be challenging to improve the fabric of older low-rise MCU buildings, including in conservation areas, compared to mid- and high-rise MCU buildings. In another example, the most cost-effective low-carbon heating systems for low-rise MCU buildings may be heat pumps; but in contrast, mid- and high-rise MCU buildings may have less opportunity for installing individual heat pumps, which might be technically challenging or change the look of the building unacceptably. In these cases, installing communal heat networks or modern storage heaters may be more appropriate. In a final example, there may be less benefit to installing solar panels in taller buildings, where limited roof space may mean disproportionate costs compared to the generation benefit of solar, or space is needed for other critical services. We also recognise that opportunities to improve energy efficiency may vary by scale of the conversion, which may affect technical, functional or economic feasibility. We are keen for views on whether MCU buildings could be categorised, with different categories of building subject to different requirements. For example, low-rise versus mid-

and high-rise MCU buildings, which represent the 2 most common forms of MCU according to data from the Office for National Statistics.

> **Question 27.** Should different categories of MCU buildings be subject to different requirements?

a. Yes
b. No (please provide justification)

> **Question 28.** Which factors should be taken into account when defining building categories? (check all those that apply)

☐ height of the building, i.e., low versus mid- to high-rise buildings
☐ floor area of the building
☐ the expertise of those carrying out the work
☐ whether the conversion is a part- or whole-building conversion
☐ Other (please state)

Please provide additional information to support your view.

7.2.4 Performance requirements for MCU - Notional specifications

We are presenting 2 illustrative notional specifications, one for a low-rise MCU and one for a mid-high-rise MCU – 2 of the most common forms of MCU buildings. The illustrative notional specifications include:

Improved fabric compared to current elemental standards found in Approved Document L, Volume 1: Dwellings. We recognise there may be circumstances, particularly in low-rise settings, where these fabric improvements could be challenging and we would like to receive feedback on this. The low-rise standards were developed considering a range of different common traditional and modern building architypes, for example solid wall houses with suspended timber floors. While the mid- to high-rise standards were developed with concrete and steel frame buildings in mind.

Solar PV panels provide a cost-effective means of reducing emissions and energy bills. However, we recognise the practical barriers of installing solar PV panels, particularly in high-rise building conversions. As for new flats, for MCU buildings over 15 storeys, solar PV panels could be removed from the specification. This is in recognition of the fact that where buildings have limited roof space this may be needed for other critical services, such as communal heating system components. Installing a very small amount of solar may also have disproportionate maintenance costs compared to the generation benefit. We would welcome views on a height threshold of 15 storeys.

Low carbon heating. The specifications include options of a high efficiency air source heat pump for, which could be focused at low-rise MCU buildings. We have also made suggestions for low carbon heat networks, in-line with new build standards, and modern storage heaters for mid- and high-rise buildings. This recognises the technical challenges to installing individual heat pumps in mid- and high-rise buildings.

Table 7.1: Notional buildings for Material Change of Use

Building element	Low-rise MCU	Mid- and high-rise MCU
External Wall U-value (W/m^2K)	Solid walls and cavity walls unsuitable for fill: 0.3 Cavity walls: Full fill of cavity	0.18
Roof U-value (W/m^2K)	0.16	0.11
Floor U-value (W/m^2K)	Suspended timber floors: 0.20 Other floors: 0.25	0.25
Windows, Rooflights and Roof Windows U-value (W/m^2K)	1.2	1.2
Opaque and Semi-glazed Door U-value (W/m^2K)	1.0	1.0
Ventilation type	Natural Ventilation with intermittent extract fans	Natural Ventilation with intermittent extract fans
Airtightness ($m^3/h{\cdot}m^2$ at 50 Pa)	5	5
Heating system	Air Source Heat Pump	Heat pump driven communal heat networks or Electric High Retention Storage heaters with off-peak 7h tariff

Building element	Low-rise MCU	Mid- and high-rise MCU
Photovoltaic system	High efficiency solar PV panels covering equivalent of 40% of ground floor area [1]	High efficiency solar PV panels covering equivalent of 40% of ground floor area [1]
Hot water system	Hot water vessel connected to ASHP	HIU or Direct electric immersion hot water vessel

[1]or for flats, dwelling floor area divided by the number of stories in block

> **Question 29.** Do you agree with the illustrative energy efficiency requirements and proposed notional building specifications for MCU buildings?

a. Yes
b. No

> **Question 30.** If you answered no to the previous question, please provide additional information to support your view. Select all that apply. The requirements are:

☐ too stretching
☐ not stretching enough
☐ not economically viable
☐ not practical/technically feasible
☐ other (please provide further details)

The performance requirements could be expressed through the same metrics as new dwellings:

- the target primary energy rate
- the target emission rate
- the target fabric energy efficiency rate

> **Question 31.** Do you agree with using the metrics of primary energy rate, emission rate and fabric energy efficiency rate, if we move to whole dwelling standards for MCU buildings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

7.2.5 Relaxation of the notional building standards for MCU

We recognise that it may not be possible for all MCU buildings to be designed to meet the illustrative notional buildings provided above that can, by definition, only account for a limited set of common archetypes and construction techniques. Specific reasons we think warrant relaxation include:

- the technical or practical feasibility of achieving the standards, for example the weight of insulation or the space available to install loft insulation
- that space is affected outside of the dwelling, for example pavements or access alleys are made too narrow
- consideration of historic and traditional dwellings

We are therefore keen to hear views on how best to provide developers and building control bodies with flexibility to achieve the best outcome for each individual MCU building.

> **Question 32.** Under what circumstances should building control bodies be allowed to relax an MCU standard?

a. None, building control bodies should not be able to relax MCU standards
b. Building control bodies should be able to relax under the following circumstances (please provide further details)

> **Question 33.** Do you have views on how we can ensure any relaxation is applied appropriately and consistently?

Please select all that apply:
☐ there should be guidance on circumstances where relaxation of the notional standard may be appropriate
☐ there should be monitoring of how relaxation is applied
☐ only formal relaxation or dispensation through the local authority should be possible
☐ other (please provide further details)

7.2.6 Minimum limiting standards for residential MCU conversions

Currently standards are set on an elemental basis and guidance is provided in the Approved Document. Where an element cannot technically, functionally or economically achieve the minimum standards in the Approved Documents additional guidance is provided, which references the requirements of Part C standards for moisture and states that generally retained elements should not have a U-value higher than 0.7 W/m^2K to prevent interstitial and surface condensation. These can both lead to mould growth and ill health. If there is a permitted relaxation of an MCU whole building standard, minimum limiting standards for building fabric performance may need to be retained and reviewed to ensure poor quality conversions are not built, even when the whole building standard cannot be met.

A basic set of limiting standards could help safeguard against condensation and mould. More stringent minimum standards could also reduce energy demand on top of preventing condensation and reduce household bills. However, reducing bills by a significant amount may require a step-change in current limiting standards with associated extra costs and technical challenges.

> **Question 34.** Should a limiting standard be retained for MCU dwellings?

a. Yes (please provide further details)
b. No, it is too strict
c. No, it is not strict enough
d. No, there is not enough information
e. No, for another reason (please provide further details)

> **Question 35.** If a limiting standard is retained, what should the limiting standard safeguard against?

Please select all that apply:
☐ risk of moisture, damp and mould
☐ high energy demand and energy bills (please provide recommended values referring to ADL volume 1 Table 4.3)
☐ other (please provide further details)

7.2.7 Unintended consequences including supply impacts

Whilst higher standards will increase comfort and reduce bills, there will be a commensurate increase in build costs to achieve these higher standards. Compared to a counterfactual specification of current practice i.e., fabric standards being routinely relaxed and either gas boilers (low-rise) or storage heaters (mid- to high-rise):

- The MCU flats have been modelled on a single dwelling basis, showing the additional capital costs, energy bill savings and annual carbon savings by conversion type and by floor level. This accounts for the difference in costs between floor levels
- The illustrative low-rise notional specification is estimated to add an additional £6,700-£8,000 (7-9%) to build-costs relative to the counterfactual and would save occupiers an estimated average £200-£230 per year in regulated energy costs (present value private energy bill savings over 15 years).
- The illustrative mid-high-rise notional specification is estimated to add an additional £4,500- 6,500 ,100 (5-7%) to the build-cost of a new home and would reduce average annual occupier regulated energy costs by £380 - £510 (£present value private energy bill savings over 15 years).

More detail on the counterfactual, the costs and benefits can be seen in the consultation stage Future Homes Standard impact assessment.

We wish to ensure that any improvement in standards for MCU buildings does not have a disproportionate impact on the supply of new homes created through MCU. We are keen to hear evidence from consultees about possible impacts on viability and deliverability of housing developments as well as the benefits for occupants and electricity grid resilience.

> **Question 36.** Do you wish to provide any evidence on the impacts of these proposals including on viability?

a. Yes (please provide evidence)
b. No

7.2.8 Applying other new build standards to MCU: BREL, photographic evidence, Home User Guides and airtightness testing

We could extend the use of the Building Regulations England Part L (BREL) reports to properties that have undergone an MCU, if energy modelling is the new way of setting standards. The BREL is produced by approved energy modelling software. It provides building control bodies with the same information in the same format for every building, allowing them to easily check key features. The report is signed by the energy assessor to confirm accuracy. The BREL could be evidenced using photographic evidence.

> **Question 37.** Do you agree that a BREL report should be provided to building control bodies if we move to energy modelling to demonstrate compliance with MCU standards?

a. Yes
b. Yes, and photographic evidence is needed
c. Yes, and I'd like to provide further information
d. No (please provide justification)

We could also extend the application of Home User Guides to include properties that have undergone a Material Change of Use (MCU). These guides would provide buyers with critical operating and maintenance information, mitigating the risk of unexpected costs and inefficiencies. This move would aim to further address the discrepancies in quality and performance between MCU dwellings and new builds, ensuring that buyers have accurate information at their disposal.

We provide more information about Home User Guides, and ask for feedback on ways that Home User Guides could be improved, in Section 8.4.

> **Question 38.** Do you agree that consumers buying homes created through a material change of use should be provided with a Home User Guide when they move in?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

We could extend the standards and/or regulations so that homes created through a material change of use are airtightness tested. Airtightness is an important part of whole building performance that reduces the amount of cold air that enters a dwelling. Thus, better airtightness reduces heating bills and improves occupant comfort. Airtightness testing is already required for every newly erected home under Regulation 43 of the Building Regulations 2010. MCU homes could be airtightness tested if we set new airtightness standards. Every new home could be tested or this could be done on a sample basis. Airtightness testing can also identify where a dwelling is too airtight for the ventilation strategy, and hence may not meet the requirements of Part F of the Building Regulations and be at increased risk of damp and mould growth.

> **Question 39.** Do you agree that homes that have undergone an MCU should be airtightness tested?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

7.2.9 Overheating in conversions

Previous research on highly glazed archetypes of buildings suggest that non-domestic to residential MCU are likely to be some of the most severely affected by overheating of all homes. The Climate Change Committee have also recommended setting standards to address this issue. We are thus calling for evidence on this issue as detailed in the section of this consultation dealing with overheating (Section 15).

8. Real-world performance of homes

8.1 Background

Several studies of new homes suggest that measured energy performance once occupied can be worse than the energy performance expected at the design stage. Those studies vary in their assessment of the size of the difference: some have found a very significant difference, but the general trend does appear to show that the difference is smaller in homes built more recently.

There are 4 main causes of the gap between expected performance and measured performance in homes:

- buildings not being built as they were designed, for example because of poor build quality or materials being substituted
- fixed building services, such as ventilation and heating systems, not being installed and commissioned correctly
- occupants using buildings in different ways to those assumed at the design stage
- inaccuracies within the models that are used to calculate the energy performance of buildings

A gap between expected performance and measured performance means that more energy is required to heat homes than should be required. This means that people are paying higher energy bills than they would if modelled energy use and energy use in practice were the same. It also means that, until the electricity grid is fully decarbonised, more carbon is being emitted than necessary, taking us further away from achieving our net zero by 2050 target. Even once the electricity grid is fully decarbonised, minimising this gap will still be important to avoid putting unnecessary pressure on the electricity grid.

We implemented several measures through the 2021 uplift to Part L to improve building performance in homes. We are, however, exploring what more can be done to close the gap.

Under the 2021 uplift to Part L, the main changes for homes were:

- stating that photographs should be taken for each dwelling on a development at appropriate construction stages and shared with Building Control
- including Build Quality guidance in Approved Document L that enables developers to avoid common issues that contribute towards creating a performance gap
- introducing a new standardised compliance report (the BREL report) which gives Building Control the same clear information about every home
- introducing a Home User Guide template that developers can use to meet their obligation under Regulation 40 to provide the building owner with information about how to conserve fuel and power

8.2 Performance testing new homes

We are concerned about the impact that poor build quality could have on the performance of new homes. For instance, failure to take sufficient care during construction can result in thermal bridges which allow heat to leave houses more easily. This could leave consumers paying higher energy bills. It also may reduce consumer confidence in the quality of new housing. Finally, it may create an unfair market. We have been told that more conscientious developers are competing against developers who are willing to cut corners, which is particularly challenging because some issues will not be visible when a house is completed. This may leave consumers unable to identify a well-built house and experiencing higher bills or lower comfort levels.

We are keen to encourage developers to focus on build quality when building Future Homes Standard homes. We are also keen to collect more data about the extent to which new homes are underperforming because of poor build quality and what the most common issues are. We are therefore seeking views on asking all domestic developers to voluntarily carry out post occupancy performance testing on the houses they build and make the results publicly available.

We are exploring different options for a performance test that we will ask developers to use. The test used should be simple, capable of being rolled out at scale and non-intrusive for occupants. We expect a Smart Meter Enabled Thermal Efficiency Rating (SMETER) could be the most suitable

method, but we are open to other types of heat transfer co-efficient test. We anticipate that most new homes will be fitted with smart meters, and while some additional equipment may be needed to conduct performance testing, upfront costs should be minimal.

