Final stage impact assessment: Future Homes Standard (FHS)

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1. Summary of proposal

1.1 The energy efficiency requirements set out in Part L of the Building Regulations 2010 for new dwellings, the calculation of energy efficiency target rates and the accompanying Approved Document guidance have been amended. In addition, the associated amendments have been made to the Building (Registered Building Control Approvers etc.) (England) Regulations 2024. These changes collectively form the Future Homes Standard (FHS). The FHS is a zero-carbon ready standard, which means that new dwellings built to this standard will not require any retrofit work to achieve zero carbon emissions in use, once the electricity grid is fully decarbonised.

1.2 This Impact Assessment (IA) covers the new performance targets for new dwellings, the transitional arrangements to support industry adaptation to new standards, as well as the range of other technical and legislative amendments that make up the FHS.

1.3 The Building Regulations are a devolved matter and the changes in this IA apply to England only. Enforcement of the Building Regulations is undertaken via the Building Control process.

1.4 This IA focuses solely on the FHS, which applies to new dwellings only. A separate set of policies, known as the Future Buildings Standard, has introduced similar changes for new non-domestic buildings. These are addressed in a separate IA.

2. Strategic case for proposed regulation

2.1 Climate change is a major national and international challenge, and one which the UK is committed to tackling. In June 2019, the UK Government legally committed to achieving Net Zero greenhouse gas emissions by 2050. To achieve this commitment, interim targets are set out through Carbon Budgets and Net Zero Strategy. In 2025, the Climate Change Committee (CCC) recommended a reduction of emissions of 87% relative to 1990, by 2040, the middle year of the Seventh Carbon Budget period.[1] In 2024, residential buildings were responsible for 14% of total UK greenhouse gas emissions.[2]

2.2 Greenhouse gas emissions accelerate and exacerbate climate change, which is having and will continue to have severe transboundary impacts. These include but are not limited to extreme weather events, flooding, dangerous high temperatures, water scarcity and ecological breakdown. There are also immediate social costs of greenhouse gas emissions through a reduction in air quality . It is therefore imperative to take action to reduce the UK's greenhouse gas emissions.

2.3 There has already been progress in reducing emissions from residential buildings - with emissions falling 35% from 1990 levels by 2023. However, the residential buildings sector remains the second highest-emitting sector, behind the transport sector. In the CCC's balanced pathway to net zero, residential buildings emissions are required to fall by 66% or 34.5 MtCO2e by 2040 relative to 2023[3]. The CCC indicate adoption of heat pumps in domestic dwellings to be a key factor in decarbonisation, with the balanced pathway indicating around half of homes in the UK heated using a heat pump by 2040, compared to around 1% in 2023[4]. A substantial proportion of these homes will be newly built between now and 2040, and it is crucial they contribute to these required reductions. In addition, the CCC estimate that all new heating systems will require to be low carbon, such as heat pumps, after 2035 to meet the balanced pathway.

2.4 There was an uplift to the energy efficiency standards for new dwellings in the Building Regulations in December 2021, which came into effect in June 2022. This uplift has already delivered meaningful improvements in this area, with new homes now expected to produce significantly less CO2 emissions than those built to the previous 2013 standards. However, further progress is needed. The 2021 uplift was intended as a transitional step towards the more ambitious FHS, which future-proofs new homes with low-carbon heating, high fabric standards and, in most cases, solar panels. The FHS is a key component of the UK Government's efforts to meet its Net Zero targets, while also ensuring that new homes are warm, comfortable and affordable to heat.

2.5 The Building Regulations should be used to reduce carbon emissions and help achieve HMG's 2050 Net Zero Target only where it can be shown that the market

[1] Seventh Carbon Budget, Climate Change Committee (2025)
[2] 2024 UK Greenhouse Gas Emissions, Provisional Figures (2025)
[3] The CCC's balanced pathway estimate emission savings from new build homes are estimated to contribute 14% to overall emission reductions in the residential sector by 2040. Available: The Seventh Carbon Budget - Climate Change Committee
[4] The Seventh Carbon Budget - Climate Change Committee

would not make these changes of its own accord, or that other measures (regulatory or otherwise) are not already driving this change. The Building Regulations represent the primary tool for setting standards for new dwellings.

2.6 Several market failures exist which mean that, in the absence of government intervention, the market would not make the changes necessary to decarbonise homes independently. In the absence of any intervention, the long lifetimes of buildings could lead to a lock-in of lower energy efficiency levels for many years to come. This may result in higher household energy costs and emissions from household regulated energy usage. Retrofitting homes to an FHS equivalent standard is likely to come at a higher capital cost than building these in at the design stage. Uplifts to the Building Regulations can help to overcome the following market failures that act as a barrier to action:

- **Split incentives:** There is a misalignment between those who invest in energy efficiency measures of new dwellings with rational developers seeking to minimise capital cost, and those who benefit e.g. occupants who seek to minimise life-time operational energy costs of the dwelling. As developers determine the energy efficiency of a new dwelling, rather than the occupant, there is a weak incentive to construct dwellings which minimise life-time energy cost. This is especially the case where occupants have only imperfect information on the energy efficiency of new homes, as mentioned in the imperfect information market failure. Additional split incentives occur when dwellings are purchased to let, as the costs of energy efficiency measures fall to the homeowner, whereas the benefits in terms of comfort and running costs are experienced by the tenant. Implementing higher energy efficiency requirements through the Building Regulations is not only cheaper and more efficient; buyers and tenants automatically benefit from low-energy efficient homes without relying on owner investment thus preventing future landlord-tenant split incentive failure by reducing retrofit burden. It moves the inefficient equilibrium closer to the socially optimum equilibrium by narrowing the gap between the preferences of developers and occupants.

- **Credit/Resource Constraints:** A failure to set standards at the point of build can lock a dwelling into higher energy consumption. There may be limited scope for homeowners to improve energy efficiency later, as retrofitting is disruptive and around 66-80% more expensive[5]. Lack of capital, lack of information and a limited tolerance for disruption can all act as barriers to households who may want to renovate and improve existing dwellings, even if these works would be cost-effective over the medium or long term. The large upfront costs of energy efficiency upgrades can also take a long time to recover given the lengthy payback periods resulting from lower fuel bills. Hence consumers who are credit constrained, especially the 11% which met the definition of fuel poverty in England (2024)[6], may lack the ability to refurbish their dwellings to higher energy standards. Similarly, landlords may lack the incentive and upfront capital to invest in energy efficiency measures

[5] The costs and benefits of tighter standards for new buildings, Page 6. (2019). Available: https://www.theccc.org.uk/wp-content/uploads/2019/07/The-costs-and-benefits-of-tighter-standards-for-new-buildings-Currie-Brown-and-AECOM.pdf

[6] Hinson et al., 2025. *Fuel Poverty in the UK*. Available: Fuel poverty in the UK - House of Commons Library

if these cannot be recovered quickly through higher rents. Locking buildings into higher energy efficiency standards at the point of construction removes the reliance on homeowners having enough capital to make the improvements themselves, and can also help improve longer term market prices, as developers building en masse can benefit from economies of scale.

- **Negative Externalities:** household energy bills in the UK reflect wholesale costs of energy and network costs, but not the wider social costs of greenhouse gases released through energy consumption such as extreme weather and reduction in air quality[7]. This means that the total cost of energy consumption for household heating is not internalised and the optimal private consumption will exceed the optimal social consumption level. Raising the required energy efficiency performance standards of new housing through the preferred FHS option will assist in changing the level and type of consumption to lower and cleaner forms of energy.

- **Coordination failure:** A complex system like the construction industry can be held back from moving to a new, low-carbon equilibrium because of coordination failures. For example, the costs of new low-carbon technologies such as heat pumps are often more expensive than existing fossil fuel dependent technologies and, as a result, low-carbon technologies can initially be non-price competitive, leading to lower demand[8]. Economies of scale and increased investment are likely to bring down the capital costs of these technologies over time[9], but the costs to each individual actor of independently adopting a new technology may seem costly, preventing a socially optimal transition. Government intervention to set a requirement for low-carbon heating in new homes will support a sector to transition from a high-carbon equilibrium to a low-carbon equilibrium, overcoming the coordination problem.

- **Imperfect Information:** Buyers of new homes have an information asymmetry relative to developers of the actual energy efficiency of the home. This may result in an adverse selection and under-valuation of high energy efficient homes. While the FHS does not directly address this market failure, setting high quality standards can narrow the information gap because buyers can rely on a baseline level of quality that all new homes must meet, and it reduces developers' ability to cut corners in ways buyers cannot detect before purchase.

2.7 The FHS has been developed whilst taking into account many other Government policies that already exist to decarbonise or improve elements of the energy system that would benefit the energy efficiency of homes. While several policy interventions designed to improve the energy performance of homes are already in place, and other future policies such as rebalancing the levies on gas vs electricity and the planned decarbonisation of heat networks, may have a future impact, they are not currently

[7] House of Commons Library, 2025. Available: Domestic energy prices - House of Commons Library
[8] Harrington, 2024. *The running cost of domestic heat pumps in the UK.* Available: UK Collaborative Centre For Housing Evidence
[9] Katris et al., 2024. *The importance of heat pump cost reduction and domestic supply chain development in the presence of persisting energy price shocks.* Available: https://doi.org/10.1016/j.esr.2024.101518

proving sufficient to overcome all the above market failures and ensure that all newly built homes are energy efficient and zero carbon or net zero ready, with extremely low carbon emissions. For example:

- **Energy Performance Certificates (EPCs)** are provided at the point of sale and provide homeowners with information about the energy efficiency of their homes. Whilst this can help buyers to make informed decisions about the homes they purchase and the potential running costs, they are insufficient on their own to drive market behaviour to social optimal levels. In addition, as set out under 'Negative Externalities', information on the EPCs including energy prices do not fully reflect the social cost of energy consumption, and so the provision of information about the likely private running costs of a home is unlikely to be sufficient to drive the desired behavioural changes to reduce energy consumption to the socially optimal level. They also do not address other market failures such as credit constraints. As such, EPCs are not sufficient to meet our strategic objectives.

- **The Warm Homes Plan** is a retrofit scheme, to improve the energy efficiency of existing dwellings. This will not impact the standards to which new homes are built and therefore will not contribute to our strategic objectives. By improving the standards to which new homes are built now, we can reduce the need for such schemes in the future, reducing the long-term cost to government.

- Similarly, **the Boiler Upgrade Scheme** is a retrofit scheme to replace existing boilers with lower carbon alternatives. This will not sufficiently impact the technologies with which new homes are built and therefore will not contribute to our strategic objectives. By ensuring new build homes are zero-carbon ready, we can reduce the need for such schemes in the future, reducing the long-term cost to government.

- The **existing Building Regulations** have already delivered meaningful improvements to the energy performance of homes. However, these do not go far enough to future-proof homes and ensure that new homes are zero-carbon ready. Without further intervention, more homes will be built without the benefit of higher standards, increasing the need for future retrofit, which is more costly and more disruptive to occupants than meeting higher standards at the point of being built.

2.8 Setting a single national standard that clearly requires zero carbon ready new-build homes and buildings therefore seems appropriate in the context of current energy efficiency measures not having been sufficient to overcome market failures in this area, and particularly so, given the urgency of responding to climate change and reaching net zero. Building regulations and standards are widely recognised as an appropriate point of intervention to overcome the market failures above. Action at the point of build or when relevant work is done has the advantage of 'locking in' low carbon technologies and energy efficient design, reducing overall energy demand of the building, improving thermal comfort, reducing bills compared to existing stock and avoiding the need to expensively retrofit in the future. It means reduced carbon emissions versus the scenario of allowing new homes to be continued to be built with gas boilers and then needing to be retrofitted, meaning better air quality and on a

macro level may contribute to reduced negative climate change impacts in future due to less carbon being released.

2.9 The policy will also help enable other government policies and strategic objectives. Notably, the transition to low-carbon technologies in new builds will have indirect benefits that will support government efforts to decarbonise existing housing stock. This is because the increased demand for low-carbon technologies will support markets and supply chains through economies of scale, likely increasing availability and driving down capital costs. The policy will also increase consumer familiarity with these products, likely leading to increases in consumer demand. This will help decrease barriers to the retrofit of existing housing stock, which will in turn lead to further reductions in carbon emissions across the residential sector. There are also wider expected benefits for areas such as health, cost of living and growing the green economy.

2.10 The Future Homes Standard has been a UK Government commitment since 2019 and shows the UK's leadership in achieving its legal net zero commitments, moving towards decarbonising the residential buildings sector alongside similar moves by international partners, such as the EU.

3. SMART objectives for intervention

3.1 The overarching aim of the Future Homes Standard is to use the performance-based targets set through the Building Regulations and accompanying Approved Documents to reduce the carbon emissions from dwellings, and thus to support the UK Government's statutory target to reach Net Zero by 2050.

3.2 The Government has set a clear ambition to build 1.5 million new homes over the course of this Parliament, as part of its wider mission to drive economic growth and tackle the housing crisis. It is important that these homes are not only delivered at scale but built to high standards of quality and sustainability. The FHS supports this ambition by ensuring that new dwellings meet ambitious energy efficiency standards, and are therefore warm, comfortable and affordable to heat.

3.3 The Government is committed to delivering clean power by 2030 and accelerating the transition to Net Zero. The Future Homes Standard supports these goals by setting higher energy efficiency requirements, enabling low-carbon heating, and encouraging the use of renewable technologies such as solar panels. In doing so, it helps reduce emissions from new homes, cuts reliance on fossil fuels, and supports the growth of a cleaner, greener economy. The Future Homes Standard will also have indirect benefits for government efforts to retrofit low carbon technologies in existing homes, as the inclusion of these technologies in more new builds will support low-carbon supply chains through economies of scale and increase consumer familiarity. This in turn will provide further support for the Government's overarching goals and commitments by enabling further residential decarbonisation.

SMART Objectives

3.4 The **specific** policy objectives of the FHS are outlined below. The accompanying Theory of Change model (Section 4) provides more detail on how these objectives are supported by the activities and outputs of the FHS.

- **New dwellings built to the FHS will be zero-carbon ready by default**, **with the FHS implemented as soon as is reasonably possible to contribute to the UK Government's legal commitment to achieving Net Zero greenhouse gas emissions by 2050 whilst giving the sector adequate time to adjust.** This means that dwellings built to the FHS will not require retrofitting to become zero carbon in use once the electricity grid is fully decarbonised. Zero-carbon ready dwellings will likely include the mainstream adoption of low-carbon technologies such as solar photovoltaic (PV) systems, wastewater heat recovery, and low-carbon heating. Implementing the FHS as soon as possible will mean maximum carbon savings are achieved, but in order to minimise the negative impact on housing supply, this must be balanced against allowing the sector adequate time to adjust to the new standards.

- **Reduce operational energy use, and therefore carbon emissions from new dwellings by at least 75% compared to 2013 standards,** supporting legally binding Government commitments on Net Zero.

- **Grid-connected homes will contribute more on-site renewable generation and help manage peak demand.** This includes the installation of solar PV or other renewable generation technologies on the majority of new dwellings which contribute to Government commitments on roof top solar in the Clean Power 2030 Action Plan[10].

- **Energy costs for occupants will be lower than the typical existing home[11] and more predictable.** The use of fossil fuel-free heating systems in FHS homes will make sure occupants are protected from fossil fuel price volatility.

- **New dwellings will be high-quality and comfortable.** Occupants will experience thermal comfort in dwellings built to the FHS. This also includes occupants understanding, and therefore successfully managing and benefitting from, energy systems in their homes.

- **New dwellings will be cost-effective, affordable, practical and safe**, meaning they are deliverable by industry given likely capacity, skills and supply chains, on sites across the country.

3.5 The above objectives are **measurable,** principally through monitoring the number of new dwellings being constructed to the FHS over time, the energy performance of these dwellings and occupant attitudes towards energy use and new build homes. Full detail on how the FHS will be continually monitored and evaluated is set out in Section 8.

3.6 These objectives are **achievable** and **realistic**. The FHS builds upon previous uplifts to the energy efficiency standards in the Building Regulations, notably the 2021 uplift, which was designed as a stepping stone towards this policy. Updates to the Building Regulations are an established mechanism for improving the energy performance of new dwellings, and so is a tried-and-tested method to achieve these objectives. The FHS has been signalled well in advance to industry, allowing developers and supply chains time to prepare and adapt.

3.7 These objectives are **time-bound** and in line with the UK Government's legal commitment to achieving Net Zero greenhouse gas emissions by 2050. As the transitional period concludes, an increasing proportion of new dwellings being completed each year will meet the FHS. By 2030 the vast majority of dwellings being completed are expected to be FHS-compliant and therefore contribute to achieving the above objectives.

[10] Clean Power 2030 Action Plan commits to 45-57 GW of UK solar generation by 2030. Available: Clean Power 2030 Action Plan - GOV.UK

[11] Homes in England had a median Energy Performance Certificate (EPC) rating in band D. ONS, 2024. Available: Energy efficiency of housing in England and Wales - Office for National Statistics

4. Description of proposed intervention option and explanation of the logical change process whereby this achieves SMART objectives

4.1 The final specification for the Future Homes Standard has been set using a 'notional building' approach. A notional building is a reference building that sets tailored performance targets and developers' designs must meet the same level of performance (energy usage, carbon emissions and fabric efficiency) as the reference building. Under the Future Homes Standards, we have set the notional building for new dwellings to include a heat pump, wastewater heat recovery, improved airtightness and decentralised mechanical extract ventilation (dMEV).

4.2 Rather than including solar panels in the notional building, we have introduced a new legislative functional requirement to strengthen the requirement for on-site renewable electricity generation. This requirement is supported by guidance in the Approved Documents which explains what we consider a reasonable effort in meeting this requirement, and when it is acceptable not to install solar panels (e.g., due to roof design or shading issues). There is also an exemption from installing solar for all higher-risk buildings (HRBs). This has increased flexibility for developers in how they provide on-site renewable generation for their dwellings.

4.3 This approach supports delivery of the SMART objectives outlined in Section 3 by setting a notional building specification that ensures new dwellings are zero-carbon ready by default. The combination of low-carbon heating, improved airtightness and decentralised mechanical extract ventilation significantly reduces operational energy use and emissions. It also means that new homes will no longer rely on fossil fuels, protecting occupants from fossil fuel price volatility and making their energy bills more predictable. The introduction of a functional requirement for on-site renewable electricity generation supports the objective for grid-connected homes to contribute more renewable generation and help manage peak demand, whilst giving developers flexibility in meeting this requirement that a notional building approach at this high a specification no longer allows. The high standards that we have set for building fabric (walls, roofs, floors, etc.) support the objective that new dwellings are high-quality and comfortable.

4.4 In addition to the notional building and functional requirement set out above, the FHS consists of a wider package of changes to the regulations and Approved Document which will support the SMART objectives outlined in Section 3. These include:

- Updates to the Approved Document to provide clearer guidance on the use of low-carbon heating technologies. This supports the move away from fossil fuel systems to help ensure all new dwellings are zero-carbon ready by default and do not require future retrofit once the grid is decarbonised.

- Improvements to commissioning and certification processes for fixed building services. This will help ensure that energy systems are performing as intended, contributing to the objective of reducing operational energy use and emissions.

- Enhanced digital Home User Guides (including clearer information for households on heat pumps and underfloor heating). These updates will

assist residents to better understand and use their dwelling's energy system efficiently, supporting the reduction of operational energy use and emissions and also supporting the objective that new homes are high-quality and comfortable.

- A new compliance route for dwellings connecting to low-carbon heat networks. This provides a clear pathway for dwellings to be zero-carbon ready in developments using heat networks, helping to reduce emissions and support grid decarbonisation. Where dwellings cannot connect to the heat network immediately and a temporary heating solution is needed, the heating solution must be low carbon.

- The introduction of voluntary reporting of delivered energy whilst retaining existing energy performance metrics. This option to voluntarily report on delivered energy will be included in the new Home Energy Model (HEM) only (see next para for more information on HEM). This supports improved transparency of the actual energy use in new dwellings and will help develop an evidence base that may inform future refinements to the standard, aligning with the objectives of reducing operational energy and enabling long-term monitoring.

- Updated compliance methodology which is underpinned by the new Home Energy Model (HEM), supported by the dual running of the Standard Assessment Procedure (SAP). (SAP and HEM are the compliance tools that industry use to assess the energy and carbon performance of new homes, with HEM set to replace SAP under the Future Homes Standard in due course.)

4.5 To support the deliverability of the FHS and manage impacts on industry, we have set out associated transitional arrangements. These comprise a 12-month period between the legislation being laid (written into law) and it coming into force, followed by a 12-month transitional period. In practice, this means that developers have 12 months after the legislation is laid to submit an initial notice, a building notice or full plans application to the local authority, and a further 12 months to commence construction. If they meet both these deadlines, then they are permitted to continue building to the 2021 standards for that specific building; if they do not meet these deadlines, they are required to meet the FHS. These arrangements give industry time to adapt to the new standards and allow work which is already in progress to be completed without major disruption.

4.6 Higher-risk buildings[12] (HRBs) must pass through a Gateway process before construction and occupation can occur. For some HRBs, particularly those with basements or complex construction programmes, this would be challenging to achieve within the transitional period. Separate transitional arrangements have therefore been set for HRBs. To benefit from the transitional arrangements, a successful Gateway 2 application must be submitted to the Building Safety Regulator within 18 months of the

[12] A HRB is defined as a building that is at least 18m or 7 storeys tall and contains at least 2 residential units, or is a care home or hospital.

legislation being laid, and construction must start within 3 years of the application being submitted.

4.7 The transitional arrangements support the FHS objectives by providing a clear and manageable pathway for industry to prepare for and adapt to the new standard.

Extension of existing regulation and use of tried-and-tested methods

4.8 The Future Homes Standard extends existing energy efficiency requirements within the Building Regulations, building on the improvement made to new dwellings through the 2021 uplift, which was intended as an interim step towards the FHS. It applies tried-and-tested regulatory levers, including performance-based targets, established calculation methodologies, and familiar compliance routes.

4.9 New methods include the introduction of a functional requirement for on-site renewable electricity generation and the adoption of a new calculation methodology, the Home Energy Model, to better reflect real-world energy performance.

Theory of Change

4.10 The Theory of Change below summarises how the preferred package of interventions is expected to deliver against the policy objectives outlined in Section 3:

4.11 **Activities** include publishing new notional building specifications; introducing a functional requirement for on-site renewables; adopting the new Home Energy Model whilst allowing for a time-limited period continued use of SAP alongside HEM; updating calculation methodologies (SAP, National Calculation Methodology); improving Home User Guides; enabling low-carbon heat network connections; and clarifying transitional arrangements.

4.12 **Outputs** include the issue of revised regulations, Notices of Approval and guidance documents; the adoption of new compliance tools; and the introduction of clearer commissioning and reporting requirements.

4.13 **Outcomes** include developers adapting their building practices to comply with the new standard; widespread adoption of low-carbon technologies such as heat pumps and solar photovoltaics (PV); improved building performance; and better occupant experience in terms of comfort and health.

4.14 **Impacts** include significant and permanent carbon savings from new homes; all new homes are zero-carbon ready by default; and a regulatory framework that supports the UK's statutory Net Zero target and builds long-term public confidence in the performance of new housing.