8.2.1 Future Homes Standard brand

Several developers have suggested that the government endorse a brand or logo that can be used to distinguish Future Homes Standard homes from those built to previous energy efficiency requirements. If we were to introduce a Future Homes Standard brand, we would want to ensure that developers using the brand were building good quality homes. We are therefore seeking views on only authorising those developers who agree to performance test their homes, and who meet the threshold for good performance, to use a government-endorsed Future Homes Standard brand.

We are aware that there may be risks associated with introducing a government-endorsed brand. For example, consumers may expect a 'Future Home' to come equipped with a range of innovative, smart technologies, which go beyond what developers are required to do to meet the minimum energy efficiency requirements. We would welcome views on other potential unintended consequences.

We have not yet developed detailed proposals for how performance testing and a Future Homes Standard brand would operate in practice. Subject to the feedback gathered from this consultation, we intend to consult on firm proposals in 2024 ahead of implementation in 2026.

> **Question 40.** Do you think that we should introduce voluntary post occupancy performance testing for new homes?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

> **Question 41.** Do you think that the government should introduce a government-endorsed Future Homes Standard brand? And do you agree permission to use a government-endorsed Future Homes Standard brand should only be granted if a developer's homes perform well when performance tested? Please include any potential risks you foresee in your answer.

a. Yes

b. Yes, and I want to provide additional suggestions or information
c. Yes, but I think there are risks associated with introducing a government-endorsed brand
d. No (please provide justification)

8.3 Commissioning fixed building services

Fixed building services, including ventilation and heating systems, must be checked and adjusted following installation to ensure they operate safely and efficiently. This process is called ‘commissioning’. It is important for ventilation systems, heating systems and associated appliances to operate efficiently. Where a ventilation system is operating inefficiently this may lead to poor indoor air quality, condensation and mould. Where a heat pump is operating poorly, or an associated appliance such as a hot water storage vessel was commissioned poorly, there may be an inadequate supply of heating and hot water, affecting the health and wellbeing of occupants.

The performance of fixed building services, particularly mechanical ventilation systems, is highly dependent on the quality of the design and installation, and so these systems must be installed and commissioned by people with the right knowledge and skills. Where installation and commissioning are carried out by a member of a competent person scheme, they can self-certify that the work was done to a sufficient standard. When the installer is not part of a competent person scheme, building control must check and approve all installations.

We have been made aware that fixed building services are not always installed, commissioned and (where required) checked to a high standard. Below we propose several amendments to Approved Document L, Volume 1: Dwellings and Approved Document F, Volume 1: Dwellings that will improve the commissioning and checking process for fixed building services in new and existing homes. In sum, we propose:

- providing additional guidance to help people installing mechanical ventilation systems, hot water storage vessels and on-site electrical storage systems to commission them correctly
- explaining the routes to certification (self-certification through a competent person scheme or having work checked by building control) to help ensure that fixed building services are being appropriately checked
- explaining what enforcement mechanisms are available where work falls short of the required standard

8.3.1 Installation and commissioning of mechanical ventilation systems

We are aware of ongoing concerns that the design and/or the installation of ducted ventilation systems is often poor and results in the fans operating at near maximum fan speed to achieve the design air flow rates. The impact of this is increased fan noise and thus nuisance for the residents, reduction in fan life due to wear on the motor bearings and an increase in fan running costs.

Currently, Approved Document F, Volume 1: Dwellings says that people commissioning mechanical ventilation systems should conduct a visual inspection and air flow rate testing. We propose the following key changes:

- When installing centralised mechanical extract ventilation (cMEV) or centralised mechanical ventilation with heat recovery (cMVHR), static pressure and total power consumption should be measured. Section 4 of draft Approved Document F, Volume 1: Dwellings includes a methodology for undertaking the performance measurements, along with specifications for the equipment needed and calibration requirements. People who install centralised ventilation systems will typically need to purchase new equipment to meet these testing requirements. Using current costs to give an estimate, this would typically be a one-off cost of around £300 for the commissioning engineer to purchase new equipment (around £280 for a single channel differential pressure gauge and £20 for a power meter). There would also be an additional annual cost of around £100 to keep the differential pressure gauge calibrated. However, if the commissioning engineer also conducts air permeability tests, they will already have equipment suitable for conducting pressure testing. We also estimate a small amount of additional time taken to carry out the tests and to record the results.
- When conducting air flow rate testing, cMEV and cMVHR systems should be tested and commissioned using calibrated powered flow hoods instead of rotating vane anemometers with hoods. Using current costs to give an estimate of costs for a commissioning engineer, calibrated powered flow hoods cost around £2,800, while rotating vane anemometers with hoods cost around £650: a capital cost uplift for commissioning engineers of around £2,150, incurred on average every 10 years but heavily dependent on frequency of use and care taken. The annual calibration cost for calibrated powered flow hoods is also £175 for commissioning engineers, an uplift of £40 compared to the calibration cost for rotating vane anemometers. However, industry is already transitioning towards using powered flow hoods: we estimate that around 25% of commissioning engineers have already upgraded.
- Stating that rigid or semi-rigid ductwork should be used in decentralised MEV systems or intermittent extract ventilation fans, and that flexible ducting should not be used.
- Stating that duct runs for decentralised MEV systems should be kept short (less than 2 metres) to improve system performance.

All of these changes would apply to mechanical ventilation systems installed in new and existing homes. We also intend to extend Regulation 42 to work in existing dwellings. This means that air flow rate testing would have to be conducted as part of the commissioning process for cMEV and cMVHR systems in existing homes, as well as new homes. Notice of the results of the test would have to be given to the building control body within 5 days.

The proposed changes to the approved document are set out in full in Sections 1 and 4 and Appendix C of draft Approved Document F, Volume 1: Dwellings.

> **Question 42.** Do you agree with the proposed changes to Approved Document F, Volume 1: Dwellings to improve the installation and commissioning of ventilation systems in new and existing homes?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

> **Question 43.** Do you agree with the proposal to extend Regulation 42 to the installation of mechanical ventilation in existing homes as well as new homes?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

8.3.2 Commissioning hot water storage vessels

Hot water storage vessels will be fitted in the vast majority of new homes with heat pumps, and it is crucial to ensure that they are commissioned properly so that they work effectively alongside the heat pump and provide water which is safe to use. We propose, therefore, to update guidance to specify that hot water storage vessels should be commissioned in accordance with the manufacturer's instructions. This is set out in Section 8 of draft Approved Document L, Volume 1: Dwellings.

> **Question 44.** Do you think the guidance on commissioning hot water storage vessels in Section 8 of draft Approved Document L, Volume 1: Dwellings is sufficient to ensure they are commissioned correctly?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

We have not amended the guidance in Section 8 of Approved Document L, Volume 1: Dwellings around how heat pumps should be commissioned. Our view is that the current guidance is sufficient. We would, however, welcome views on potential amendments or additions.

> **Question 45.** Are you aware of any gaps in our guidance around commissioning heat pumps, or any third-party guidance we could usefully reference?

a. Yes (please provide further details)
b. No

8.3.3 Commissioning on-site electricity storage systems

On-site electricity storage systems, such as batteries that store energy generated by solar PV panels, must be commissioned correctly to ensure that they are safe and operating as designed. We therefore propose that these systems should be commissioned in accordance with the commissioning requirements of MCS' 'MIS 3012: The Battery Standard (Installation)'.

This proposed change is set out in Section 8 of draft Approved Document L, Volume 1: Dwellings.

> **Question 46.** Do you think the guidance for commissioning on-site electrical storage systems in Section 8 of draft Approved Document L, Volume 1: Dwellings is sufficient to ensure they are commissioned correctly?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

8.3.4 Routes to certification and enforcement mechanisms

We believe that heat pumps and mechanical ventilation systems being installed and commissioned well is important to the success of the Future Homes Standard. As set out above, 1 of 2 procedures must be used to certify that a fixed building service has been installed and commissioned in accordance with the requirements set out in the Building Regulations. Installers can self-certify their work if they are a member of a competent person scheme. Otherwise, a building control body will need to certify each installation.

Self-certifying that work was compliant with the Building Regulations through a competent person scheme has several advantages. It will often

save installers time and money because it removes the need to notify building control in advance and pay building control fees. It also demonstrates installer competence to carry out the work, which increases consumer confidence. Finally, most competent person schemes offer training opportunities to upskill members and all schemes must keep members up to date on changes to Building Regulations and other relevant changes.

The other option is for a building control body to check the work. We have heard some evidence that building control bodies do not always have the resources and expertise to carry out appropriate post-installation checks on fixed building services. We are keen to ensure that fixed building services installed and commissioned by people who are not part of a competent person scheme are receiving the right checks. Separate from this consultation, the Building Safety Regulator (BSR) has commenced registration of Registered Building Inspectors (RBIs) and Registered Building Control Approvers (RBCAs), currently known as Approved Inspectors. BSR will be regulating the building control profession and improving competence through oversight, support and encouragement as well as mandatory codes and standards to apply from April 2024.

We propose adding guidance to Approved Document L, Volume 1: Dwellings and Approved Document F, Volume 1: Dwellings setting out in detail the 2 routes to certification for fixed building services, to help installers choose the route most appropriate for them. We also propose adding guidance setting out the enforcement options available where work is not completed to the required standard.

Full details of these proposed changes are in Section 9 of draft Approved Document L, Volume 1: Dwellings and Section 1 of Approved Document F, Volume 1: Dwellings.

> **Question 47.** Do you agree with proposed changes to Approved Document L, Volume 1: Dwellings and Approved Document F, Volume 1: Dwellings to (a) clarify the options for certifying fixed building services installations and (b) set out available enforcement options where work does not meet the required standard?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

The government intends to consult separately on changes to the minimum technical competencies (MTCs) that members of competent person schemes must demonstrate.

8.4 Home User Guides

As part of the 2021 uplift to Part L, Approved Document L, Volume 1: Dwellings was updated to specify that for new homes a Home User Guide should be provided to the homeowner that contains advice on ventilation; heating and domestic hot water; on-site electricity generation; and overheating. A link to a Home User Guide template is included in Approved Document L, Volume 1: Dwellings, but there is no requirement to follow the layout, format or text used in the template.

The transitional arrangements in place for the 2021 uplift mean that we are not yet in a position to accurately analyse the impact of introducing a Home User Guide template. However, we have been considering ways to ensure that the information developers are required to provide to homeowners is useful and accessible.

Firstly, occupants could benefit from knowing how to operate their heat pump systems and hot water storage cylinders to ensure they work efficiently. We propose that additional guidance should be included in the Home User Guide to provide occupants with the information they need to be able to use their heat pump systems. The additional information will also help occupants to make choices, for example about their electricity tariff and heat pump controls, which could help them save energy and money. In sum, the changes we propose to make to the Home User Guide template are:

- adding guidance around replacing floor coverings where an underfloor heating system is installed
- explaining that heat pumps cannot provide space heating and hot water simultaneously, which is why hot water will usually be stored in a hot water cylinder
- adding guidance around using hot water cylinders and thermal stores, including making use of cheaper off-peak time-of-use tariffs for reheating stored water and ensuring stored domestic hot water is safe to use

> Question 48. Do you think the additional information we intend to add to the Home User Guide template, outlined above, is sufficient to ensure home occupants can use their heat pumps efficiently?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

We also have concerns about the accessibility and longevity of Home User Guides that are provided as paper copies, rather than digitally. They may get misplaced; not be passed on to subsequent homeowners; and even if they are split into sections, it may still be difficult and time consuming to

navigate through them and find the relevant section. We are also aware that some people moving into a new home may not realise that they have been provided with detailed guidance around how to operate their home, and that people digest information in different ways.

Updating Approved Document L, Volume 1: Dwellings to specify that developers should make Home User Guides available digitally may at least partially resolve these issues. The guides could be uploaded to a central online database which homeowners could search by address. This would avoid guides being misplaced, subsequent homeowners or tenants would be able to access the information, and they would be searchable. We recognise that some people do not have access to the internet or would find an online Home User Guide difficult to use. Therefore, we would specify that paper copies should be made available for people who need them.

However, we recognise that this may not be the right or the only solution to the problems we have identified with Home User Guides. We therefore welcome views on other potential solutions that are cost-effective; address consumer barriers and concerns; are accessible; and minimise additional burdens on developers.

> **Question 49.** If you are a domestic developer, do you use, or are you planning to use, the Home User Guide template when building homes to the 2021 uplift? Please give reasons in your response.

a. Yes (please provide further details)
b. No (please provide further details)

> **Question 50.** Do you have a view on how Home User Guides could be made more useful and accessible for homeowners and occupants, including on the merits of requiring developers to make guides available digitally? Please provide evidence where possible.

a. Yes, (please provide further details)
b. No

Finally, we have concerns around compliance with Regulations 39, 40, 40A and 40B of the Building Regulations 2010. These regulations require persons carrying out work to provide sufficient information to homeowners, within 5 days of work being completed, about:

- how to operate and maintain the ventilation system so that it provides adequate ventilation
- how to operate and maintain the fixed building services to use no more fuel and power than is reasonable

- how to operate and maintain systems for on-site electricity generation, such as solar PV panels, to maximise electricity production
- how to operate systems put in place under Part O (overheating mitigation) to protect against overheating

Currently, local authorities can issue a completion certificate without evidence that this information has been provided, so we cannot be certain that all developers are providing the necessary information to all owners of new homes. We are therefore seeking views on whether there are issues around compliance with Regulations 39, 40, 40A and 40B, and if so whether people carrying out building work should be required to notify their building control body that they have provided the homeowner with the necessary information before a completion certificate can be issued for the house.

> **Question 51.** Do you think that there are issues with compliance with Regulations 39, 40, 40A and 40B of the Building Regulations 2010? Please provide evidence with your answer.

a. Yes (please provide justification)
b. No (please provide justification)

> **Question 52.** Do you think that local authorities should be required to ensure that information required under Regulations 39, 40, 40A and 40B of the Building Regulations 2010 has been given to the homeowner before issuing a completion certificate?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

9. Heat networks

9.1 Background

As set out in the Heat and Buildings Strategy, the government believes that heat networks will be an important part of our net-zero future in any scenario. Developing the market for low-carbon heat networks will therefore be a no-regrets action. This is supported by the Climate Change

Committee's recommendation for around 18% of UK heat to come from heat networks by 2050 as part of a least-cost pathway to meeting net-zero.

We are committed to working with the heat networks industry, through coordinated activity, heat network zoning and regulation, to ensure that heat networks decarbonise at the pace required to meet our 2050 net-zero goal. The government has committed to using its new regulatory framework for heat networks to ensure that they decarbonise for 2050.

9.2 Connecting new homes and non-domestic buildings to heat networks

We are proposing to support the expansion of heat networks where they are making demonstrable steps to decarbonise. We are proposing that the Future Homes and Buildings Standards will enable new homes and non-domestic buildings to be connected to existing and new heat networks where they can demonstrate that they are adding new low carbon technologies, or are able to make use of existing low carbon heat which is currently unused. By 'existing heat networks' we mean heat networks that are operating at the point of the Future Homes and Building Standards coming into force and 'new' refers to those coming into operation afterwards. At a minimum, the heat required by any additional new homes and non-domestic buildings connected to an existing heat network (using a calculation of the 'diversified heat demand'), should match the new or unused existing low-carbon heat generation capacity of the network. We propose that a 'sleeving' system is used to implement this principle. This will assess the 'sleeved' component of heat (i.e., the new or unused capacity) against a specific Heat Networks notional building (as described above in Section 4.2.5).

Under the 2021 Part L notional building standards for dwellings and non-domestic buildings we made a distinction between existing and new networks with different standards applying to each. We are proposing to remove this distinction in the Future Homes and Building Standards with sleeving applying to all heat network new build connections. Applying sleeving to only existing heat networks but not new heat networks for example would mean that all new heat networks would have to generate heat at levels equivalent to heat network notional for all their customers, regardless of whether they are supplying new buildings or buildings built many years previously. This would, in effect, decarbonise the heating supply for many existing buildings far in advance of wider government commitments on decarbonising heat in buildings. All heat network connections to new buildings will need to deliver (potentially sleeved) heat in line with the heat network concurrent notional standard set out in The Future Homes Standard 2025: dwelling notional buildings for consultation

for homes and the draft National Calculation Methodology Modelling Guide for non-domestic buildings. Connections to existing buildings will need to comply with Section 5 of the relevant volume of Approved Document L for existing dwellings or buildings other than dwellings, which state that replacement heating systems should not have higher CO2 or primary energy standards than the original heating source. The Department for Energy Security and Net Zero will shortly publish proposals on heat network zoning in England, which will set out how Government intends to develop low-carbon heat networks in Zones across the country from 2025. Government is also committed to developing CO2 emission standards for all networks across the country in the mid-2030s, regulated by Ofgem as the national heat network regulator, which will require the sector to transition to lower-carbon heat sources.

Management of the sleeving process will be led by the Department for Energy Security and Net Zero. Heat networks will need to be registered as part of a rebuilt Products Characteristic Database (PCDB). The current PCDB is an online portal linked to the Standard Assessment Procedure (SAP) and is used for storing the characteristics of many different forms of building technologies. As part of the development of the Home Energy Model (which will be replacing SAP), the existing PCDB will be fully rebuilt (see Section 3.3 in the Home Energy Model consultation).

As part of the management of the sleeving process, heat networks will need to register their generation heat sources in this rebuilt PCDB. These PCDB entries will demonstrate where heat networks have new or existing unused capacity to deliver heat at sufficiently low levels of CO2 and Primary Energy to comply with the Future Homes and Buildings Standards. This approach will ensure that heat networks will continue to be able to expand to connect to new buildings under the Future Homes and Buildings Standards and will incentivise heat networks to add low-carbon generation to their networks. We intend to use the outputs of the PCDB database to demonstrate compliance for heat network connections with the energy efficiency requirements of the Building Regulations for both domestic and non-domestic buildings.

Additional details on the compliance process for Heat Networks are given in the draft Approved Documents in Appendix D (ADL1) and Appendix F (ADL2). Alongside the HEM consultation, g a prototype spreadsheet tool is available upon request from heatnetworks@energysecurity.gov.uk. This tool will allow respondents to better understand how an application for sleeving may work in practice. This should be viewed in conjunction with the guidance in the Approved Documents. It should be noted that the current spreadsheet tool is intended to aid consultation responses and demonstrate the principle of sleeving only. The actual data entry process for sleeving when the Future Homes and Building Standards come into force may operate differently.

Question 53. Do you agree that new homes and new non-domestic buildings should be permitted to connect to heat networks, if those networks can demonstrate they have sufficient low-carbon generation to supply the buildings' heat and hot water demand at the target CO2 levels for the Future Homes or Buildings Standard?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 54. Do you agree that newly constructed district heating networks (i.e., those built after the Future Homes and Buildings Standard comes into force) should also be able to connect to new buildings using the sleeving methodology?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 55. Do you agree with the proposed guidance on sleeving outlined for Heat Networks included in Approved Document L, Volume 1: Dwellings and Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

It will be important to make sure that low carbon capacity assigned via the sleeving process is used in practice. The PCDB process will manage where existing capacity is to be declared as unused (and therefore available for sleeving if sufficiently low-carbon) and the calculation of the carbon intensity of this heat. DESNZ will consult in early 2024 on proposals for how the carbon emissions of heat networks will be assessed as part of plans for Ofgem's regulation of the sector. As part of this consultation, we will publish more specific proposals for how the enforcement and monitoring of the sleeving system under the Future Homes and Building Standards will be integrated within this.

Question 56. Do you agree that heat networks' available capacity that does not meet a low carbon standard should not be able to supply heat to new buildings?

a. Yes
b. No (please provide further details regarding how this unused higher carbon capacity should be accounted for)

> **Question 57.** What are your views on how to ensure low-carbon heat is used in practice?

> **Question 58.** Are there alternative arrangements for heat networks under the Future Homes and Building Standards that you believe would better support the expansion and decarbonisation of heat networks?

10. Smart meters

10.1 Background

Smart meters are an important upgrade to our national energy infrastructure and underpin the cost-effective delivery of the government's commitment to achieve net zero greenhouse gas emissions by 2050. They are a valuable tool in modernising the way we use energy in homes and non-domestic buildings and support the transformation of the retail energy market to make it work better for energy consumers.

At the end of September 2023, there were 33.9 million smart and advanced meters across Great Britain, representing 59% smart coverage[footnote 4]. Smart meters therefore represent the default meter in Great Britain in domestic properties, and as such the government wishes to ensure new homes can accommodate these. This was confirmed in the British Energy Security Strategy, published in 2022, where HMG has committed to "… ensur[e] all new homes are designed so that smart meters can be fitted from the outset, in advance of the Future Homes and Building Standards by 2024."

Smart meters are popular with consumers and provide material benefits to the housing stock in Great Britain. Firstly, there is good consumer demand for smart meters: 7 in 10 (70%) of meters in Great Britain either are already upgraded to smart meters or are in homes where the householders say they are likely to seek or accept a smart meter offer in the next 6 months. The ability to install smart meters also makes housing stock 'flexibility ready', as they enable access to smart energy tariffs which are increasingly in demand

and reward households for shifting their energy use away from peak periods.

Relatedly, there is an expectation for homes to be ‘new-technology’ ready; smart meters enable a range of benefits and are a key tool in helping consumers with their energy management. Finally, in order to be eligible for Smart Export Guarantee (SEG) payments, generators must have an export meter that is capable of taking half-hourly measurements, such as a smart meter.

10.2 Updated guidance

In November 2020, the government published voluntary guidance for builders, architects and all those involved in the specification of metering locations in new build premises[footnote 5].

Following engagement with industry, we believe that this guidance can be updated to provide additional clarity for those in the construction industry. This updated guidance focuses on solutions to the most common blockers to successful smart meter installations and commissioning, particularly in multiple dwelling units (blocks of flats). It provides guidelines on 4 areas where developers can take steps to ensure smart meters can be installed and commissioned in their buildings from the outset:

- the location of smart meter installations
- the spacing around smart electricity meters
- materials which block signal propagation to the Communications Hub that is fitted to the smart electricity meter
- logistics

This guidance, unlike other guidance in the Approved Documents, does not describe routes to compliance with the Building Regulations. Instead, it looks to describe good practice in the installation of smart meters. We propose referencing the new guidance within the Approved Documents, however, to ensure the guidance is easily accessible to relevant parties.

The full text of this draft guidance (https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation) has been published alongside this consultation. We would like feedback on this draft guidance and whether referencing it in the Approved Documents will increase the amount of successful smart meter installations.

> **Question 59.** Do you agree that the draft guidance provides effective advice to support a successful smart meter installation in a new home, appropriate to an audience of developers and site managers?

a. Yes
b. No

If not, please provide suggestions for how the draft guidance could be improved. Please provide evidence and sources for your statements where appropriate.

> **Question 60.** Do you agree that voluntary guidance referenced in draft Approved Document L, Volume 1: Dwellings is the best approach to encouraging smart meters to be fitted in all new domestic properties?

a. Yes
b. No

If not, is there anything else you think the government should be doing to ensure that smart meters are fitted in all new build properties?

11. Accounting for exceptional circumstances

11.1 Background

We recognise that meeting the Future Homes and Buildings Standards may present challenges for some parts of industry. Building to these standards will need supply chains to adapt and workforce upskilling. With appropriate transitional arrangements (Section 14) in place, however, our view is that it will be possible for the vast majority of new homes and non-domestic buildings to be built to the standards we are proposing.

That said, we also recognise that as the energy efficiency requirements we set for new buildings become stricter, there may be exceptional circumstances where these standards cannot reasonably be applied. We do not believe that this necessitates less ambitious standards, and would

propose that, instead, we allow dispensation or relaxation in these exceptional circumstances.

As per regulation 11(1) of the Building Regulations 2010, and section 8 of the Building Act 1984, developers can apply to the relevant local authority to relax or dispense with a requirement in the Building Regulations. A local authority should grant relaxation or dispensation if, and to the extent that, it judges the requirement to be unreasonable in relation to that specific building work. Regulation 11(3), however, provides that in relation to new buildings, regulations 25A, 25B and 26 cannot be relaxed. Regulation 26 is the requirement not to exceed the target CO2 emission rate for the building, calculated using the national calculation methodologies. We are proposing to repeal regulations 25A and 25B (see Section 12.3).

Being unable to relax Regulation 26 means that key parts of the energy efficiency requirements in the 2010 Regulations cannot be relaxed or dispensed with. By contrast, almost all other parts of the Regulations, including the structure and fire safety requirements, can be relaxed or dispensed with where the relevant local authority judges the requirement to be unreasonable. This difference stems from EU law.

11.2 Allowing relaxation where reasonable

Now that we have left the EU, we propose that we amend regulation 11(3) to bring Regulation 26 within scope of possible relaxation or dispensation. This would mean that a developer could apply to the relevant local authority (or the Building Safety Regulator where they are the building control authority) for relaxation or dispensation of any of the energy efficiency requirements in the Regulations. The application should be granted where the local authority (or Regulator) thought that the standard was unreasonable in that particular case.

We intend to include guidance in the Approved Documents (subject to the findings of this consultation) for developers considering making an application. To inform that guidance, we would welcome examples of circumstances in which you believe relaxation or dispensation would be warranted. For example, we anticipate that, in areas participating in future hydrogen heating trials, local authorities (or the Building Safety Regulator) may deem it suitable to relax or dispense with the energy performance requirements for a small number of new buildings to enable them to participate in the trials. We do, however, recognise that it would need to be a flexible test that could respond to the particular challenges faced on each development. Ultimately it will be for local authorities or the Building Safety Regulator to decide if relaxation or dispensation is appropriate.

We are conscious that we cannot anticipate all circumstances in which developers may apply for relaxation or dispensation, or the decisions that local authorities will make. We would, however, like to monitor how the power is being used and if a similar approach is being taken by different local authorities. We would also like to keep under review the additional demands that assessing applications places on local authorities. We therefore propose that, if requested, local authorities would be required to submit the applications they receive and the decisions they make, along with their reasoning, for review.

> **Question 61.** Do you agree that it should be possible for Regulation 26 (CO2 emission rates) to be relaxed or dispensed with if, following an application, the local authority or Building Safety Regulator concludes those standards are unreasonable in the circumstances?

a. Yes
b. No (please provide justification)

> **Question 62.** [If yes to previous question], please share any examples of circumstances where you think it may be reasonable for a local authority to grant a relaxation or dispensation?

> **Question 63.** Do you think that local authorities should be required to submit the applications they receive, the decisions they make and their reasoning if requested?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

> **Question 64.** Are there any additional safeguards you think should be put in place to ensure consistent and proportionate use of this power?

12. Legislative changes to the energy efficiency requirements

12.1 Background

Enacting the Future Homes and Buildings Standards will primarily involve changes to the Approved Documents and the notional building specification. We, however, also intend to make some changes to the Building Regulations to ensure they reflect our dual aims under the Future Homes and Buildings Standards of reducing carbon emissions and conserving energy. We are also proposing to repeal regulations that will become redundant with these changes.