Activities	Outputs	Outcomes	Impacts
• Publish new notional building specifications for dwellings • Introduce functional requirement for on-site renewable generation • Update calculation methodologies (SAP, NCM) • Adopt new Home Energy Model • Introduce voluntary reporting of delivered energy • Strengthen commissioning and certification of fixed building services • Improve Home User Guides • Enable connection to heat networks with low-carbon heat • Restrict chimney and flue installations where no secondary heating is installed • Set clear transitional arrangements and sunset historic transitional arrangements	• Builders adopt zero-carbon ready designs • Functional requirement for solar PV introduced in domestic regulations • Revised Building Regulations, Notices of Approval, and Approved Documents issued • Notional building specifications published for dwellings • Updated Home Energy Model adopted with SAP dual-running • Building Regulations England Part L (BREL) report adapted to permit voluntary reporting of delivered energy • Home User Guide produced in both paper and digital format • Clearer commissioning and performance standards introduced • New guidance and pathways for connecting to low-carbon heat networks • Transitional and sunsetting arrangements established	• Developers adapt building practices to comply with the new standard • Operational energy use and emissions from new dwellings are significantly reduced • Low carbon technologies such as solar PV, wastewater heat recovery, and low-carbon heating become mainstream • Builders, developers, and suppliers are aligned with a Net Zero market e.g. strengthened skills and supply chain in low-carbon technologies • Grid-connected homes contribute more on-site renewable generation and help manage peak demand • New homes perform more closely to their design targets due to improved commissioning and modelling • Energy costs for occupants are more predictable, and occupants are better protected from fossil fuel price volatility • Occupants experience improved comfort and health • Occupants better understand, manage, and benefit from energy systems in their homes	• All new dwellings are zero-carbon ready by default • Significant and permanent carbon savings from new dwellings and residential building stock • Supports the UK Government's statutory target to reach Net Zero by 2050 • New dwellings future-proofed, requiring no retrofit to meet climate commitments • Widespread public confidence in a building framework that delivers safe, high-performing, and sustainable homes • Stimulated innovation and green economic growth in construction and housing sectors.

5. Development and assessment of options long-list

5.1 The following section gives an overview of the longlist of options identified, and the rationale for which options were shortlisted and progressed to consultation. Options consisted of two different notional buildings, and two different timelines for transitional arrangements, as well as BAU and non-legislative approaches.

5.2 To set the requirements in the options for the notional buildings outlined, we modelled many different building specifications. We used different reference values and modelled different representative building types, engaging throughout with industry and other experts, we identified building specifications that we considered would achieve the most appropriate balance of delivering against our SMART objectives, while still being achievable for the sector.

5.3 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. We considered 18-month transitional arrangements, as this is the precedent set by the 2021 uplift to Part L. To acknowledge the challenges of adjusting to potentially significant increases in building standards, we also considered a 24-month transition period.

5.4 Transition periods longer than 24 months were not included for options progressed to consultation, as it was considered this would reduce the carbon savings of the FHS by delaying the implementation, with diminishing returns for increases in supplier capability. Transition periods shorter than 18 months were not considered, as it was considered unlikely that these would offer industry sufficient time to adjust.

5.5 Table 1 contains a detailed description of the options considered at long-list stage, and an assessment of how well each aligns with our SMART objectives and the critical success factors (CSFs). This is based on our views of each option, prior to formal consultation. The shortlisted options were then taken to consultation – for a description of how consultation feedback impacted our considerations, please see Section 6.

Table 1: Assessment of longlisted policy options against the SMART objectives and the Green Book Critical Success Factors, before going to consultation

Option 1 (Do maximum)	
Summary of policy	The notional building for new dwellings would include a heat pump, solar PV (covering equivalent of 40% of the ground floor area), wastewater heat recovery, improved airtightness, and decentralised mechanical ventilation. Transitional arrangements would be as per Option 3 or Option 4.
RAG rating against SMART objectives	**New dwellings built to the FHS will be zero-carbon ready by default, with the FHS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust** The low carbon technologies included in the notional building mean new dwellings would be constructed to be net-zero ready by default, meaning this objective would be met, as long as the right transitional arrangements are selected. **Reduce operational energy use from new dwellings** The combination of low-carbon heating, improved airtightness and decentralised mechanical extract ventilation significantly reduces operational energy use. This means this objective would be met. Energy savings were estimated at 234,000 GWh for gas and 44,000 GWh for electricity. Carbon savings were estimated at 43 MtCO2e non-traded and 0.4 MtCO2e traded over the appraisal period (24-month transition period). An 18-month transitional period would increase total non-traded emission savings by 5% or 7 MtCO2e over the appraisal period, relative to the longer 24-month transitional period[13]. **Grid-connected homes will contribute more on-site renewable generation and help manage peak demand** The inclusion of solar PV (covering equivalent of 40% of the ground floor area) in the notional building means this objective would be met. Compared to option 2 the onsite PV offsets the additional electricity use from low-carbon heating. **Energy costs for occupants will be lower and more predictable** The low carbon technologies included in the notional building would make energy costs more predictable by protecting occupants from fossil fuel price volatility. Dwellings built to these standards would deliver lower energy bills than a typical existing home. Energy savings were estimated as around £3,700m (2022 prices) over the appraisal period assumed at consultation[14]. Therefore, this objective would be met. **New dwellings will be high-quality and comfortable** The combination of low-carbon heating, improved airtightness and decentralised mechanical extract ventilation would ensure that new dwellings are high-quality and can maintain a comfortable ambient environment. Therefore, this objective would be met.

[13] Modelled assuming the consultation Option 1 policy specification.

[14] Details of the appraisal period outlined in Annex G. Standard 10-year appraisal period assumed from 2026-35. Estimating costs and benefits of new dwellings constructed over this period and their assumed asset life of 60-years.

		New dwellings will be cost-effective, affordable, practical and safe The high level of ambition of this option vs the option without solar and additional net zero technologies (Option 2) means that dwellings under this option would be more expensive and complicated for developers to build by comparison, although in the long term the housing market may adjust to accommodate (for example through changing land prices) and the additional technology in this option provides other benefits that Option 2 can't. This was estimated as an aggregate capital cost increase of around £3,000m (2022 prices) over the appraisal period relative to the Part L 2021 counterfactual. To summarise though, when it comes to imposing costs on developers, this option would not do as well on this particular objective as Option 2. Other existing Building Regulations are intended to protect people's safety, health and welfare, setting acceptable standards for new building work. This will remain unchanged, regardless of the option chosen for the FHS.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** This option offers strong support for the SMART objectives, and therefore meets business needs well. The increased cost and complexity for developers may have a negative impact on housing supply, however the high ambition for improved standards means this option would achieve the most significant contribution to the UK's carbon reduction goals, the Government's ambitions for Clean Energy by 2030 and improve bill savings for occupants. **Potential value for money:** The estimated NPSV of this option at consultation stage is around £7,200m (2022 prices), which is higher than the £5,600m (2022 prices) calculated for Option 2. In addition, the Green Book cost effectiveness for non-traded emission savings (majority of emission savings for the FHS) indicates better cost effectiveness for Option 1 compared to Option 2. These are (£20)/tCO2e vs £17/tCO2e, respectively. **Supplier capacity and capability, and potential achievability:** This is a high-ambition option, representing a significant increase in energy efficiency standards, and therefore may pose capability and achievability changes for suppliers adopting new practices. **Potential affordability:** Higher capital, maintenance and replacement costs relative to the preferred option. This option does not impose direct costs on HMG. However, some capital, replacement and maintenance costs will fall on Housing Associations, which are partially funded by government.
Overall RAG rating and assessment		This high-ambition option delivers strongly against our SMART objectives and the CSFs, although there are some concerns around supplier capability and achievability.
Progressed to shortlist stage?	Yes – included in consultation. Consultation Analysis included in Annex G.	
Option 2 (Do minimum)		

Summary of policy	The notional building for new dwellings would include a heat pump, but not the other technologies included in Option 1. Transitional arrangements would be as per Option 3 or Option 4.
RAG rating against SMART objectives	**New dwellings built to the FHS will zero-carbon ready by default, with the FHS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust** This option would meet the minimum threshold for homes being 'zero-carbon ready', so this objective would be met. **Reduce operational energy use from new dwellings** This option would achieve a reduction in operational energy use, albeit a smaller reduction in operational energy use than Option 1 due to the inclusion of fewer energy efficiency provisions. Energy savings were estimated at 234,000 GWh for gas but additional electricity use of 133,000 GWh. Carbon savings were estimated at 43 MtCO2e non-traded and (1.3) MtCO2e traded over the appraisal period (24 month transition period). Carbon savings would be slightly higher if an 18-month transition period was selected. **Grid-connected homes will contribute more on-site renewable generation and help manage peak demand** This option does not include a requirement for renewable electricity generation, and therefore does not meet this objective. **Energy costs for occupants will be lower and more predictable** This would deliver lower energy bills compared to existing homes, albeit smaller savings than Option 1. There would be an energy bill increase relative to the Part L 2021 counterfactual. There was an aggregate energy bill cost increase of around £1,400m (2022 prices) estimated over the appraisal period. The inclusion of a heat pump will offer occupants protection against fossil fuel price volatility. **New dwellings will be high-quality and comfortable** Comfort and quality can be seen to be addressed by the inclusion of a heat pump; comfort may be reduced compared to Option 1. **New dwellings will be cost-effective, affordable, practical and safe** This option would reduce build costs and complexity compared to Option 1, increasing the cost-effectiveness and practicality of this option. Estimated capital costs are estimated to represent a saving of around £800m (2022 prices) over the appraisal period relative to the Part L 2021 counterfactual. Other existing Building Regulations are intended to protect people's safety, health and welfare, setting acceptable standards for new building work. This will remain unchanged, regardless of the option chosen for the FHS.
RAG rating against CSFs	**Strategic fit and meeting of business needs:** This is a less ambitious option than Option 1. The carbon emission savings and household energy cost savings of this option are significantly lower than for Option 1, giving it a much poorer strategic fit. However this does mean that impacts on businesses and housing supply will likely be lower. **Potential value for money:** The monetised costs to business are lower under Option 2, but the monetised benefits are also lower due to the additional carbon emission

		benefits under Option 1 (Annex G). Therefore, the monetised net present social value is positive, but lower than under Option 1. **Supplier capacity and capability, and potential achievability:** The decreased ambition and complexity of this option means that the notional building set out in this Option has higher achievability than that set out in Option 1. **Potential affordability:** This has lower capital, maintenance and replacement costs relative to Option 1, due to the less ambitious uplift to energy efficiency standards. This option does not impose direct costs on HMG. However, some capital, replacement and maintenance costs will fall on Housing Associations, which are partially funded by government.
Overall RAG rating and assessment		This is a far lower ambition option than Options 1 and 2, and does not support all SMART objectives. However, this option could represent a useful fallback if the requirements in Option 1 were found to be undeliverable.
Progressed to shortlist stage?	Yes – included in consultation. Consultation Analysis included in Annex G.	
Option 3 (18-month transitional arrangements)		
Summary of policy	The notional building for new dwellings would be set as per Option 1 or Option 2. There would be 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, followed by a 12-month transitional period **(18 months total).**	
RAG rating against SMART objectives		The support for each SMART objective will depend on whether the notional building is set according to Option 1 or Option 2. This option represents a quicker transition than Option 4, meaning the objectives would be achieved more quickly. Proceeding with a shorter transitional arrangement than under Option 4 would result in a slightly higher carbon emission savings over the appraisal period of the FHS, as fewer new dwellings would be constructed with a gas boiler. For example, under Option 1, this is estimated to increase total non-traded emission savings by 5% or 7 MtCO2e over the appraisal period, relative to the longer 24-month transitional period under Option 4[15] . However, 18 months may not be sufficient time for industry to adapt (as is a requirement for our first SMART objective).
RAG rating against CSFs		**Strategic fit and meeting of business needs:** This option represents a quicker transition than Option 4, meaning the objectives would be achieved more quickly. This would lock in carbon savings sooner and offer earlier support for the transition to net zero. However, if this option does not allow sufficient time for industry to adjust,