12.2 Amending Part L1 of Schedule 1 to reference greenhouse gas emissions reduction

Part L1 of Schedule 1 makes provision for the conservation of fuel and power in buildings by limiting heat gains and losses and providing fixed building services which are energy efficient, have effective controls and have been commissioned correctly. Government also recognises the important role that energy efficient buildings have in reducing carbon emissions from the built environment. We propose amending Part L1 of Schedule 1 to better reflect the dual goals of conserving energy and reducing carbon emissions.

Most of the time, measures designed to conserve fuel and power will, by implication, reduce greenhouse gas emissions. This amendment to the regulations, however, will mean that compliance with Schedule 1 of the Building Regulation could mean meeting a standard whose main focus is emissions reduction (rather than reducing energy use). For example this would provide the legal basis for a future CO2 emission rate standard in the approved documents for MCU buildings (see Section 7).

Our updated draft of Part L1 of Schedule 1 is below, with proposed amendments in bold. The draft Approved Documents contain updated guidance on complying with Part L1 as amended.

Draft Part L1 of Schedule 1

Conservation of fuel and power **and minimisation of greenhouse gas emissions** L1. Reasonable provision shall be made for the conservation of fuel and power **and the minimisation of greenhouse gas emissions** in buildings by—
(a) limiting heat gains and loses—
(i) through thermal elements and other parts of the building fabric; and
(ii) from pipes, ducts and vessels used for space heating, space cooling and hot water services;
(b) providing fixed building services which—

(i) are energy efficient to a reasonable standard;
(ii) minimise greenhouse gas emissions;
(iii) have effective controls; and
(iii) are commissioned by testing and adjusting as necessary to ensure they use no more fuel and power than is reasonable in the circumstances.

'Greenhouse gas' would have the same meaning as it does in section 92 of the Climate Change Act 2008.

> **Question 65.** Do you agree that Part L1 of Schedule 1 should be amended, as above, to require that reasonable provision be made for the conservation of energy and reducing carbon emissions?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

12.3 Regulations 25A and 25B

As the Future Homes and Buildings Standards improve energy efficiency requirements for new buildings, some parts of the Building Regulations will become redundant. Some of the energy efficiency provisions in the Regulations were introduced to comply with our obligations under EU law. Now we have left the EU, we have reviewed those provisions carried across from EU law to determine which provisions no longer have any effect and can be repealed.

Regulation 25A requires people carrying out building work to consider whether it would be feasible to use "high-efficiency alternative systems" during construction. Examples provided in the regulation are decentralised energy supply systems based on energy from renewable sources, co-generation, district or block heating or cooling, and heat pumps. Regulation 25B stipulates that new buildings must be "nearly zero-energy" buildings. A nearly zero-energy building is defined in regulation 35 as a building that has "a very high energy performance… where the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby". Both regulations were inserted into the Building Regulations to comply with EU law, specifically Directive 2010/31/EU which sets requirements around the energy efficiency of buildings.

We intend to repeal regulations 25A and 25B because we consider them to be redundant once the Future Homes and Buildings Standards have been

introduced. Homes and non-domestic buildings will be ‘zero-carbon ready’, meaning that no further work will be necessary to ensure they have zero carbon emissions as the electricity grid continues to decarbonise. Low-carbon heating will be installed in the vast majority of new buildings, and renewable energy generation will be widespread. We consider that the aims of regulation 25A and 25B will therefore automatically be met.

> **Question 66.** Do you agree that regulations 25A and 25B will be redundant following the introduction of the Future Homes and Buildings Standards and can be repealed?

a. Yes
b. Yes, and I’d like to provide further information
c. No (please provide justification)

13. A review of our approach to setting standards

13.1 Background

As set out in more detail in Sections 4.1 and 6.1, we use 2 ways to control the energy efficiency of new buildings. First, building energy modelling is used to set whole-building performance requirements: the target primary energy rate, the target emission rate and the target fabric energy efficiency rate. Second, additional guidance and minimum standards are used to control fabric and fixed building services.

In setting whole-building performance requirements we use a notional building approach (Section 4). To determine the energy performance and demonstrate compliance against these performance requirements, calculations of emission rates, fabric energy efficiency rates and primary energy rates must be carried out according to the national calculation methodologies approved by the Secretary of State.

Regulations 25, 26, 26A and 26C of the Building Regulations state that the whole-building performance requirements will be provided and must be met. Regulation 24 states that a methodology of calculation of the energy performance will be approved; these are currently the Simplified Building Energy Model (SBEM) or Dynamic Simulation Models (DSM) for non-domestic buildings. For domestic buildings, the government is consulting on

the new ‘Home Energy Model’, which will replace The Government’s Standard Assessment Procedure for Energy Rating of Dwellings (SAP) when it is published. To ensure that calculation methods are well suited to the technologies required of new, net zero ready homes, the government has decided to undertake the first complete overhaul of the SAP methodology and wider ecosystem to ensure it is fit for Net Zero. We encourage stakeholders to provide feedback on this new approach through the separate Home Energy Model (https://www.gov.uk/government/consultations/home-energy-model-replacement-for-the-standard-assessment-procedure-sap) and Home Energy Model: Future Homes Standard assessment (https://www.gov.uk/government/consultations/home-energy-model-future-homes-standard-assessment) consultations.

We currently do not approve any other methods.

For homes in particular, we recognise that the notional building approach is not supported by all stakeholders. In response, and to ensure this approach is aligned with the new proposed HEM, we have reviewed our current approach to setting standards to understand if it remains appropriate in the context of increasingly low carbon, low energy consumption buildings. This review includes the use of notional buildings and minimum standards.

13.2 National Calculation Methodologies for Homes

We propose adopting the new Home Energy Model: Future Homes Standard assessment as the approved calculation methodology to demonstrate compliance of new homes with the Future Homes Standard, replacing SAP.

As in previous SAP calculations, the Home Energy Model will estimate the energy use and carbon emissions of a dwelling under certain conditions and compare these to a notional building.

The government has published a package of materials relating to the Home Energy Model (Please see Section 3.2 and Table 13.1 below).

Table 13.1: Materials relating to the Home Energy Model

Item	Description	Audience
The Home Energy Model Consultation	This document explains the overhaul to the SAP methodology and seeks views	This document will be of interest to those who want to understand the proposed changes to the

Item	Description	Audience
	on the new approach taken by the Home Energy Model.	SAP methodology and wider SAP landscape.
Home Energy Model: Future Homes Standard assessment Consultation	The Home Energy Model: Future Homes Standard assessment consultation seeks views on the parts of the new Home Energy Model methodology which are specific to demonstrating compliance with the Future Homes Standard.	The Home Energy Model: Future Homes Standard assessment consultation will be of interest to those who want to understand the methodology behind the proposed standardised occupancy, energy demand, weather, and fuel assumptions to be used in Future Homes Standard assessments, as well as the methodology for producing the output compliance metrics.
The Home Energy Model: Future Homes Standard assessment consultation tool	Alongside the consultations listed above, we have published Future Homes Standard assessment demonstration software, called the Home Energy Model: Future Homes Standard assessment consultation tool, as a web browser-based application. The Home Energy Model: Future Homes Standard assessment consultation tool gives the opportunity to interact with the Home Energy Model and Future Homes Standard assessment model, by providing a demonstration user interface.	The Home Energy Model: Future Homes Standard assessment consultation tool will be of interest to those who want to test out an early version of Home Energy Model and Future Homes Standard assessment and understand whether different building designs are likely to comply with the proposed Future Homes Standard.

Find the following documents:

- The Home Energy Model consultation (https://www.gov.uk/government/consultations/home-energy-model-replacement-for-the-standard-assessment-procedure-sap)

- The Home Energy Model: Future Homes Standard assessment consultation (https://www.gov.uk/government/consultations/home-energy-model-future-homes-standard-assessment)
- The Home Energy Model: Future Homes Standard assessment consultation tool (https://www.homeenergymodelconsultation.org.uk)

> **Question 67.** Do you agree that the Home Energy Model should be adopted as the approved calculation methodology to demonstrate compliance of new homes with the Future Homes Standard?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

13.3 Reviewing the notional building approach for homes

Some stakeholders have argued that the notional building approach should be replaced. Reasons that have been presented in favour of alternative approaches include that the notional building does not promote efficient built form or homes that share fabric elements; it does not encourage optimising solar orientation; and that absolute targets can allow standards to be compared over time more easily. The way that the notional building currently works has also been criticised, for instance it uses standardised assumptions, such as weather, that lead to standardised assessments.

We have also heard that the notional building as a concept may not be easily understandable for consumers. The notional building and the national calculation methodology, however, are not intended to be consumer focused. It is likely that many buyers of new homes do not understand the notional building approach and would be unable to check their home's performance against targets generated by the notional model. However, EPCs and Home User Guides are in place as a consumer facing document to allow consumers to understand their home's energy performance. Wider work is being carried out by the government to make sure that end users have the information that they need to take action to improve the energy efficiency of their building.

Finally, some stakeholders have raised concerns that the notional building approach results in a larger performance gap. From a literature review in the field, there is not clear evidence to either support or discredit this. The use of standardised values in models (for example standardised climate data and occupancy patterns) could be a potential cause of the

performance gap. A standard setting approach based on absolute targets, however, would also use some standardised values.

We believe, however, that the notional building provides a range of benefits that effectively allow developers to meet our ambitious efficiency standards while allowing a degree of flexibility in design to deliver homes that people want. The key benefits are:

- Using the same shape building as the one being built allows complex and interesting shapes of building to be built without having to compensate elsewhere. It is important to the government that an emphasis is placed beauty, place-making and good design, while meeting the objectives of decarbonisation and reducing bills.
- The building industry is familiar with the notional building approach and has experience in designing using this approach. A change in approach would cause disruption and uncertainty, in turn increasing costs to housebuilders.
- The notional building approach allows detached houses to be built to the same fabric specification, and therefore using the same materials and skills, as other homes, which is a popular built form for buyers of new homes. The government believes that this supports the mass purchasing, mass production, and mass design approach that is required for medium and large housebuilders to meet housing supply targets.
- The current notional building uses the same size building as the one a developer intends to build. An approach using absolute targets on a per m2 basis could make it more technically difficult to build smaller houses or bungalows than a larger house.
- Aside from fabric standards, the notional building approach provides a developer with an initial design that will meet the Building Regulations. This is a useful tool for small and medium sized builders who may not have the resource to design from scratch.
- The notional building approach tailors the whole building energy efficiency requirements to each building type. By contrast, an absolute target would likely have to be set at a level that more efficient building types, such as flats, would find it easier to comply with. This does not maximise the opportunity to reduce energy demand from each building.

After careful consideration, we are content that the benefits of this approach outweigh these criticisms and there does not appear to be a strong case for moving away from the notional building approach. We intend for the notional building approach to be retained as the government's primary method for setting standards. However, we agree that the notional building could be improved. In the following section we propose a number of changes to the notional building approach, including standardised assumptions; weather; demonstrating compliance in buildings that contain multiple dwellings; the use of secondary heating; and window and door U-value calculations.

13.3.1 Standardised assumptions

While we propose to continue using a notional building as an overall approach, there are choices to be made on which parameters use standardised properties. A thorough review of each part of the dwelling notional building has been done as part of the transition to the HEM. This review considered which parameters should have a reference value provided, and which parameters should be set as the ‘same as actual’. The full notional building can be seen in The Future Homes Standard 2025: dwelling notional buildings for consultation. We would welcome any comments on the choices made here, and where limits have been placed on inputs for the actual building.

> **Question 68.** Please provide any comments on the parameters in the notional building.

13.3.2 Weather

This section explores using local weather data in HEM to demonstrate compliance with the FHS. The current notional building, used for Building Regulations compliance under the 2021 requirements, uses climate data from a single location (the East Pennines) to set performance standards for the entire country. This method has been used historically because it supports standardised construction practices. For instance, designers can create a single house design that can be built across England without having to take local weather conditions into account.

For the Future Homes Standard, we are proposing that the notional building sizes the heat pump according to the calculated heat demand of the dwelling. There are 2 outcomes that the new notional building could create if a single weather location continues to be used to calculate whole-building performance requirements:

- Sizing a heating system on a standardised weather location will mean that the heat pump is over- or under-sized for the heating demand of the dwelling. It will then not perform optimally, resulting in higher energy bills for consumers.
- Sizing a heating system on the actual location would mean that designers would have to compensate in other aspects of their building design to meet the target efficiency rates. This is disincentivising correct sizing of heating systems.

The above issue can be illustrated with the following example: A home in the north of the country will experience colder temperatures throughout the year than its southern counterpart. A standard based on a single weather location could mean that both homes are modelled using a similar sized heat pump. If used in practice, such a heat pump may be too small for the heat demand in the north and too large in the south compromising

performance of the system. If a developer tried to remedy this problem in the actual dwelling, they would have to change the size of the heat pump which may result in it no longer passing against performance requirements, which are currently calculated using the single weather location. In this way, use of a single weather region disincentivises the correct size of heat pumps being installed in practice.

We are therefore proposing that for the Future Homes Standard, the performance requirements are calculated in HEM using local weather. This supports the correct sizing of the heat pump in the notional building and consequently in the actual building as designers work towards achieving compliance.

We are proposing this change because, compared to gas boilers, heat pump efficiencies are more sensitive to being incorrectly sized. While our approach remains technology agnostic, heat pumps are likely to play a significant role in new homes constructed to the Future Homes Standard, so it is important that we address this issue.

We anticipate local weather to mean at the regional level, similar to the weather regions seen in SAP 10. By using local weather data we can make sure that heating systems are sized for the heating load, while fabric standards remain static across the country. There are also other benefits to this approach; for example, developers will be enabled to make rational cost-effective decisions on their building design based on the location. This could be through making more use of solar generation in the south, or better performing fabric in the north.