[15] Modelled assuming the consultation Option 1 policy specification.

		this could have a negative impact on housing supply and confidence in net zero technologies. **Potential value for money:** The value for money of this option could be higher than that of Option 4, if the benefits of FHS implementation are realised more quickly. However these would need to be balanced against any impact on housing supply and businesses needing more time to adapt. **Supplier capacity and capability, and potential achievability:** The proposed transition period may not allow sufficient time for all parts of the industry to adapt to the new standard. **Potential affordability:** This option does not impose direct costs on HMG. However, some capital, replacement and maintenance costs associated with Options 1 and 2 will fall on Housing Associations, which are partially funded by government. Shorter transitional arrangements mean these cost increases would come sooner than for Option 4.
Overall RAG rating and assessment		The faster transitional arrangements compared to Option 4 will mean carbon reductions are locked-in more quickly, although there is a risk that going faster will have a negative impact on businesses and housing supply.
Progressed to shortlist stage?	Yes – included in consultation.	
Option 4 (24-month transitional arrangements)		
Summary of policy	The notional building for new dwellings would be set as per Option 1 or Option 2. There would be a **12-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, followed by a 12-month transitional period **(24 months total).**	
RAG rating against SMART objectives		The support for each SMART objective will depend on whether the notional building is set according to Option 1 or Option 2. This option represents a slower transition than Option 4, meaning the objectives would be achieved less quickly. However, this may allow more time for industry to adapt to the new standards. This is essential for meeting our first SMART objective, and minimising unintended consequences that could be associated with a faster transition.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** This option represents a slower transition than Option 4, meaning the objectives would be achieved less quickly. For example, under Option 1, this would mean around a 5% reduction in non-traded emission savings relative to 18-month transitional period under Option 3[16], as it would miss the opportunity to lock in carbon savings sooner and offer earlier support for the transition to net zero. However, if this option allows sufficient time

[16] Modelled assuming the Option 1 FHS specification.

		for industry to adjust, this could reduce negative impact on businesses and housing supply and enable a more successful transition to the FHS. **Potential value for money:** The value for money of this option could be lower than that of Option 4, if the benefits of FHS implementation are realised more slowly. However, this would need to be balanced against the lower likely impact on housing supply. **Supplier capacity and capability, and potential achievability:** This option likely has a higher supplier capability and achievability, as it offers the sector more time to adjust to the new standards. **Potential affordability:** This option does not impose direct costs on HMG. However, some capital, replacement and maintenance costs associated with Options 1 and 2 will fall on Housing Associations, which are partially funded by government. Longer transitional arrangements mean these cost increases would come later than for Option 3, allowing more time to prepare.
Overall RAG rating and assessment		The slower transitional arrangements compared to Option 3 will mean the opportunity to lock in carbon reductions more quickly is lost. However, the additional time will improve the ability of the sector to successfully deliver the FHS and this may reduce the negative impact on housing supply.
Progressed to shortlist stage?	Yes – included in consultation.	
Option 5 (counterfactual/BAU)		
Summary of policy	A business-as-usual approach would retain the existing 2021 energy efficiency standards for dwellings.	
RAG rating against SMART objectives		There would be no improvement against any of the SMART objectives.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** Option 5 would not support any of the SMART objectives, or lead to any further reduction in carbon emissions, and so has a very poor strategic fit. However, it would have no negative impact on housing supply. **Potential value for money:** New dwellings may require retrofit which is generally more expensive than when installed at the point of construction and can be disruptive to occupants. Therefore, counterfactual/BAU may offer poor value for money for occupants over time. There are also no additional carbon or air quality improvements benefits with this option. **Supplier capacity and capability, and potential achievability:** No significant changes are required from suppliers, as the energy efficiency and heating system standards remain at 2021 levels. Therefore, in the immediate term, this has high supplier capability and achievability. While this scenario poses no immediate challenges to supplier capacity, it also offers little incentive for innovation or growth in low-carbon technologies, potentially slowing the development of future-ready supply chains. As such, this could represent a missed opportunity to increase

		supplier capability and grow UK low carbon technology markets in line with those of other countries bringing in similar standards to the FHS. **Potential affordability:** The counterfactual/BAU has no additional costs on industry or HMG.
Overall RAG rating and assessment		Doing nothing would not achieve progress towards our SMART objectives, or towards our net zero commitments. However, it would also avoid any negative impact on housing supply.
Progressed to shortlist stage?	Yes – included in consultation as the counterfactual.	
Option 6 (non-legislative options)		
Summary of policy	Non-legislative options, designed to encourage and enable developers to build dwellings to higher energy efficiency standards, without mandating this through the Building Regulations. Examples of non-legislative policy programmes could include guidance for developers to encourage particular building practices or subsidising the cost to developers of low-carbon technologies.	
RAG rating against SMART objectives		As set out in Section 2, market failures such as imperfect information to consumers, split incentives for developers, and co-ordination failures mean that there is little incentive for developers to be early adopters of low carbon and energy efficient building, as the additional costs incurred cannot always be recouped at the point of sale. This could put early adopters at a commercial disadvantage compared to developers who chose not to adopt higher energy efficiency standards. While non-legislative options can incentivise better standards, they lack the enforceability and uniformity provided by the Building Regulations. There are several industry led higher standards that have been developed and published but this has not yet been sufficient to persuade the market as a whole to build to levels higher than current Building Regulations. Analysis of EPC lodgement data found historically developers generally do not go above and beyond the energy efficiency standard in the Building Regulations, and indeed take significant advantage of transitional arrangements to continue building to previous energy efficiency standards for several years after a change in regulation, suggesting that legislation is needed to regulate for higher standards and to achieve the desired outcome in time for our legal net zero commitments. As such, while non-legislative options may lead some developers to make some progress towards lower emission, more energy efficient housing, this would not be sufficient to meet any of our objectives.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** Option 6 would not sufficiently meet any of the SMART objectives, or contribute significant reductions in carbon emissions, and so has a very poor strategic fit. However, it would likely have very little negative impact on businesses and housing supply. **Potential value for money:** New dwellings may require retrofit which is generally more expensive and can be disruptive to occupants. Therefore, non-legislative options that do not require the sector to improve building standards across the board may offer poor value for money for occupants over time. There are likely very reduced additional carbon or air quality improvements benefits with this

		option, compared to Options 1 and 2. Unlike Option 5, this option would likely incur costs for HMG, for example the cost of subsidising low-carbon technologies, and is therefore the poorest value for money option. **Supplier capacity and capability, and potential achievability:** Engagement with non-legislative policy programmes would be optional. This would mean that suppliers with limited capability, or developers for whom engagement is not achievable, would not be directly adversely impacted. While this scenario poses no immediate challenges to supplier capacity, it also offers little incentive for innovation or growth in low-carbon technologies, potentially slowing the development of future-ready supply chains. As such, this could represent a missed opportunity to increase supplier capability. **Potential affordability:** This option could incur some additional costs for HMG, depending on the programme identified and progressed, for example if a subsidy programme was selected. Any additional costs to industry resulting from this would be optional, as the programme would be non-legislative.
Overall RAG rating and assessment		Non-legislative options were not considered to be a viable approach to achieving the SMART objectives set out in Section 3. Changes to the Building Regulations are a tried and tested approach to improving energy efficiency standards, setting a national minimum that ensures consistency and compliance. Therefore, a non-legislative option was not considered for the FHS, as it would not guarantee the same level of adherence and effectiveness in achieving the SMART objectives set out in Section 3.
Progressed to shortlist stage?	No.	

6. Revised assessment of options shortlist and identification of preferred option

6.1 The following table outlines how our assessment of each of the shortlisted options was revised following consultation feedback.

Table 2: Revised assessment of shortlisted policy options against the SMART objectives and the Green Book Critical Success Factors, following consultation

Option 1 (Do maximum)	
Summary of policy	The notional building for new dwellings would include a heat pump, solar PV (covering equivalent of 40% of the ground floor area), wastewater heat recovery, improved airtightness, and decentralised mechanical ventilation. Transitional arrangements would be as per Option 3 or Option 4.
Revised RAG rating against SMART objectives	Many respondents to the consultation provided positive feedback on Option 1, suggesting the high level of ambition was welcome. However, concerns were raised that caused us to revise our assessment of this option against the following SMART objective. As a result, we have revised our RAG rating against SMART objectives from Green to Amber. **Grid-connected homes will contribute more on-site renewable generation and help manage peak demand** Concerns were raised that the proposed levels of solar coverage would have been impractical to meet in many situations. This would therefore have increased the number of exemptions from solar being sought, thereby undermining the aim to maximise onsite renewable energy generation overall. As such, this option offers poorer support for this objective than we had considered at long-list stage.
Revised RAG rating against CSFs	Concerns were raised that caused us to revise our assessment of this option against the following CSFs. As a result, we have revised our RAG rating against CSFs from Amber to Red. **Strategic fit and meeting of business needs:** The expectation to meet solar PV coverage equal to 40% of ground floor area was suggested to be impractical for many new dwelling designs. This could mean that more exemptions are sought, undermining the FHS's intended contribution to the net zero transition, bill savings and clean energy generation. As exemptions are handled locally by local authority building control bodies, this could also place a high unintended burden on them. This could lead to housing supply reductions above those estimated for the preferred policy option. **Supplier capacity and capability, and potential achievability:** The concerns raised about levels of solar PV coverage suggest that achievability for this option is a bigger concern than we had initially estimated.

		As such, this option offers poorer support for this CSF than we had considered at long-list stage.
Overall revised RAG rating and assessment		The poor achievability of the high levels of solar PV coverage may lead to more exemptions being sought, counter to the FHS's aim. However, many respondents provided positive feedback on this option, suggesting that the overall approach other than on solar is sound.
Option 2 (Do minimum)		
Summary of policy	The notional building for new dwellings would include a heat pump, but not the other technologies included in Option 1.	
Revised RAG rating against SMART objectives		Unchanged following consultation.
Revised RAG rating against CSFs		Unchanged following consultation.
Overall revised RAG rating and assessment		Unchanged following consultation.
Option 3 (18-month transitional arrangements)		
Summary of policy	The notional building for new dwellings would be set as per Option 1 or Option 2. There would be 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, followed by a 12-month transitional period **(18 months total).**	
Revised RAG rating against SMART objectives		Consultation responses were largely positive about 18-month transitional arrangements. However, concerns were raised that caused us to revise our assessment of this option against the following SMART objective. As a result, we have revised our RAG rating against SMART objectives from Amber to Red. **New dwellings built to the FHS will zero-carbon ready by default, with the FHS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust** Concerns were raised about whether these transitional arrangements would give the sector adequate time to adjust. This included concerns that the Home Energy Model, a key compliance software, would not be ready for use, that this would not give industry sufficient time to upskill in key areas (e.g., heat pump installation), and supply chain disruptions would negatively impact housing supply. It was also noted that shorter transitional arrangements may have a negative impact on small and medium-sized developers, who may lack the capacity to respond quickly to regulation changes, and may need to source external expertise on areas such as energy modelling. As such, we do not believe it is reasonable to expect all parts of industry to adapt to the new standards within 18 months. This option could therefore have a significant negative impact on housing supply. As such, this option offers poorer support for this objective than we had considered at long-list stage.

Revised RAG rating against CSFs		Concerns were raised that caused us to revise our assessment of this option against the following CSF. As a result, we have revised our RAG rating against the CSFs from Amber to Red. **Strategic fit and meeting of business needs:** If 18-month transitional arrangements do not give industry sufficient time to adjust, this could have an increased impact on housing supply and impact the successful transition to the FHS and net zero technologies in new homes. As such, this option offers poorer support for this CSF than we had considered at long-list stage.
Overall revised RAG rating and assessment		Consultation responses suggest that the 18-month transitional arrangements would not give industry sufficient time to adjust, and that therefore this option is not viable.
Option 4 (24-month transitional arrangements)		
Summary of policy	The notional building for new dwellings would be set as per Option 1 or Option 2. There would be a **12-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, followed by a 12 month transitional period **(24 months total).**	
Revised RAG rating against SMART objectives		Concerns were raised that caused us to revise our assessment of this option against the following CSFs. As such we have revised this RAG rating from Amber to Green. **New dwellings built to the FHS will be zero-carbon ready by default, with the FHS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust** The concerns raised around 18-month transitional arrangements, outlined for Option 3, suggest that 24 months is the shortest transition period that would still give the sector adequate time to adjust. As such, this option offers stronger support for this objective than we had considered at long-list stage.
Revised RAG rating against CSFs		Concerns were raised that caused us to revise our assessment of this option against the following CSFs. As such, we have revised the RAG rating from Amber to Green. **Strategic fit and meeting of business needs:** Feedback on transitional arrangements suggests that 24 months is the minimum needed for industry to adjust to minimise further impacts to housing supply, whilst still bringing about carbon savings as quickly as possible. This increases the strategic fit for this option, compared to Option 3. As such, this option offers stronger support for this CSF than we had considered at long-list stage.
Revised Overall RAG rating and assessment		Consultation responses suggest that the 24-month transitional arrangement timeline would give industry adequate time to adjust to the new standards, whilst locking in carbon savings as soon as possible.
Option 5 (counterfactual/BAU)		

Summary of policy	A business-as-usual approach would retain the existing 2021 energy efficiency standards for dwellings.	
RAG rating against SMART objectives		Unchanged following consultation.
RAG rating against CSFs		Unchanged following consultation.
Overall RAG rating and assessment		Unchanged following consultation.

Identification of preferred option

Building specification

6.2 Following consultation feedback, our revised assessment of Options 1 and 2 indicated that neither was fit for purpose; Option 2 lacked sufficient ambition to achieve our SMART objectives and contribute adequately towards legally binding carbon emission reduction commitments, and Option 1 was impractical due to the high solar PV coverage requirements. As such, we developed a new option to mitigate these issues.

6.3 Given that feedback on Option 1 was otherwise positive, we developed an option that mirrored Option 1, but with a renewable electricity generation requirement that offers more flexibility for developers and is therefore more achievable. As in Option 1, this would see the notional building for new dwellings include a heat pump, wastewater heat recovery, improved airtightness and decentralised mechanical extract ventilation. However, instead of any solar requirement being included in the notional building, the new policy option would introduce a new legislative requirement ("functional requirement") for a reasonable provision of on-site renewable electricity generation. This is a stronger way of requiring on-site renewable electricity generation than can be achieved by including solar in the notional building. This will be accompanied by guidance in the Approved Documents which gives more flexibility on what that possible solar provision looks like. As part of this Higher-Risk Buildings (HRBs) have been exempted from a solar requirement as they have very limited roof space relative to the number of likely dwellings in the building, which may also be needed for other practical purposes, improving the achievability and safety of the standard for HRBs. This whole new approach to solar PV in the FHS was tested with stakeholders through targeted engagement post-consultation.

Transitional arrangements

6.4 Following consultation feedback, our revised assessment of Options 3 and 4 indicates that Option 4, transitional arrangements totalling 24 months, is the most appropriate. This is because it is the shortest possible timeframe for implementing the FHS and achieving the associated reductions in carbon emissions, whilst also allowing industry sufficient time to adapt, and minimising any negative impact on housing supply.

6.5 The preferred, longer transitional arrangements mean that developers seeking to build to 2021 standards have 12 months after the legislation is laid to submit an initial notice,

a building notice or full plans application to the local authority, and a further 12 months to commence construction. If they do not meet these deadlines, they are required to meet the FHS. We expect that during the 12 months after the legislation is laid, there may be an increase in applications to local authorities from developers seeking to secure transitional arrangements to build to 2021 standards for some of their projects. This may lead to a small increase in the number of homes built to 2021 Part L standards, with poorer energy efficiency and higher emissions.

6.6 Although the impact of this issue may be larger with 24-month transitional arrangements, compared to 18-months, the same issue of increased applications prior to the FHS coming into force would still occur if we implemented shorter transitional arrangements. Transitional arrangements are a necessary component of changes to Building Regulations, giving businesses vital time to familiarise themselves with new requirements and adapt smoothly, particularly for SMEs and MSEs. This is particularly important for the FHS, as the high ambition of the preferred option will see a significant paradigm shift from fossil fuel to low-carbon heating. The success of the FHS and adoption of the standard, is dependent on industry being given sufficient time to adapt to and prepare, and this justifies the use of longer transitional arrangements, even if a temporary increase in planning applications results.

6.7 It should be noted that these transitional arrangements will apply to each individual building, rather than the site. This means that developers cannot secure transitional arrangements for a whole development site by progressing only a small proportion of buildings within it. This will likely reduce the number of dwellings that can be constructed to previous standards.

Higher-Risk Buildings (HRBs)

6.8 A Higher-Risk Building (HRB) is a building which is at least 18m in height or has at least 7 storeys and contains at least 2 residential units, or is a care home or hospital. Through the Building Safety Act 2022, HRBs are required to go through more stringent building control procedures (known as the Gateway process) as part of reform efforts to ensure safety in high-rise buildings. This process is managed by the Building Safety Regulator (BSR). In particular Gateway 2 (GW2) requires developers to submit detailed plans to the BSR for approval.

6.9 At the time of the FHBS consultation, the new Higher-Risk Building scheme had only recently come into force. As a result we did not consult on alternative arrangements for HRBs at the time. However, the consultation and experience of undergoing Gateway submissions since then highlighted to us that the standard FHBS transitional arrangements are not suitable for HRBs. In particular, HRBs and the accompanying requirements of the Gateways process significantly more complex and require more time to undertake. Before being able to proceed further, HRB developers must await BSR approval which adds significant additional time into their delivery timelines. As such we have created an extended set of transitional arrangements for HRBs – they will be allowed 18 months from the FHS SI being laid to file a successful Gateway 2 application. Following on from this they will then have 3 years from this to commence construction (this is a provision already in the Building Safety Act). Whilst this seems substantially longer than for other new dwellings we believe HRBs are incentivised to commence building as soon as they can given the level of investment and expected returns these projects require so a different earlier deadline was not considered necessary or practical.

6.10 Implementing longer transitional arrangements for HRBs (assumed to comprise around 20% of new dwellings over the appraisal period[17]) is estimated to reduce non-traded emission savings by 6 MtCO2e or around 5% over the appraisal period relative to Option 1. However, the specification of the notional building for HRBs is also such that the per dwelling impact on carbon emission savings and occupant energy bill costs will be lower than it would be for other archetypes (e.g. there will be no solar PV on HRB buildings). In addition, giving HRBs extended transitional arrangements will significantly improve the achievability of the FHS standard for these building types, enabling a smooth transition to the FHS whilst also protecting housing supply.

Assessment of preferred option against SMART objectives and CSFs

6.11 The table below outlines our assessment of the preferred option against the SMART objectives and CSFs.

Table 3: Assessment of preferred options against the SMART objectives and the Green Book Critical Success Factors

Preferred Option	
Summary of policy	This would see the notional building for new dwellings include a heat pump, wastewater heat recovery, improved airtightness and decentralised mechanical extract ventilation. This would introduce a new functional requirement for on-site renewable electricity generation rather than including solar in the notional building; both strengthening the need for on-site renewable generation for dwellings whilst increasing flexibility for how that is delivered. There would be a **12-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, followed by a 12 month transitional period **(24 months total), with longer transitional arrangements for HRBs (as per above, paragraphs 6.8 and 6.9).**
RAG rating against SMART objectives	**New dwellings built to the FHS will be zero-carbon ready by default, with the FHS implemented as soon as is reasonably possible whilst giving the sector adequate time to adjust** The low carbon technologies included in the notional building mean new dwellings would be constructed to be net-zero ready by default. 24-month transitional arrangements mean the carbon emission savings of the FHS can be delivered as quickly as possible, while still giving industry adequate time to adjust. **Reduce operational energy use from new dwellings** The combination of low-carbon heating, improved airtightness and decentralised mechanical extract ventilation significantly reduces operational energy use. This means this objective would be met. **Grid-connected homes will contribute more on-site renewable generation and help manage peak demand** The inclusion of a functional requirement for on-site renewable electricity generation means this objective would be met.

[17] Based on historical trends analysis of unpublished Glenigan's planning data splitting new build housing supply by archetype.

		Energy costs for occupants will be lower and more predictable The low carbon technologies included in the notional building would make energy costs more predictable by protecting occupants from fossil fuel price volatility. Dwellings built to these standards would deliver lower energy bills than a typical existing home. **New dwellings will be high-quality and comfortable** The combination of low-carbon heating, improved airtightness and decentralised mechanical extract ventilation would ensure that new dwellings are high-quality and can maintain a comfortable ambient environment. Therefore, this objective would be met. **New dwellings will be cost-effective, affordable, practical and safe** The high level of ambition of these standards would mean that dwellings are more expensive and complicated for developers to build, so this objective would not be fully met, although in the long term the housing market may adjust to accommodate (for example through changing lang prices). Other existing Building Regulations are intended to protect people's safety, health and welfare, setting acceptable standards for new building work. This will remain unchanged, regardless of the option chosen for the FHS.
RAG rating against CSFs		**Strategic fit and meeting of business needs:** This option offers strong support for the SMART objectives, and therefore meets business needs well. The increased cost and complexity for developers may have a negative impact on housing supply, however the high ambition for improved standards means this option would achieve the most significant contribution to the UK's carbon reduction goals. **Potential value for money:** This has a similar NPV to Option 1, but the increased flexibility introduced around on-site renewable electricity generation will decrease aggregate capital costs as not all new dwellings are modelled to achieve 40% of ground floor area rooftop solar coverage. Despite the small decrease in overall non-traded/traded emission savings, this will increase the non-traded cost effectiveness of carbon metric from £69/tCO2 under Option 1, to £74/tCO2 under the preferred option. **Supplier capacity and capability, and potential achievability:** This is a high-ambition option, representing a significant increase in energy efficiency standards, and therefore may pose capability and achievability changes for suppliers adopting new practices. The increase flexibility around on-site renewable electricity generation will reduce these challenges compared to Option 1. Achievability is also ensured through the selection of 24-month transitional arrangements, to give industry adequate time to adjust. **Potential affordability:** This has lower capital, maintenance and replacement costs relative to Option 1. Whilst capital, maintenance and replacement costs are higher than Option 2 at consultation, we consider that the benefits of this new option with regards lower bills, and increased contributions to clean energy generation, legal commitments, reduced carbon emissions and better air quality outweigh the benefits of Option 2 and its performance against this potential affordability CSF. Furthermore, we considered that the lower bills this Option offers may also contribute positively to reducing the cost of living for occupants and improving mortgage affordability.

		This option does not impose direct costs on HMG. However, some capital, replacement and maintenance costs will fall on Housing Associations, which are partially funded by government.
Overall RAG rating and assessment		This high-ambition option delivers strongly against our SMART objectives and the CSFs, and includes more flexibility, with the right transitional arrangements, to be more achievable for industry. It was therefore selected as the preferred option.