We are aware that there may be some unintended consequences associated with the use of a localised weather approach. If designers closely follow the notional building specification it will be straightforward for housebuilders to use a similar design across the country (only varying heat pump size), however, developers may face disruption to their standardised design approach if they if they do not closely follow the notional building specification.

> **Question 69.** Minimum standards already state that heat pumps should have weather compensation and we would like to understand if stakeholders think this is enough to ensure efficiency of heat pumps under the varying weather conditions across England. Should the notional building use local weather?

a. Yes
b. No

Please provide any evidence you have on the unintended consequences that could arise as a result of using local weather in the notional building. If

possible, please comment on the impact on the construction industry in terms of design and building feasibility. We also welcome views on whether weather compensation is sufficient to ensure heat pump efficiency.

13.3.3 Buildings that contain multiple dwellings

Currently Approved Document L, Volume 1: Dwellings allows an average target emission rate, primary energy rate and fabric energy efficiency rate to be used for demonstrating compliance in buildings that contain multiple dwellings.

This offers flexibility in delivering efficient fabric and energy generation across a whole building, trading individual dwellings off against one another. This is useful for flats, where there is challenging thermal bridging, limited surface area and a shared roof for generation. However, this approach is also used for terraced houses, where there is less of a justification for this. With an increased use of solar generation and a focus on energy bills, it is necessary that each home performs well and that the generation of renewable energy is provided to each home so households can benefit from reduced energy bills. We therefore propose to remove this average compliance approach for terraced houses.

> **Question 70.** Do you agree with the revised guidance in The Future Homes Standard 2025: dwelling notional buildings for consultation no longer includes the average compliance approach for terraced houses?

a. Yes
b. No

Please provide any evidence you have on the unintended consequences that could arise as a result of these changes.

13.3.4 Secondary heating

Currently, Approved Document L, Volume 1: Dwellings allows a chimney or flue to be provided when no secondary heating appliance is installed. The guidance sets out efficiencies to be assumed when determining the dwelling primary energy rate and dwelling emission rate.

We propose that where no secondary heating appliance is installed, there should be no chimney or flue provided. Draft text is provided in section 2 of draft Approved Document L, Volume 1: Dwellings. To note, this guidance does not preclude the installation of ‘decorative’ elements, e.g., a faux chimney stack.

> **Question 71.** Do you agree with the revised guidance in Approved Document L, Volume 1: Dwellings which states that you should not provide a chimney or flue when no secondary heating appliance is installed?

a. Yes
b. No

Please provide any further evidence.

13.3.5 Window and door U-value calculations

Currently, Approved Document L, Volume 1: Dwellings allows the U-value of a window or door to be determined using standard sizes and configurations. This may be used in both energy models and when demonstrating compliance against minimum standards.

A new national calculation methodology for dwellings is proposed called the Home Energy Model, as discussed above. The new Home Energy Model is based on the latest evidence and is more sophisticated than SAP, with the aim of improving accuracy of energy modelling. It is logical to improve the accuracy of inputs to the Home Energy Model in order to make the most of the improved model. One source of inaccuracy is the use of U-value calculations that use standard sizes and configurations or default values. We propose, therefore, that for new dwellings, the U-value of windows and doors should be calculated using either the actual size and configuration of the window or door, or measured using the appropriate hot box method set out in the BS EN ISO 12567 series.

This means it would no longer be possible to use standard sizes or configurations, or to use the U-value of a window or door taken from the default values in the SAP version 10, Table 6e. This change would mean that the U-values of windows and doors used in the Home Energy Model are more accurate, and therefore improve the accuracy of the energy modelling. For the sector, the change would mean an increase in heat transfer modelling or testing for different window sizes and configurations.

We are keen to identify a pragmatic approach to determining the U-values of windows and doors that recognises any practical issues associated with these proposed changes. We welcome views from stakeholders on the practicalities of the proposed approach, and any alternative solutions.

> **Question 72.** Do you agree with the proposed approach to determine U-values of windows and doors in new dwellings?

a. Yes
b. No

Please provide any further evidence.

13.3.6 Thermal bridging

Currently, Approved Document L, Volume 1: Dwellings allows thermal bridges in new dwellings to be assessed using 1 of 4 methods: using construction joint details assessed by a suitably competent person; using independently assessed thermal junction details from a reputable non-government database; using values from the Standard Assessment Procedure version 10.2, Table K1; or using a default y-value of 0.20W/(m^2.K). However, the new Home Energy Model does not accept y-values. This means that for new dwellings using the default value of 0.20W/(m^2.K) is no longer applicable. Instead, thermal bridges should be assessed using one of the remaining 3 methods.

> **Question 73.** Do you agree with the proposal to remove the default y-value for assessing thermal bridges in new dwellings?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

13.3.7 Curtain walling in homes

A curtain wall is a weather-proofing façade, which is typically highly glazed, and does not carry the weight of floors above it. The proposed notional buildings for the Future Homes Standard do not currently contain any dispensation for the potential challenges of curtain wall construction, unlike the 2021 energy efficiency standards We would like to seek information on the importance of curtain wall construction. We would also like to seek information on whether any elements of the fabric specification for the dwelling notional building is a challenge for curtain wall construction, for example, with regard to thermal bridging.

> **Question 74.** Do you have any information you would like to provide on the homes built to the Future Homes Standard using curtain walling?

13.4 National Calculation Methodologies for Non-domestic buildings

For non-domestic buildings 2 routes are available for assessing buildings, both of which must be compliant with the NCM as set out in the NCM modelling guide:

- for most simple buildings, using the Simplified Building Energy Model (SBEM)
- for more complex buildings, using an approved Dynamic Simulation Method

We are proposing improvements and updates to the NCM for non-domestic buildings, which affect both SBEM and DSM implementations of the methodology. Other proposals only affect SBEM and/or the government's associated free software interface iSBEM.

To allow consultees to investigate the effect of all changes, an interface to a draft Simplified Building Energy Model (cSBEM) and a draft NCM modelling guide (http://www.uk-ncm.org.uk/).

Research reports (https://www.uk-ncm.org.uk/disclaimer.jsp) outlining the findings of research ahead of the development of cSBEM for the Future Buildings Standard can also be found at the same website.

13.4.1 Reported underestimates of space heating in the NCM

Stakeholders have raised concerns that some space heating demand in some buildings is being underestimated by the NCM. To support these concerns, some case studies have been provided. As part of the ongoing development of the NCM we have investigated these concerns, identified possible reasons for the any underestimation and identified additional design and in-use building data which may help address the disparity. As a result, changes have been made to the underlying 'activity database' which attributes occupancy and usage parameters to different spaces in non-domestic buildings where data allows and is of sufficient quality. These changes are outlined in supporting documents available alongside the NCM modelling guide on the website above.

For activity types where there was insufficient evidence to make changes at this time the work has identified gaps in data coverage and targets for future research. The impact of occupants in school classrooms on internal heat gains, for example, has been re-evaluated. The assumed metabolic rate, which affects heat generation, has been adjusted to better suit the age group present in the space. Similarly, the occupancy density of storerooms, which are often unoccupied, is being reviewed. Equipment gains are also being reduced in areas such as offices, while illumination levels are being increased in settings where higher lighting precision is needed. These changes aim to improve the accuracy of energy assessments in different building scenarios.

13.4.2 Other updates to SBEM and iSBEM

To support the implementation of the Future Buildings Standard a number of other changes have been introduced for SBEM and its interface, iSBEM. These can be identified in the consultation software tool and accompanying documents published alongside the consultation. Updates include:

- introduction of a tool to support the production of heat pump system seasonal efficiencies, which works alongside SBEM and can be used to provide data when this is not readily produced by the system designer (for instance when some system details are unknown)
- ability to more readily input data where multiple lighting systems are in use in one zone
- ability to input round windows
- general improvements to iSBEM, including to usability and functionality allowing better use on tablet and mobile devices
- carbon factors for all fuels have been updated

> **Question 75.** Do you agree with the methodology outlined in the NCM modelling guide for the Future Buildings Standard?

a. Yes,
b. No (please provide justification)

> **Question 76.** Please provide any further comments on the cSBEM tool which demonstrates an implementation of the NCM methodology.

> **Question 77.** Please provide any further comments on the research documents provided alongside the cSBEM tool and which support the development of the NCM methodology, SBEM and iSBEM.

13.5 Other calculation methods

There have been calls by some in industry to allow other calculation methods to demonstrate compliance. As described above, we intend to approve the following methodologies for the purpose of demonstrating compliance with the Future Homes and Buildings Standards:

- for dwellings - the Home Energy Model (Section 3.2)

- for non-domestic buildings - The National Calculation Methodology (as outlined in the National Calculation Methodology Modelling Guide)

While we recognise calls to allow other methodologies used in industry, it is important there is only one approved calculation methodology for each building to ensure a standardised assessment process.

In response to this, we have undertaken an extensive series of exercises to compare the performance of the new Home Energy Model to other methodologies. These show that the Home Energy Model is well aligned to other industry models, and we are confident that further development work between now and implementation in 2025 will improve alignment further.

Please see the Home Energy Model consultation for further information on model validation.

14. Transitional arrangements

14.1 Background

When changes are made to the Building Regulations, transitional arrangements (also known as transitional provisions) are put in place setting out the limited conditions under which a building can be built to the previous standards. The arrangements give industry time to adapt to the new standards and allow work which is already in progress to be completed without major disruption. The arrangements also give certainty and assurance to developers about the standards to which they must build. Transitional arrangements are developed specifically for each change in the regulations and do not apply more generally to other changes to the Building Regulations.

As part of the 2021 Part L uplift we allowed a 6-month period between laying the regulations and the standards coming into force, followed by a 12-month transitional period. This meant that the regulations were laid on 15 December 2021 and came into force on 15 June 2022. Then during the transitional period, if a developer submitted an initial notice, a building notice or full plans application to the local authority prior to the uplift coming into force on 15 June 2022, work on that building was permitted to continue under the previous standards, provided work started on the building by 15 June 2023.

The transitional arrangements for the 2021 Part L uplift were more stringent than previous Part L transitional arrangements. They applied to individual buildings rather than an entire development. This was to make sure that the occupants of as many new homes and non-domestic buildings as possible could benefit from the high levels of energy efficiency and low levels of carbon emissions that are expected from new buildings.

The 2021 Part L uplift aimed to help pave the way for the 2025 Future Homes and Buildings Standards, which represent a significant change in the way we will heat new homes and non-domestic buildings. It is important that the transitional arrangements that we put in place take account of this and make sure that any disruption to projects that are already underway is minimised.

Recent amendments to the Building Act 1984 by the Building Safety Act 2022 brought in major changes to the building control process. We will adopt the new definition of ‘commencement’ for these transitional arrangements brought in by new regulation 46A of the Building Regulations. This means that for complex buildings, work is to be regarded as commenced when the foundations supporting the building and the structure of the lowest floor level of that building (but not the other buildings or structures to be supported by those foundations) are completed. Where the work consists of a building that is not complex, or a horizontal extension of a building, work is to be regarded as commenced when the sub-surface structure of the building or the extension including all foundations, basement level (if any) and the structure of ground floor level is completed.

14.2 Transitional arrangements for the Future Homes and Buildings Standards

For the 2021 Part L uplift, there was a 6-month period between the laying date of the new legislation and the date that the legislation came into force. This was followed by a 12-month transitional period. Transitional arrangements need to be proportionate to the scale of the delivery challenge, providing a reasonable period of time for industry to adapt whilst making sure that the momentum towards our net zero targets is maintained.

Although fabric requirements and the provision of solar PV panels are similar to what we expect developers to deliver to meet the 2021 Part L uplift, we recognise that both of the proposed FHS and FBS options represent a significant shift towards the use of low-carbon technologies. We would welcome feedback from consultees on whether the same arrangements as for the 2021 Part L uplift are proportionate for these new standards, or whether a longer period of up to 12 months between laying

the regulations and them coming into force is more suitable. As such we are consulting on 2 options for the length of transitional arrangements:

- Option 1: a 6-month period between the laying date of the Future Homes and Buildings Standard regulations and publication of full technical specification and the regulations coming into force.
- Option 2: up to 12-months between the laying date of the Future Homes and Buildings Standard regulations and publication of full technical specification and the regulation coming into force.

Both options would be followed by a 12-month transitional period. As with the 2021 Part L uplift, the transitional arrangements for the 2025 Future Homes and Buildings Standards will apply to individual buildings on a site. They will apply where a building notice, initial notice, or an application for building control approval accompanied by the appropriate plans has been submitted to the local authority or Building Safety Regulator (as appropriate) in respect of that building before the new standards come into force and work on that building commences, as defined in new Regulation 46A of the Building Regulations 2010, within the transitional period. Where work commences on an individual building after this transitional period, that building will have to comply with the new standards (even if a building notice, initial notice or application for building control approval were submitted before the new standards came into force). The Approved Documents, new notional building specifications and National Calculation Methods (NCMs), including the new HEM, will also run to this timeline. This means that they will be published when the legislation is laid, come into force 6 or up to 12 months later, and have the same 12-month transitional period.

> **Question 78.** Which option describing transitional arrangements for the Future Homes and Buildings Standard do you prefer? Please use the space provided to provide further information and/or alternative arrangements.

a. Option 1
b. Option 2

Please provide further information or suggest alternative transitional arrangements with your rationale and supporting evidence.

> **Question 79.** Will the changes to Building Regulations proposed in this consultation lead to the need to amend existing planning permissions? If so, what amendments might be needed and how can the planning regime be most supportive of such amendments?

a. Yes (please provide further information)
b. No

14.3 Sunsetting of previous transitional arrangements for new buildings

For the 2021 Part L uplift, we permitted buildings captured under the transitional arrangements put in place for earlier updates to energy efficiency requirements (meaning amendments made in 2013 and 2010) to be exempt from the 2021 standards. While we appreciate that many developments are built out over a number of years, it cannot be right that new buildings today are continuing to be built to very old standards. It means that occupiers do not benefit from the levels of energy efficiency and the bill savings they might expect from a brand-new building. It also means that these new buildings will have carbon emissions that are incompatible with reaching net zero by 2050.