Small and Micro Business Assessment (SaMBA) and Medium-Sized Business Impact

6.12 Small and micro businesses in the housing sector primarily include developers, architects, and technical specialists. The impacts of the Future Homes Standard on these businesses are expected to be moderate, with developers and heating engineers experiencing the most significant cost and operational changes as they transition to low-carbon technologies. Other stakeholders will primarily face short-term adjustments to professional practices. The nature of costs is likely to be similar for medium-sized businesses.

6.13 SMB and MSB developers face a distinct challenge from the introduction of new energy efficiency regulation in that they may lack access to the in-house technical or analysis capacity which would be available to a larger developer. This means it is harder for them to understand and adjust to new requirements at pace and may increase their familiarisation costs. Conversely, SMBs and MSBs may benefit from increased agility compared to their larger counterparts, as they generally have fewer developments undergoing planning approvals at any given time, and often have shorter contracts with suppliers. This may offset some of the impacts of this policy on SMBs and MSBs.

Small and Micro Business Assessment (SaMBA) and Medium-Sized Business Exemption

6.14 There is insufficient data on the proportion of homes constructed by SMEs and MSEs as defined by the Better Regulation Framework (i.e. enterprises split by numbers of employees – 0-9; 10-49; and 50-499). As such, it has not been possible to quantitatively assess the extent to which introducing an exemption for SMBs and MSBs would sacrifice the benefits of the proposal.

6.15 Any mechanism for exempting homes constructed by SMBs and MSEs would have to be robust enough to prevent exploitation by larger developers, as any exploitation would likely prevent the overarching policy objectives from being achieved. A blanket exemption for homes developed by businesses with fewer than 500 employees, for example, would be without precedent in previous updates to Part L. Such a mechanism would likely not prevent exploitation of the exemption by larger developers through the setting up of separate smaller legal entities which could have fewer than 500 employees. Another method of possible exemption considered was exempting developments of less than ten dwellings per site – however, exploitation of this could not be avoided without significant local compliance efforts, which would require significant new resource and funding. More broadly, an exemption for SMBs and MSEs could create a complex regulatory environment in the homebuilding sector, where monitoring and enforcing compliance with multiple varying standards based on developer size would become prohibitively challenging for building control bodies.

Even if the enforcement challenges could be overcome, this would create a permanent and confusing two-tier energy efficiency market of new dwellings for occupants. Crucially, this would also create a permanent stock of new dwellings requiring later, much more expensive, retrofitting in order to achieve net zero. Before they are retrofitted, they will continue to create higher carbon emissions than dwellings built to the FHS, undermining the aims of the regulation. As such, the approach of exempting small, micro and medium sized businesses from new regulatory requirements would be inappropriate in this situation and the Government has sought to mitigate the impacts of the proposal via other means.

Small and Micro Business Assessment (SaMBA) and Medium-Sized Business Mitigations

6.16 The updated solar proposal included in the final package provides developers, regardless of size, with greater flexibility in how they can deliver on-site renewable generation for their dwellings through the new legislative requirement. This could offer particular benefits to micro, small and medium-sized businesses, who often face tighter cost constraints and site-specific limitations. However, there will be a learning curve for all developers in understanding how the new approach to solar under the Future Homes Standard operates, and this may place a relatively greater technical capacity burden on smaller developers compared to larger housebuilders.

6.17 The Government is committed to supporting small, micro, and medium-sized businesses through the implementation phase. The industry-led Future Homes Hub, backed by government departments including MHCLG and DESNZ, will play a central role in providing technical guidance, pilot developments, and practical solutions tailored to the needs of smaller firms to help them adjust to the new requirements.

6.18 The publication of the full technical specification well in advance of the regulations coming into force in 2027 is intended to give businesses, particularly SMBs and MSBs, sufficient time to prepare and adapt. The transitional arrangements have also been designed to provide flexibility and reduce disruption across the sector. The decision to implement the longer option for transitional arrangements was partially informed by targeted engagement to understand the likely impact of the standards on SMBs and MSBs, where it became clear the additional time will be important for them to adapt.

6.19 The Standard Assessment Procedure (SAP) and the Home Energy Model (HEM) are the compliance tools that industry use to assess the energy and carbon performance of new homes, with HEM set to replace SAP under the Future Homes Standard. However, to help manage the administrative burden of transitioning to the new standard further, SAP will not be retired for the Future Homes Standard. Instead, a dual running period of at least 24 months for SAP and HEM will allow developers and assessors to gain familiarity with the new methodology without disruption to delivery, before a decision is then made to retire SAP. This will also particularly benefit SMBs and MSBs without access to in-house technical or analytical capacity during the transition to the FHS, as they will be able to continue using a compliance tool they are familiar with and have more time to prepare to transition to HEM.

7. Regulatory scorecard for preferred option

Part A: Overall and stakeholder impacts

(1) Overall impacts on total welfare		Directional rating
Description of overall expected impact	The FHS is expected to have an overall positive social impact based on monetised impacts. Given the size of the monetised benefits estimated, including non-monetised impacts in this assessment is unlikely to switch this assessment.	**Positive** **Based on all impacts (incl. non-monetised)**
Monetised impacts	Total £11,251m NPSV. The FHS expected to have a net positive social impact. This is primarily driven by reduced non-traded emission savings, resulting in improved air quality and reduced social impacts of greenhouse gas emissions. This is estimated to off-set the increased capital, maintenance and replacement costs to businesses and households from constructing and occupying dwellings completed to a higher energy efficiency standard. The estimated NPSV is positive under all sensitivity analysis scenarios.	**Positive** **Based on likely £NPSV**
Non-monetised impacts	These changes may have a small short-term impact on the demand and supply of new homes. This is not expected to be substantial. This impact has not been monetised. Any increases in costs from grid reinforcement have not been monetised due to insufficient evidence and variable cost. Including these would increase cost to business, reducing the NPSV. These are not expected to be widespread. No allowance is made for fuel security benefits, employment opportunities from developing energy saving or low-carbon/primary energy products or spill-over benefits of innovation, which would all contribute positively to the NPSV.	**Uncertain**
Any significant or adverse distributional impacts?	There are no significant distributional impacts as result of the policy. There may be some cases on a per dwelling basis where energy bills are marginally higher than in the baseline due to electricity being more expensive per unit than gas. However, the FHS is expected to deliver significant energy bill savings relative to the existing typical dwelling.	**Neutral**

(2) Expected impacts on businesses		
Description of overall business impact	The direct costs determined to be in scope of the EANDCB are transition costs, upfront capital costs, installation costs, and some maintenance and replacement costs. The most significant costs are the capital costs which are borne by developers. Other costs are borne by Housing Association and Private Rented Sector Landlords.	**Negative**
Monetised impacts	The business NPV is estimated to be -£7.7bn, of which admin costs are £26m. This accounts for the familiarisation costs to the new guidance and compliance software; increased capital cost of construction and increased maintenance/replacement costs to Housing Associations and Private Rented Sector Landlords. The estimated EANDCB is £709m based on the construction of new dwellings in the first 10-years of the policy. No pass-through of these costs to households have been assumed in this analysis. Housing developers may be able to pass-through costs through higher house prices if the energy efficiency upgrades are internalised by occupants. However, evidence for this pass-through in new housing is mixed and context dependent (e.g. house type, region, market conditions)18. There is also evidence that energy efficiency premiums are reducing over time as energy efficiency upgrades, such as solar panels, become more common19. As pass-through of costs from businesses to households is not an explicit part of the policy intention, these have not been assumed in this analysis.	**Negative** **Based on likely business £NPV**
Non-monetised impacts	The FHS will be set as a performance standard, rather than a prescriptive standard. This means businesses will have the flexibility in how they comply with the FHS. This freedom and market incentive may encourage business to explore new routes to compliance which are more cost effective[20]. Potential benefits from increased innovation and supply chain development in low/zero-carbon technologies have not been monetised for this analysis but would be expected to offset some of the increased capital costs to business. Businesses may be able to pass-through some or all the increased capital cost if households have a higher willingness to pay for new dwellings with higher energy efficiency. There is mixed evidence to the extent this pass-through can be realised, so this has not been monetised for this policy.	**Neutral**

[18] Wei and Peiser, 2025. *Evolving Green Premiums: The Impact of Energy Efficiency on London Housing Prices over Time.* Available: https://doi.org/10.3390/land14102053
[19] Asproudis et al., 2023. *Returns to Solar Panels in the Housing Market: A Meta Learner Approach.* Available: 10.1016/j.eneco.2024.107768
[20] Gann et al., 1998. *Do regulations encourage innovation? - the case of energy efficiency in housing.* Available: https://doi.org/10.1080/096132198369760

	Wider grid reinforcement costs which may fall on developers in some cases have not been monetised. These are expected to arise rarely for new housing developments. Costs will vary by project but may be large in some cases. This would increase cost to business.	
Any significant or adverse distributional impacts?	As the FHS will be a change to the national building regulations and will apply to all new dwellings in England after the transitional periods, there are not expected to be any disproportionate impact on specific sectors or regions.	**Neutral**

(3) Expected impacts on households		
Description of overall household impact	The FHS is expected to have a net cost to households through increased costs of replacement and maintenance of energy efficient technologies. This will be partially offset by savings to energy costs.	**Negative**
Monetised impacts	The NPV to households is expected to be an increase in costs of £2.5bn for occupants of new dwellings constructed in the first 10-years of the policy over their assumed 60-year asset life. This is primarily driven by increased replacement and maintenance costs for owner occupiers of dwellings. These are partially offset by a net saving in household energy costs through improved energy efficiency and increased solar generation. Energy cost savings would be significantly larger if compared against a typical existing domestic dwelling. There are estimated EANDCH of £90.5m over the assumed 60-year asset life of dwellings constructed in the first 10-years of the policy.	**Negative** **Based on likely household £NPV**
Non-monetised impacts	Improved energy security and price stability have not been monetised in this analysis. Both would be expected to further reduce costs to households over the appraisal period if included. Households may have a higher willingness to pay for dwellings with relatively higher energy efficiency. This may lead to developers passing-through increased capital costs to households. There is mixed evidence for these pass-through effects and as this is not an explicit part of the policy intention, these have not been monetised in this analysis.	**Neutral**
Any significant or adverse distributional impacts?	There are not expected to be any significant distributional impacts from this policy. The higher energy efficiency standards will apply to all new dwellings of all house types, therefore is unlikely to fall disproportionately on low-income households.	**Neutral**

Part B: Impacts on wider government priorities

Category	Description of impact	Directional rating
Business environment: **Does the measure impact on the ease of doing business in the UK?**	Building to a higher energy efficiency standard would be expected to increase capital costs to developers. However, as this would apply to all new domestic dwellings in England, this is expected to create a level-playing field for developers and impact similar house designs in similar ways. The FHS is technology agnostic so long as performance standards are met. This is expected to incentivise innovation of low/zero carbon energy efficiency technologies through allowing businesses the freedom and market incentive to develop more cost effective routes to complying with the performance standards[21]. Information sharing would support the range of small and large businesses which operate in this sector.	**Neutral**
International Considerations: **Does the measure support international trade and investment?**	There are no major impacts on international trade and investment. Increased capital costs for firms which export internationally may have reduced trade. This will vary significantly by sector and depending on comparative advantage. Innovation of new technologies may increase international demand for energy efficient technologies and support UK manufacturing.	**Neutral**
Natural capital and Decarbonisation: **Does the measure support commitments to improve the environment and decarbonise?**	Monetised social benefits from CO_2 savings and air quality savings are £20,535m. The total non-traded CO_2 savings are 117 $MtCO_2(e)$ for dwelling constructed in the first 10 years of the policy over their 60-year asset life. There is calculated to be a marginal increase in traded emissions, but this is negligible relative to the non-traded savings. The preferred policy option is calculated to have a cost effectiveness of £74 per $tCO_2(e)$ for non-traded emission savings, which is below the non-traded cost comparator of £169. Therefore, indicating that the FHS is a cost-effective measure by the definition laid out in the Green Book supplementary guidance on the valuation of energy use.	**Supports**

[21] Gann et al., 1998. *Do regulations encourage innovation? - the case of energy efficiency in housing.* Available: https://doi.org/10.1080/096132198369760

8. Monitoring and evaluation of preferred option

8.1 MHCLG will monitor and evaluate the Future Homes Standard and publish the evaluation findings in a timely manner, consistent with our policy for publication of research.