We therefore propose that the Future Homes and Buildings Standards applies to new buildings, regardless of whether the site has benefited from previous transitional arrangements. As consulted on in the 2019 Future Homes Standard consultation, we propose sunsetting the transitional provisions that accompanied the changes to the energy efficiency requirements in 2010 and 2013.

We propose to do this by applying the Future Homes and Buildings Standards transitional provisions above to all buildings without exception, permitting individual buildings, where work on which has commenced (as per the new definition of commencement above) before the end of the transitional period for the Future Homes and Buildings Standards, to continue to be built out to the relevant earlier standard. Buildings that are commenced after this date will be subject to the Future Homes and Buildings Standards. Any building being built to the new standards should also comply with up-to-date ventilation standards. This would mean after the end of the transitional period for the Future Homes and Buildings Standards, no buildings would benefit from the site-wide transitional arrangements associated with 2010 and 2013 changes to the Building Regulations. Moreover, while historic transitional provisions applied to work that had ‘started’ within a certain period, these proposed transitional provisions will apply to work that has ‘commenced’, as newly defined. This will mean that, in general, work will have to be further progressed than before to benefit from transitional arrangements.

> **Question 80.** Do you agree that the 2010 and 2013 energy efficiency transitional arrangements should be closed down, meaning all new

> buildings that do not meet the requirements of the 2025 transitional arrangements would need to be built to the Future Homes and Buildings Standards?

a. Yes
b. No (please provide justification)

We are aware that there are some instances where previous transitional arrangements, including those set out for the 2021 uplift, have been used as a way to build to earlier energy efficiency standards for a number of years after those standards have been superseded. That's because work on developments or buildings 'starts' within the relevant transitional period but is not progressed or completed until years later. We therefore would like to gather evidence from consultees about whether the sunsetting of previous transitional arrangements would benefit from further mechanisms to ensure that as many homes as practicable are built to the new Future Homes Standard.

We could have a shorter transitional period for those building to 2013 and earlier standards. This would mean that work on buildings relying on 2021, 2013 and 2010 transitional provisions (and therefore building to 2013, 2010 and 2006 standards respectively) would have to commence earlier than other buildings in order to be able to build to those previous standards.

One other such mechanism could be to provide 'build-by' dates. If these were introduced, homes would need to be completed by that date or lose the benefit of those transitional arrangements and would need to meet the 2025 energy efficiency requirements. We welcome views on this, or other, possible approaches to effectively sunsetting historical transitional arrangements.

We are aware that sunsetting historical transitional arrangements may have unintended consequences on some sites. We therefore welcome any additional evidence that might support us in developing the final proposals. We would be particularly interested to hear about the number and nature of sites still building to superseded standards and the possible impact closing previous arrangements down could have on housing supply and development costs. We also encourage you to provide any evidence you may have of instances where energy efficiency transitional arrangements have been improperly used.

> **Question 81.** What are your views on the proposals above and do you have any additional evidence to help us reach a final view on the closing of historical transitional arrangements?

15. Part O – call for evidence

15.1 Background

In December 2021, a new legal requirement was introduced in the Building Regulations (Part O) to reduce the risk of overheating in new residential buildings. Part O1 of Schedule 1 to the Building Regulations states that reasonable provision must be made to limit unwanted solar gains in summer, and to provide an adequate means of removing heat from the indoor environment. In meeting these obligations, account must be taken of the safety of any occupant and their reasonable enjoyment of the residence.

Mechanical cooling can only be used to meet the requirement where other methods are incapable of removing sufficient heat from the home.

We expect the majority of housebuilders will now have had experience applying Part O to real projects. The relevant parts of the industry should now have had time to understand how the new regulations and guidance are working in practice. As such, we see this as a suitable time to seek views and evidence on Part O. We would like to understand which elements of Part O should be prioritised for review and would benefit from research and analysis to better understand any omissions or issues. This will then be used to inform any update to Part O and the Approved Document O over the longer term.

After the publication of Approved Document O, Government issued a set of Frequently Asked Questions (FAQs) on the gov.uk website. The web page provides additional guidance, to help designers and housebuilders to apply the Part O requirements in practice. We intend to adopt relevant parts of the FAQs into a future revision of Approved Document O. We are also aware that some industry bodies have produced their own guidance for the application of Part O. We are keen to hear from these bodies on any ways that the guidance could be improved.

15.2 Widening the scope of Part O of the Building Regulations 2010

The regulations apply to new dwellings, institutions, and buildings with one or more rooms for residential purposes (excluding hotels). They do not apply to homes created through a material change of use (for example, a non-domestic building converted into a domestic building). Extending Part O to MCU has potential for climate adaptation benefits. The Building Safety

Regulator is currently carrying out technical research on the impact of applying the Part O requirements to homes created through a material change of use. We plan to publish this research in 2024.

The Building Regulations 2010 define a material change of use in Regulation 5, as follows.

> **5.** For the purposes of paragraph 8(1)(e) of Schedule 1 to the Act and for the purposes of these Regulations, there is a material change of use where there is a change in the purposes for which or the circumstances in which a building is used, so that after that change—
>
> (a)the building is used as a dwelling, where previously it was not;
>
> (b)the building contains a flat, where previously it did not;
>
> (c)the building is used as an hotel or a boarding house, where previously it was not;
>
> (d)the building is used as an institution, where previously it was not;
>
> (e)the building is used as a public building, where previously it was not;
>
> (f)the building is not a building described in classes 1 to 6 in Schedule 2, where previously it was;
>
> (g)the building, which contains at least one dwelling, contains a greater or lesser number of dwellings than it did previously;
>
> (h)the building contains a room for residential purposes, where previously it did not;
>
> (i)the building, which contains at least one room for residential purposes, contains a greater or lesser number of such rooms than it did previously;
>
> (j)the building is used as a shop, where previously it was not; or
>
> (k) the building is a building described in regulation 7(4)(a), where previously it was not.

We are seeking views and evidence on the extent of overheating issues in homes created through a material change of use and whether the Part O requirements should also apply in these circumstances. We would like to receive views on the range of the different material change of use scenarios that Part O could be applied to. Examples include an office building being converted into a block of flats; a house being split into multiple flats; a barn

being converted into a house; or a room for residential purposes being created.

> **Question 82.** Part O does not apply when there is a material change of use. Should it apply?

a. Yes
b. Yes, but only for some types of conversion (please list from reg 5a-k or describe the type)
c. No

Please provide more details about why Part O should/should not apply to a material change of use and, if possible, point to existing evidence/examples that demonstrates your view.

> **Question 83.** Apart from material change of use, is there anything missing from the current scope of Part O?

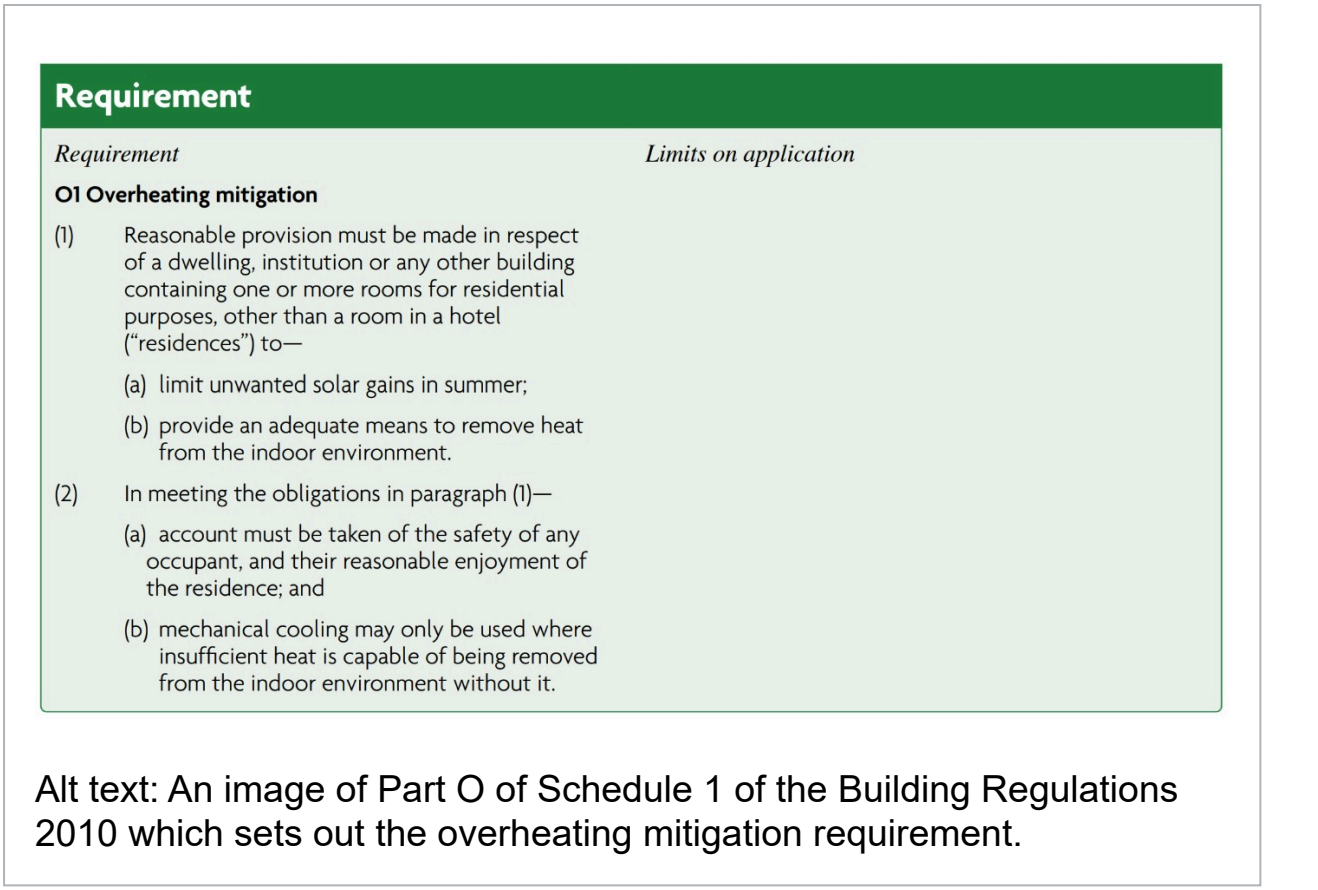
a. Yes, (please provide justification)
b. No, (please provide justification)

> **Question 84.** Can you provide evidence on how the addition of extensions or conservatories to domestic buildings can impact overheating risk on an existing building?

a. Yes, (please provide justification)
b. No

15.3 Requirement O: Overheating mitigation

Part O of Schedule 1 of the Building Regulations 2010 sets out the following requirement:



Requirement

Requirement	*Limits on application*
O1 Overheating mitigation	
(1) Reasonable provision must be made in respect of a dwelling, institution or any other building containing one or more rooms for residential purposes, other than a room in a hotel ("residences") to—	
(a) limit unwanted solar gains in summer;	
(b) provide an adequate means to remove heat from the indoor environment.	
(2) In meeting the obligations in paragraph (1)—	
(a) account must be taken of the safety of any occupant, and their reasonable enjoyment of the residence; and	
(b) mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it.	

Alt text: An image of Part O of Schedule 1 of the Building Regulations 2010 which sets out the overheating mitigation requirement.

There are 2 methods for demonstrating that Part O of Schedule 1 has been met. These are:

1. The simplified method, which provides a route to compliance by measuring the areas of glazing on each façade, the area of ventilation openings, and external shading (where relevant).
2. Dynamic thermal modelling, which provides an alternative route to compliance by carrying out computer modelling to assess the level of overheating risk.

We are seeking views and evidence on how the regulations and guidance could be improved to make sure that the application of Part O:

1. Provides adequate protection against the effects of excess heat.
2. Is safe and useable for occupants in practice.
3. Is practical and affordable for both large and smaller housebuilders to achieve.
4. Allows sufficient flexibility to create good quality homes with visually interesting designs and streetscapes.

> **Question 85.** We are currently reviewing Part O and the statutory guidance in Approved Document O. Do you consider there to be omissions or issues concerning the statutory guidance on the simplified method for demonstrating compliance with requirement O1, for buildings within the scope of requirement O1?

a. Yes (please provide justification)
b. No

> **Question 86.** Do you consider there to be omissions or issues concerning the statutory guidance on the dynamic thermal modelling method for demonstrating compliance with requirement O1 for all residential buildings?

a. Yes, (please provide justification)
b. No

> **Question 87.** Do you consider there to be omissions or issues concerning the statutory guidance on ensuring the overheating mitigation strategy is usable for buildings within the scope of requirement O1?

a. Yes, (please provide justification)
b. No

> **Question 88.** Do you consider there to be omissions or issues concerning the statutory guidance on protection from falling?

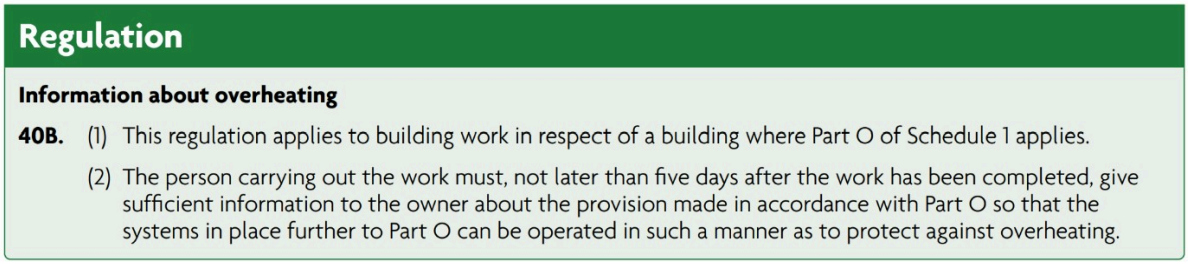
a. Yes, (please provide justification)
b. No

> **Question 89.** Are you aware of ways that Approved Document O could be improved, particularly for smaller housebuilders?

a. Yes, (please provide justification)
b. No

15.4 Regulation 40B: Information about overheating

Regulation 40B of the Building Regulations 2010 sets out a legal requirement that the person carrying out the work must give sufficient information to the owner about the overheating strategy of the home.



Regulation

Information about overheating

40B. (1) This regulation applies to building work in respect of a building where Part O of Schedule 1 applies.

(2) The person carrying out the work must, not later than five days after the work has been completed, give sufficient information to the owner about the provision made in accordance with Part O so that the systems in place further to Part O can be operated in such a manner as to protect against overheating.

Alt text: An image of Regulation 40B of the Building Regulations 2010 which sets out a legal requirement that the person carrying out the work must give sufficient information to the owner about the overheating strategy of the home.

We are seeking views and evidence on whether and how the provision of information for home users should be improved.

> **Question 90.** Does Regulation 40B require revision?

a. Yes, (please provide justification)
b. No

> **Question 91.** Do you consider there to be omissions or issues concerning the statutory guidance on providing information?

a. Yes, (please provide justification)
b. No

> **Question 92.** Are there any improvements that you recommend making to the information provided about overheating in the Home User Guide template?

a. Yes, (please provide justification)
b. No

> **Question 93.** Are there any omissions or issues not covered above with the statutory guidance in Approved Document O that we should be aware of?

a. Yes
b. No

If you answered yes, please provide more details including suggestions on ways to improve the statutory guidance and point to existing evidence/examples that demonstrates why the gaps or issues you have identified should be reviewed as a priority.

16 Equalities and impact assessments

16.1 Equality assessment

The Public Sector Equality Duty requires ministers to have due regard to the need to eliminate discrimination and other conduct prohibited under the Equality Act 2010, and to advance equality of opportunity and foster good relations between persons who share protected characteristics and those who do not.

We are interested in views as to the potential impacts of any of the proposals in this consultation document on persons who have a protected characteristic. Protected characteristics as defined by the Equality Act 2010 are:

- Age
- Disability
- Gender reassignment
- Marriage and Civil partnership
- Pregnancy and Maternity
- Race
- Religion or belief
- Sex
- Sexual orientation

> **Question 94.** Please provide any feedback you have on the potential impact of the proposals outlined in this consultation document on persons who have a protected characteristic. If possible, please provide evidence to support your comments.

16.2 Impact assessments

The Building Regulations have a significant impact on how our buildings are constructed and used. They therefore have the potential to deliver benefits and impose costs upon individuals, businesses, and society as a whole. We have published accompanying impact assessments (one for domestic buildings and one for non-domestic buildings), which consider the costs and benefits of the proposed changes to the Building Regulations and Approved Documents detailed in this consultation.

The impact assessments are an important part of the consultation as they have shaped our proposals. We are therefore keen for your feedback on their analysis and results, with particular attention to the capital costs of meeting the proposed standards, costs for businesses to adjust to the new standards and the likely specifications of new buildings in the absence of this change in regulation. We encourage you to read the impact assessments and respond to the question below.

> **Question 95.** Please provide any feedback you have on the impact assessments.

17. About this consultation

This consultation document and consultation process adhere to the Consultation principles (https://www.gov.uk/government/publications/consultation-principles-guidance) issued by the Cabinet Office.

Representative groups are asked to give a summary of the people and organisations they represent, and where relevant who else they have consulted in reaching their conclusions when they respond.

Information provided in response to this consultation may be published or disclosed in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Environmental Information Regulations 2004 and UK data protection legislation. In certain circumstances this may therefore include personal data when required by law.

If you want the information that you provide to be treated as confidential, please be aware that, as a public authority, the Department is bound by the information access regimes and may therefore be obliged to disclose all or some of the information you provide. In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic

confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the department.

The Department for Levelling Up, Housing and Communities will at all times process your personal data in accordance with UK data protection legislation and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties. A full privacy notice is included below.

Individual responses will not be acknowledged unless specifically requested.

Your opinions are valuable to us. Thank you for taking the time to read this document and respond.

Are you satisfied that this consultation has followed the consultation principles? If not or you have any other observations about how we can improve the process please contact us via the complaints procedure (https://www.gov.uk/government/organisations/department-for-levelling-up-housing-and-communities/about/complaints-procedure).

Annex A: Privacy notice

The following is to explain your rights and give you the information you are entitled to under UK data protection legislation.

Note that this section only refers to personal data (your name, contact details and any other information that relates to you or another identified or identifiable individual personally) not the content otherwise of your response to the consultation.

1. The identity of the data controller and contact details of our Data Protection Officer

The Department for Levelling Up, Housing and Communities (DLUHC) is the data controller. The Data Protection Officer can be contacted at dataprotection@levellingup.gov.uk or by writing to the following address:

> Data Protection Officer
> Department for Levelling Up, Housing and Communities
> Fry Building

2 Marsham Street
London SW1P 4DF

2. Why we are collecting your personal data

Your personal data is being collected as an essential part of the consultation process, so that we can contact you regarding your response and for statistical purposes. We may also use it to contact you about related matters.

We will collect your IP address if you complete a consultation online. We may use this to ensure that each person only completes a survey once. We will not use this data for any other purpose.

Sensitive types of personal data

Please do not share special category personal data or criminal offence data unless absolutely necessary for the purposes of your consultation response. By 'special category personal data', we mean information about a living individual's:

- race
- ethnic origin
- political opinions
- religious or philosophical beliefs
- trade union membership
- genetics
- biometrics
- health (including disability-related information)
- sex life; or
- sexual orientation.

By 'criminal offence data', we mean information relating to a living individual's criminal convictions or offences or related security measures.

3. Our legal basis for processing your personal data

The collection of your personal data is lawful under article 6(1)(e) of the UK General Data Protection Regulation as it is necessary for the performance by DLUHC of a task in the public interest/in the exercise of official authority vested in the data controller. Section 8(d) of the Data Protection Act 2018

states that this will include processing of personal data that is necessary for the exercise of a function of the Crown, a Minister of the Crown or a government department - in this case a consultation. We have a statutory duty to consult on changes to building regulations.

Where necessary for the purposes of this consultation, our lawful basis for the processing of any special category personal data or 'criminal offence' data (terms explained under 'Sensitive Types of Data') which you submit in response to this consultation is as follows. The relevant lawful basis for the processing of special category personal data is Article 9(2)(g) UK GDPR ('substantial public interest'), and Schedule 1 paragraph 6 of the Data Protection Act 2018 ('statutory etc and government purposes'). The relevant lawful basis in relation to personal data relating to criminal convictions and offences data is likewise provided by Schedule 1 paragraph 6 of the Data Protection Act 2018.

4. With whom we will be sharing your personal data

DLUHC may appoint a 'data processor', acting on behalf of the Department and under our instruction, to help analyse the responses to this consultation. Where we do we will ensure that the processing of your personal data remains in strict accordance with the requirements of the data protection legislation.

5. For how long we will keep your personal data, or criteria used to determine the retention period.

Your personal data will be held for 2 years from the closure of the consultation, unless we identify that its continued retention is unnecessary before that point.

6. Your rights, e.g. access, rectification, restriction, objection

The data we are collecting is your personal data, and you have considerable say over what happens to it. You have the right:

a. to see what data we have about you
b. to ask us to stop using your data, but keep it on record

c. to ask to have your data corrected if it is incorrect or incomplete
d. to object to our use of your personal data in certain circumstances
e. to lodge a complaint with the independent Information Commissioner (ICO)

If you think we are not handling your data fairly or in accordance with the law. You can contact the ICO at Information Commissioner's Office (ICO) (https://ico.org.uk/), or telephone 0303 123 1113.

Please contact us at the following address if you wish to exercise the rights listed above, except the right to lodge a complaint with the ICO: dataprotection@levellingup.gov.uk or

> Knowledge and Information Access Team
> Department for Levelling Up, Housing and Communities
> Fry Building
> 2 Marsham Street
> London SW1P 4DF

7. Your personal data will not be sent overseas

8. Your personal data will not be used for any automated decision making

9. Your personal data will be stored in a secure government IT system

We use a third-party system, Citizen Space, to collect consultation responses. In the first instance your personal data will be stored on their secure UK-based server. Your personal data will be transferred to our secure government IT system as soon as possible, and it will be stored there for 2 years before it is deleted.

Annex B: Consultation questions

Question 1. Are you responding as / on behalf of (select all that apply):

- Member of the public
- Builder/Developer
- Building Control Approved Inspector/Registered Building Control Approver
- Competent Persons Scheme Operator
- Designer/Engineer/Surveyor
- Architect
- Energy sector
- Installer/Specialist sub-contractor
- Local authority
- Housing Association
- Manufacturer/Supply chain
- National representative or trade body
- Professional body or institution
- Property Management
- Research/Academic organisation
- Other

Question 2. If you are responding as a member of the public/a building professional, what region are you responding from? [drop down list of England regions + other]

Question 3. If you are responding as a member of the public, are you a [checklist: private tenant, housing association/local authority housing tenant, private landlord, homeowner]

Question 4. If you are responding on behalf of a business/organisation, what is the name of your business/organisation? [free text]

Question 5. If you are responding on behalf of a business/organisation, where is your business/organisation based/registered? [drop down list England regions + other]

Question 6. When you respond it would be useful if you can confirm whether you are replying as an individual or submitting an official

response on behalf of an organisation and include:

- your name,
- your position (if applicable),
- the name of organisation (if applicable),
- an address (including post-code),
- an email address, and
- a contact telephone number

Question 7. Which option for the dwelling notional buildings (for dwellings not connected to heat networks) set out in The Future Homes Standard 2025: dwelling notional buildings for consultation do you prefer?

a. Option 1 (higher carbon and bill savings, higher capital cost)
b. Option 2 (lower carbon savings, increase in bill costs, lower capital cost)

Question 8. What are your priorities for the new specification? (select all that apply)

☐ low capital cost
☐ lower bills
☐ carbon savings
☐ other (please provide further information)

Please provide any additional comments to support your view on the notional building for dwellings not connected to heat networks.

Question 9. Which option for the dwelling notional buildings for dwellings connected to heat networks set out in The Future Homes Standard 2025: dwelling notional buildings for consultation do you prefer?

a. Option 1 (higher carbon and bill savings, higher capital cost)
b. Option 2 (lower carbon savings, increase in bill costs, lower capital cost)

Please provide any additional comments on the specification of the heat network in the notional building.

Question 10. Which option do you prefer for the proposed non-domestic

notional buildings set out in the NCM modelling guide?

a. Option 1
b. Option 2

Question 11. What are your priorities for the new specification?

☐ low capital cost
☐ lower bills
☐ carbon savings
☐ other (please provide further information)

Please provide additional information to support your view on the proposed non-domestic notional buildings set out in the National Calculation Methodology modelling guide.

Question 12. Do you agree that the metrics suggested above (TER, TPER and FEE) be used to set performance requirements for the Future Homes and Buildings Standards?

a. Yes
b. Yes, and I want to provide views on the suitability of these metrics and/or their alternatives
c. No, I think delivered energy should be used
d. No, I think FEE should be changed
e. No, for another reason (please provide justification)

Question 13. Do you agree with the proposed changes to minimum building services efficiencies and controls set out in Section 6 of draft Approved Document L, Volume 1: Dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

Question 14. Do you agree with the proposal to include additional guidance around heat pump controls for homes, as set out in Section 6 of draft Approved Document L, Volume 1: Dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

Question 15. Do you agree that operating and maintenance information should be fixed to heat pump units in new homes?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 16.** Do you think that the operating and maintenance information set out in Section 10 of draft Approved Document L, Volume 1: Dwellings is sufficient to ensure that heat pumps are operated and maintained correctly?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 17.** Do you agree with the proposed changes to Section 4 of draft Approved Document L, Volume 1: Dwellings, designed to limit heat loss from low carbon heating systems?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

We also propose updating guidance on the sizing of domestic hot water storage vessels. This is set out in Section 5 of draft Approved Document L, Volume 1: Dwellings.

> **Question 18.** Do you agree with the proposed sizing methodology for hot water storage vessels for new homes?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 19.** Do you agree with the proposed changes to minimum building services efficiencies and controls set out in Section 6 of draft Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 20.** Do you agree with the proposed guidance on the insulation standard for building heat distribution systems in Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 21.** Do you agree that the current guidance for buildings with low energy demand which are not exempt from the Building Regulations, as described in Approved Document L, Volume 2: Buildings other than dwellings should be retained without amendment?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view<br c. No (please provide justification)

> **Question 22.** Do you agree that lifts, escalators and moving walkways in new buildings (but not when installed withing a dwelling) should be included in the definition of fixed building services?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 23.** Do you agree with the proposed guidance for passenger lifts, escalators and moving walkways in draft Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 24.** Do you have any further comments on any other changes to the proposed guidance in draft Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes (please provide comments)
b. No

> **Question 25.** Should we set whole-building standards for dwellings created through a material change of use?

a. Yes
b. No, an elemental standard should be set with an option to use a notional building if the designer prefers
c. No, for another reason (please provide justification)

> **Question 26.** Should the proposed new MCU standard apply to the same types of conversion as are already listed in Approved Document L, Volume 1: Dwellings?

a. Yes
b. No, standards should also apply to non-dwelling accommodation e.g., student or patient accommodation, care homes, and hotels
c. No, the standard should be clearer that it applies to houses of multiple occupation (please recommend specific building types you think the standard should apply to and provide justification)
d. No, for another reason (please provide justification)

> **Question 27.** Should different categories of MCU buildings be subject to different requirements?

a. Yes
b. No (please provide justification)

> **Question 28.** Which factors should be taken into account when defining building categories? (check all those that apply)

☐ height of the building, i.e., low versus mid- to high-rise buildings
☐ floor area of the building
☐ the expertise of those carrying out the work
☐ whether the conversion is a part- or whole-building conversion
☐ Other (please state)

Please provide additional information to support your view.