What will be monitored and evaluated?

8.2 MHCLG currently monitors implementation of Part L 2021 by using Energy Performance Certificate (EPC) lodgement data to estimate the number of new dwellings built to the latest standard each month, and their energy efficiency characteristics, in particular, whether they have specific technologies installed including a heat pump and/or solar photovoltaic (PV) panels. This monitoring will continue and adapt to enable effective monitoring of FHS implementation, and therefore feed into the evaluation.

8.3 At this stage we anticipate that our evaluation work will cover three broad areas: process, impact and value for money.

Process evaluation

8.4 To examine how the FHS was and is likely to be implemented by developers (timing of evaluation to be determined at the planning phase) including:

- Compliance routes (different technologies and reasons for developers choosing these routes)
- The phase-in time in practice (what are the drivers for time taken to implement new regulations, including how transitional arrangements impacted developer readiness)
- Implementation issues

8.5 To understand homeowner attitudes and perspectives where possible. Heat pump requirements represent a significant change for homeowners and affect the success of the policy.

Impact evaluation

- New dwellings built to the FHS will be zero-carbon ready by default, with the FHS implemented as soon as is reasonably possible to contribute to the UK Government's legal commitment to achieving Net Zero greenhouse gas emissions by 2050 whilst giving the sector adequate time to adjust;
- Reduce operational energy use, and therefore carbon emissions from new dwellings by at least 75% compared to 2013 standards, supporting legally binding Government commitments on Net Zero.
- Grid-connected homes will contribute more on-site renewable generation and help manage peak demand;
- Energy costs for occupants will be lower and more predictable;
- New dwellings will be high-quality and comfortable; and

- New dwellings will be cost-effective, affordable, practical and safe

8.6 This will aim to assess to what extent the FHS achieved the expected outcomes, to what extent observed changes can be attributed to the implementation of the FHS and whether these impacts vary across different groups. The FHS long-term SMART objectives, covered within Section 3, identified through our Theory of Change (detailed in Section 4) include:

- The evaluation will also aim to understand any unintended consequences, for example, on housing supply.

Value for money evaluation

8.7 This will assess the extent to which the original cost-benefit assumptions hold true and whether the FHS has delivered outcomes efficiently and economically relative to the resources invested.

8.8 Throughout these three areas, we will aim to consider whether outcomes have varied across stakeholders, for example by:

- Geographical location;
- Developer size; and
- Type of dwelling / archetype.

8.9 MHCLG will also aim to review the Public Sector Equality Duty assessments carried out that considered the impact of the FHS on those with protected characteristics and update them if and when any new information arises.

Proposed research questions

8.10 For a list of proposed research questions by evaluation type, see Table 4.

Table 4: Proposed research questions for each evaluation type

Type of evaluation	Question
Process Evaluation	To what extent was the FHS implemented as planned, including publication of revised specifications, adoption of the Home Energy Model (HEM), and updated compliance tools?
	To what extent were industry (housebuilders, assessors, local authorities, supply chains, wider stakeholders, etc.) aware of the changes brought about by the FHS? How clear was the guidance and messaging from central government?
	How did industry and local authorities respond to FHS requirements, including zero-carbon ready homes, new solar PV requirement, and new commissioning rules? What behavioural changes occurred?
	What worked well or less well in the implementation of FHS measures? Were there unintended consequences or compliance challenges? Are there any examples of good practice?
	What impact did transitional arrangements and the sunsetting of previous arrangements have on builder readiness and innovation adoption?
	What role did external factors (e.g. costs, skills and supply chain availability) play in shaping the pace and quality of implementation?
	How are FHS requirements becoming embedded in business-as-usual practices for industry and how does it compare across the sector (SMEs vs volume housebuilders)?
Impact Evaluation	To what extent did the FHS meet its objectives as intended?
	What behavioural changes have occurred among builders, developers, and occupants in response to FHS (e.g. design choices, commissioning, energy management)?
	Were there any unintended or adverse consequences of the FHS, such as impacts on wider housing markets, rental levels, affordability issues? What contribution did the FHS make to these impacts relative to other contextual factors?
	How have outcomes varied across different contexts such as building type, location, or builder type (SME vs volume housebuilder)?
	To what extent have external factors influenced the achievement and/or scale of the FHS outcomes?
Value for money	To what extent did the FHS as a whole deliver value for money?
	To what extent have the changes delivered by the FHS been delivered without undue cost to the public purse?
	What scale of energy, carbon, and cost benefits must be achieved for FHS to represent good value for money and is this being realised?
	How have the costs and benefits of the FHS been spread across society (e.g. SME vs volume housebuilders, owner-occupiers vs renters, rural vs urban)?

8.11 The proposed research questions are designed to support the SMART objectives set out in Section 3 and to explore how delivery will be assessed post-implementation. The impact evaluation questions will be used as the primary test of whether the intended outcomes have been achieved, including the extent to which the objectives have been met and how outcomes vary across dwelling types, locations and developer

size. The process evaluation questions will support interpretation of those findings by assessing how effectively the changes have been implemented in practice, including levels of awareness, compliance, and the key barriers and enablers influencing delivery. The value for money question will then assess whether the objectives have been delivered proportionately, including the balance of costs and benefits and any distributional or unintended impacts.

Challenges of evaluation

8.12 Establishing a robust counterfactual to assess the impact of the FHS and separating out changes which would have happened irrespective of the legislation will be challenging. This is particularly difficult for the impact evaluation, including understanding housing supply impacts, because there are several related, concurrent policies, such as DESNZ's regulation of heat networks and wider clean heat policies and the Planning and Infrastructure Bill, alongside external factors like prices. These make it difficult to separate out effects due to the FHS alone.

8.13 Further difficulty can stem from the transition period, which is the phased implementation timeline of the regulations that allows the industry to adapt to new regulations. This can limit the applicability or reliability of certain impact evaluation techniques, particularly those that rely on clear-cut treatment and control groups. Both qualitative and quantitative methods will be explored as far as possible. To address these challenges, the evaluation could adopt a mixed-methods approach, combining qualitative insights with quantitative analysis. Theory-based evaluation and stakeholder engagement will be considered to strengthen causal inference and contextual understanding.

Monitoring and Evaluation Approach and Timing

8.14 A Post Implementation Review (PIR) will be published within five years of the coming into force of the FHS (12 months after the statutory instrument is laid). This timeframe strikes a balance between allowing some time for the changes to take effect and early identification of issues and outcomes.

8.15 A phased approach will be taken beginning with developing a monitoring and evaluation plan. The Theory of Change for the FHS (outlined in Section 4 of the impact assessment) will provide a sound framework. The framework will help to formulate more detailed questions and support work to adapt the current Part L monitoring to enable assessment of FHS implementation. It is anticipated that much of the early monitoring and evaluation work will make use of stakeholder engagement and focus on monitoring using EPC lodgements data and other existing data sources (see below).

8.16 Further phases of evaluation will aim to assess longer-term impacts. As a number of the outcomes and impacts are long-term related to energy use and climate change, we expect the evaluation to continue beyond 2031, the timing of the initial PIR. Funding to resource evaluation is naturally reliant on the Department's financial budgets, and ongoing engagement with the Exchequer in the routine way. Links with wider monitoring and evaluation work on energy efficiency will be explored, including the DESNZ's work on updating to the Home Energy Model. MHCLG will draw upon and/or align with these ongoing evaluations as far as possible.

Early Work on Potential Data Sources

8.17 MHCLG has undertaken some early work to explore potential data sources to address the evaluation areas and themes. Further work will be undertaken as part of the planning phase.

Table 5: Potential data sources for each evaluation area/theme

Evaluation questions	Potential data sources
Process: How the FHS was implemented by developers: • Compliance routes (different technologies and reasons for developers choosing these routes) • The phase-in time in practice (what are the drivers for time taken to implement new regulations, including how transitional arrangements impacted developer readiness) • Implementation issues	EPC lodgement data Stakeholder engagement/developer survey; also via OGDs, Future Homes Hub and other external organisations (reasons for chosen routes; drivers; issues)
Process: Homeowner attitudes and perspectives e.g. in relation to heat pump requirements	Stakeholder engagement as above, including developer engagement to assess their perceptions of homeowners' attitudes Survey data
Impact: New dwellings built to the FHS will be zero-carbon ready by default; Reduce operational energy use, and therefore carbon emissions from new dwellings by at least 75% compared to 2013 standards Grid-connected homes will contribute more on-site renewable generation and help manage peak demand; Energy costs for occupants will be lower than the typical existing home and more predictable. New dwellings will be high-quality and comfortable. New dwellings will be cost-effective, affordable, practical and safe	EPC lodgement data Energy usage data (to be explored) Grid-connection data (to be explored) Stakeholder engagement/ occupier survey data (to be explored)

Impact: Unintended consequences, for example, impact on housing supply	Housing supply net additions data for new dwellings
Value for money Testing the original assumptions in the cost benefit analysis.	EPC lodgement data Consultancy cost data

8.18 EPC Lodgements data for new dwellings: MHCLG has developed methods to clean the register data including removing duplicate certificates. This is currently used for Part L 2021 monitoring. The EPC lodgements data is well suited to provide a time series of the number of new dwellings by version of Part L and by energy efficiency characteristics in particular of heat pump and solar PV installations and possibly other technological improvements. An EPC record level open dataset is published. The feasibility of linking the EPC data to other datasets will also be explored as far as possible. This is aimed at providing a richer data source.

8.19 Housing supply net additions data for new dwellings to provide an indication of any unintended consequences of the changes to the Building Regulations.

8.20 EHS broken down by construction date. The sample size will likely be small for new dwellings and we cannot identify them as a 'new construction' (as opposed to conversions/material change of use). However, the EHS is a unique survey offering information about both the dwelling and household characteristics. The feasibility of using the dataset will be explored.

8.21 Stakeholder engagement including other government departments, the Future Homes Hub and external organisations.

8.22 Data on energy consumption in the domestic sector will be explored, for example, the National Energy Efficiency Data-Framework (NEED). Data are available by the year the property was built and annual gas and electricity consumption.

9. Minimising administrative and compliance costs for preferred option

9.1. To help minimise the administrative and compliance costs associated with the FHS, we have incorporated a number of measures into the policy design and implementation approach. These are intended to reduce burdens on both businesses and individuals, particularly in relation to familiarisation, documentation and technical compliance. In instances where there is an increase in administrative or compliance cost, this has been balanced against the environmental benefit of the policy.

9.2. The dual-running of the Standard Assessment Procedure (SAP) and the Home Energy Model (HEM), will help support industry to transition gradually to the new methodology. This approach is designed to reduce disruption and enable developers, assessors and software providers to adapt at their own pace, thereby lowering the time and resource costs associated with familiarisation and system updates. Further information on SAP and HEM is available via GOV.UK guidance.

9.3. To support compliance with the new requirement for on-site renewable electricity generation, technical diagrams have been included in the Approved Document guidance. These diagrams help illustrate when there is flexibility in how the requirement is met and we hope will reduce the technical burden on developers and designers in interpreting and understanding the new functional requirement and Approved Document guidance.