> **Question 29.** Do you agree with the illustrative energy efficiency requirements and proposed notional building specifications for MCU buildings?

a. Yes
b. No

> **Question 30.** If you answered no to the previous question, please provide additional information to support your view. Select all that apply. The requirements are:

☐ too stretching
☐ not stretching enough
☐ not economically viable
☐ not practical/technically feasible
☐ other (please provide further details)

> **Question 31.** Do you agree with using the metrics of primary energy rate, emission rate and fabric energy efficiency rate, if we move to whole dwelling standards for MCU buildings?

a. Yes
b. Yes, and I want to provide additional suggestions or information to support my view
c. No (please provide justification)

> **Question 32.** Under what circumstances should building control bodies be allowed to relax an MCU standard?

a. None, building control bodies should not be able to relax MCU standards
b. Building control bodies should be able to relax under the following circumstances (please provide further details)

Question 33. Do you have views on how we can ensure any relaxation is applied appropriately and consistently?

Please select all that apply:
☐ there should be guidance on circumstances where relaxation of the notional standard may be appropriate
☐ there should be monitoring of how relaxation is applied
☐ only formal relaxation or dispensation through the local authority should be possible
☐ other (please provide further details)

Question 34. Should a limiting standard be retained for MCU dwellings?

a. Yes (please provide further details)
b. No, it is too strict
c. No, it is not strict enough
d. No, there is not enough information
e. No, for another reason (please provide further details)

Question 35. If a limiting standard is retained, what should the limiting standard safeguard against?

Please select all that apply:
☐ risk of moisture, damp and mould
☐ high energy demand and energy bills (please provide recommended values referring to ADL volume 1 Table 4.3)
☐ other (please provide further details)

Question 36. Do you wish to provide any evidence on the impacts of these proposals including on viability?

a. Yes (please provide evidence)
b. No

Question 37. Do you agree that a BREL report should be provided to building control bodies if we move to energy modelling to demonstrate compliance with MCU standards?

a. Yes
b. Yes, and photographic evidence is needed

c. Yes, and I'd like to provide further information
d. No (please provide justification)

> **Question 38.** Do you agree that consumers buying homes created through a material change of use should be provided with a Home User Guide when they move in?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 39. Do you agree that homes that have undergone an MCU should be airtightness tested?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

> **Question 40.** Do you think that we should introduce voluntary post occupancy performance testing for new homes?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

> **Question 41.** Do you think that the government should introduce a government-endorsed Future Homes Standard brand? And do you agree permission to use a government-endorsed Future Homes Standard brand should only be granted if a developer's homes perform well when performance tested? Please include any potential risks you foresee in your answer.

a. Yes

b. Yes, and I want to provide additional suggestions or information
c. Yes, but I think there are risks associated with introducing a government-endorsed brand
d. No (please provide justification)

> **Question 42.** Do you agree with the proposed changes to Approved Document F, Volume 1: Dwellings to improve the installation and commissioning of ventilation systems in new and existing homes?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 43. Do you agree with the proposal to extend Regulation 42 to the installation of mechanical ventilation in existing homes as well as new homes?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 44. Do you think the guidance on commissioning hot water storage vessels in Section 8 of draft Approved Document L, Volume 1: Dwellings is sufficient to ensure they are commissioned correctly?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 45. Are you aware of any gaps in our guidance around commissioning heat pumps, or any third-party guidance we could usefully reference?

a. Yes (please provide further details)
b. No

Question 46. Do you think the guidance for commissioning on-site electrical storage systems in Section 8 of draft Approved Document L, Volume 1: Dwellings is sufficient to ensure they are commissioned correctly?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 47. Do you agree with proposed changes to Approved Document L, Volume 1: Dwellings and Approved Document F, Volume 1: Dwellings to (a) clarify the options for certifying fixed building services

installations and (b) set out available enforcement options where work does not meet the required standard?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 48. Do you think the additional information we intend to add to the Home User Guide template, outlined above, is sufficient to ensure home occupants can use their heat pumps efficiently?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 49. If you are a domestic developer, do you use, or are you planning to use, the Home User Guide template when building homes to the 2021 uplift? Please give reasons in your response.

a. Yes (please provide further details)
b. No (please provide further details)

Question 50. Do you have a view on how Home User Guides could be made more useful and accessible for homeowners and occupants, including on the merits of requiring developers to make guides available digitally? Please provide evidence where possible.

a. Yes, (please provide further details)
b. No

Question 51. Do you think that there are issues with compliance with Regulations 39, 40, 40A and 40B of the Building Regulations 2010? Please provide evidence with your answer.

a. Yes (please provide justification)
b. No (please provide justification)

Question 52. Do you think that local authorities should be required to ensure that information required under Regulations 39, 40, 40A and 40B

of the Building Regulations 2010 has been given to the homeowner before issuing a completion certificate?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 53. Do you agree that new homes and new non-domestic buildings should be permitted to connect to heat networks, if those networks can demonstrate they have sufficient low-carbon generation to supply the buildings' heat and hot water demand at the target CO2 levels for the Future Homes or Buildings Standard?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 54. Do you agree that newly constructed district heating networks (i.e., those built after the Future Homes and Buildings Standard comes into force) should also be able to connect to new buildings using the sleeving methodology?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 55. Do you agree with the proposed guidance on sleeving outlined for Heat Networks included in Approved Document L, Volume 1: Dwellings and Approved Document L, Volume 2: Buildings other than dwellings?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 56. Do you agree that heat networks' available capacity that does not meet a low carbon standard should not be able to supply heat to new buildings?

a. Yes
b. No (please provide further details regarding how this unused higher

carbon capacity should be accounted for)

> **Question 57.** What are your views on how to ensure low-carbon heat is used in practice?

> **Question 58.** Are there alternative arrangements for heat networks under the Future Homes and Building Standards that you believe would better support the expansion and decarbonisation of heat networks?

> **Question 59.** Do you agree that the draft guidance provides effective advice to support a successful smart meter installation in a new home, appropriate to an audience of developers and site managers?

a. Yes
b. No

If not, please provide suggestions for how the draft guidance could be improved. Please provide evidence and sources for your statements where appropriate.

> **Question 60.** Do you agree that voluntary guidance referenced in draft Approved Document L, Volume 1: Dwellings is the best approach to encouraging smart meters to be fitted in all new domestic properties?

a. Yes
b. No

If not, is there anything else you think the government should be doing to ensure that smart meters are fitted in all new build properties?

> **Question 61.** Do you agree that it should be possible for Regulation 26 (CO_2 emission rates) to be relaxed or dispensed with if, following an application, the local authority or Building Safety Regulator concludes those standards are unreasonable in the circumstances?

a. Yes
b. No (please provide justification)

> **Question 62.** [If yes to previous question], please share any examples of circumstances where you think it may be reasonable for a local

authority to grant a relaxation or dispensation?

Question 63. Do you think that local authorities should be required to submit the applications they receive, the decisions they make and their reasoning if requested?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 64. Are there any additional safeguards you think should be put in place to ensure consistent and proportionate use of this power?

Question 65. Do you agree that Part L1 of Schedule 1 should be amended, as above, to require that reasonable provision be made for the conservation of energy and reducing carbon emissions?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 66. Do you agree that regulations 25A and 25B will be redundant following the introduction of the Future Homes and Buildings Standards and can be repealed?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 67. Do you agree that the Home Energy Model should be adopted as the approved calculation methodology to demonstrate compliance of new homes with the Future Homes Standard?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 68. Please provide any comments on the parameters in the notional building.

Question 69. Minimum standards already state that heat pumps should have weather compensation and we would like to understand if stakeholders think this is enough to ensure efficiency of heat pumps under the varying weather conditions across England. Should the notional building use local weather?

a. Yes
b. No

Please provide any evidence you have on the unintended consequences that could arise as a result of using local weather in the notional building. If possible, please comment on the impact on the construction industry in terms of design and building feasibility. We also welcome views on whether weather compensation is sufficient to ensure heat pump efficiency.

Question 70. Do you agree with the revised guidance in The Future Homes Standard 2025: dwelling notional buildings for consultation no longer includes the average compliance approach for terraced houses?

a. Yes
b. No

Question 71. Do you agree with the revised guidance in Approved Document L, Volume 1: Dwellings which states that you should not provide a chimney or flue when no secondary heating appliance is installed?

a. Yes
b. No

Please provide any further evidence.

Question 72. Do you agree with the proposed approach to determine U-values of windows and doors in new dwellings?

a. Yes
b. No

Please provide any further evidence.

Question 73. Do you agree with the proposal to remove the default y-value for assessing thermal bridges in new dwellings?

a. Yes
b. Yes, and I'd like to provide further information
c. No (please provide justification)

Question 74. Do you have any information you would like to provide on the homes built to the Future Homes Standard using curtain walling?

Question 75. Do you agree with the methodology outlined in the NCM modelling guide for the Future Buildings Standard?

a. Yes,
b. No (please provide justification)

Question 76. Please provide any further comments on the cSBEM tool which demonstrates an implementation of the NCM methodology.

Question 77. Please provide any further comments on the research documents provided alongside the cSBEM tool and which support the development of the NCM methodology, SBEM and iSBEM.

Question 78. Which option describing transitional arrangements for the Future Homes and Buildings Standard do you prefer? Please use the space provided to provide further information and/or alternative arrangements.

a. Option 1
b. Option 2

Please provide further information or suggest alternative transitional arrangements with your rationale and supporting evidence.

Question 79. Will the changes to Building Regulations proposed in this consultation lead to the need to amend existing planning permissions? If

so, what amendments might be needed and how can the planning regime be most supportive of such amendments?

a. Yes (please provide further information)
b. No

Question 80. Do you agree that the 2010 and 2013 energy efficiency transitional arrangements should be closed down, meaning all new buildings that do not meet the requirements of the 2025 transitional arrangements would need to be built to the Future Homes and Buildings Standards?

a. Yes
b. No (please provide justification)

Question 81. What are your views on the proposals above and do you have any additional evidence to help us reach a final view on the closing of historical transitional arrangements?

Question 82. Part O does not apply when there is a material change of use. Should it apply?

a. Yes
b. Yes, but only for some types of conversion (please list from reg 5a-k or describe the type)
c. No

Please provide more details about why Part O should/should not apply to a material change of use and, if possible, point to existing evidence/examples that demonstrates your view.

Question 83. Apart from material change of use, is there anything missing from the current scope of Part O?

a. Yes, (please provide justification)
b. No, (please provide justification)

Question 84. Can you provide evidence on how the addition of extensions or conservatories to domestic buildings can impact overheating risk on an existing building?

a. Yes, (please provide justification)
b. No

> **Question 85.** We are currently reviewing Part O and the statutory guidance in Approved Document O. Do you consider there to be omissions or issues concerning the statutory guidance on the simplified method for demonstrating compliance with requirement O1, for buildings within the scope of requirement O1?

a. Yes (please provide justification)
b. No

> **Question 86.** Do you consider there to be omissions or issues concerning the statutory guidance on the dynamic thermal modelling method for demonstrating compliance with requirement O1 for all residential buildings?

a. Yes, (please provide justification)
b. No

> **Question 87.** Do you consider there to be omissions or issues concerning the statutory guidance on ensuring the overheating mitigation strategy is usable for buildings within the scope of requirement O1?

a. Yes, (please provide justification)
b. No

> **Question 88.** Do you consider there to be omissions or issues concerning the statutory guidance on protection from falling?

a. Yes, (please provide justification)
b. No

> **Question 89.** Are you aware of ways that Approved Document O could be improved, particularly for smaller housebuilders?

a. Yes, (please provide justification)
b. No

Question 90. Does Regulation 40B require revision?

a. Yes, (please provide justification)
b. No

Question 91. Do you consider there to be omissions or issues concerning the statutory guidance on providing information?

a. Yes, (please provide justification)
b. No

Question 92. Are there any improvements that you recommend making to the information provided about overheating in the Home User Guide template?

a. Yes, (please provide justification)
b. No

Question 93. Are there any omissions or issues not covered above with the statutory guidance in Approved Document O that we should be aware of?

a. Yes
b. No

If you answered yes, please provide more details including suggestions on ways to improve the statutory guidance and point to existing evidence/examples that demonstrates why the gaps or issues you have identified should be reviewed as a priority.

Question 94. Please provide any feedback you have on the potential impact of the proposals outlined in this consultation document on persons who have a protected characteristic. If possible, please provide evidence to support your comments.

Question 95. Please provide any feedback you have on the impact assessments.

1. Heat and buildings strategy (https://www.gov.uk/government/publications/heat-and-buildings-strategy).
2. Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2023). Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal (https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal).
3. Taken from the Clean heat market mechanism IA and rebased to 2022 prices (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1160093/clean-heat-market-mechanism-ia.pdf) (PDF, 648 KB).
4. DESNZ (2023). Smart meters in Great Britain, quarterly update September 2023 (https://www.gov.uk/government/statistics/smart-meters-in-great-britain-quarterly-update-september-2023).
5. DESNZ (2020). Smart meter installation in domestic new build premises (https://www.gov.uk/government/publications/smart-meter-installation-in-domestic-new-build-premises).