9.4. The FHS regulations are performance-based, rather than requiring specific technologies or products. Builders must meet functional requirements, such as specified fabric efficiency levels, instead. Notional buildings offer a reference design for developers, but these references are not mandatory to follow. This means that suppliers and builders can meet the standards in a variety of ways, which allows them to innovate in building materials and building design tailoring these to the circumstances of buildings to meet the standards in a way that is value for money.

Declaration

Department:

MHCLG

Contact details for enquiries:

…

Minister responsible:

Minister for Building Safety, Fire and Democracy, Samantha Dixon MBE MP

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed: Sign here

Date: Date

Evidence Base

10. Overview of Analytical Approach

10.1 To assess the impact of the uplifts to the energy efficiency requirements of the Building Regulations, a cost benefit analysis was undertaken. This Impact Assessment (IA) refines some of the assumptions used in the Consultation Stage IA, reflecting final policies, improvements in the evidence base on the latest market positions, as well as most recent data.

10.2 At consultation, MHCLG considered two policy options (as outlined in the long-list above) and the counterfactual/business as usual (Part L 2021 standard) (see Consultation Stage IA). For the final IA, two options are considered: (i) the counterfactual/business as usual; and (ii) the preferred option. To estimate the overall costs and benefits of the preferred option, changes are modelled for new dwellings in construction costs, replacement and maintenance costs, energy use and consequent CO_2 emissions using the proposed energy efficiency requirements for the FHS. These are compared to a counterfactual of the Part L 2021 standards, the most recent uplift to energy efficiency standards in new builds. A summary of changes is outlined in table 6.

Table 6: Summary of changes to technical specification, FHS (preferred policy option) vs Part L 2021 (counterfactual)

	Part L 2021	**FHS (preferred specification)**
Heating system	Gas boiler or heat pump (district heat network in flats >11m)	Heat pump (district heat network in flats >11m)
Onsite generation	6.5 m2/kWp efficiency solar panels (if no heat pump)	4.5 m2/kWp efficiency solar panels (functional requirement*) No solar PV in flats >18m
Insulation	High levels of insulation	High levels of insulation and increased air tightness
Ventilation	Natural ventilation	Decentralised Mechanical Extract Ventilation
Additional requirements	-	Wastewater heat recovery system

*Solar PV is now included as a functional requirement in the FHS, rather than in the notional building specification as in Part L 2021. This is to allow for flexibility in total solar coverage as a percentage of ground floor area where 40% is not possible.

Prices and Valuation of Energy Savings

10.3 Costs and benefits are shown in real 2025 prices, with a 2026 base year. This includes the Estimated Annual Net Direct Cost to Businesses (EANDCB) and Households (EANDCH) calculations. A discount rate of 3.5% has been used for the first 30 years of the building's life and 3% for subsequent years as per current Green Book guidance.

10.4 Energy savings are valued at the long-run variable cost (LRVC) for social impacts in accordance with the supplementary Green Book guidance. Retail prices are used for energy cost savings to households. Solar export prices are based on Ofgem's Smart Export Guarantee combined average tariff for 2023/24[22]. They are projected forward as a fixed percentage of the Green Book retail electricity price for households. Given the uncertainty in future export tariffs, an illustrative scenario where the export tariff is set to zero is included in the Sensitivity Analysis below.

10.5 The analysis uses the fuel prices, traded and non-traded carbon values and emissions factors published in the November 2023 version of the Green Book supplementary guidance on valuing energy use and greenhouse gas emissions for appraisal. The carbon value represents a monetary value that society places on one tonne of carbon dioxide equivalent (£/tCO2e). The government uses these values to estimate a monetary value of the greenhouse gas impact of policy proposals during policy design, and also after delivery.

10.6 The latest Green Book carbon values used are target-consistent prices and reflect the marginal abatement cost required to meet the UK's statutory carbon budgets and Net Zero commitments[23].

Appraisal period

10.7 The stock of new domestic dwelling in the first ten-years of the policy are used for estimating the impact of the policy (2026-2035). As the policy impacts on assets with a lifespan of 60 years, the full impact of the policy extends beyond the initial ten-years. To capture the complete lifecycle costs and benefits of the assets – including for those homes built in Year 10 - the total appraisal period is 70 years (see Annex C for assumptions on asset lifespan).

Numbers of new dwellings, dwelling types and floor space

10.8 An estimate for the number of new domestic dwelling completions in England between 2026-2035 is outlined in Annex A. This is an indicative trajectory used for appraisal purposes only and do not represent an official forecast of changes in housing supply. The new domestic dwelling completions are apportioned across six building archetypes summarised in Table 7. The proportions of each building archetype have been informed by analysis of planning data by Quod Consultancy. Floor area assumptions, used in energy calculations, align with the Nationally Described Space Standards (NDSS) for each

[22] Ofgem SEG data, 2024. [Fig. 2.5 Average Tariff Rates] https://www.ofgem.gov.uk/sites/default/files/2024-10/Smart_Export_Guarantee_Annual_Report_SEG_Year_4_Dataset.xlsx

[23] Further details can be found at: Valuation of greenhouse gas emissions: for policy appraisal and evaluation - GOV.UK
Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK

archetype[24]. Costs and benefits are modelled for each archetype and then aggregated for England as whole.

10.9 High-rise flats are now modelled without solar panels. Therefore, the mid-high rise flat archetype modelled at the consultation stage has been separated out into two separate archetypes.

10.10 The assumed build rate trajectory and floor space assumptions have both been revised upwards since the Consultation Stage IA to align with current evidence. These have led to an increase in aggregate capital costs in comparison to the options appraised in the FHS consultation.

10.11 Based on the Government's manifesto commitment to build 1.5 million new homes this parliament, the analysis has also been run with a higher build rate trajectory. This is presented in the Sensitivity Analysis section 4.

Table 7: Dwelling Type and Size Assumptions used in the IA

Dwelling Type	**Floor Area (m2) per unit**	**Number of units (for flats)**
Low- rise block of flats: a Small, 1 bed single aspect apartment & a Large, 2 bed corner apartment	50 – 70	32
Mid-rise block of flats: A Small, 1 bed single aspect apartment & a Large, 2 bed corner apartment	50 – 70	48
High-rise block of flats: A Small, 1 bed single aspect apartment & a Large, 2 bed corner apartment	50 – 70	96
Mid-Terrace House	84	
End-Terrace/ Semi-Detached House	84	
Detached House	117	

Source: Based on analysis of planning data by Quod Consultancy

Changes in energy use

10.12 The changes in energy use were assessed by using the most recent version of the Home Energy Model (HEM). The new carbon emission and primary energy factors in the Home Energy Model were used to rebase the 2021 standard and used to calculate the effect of the proposed 2025 standards.

Compliance (performance gap)

10.13 In some buildings, there is a gap between the designed and as-built performance, known as the 'performance gap'. Buildings that appear to fully meet the energy performance

[24] Technical Housing Standards – Nationally Defined Space Standards (2015). Available at: Technical housing standards – nationally described space standard - GOV.UK

standards through the paperwork submitted can fall short when completed for several reasons. For instance, buildings may not be built to design because of poor build quality or materials being substituted, or occupants may use buildings in different ways to those assumed at the design stage.

10.14 For the purposes of modelling, 100% compliance is assumed as this is standard practice in estimating the impact of a regulation. Issues causing any non-compliance are complex and, whilst some evidence has been produced, there remains insufficient evidence to provide a sufficiently robust estimate of the size of non-compliance. Additionally, measures were also brought in to reduce possible non-compliance in the Part L 2021 uplift, such as photographic evidence of certain completed works.

10.15 The lack of evidence applies equally to the counterfactual and the FHS. If the modelling overestimates the energy use of all buildings by the same proportion, the estimates of the percentage reductions in energy use are not affected. However, our analysis would overestimate the absolute savings from the change.

10.16 The 2021 uplift to Part L introduced the Building Regulations England Part L (BREL) report, which replaced previous compliance documents to ensure greater accountability in the construction process and thereby improve construction quality. Part of the way that this is achieved is through the requirement to provide photographic evidence of construction details. At present, due to the lack of evidence quantifying the size of the performance gap in homes built to the 2021 standard, adding further regulatory requirements is not proportionate.

10.17 To address the lack of evidence, we intend to publish a call for evidence on the energy performance gap and building performance evaluation, as well as considering further research in this area. Alongside this, we are making changes focused on providing clearer guidance rather than introducing new regulatory requirements. These changes include amending guidance on the commissioning and installation of fixed building services in Approved Documents F and L. This includes clarifying the importance of following manufacturers' instructions for heat pump installations and stating that competent person schemes should be used when installing a heat pump or mechanical ventilation. We have also retained the proposal from the consultation for guidance on commissioning of hot water storage vessels. These measures aim to support better compliance and installation practices without imposing additional burdens on industry.

11. Counterfactual/Business as Usual

Routes to Compliance (Part L 2021 counterfactual)

11.1 The 2021 energy efficiency requirements are performance-based standards requiring dwellings to achieve targets of regulated primary energy, CO2 emissions and fabric energy efficiency. Consequently, there were many ways in which a housebuilder could comply with the regulations. For the Part L 2021 IA, it was assumed that the most likely means of compliance to the 2021 Part L requirements was a specification with a high level of energy efficiency, a gas boiler, solar panels and wastewater heat recovery. This is the most likely means of compliance because it requires the least change from current building practices, and for many housebuilders is the lowest-cost solution in the short run. This is supported by recent internal analysis of the EPC register.

11.2 The main alternative route to compliance for housebuilders was assumed to be with a heat pump. This was seen as appealing for some to start transitioning to the Future Homes Standard and for areas that do not have a natural gas supply. For the purposes of the IA, these two routes to compliance have been modelled as part of the counterfactual/business as usual.

11.3 The routes to compliance profile for the central estimate in the main cost benefit modelling is shown in Table 8. This has been updated using actual data from 2022-24, based on analysis of the EPC register, and a revised projection from 2025 onwards reflecting current trends. This updated projection assumes a higher proportion of gas boilers relative to heat pumps than at consultation stage, resulting in increased carbon emission savings and higher capital costs.

11.4 Given the uncertainty, a sensitivity analysis for a high heat pump scenario is outlined in the sensitivity analysis section.

Table 8: Routes to Compliance (Part L 2021 counterfactual): Central Estimate

Route to Compliance	2022 (actual)	2023 (actual)	2024 (actual)	2025 onwards (estimate)
BR2021 Gas boiler and solar panels	95%	75%	75%	70%
BR2021 Air source heat pump (ASHP)	5%	25%	25%	30%

Source: MHCLG analysis of EPC register.

Gas boiler installation

11.5 The counterfactual does not include the impact of future potential Net Zero policy measures which are not yet committed to in legislation or funded by government. This includes the ambition publicised under the previous Government in the 2021 Heat and Buildings Strategy to phase out gas-boiler installations by 2035[25].

11.6 It is assumed that any gas boiler fitted in the counterfactual will be replaced with another gas boiler when it reaches the end of its asset life. Sensitivity analysis in Annex B explores the impact on the estimated costs and benefits of assuming gas boilers are replaced with heat pumps in the counterfactual from 2035 onwards.

Local Authority Approach and other 'Net Zero' Routes

11.7 The impact of local authority plans has been removed from the counterfactual in the Final IA modelling, reflecting the 2023 Written Ministerial Statement (WMS), which discouraged local authorities setting their own energy efficiency standards[26]. As a result, the number of new homes completed with a heat pump in the counterfactual is lower in the final IA than

[25] HM Government (2021). Heat and Buildings Strategy. Available at: https://assets.publishing.service.gov.uk/media/61d450eb8fa8f54c14eb14e4/6.7408_BEIS_Clean_Heat_Heat___Buildings_Strategy_Stage_2_v5_WEB.pdf

[26] Written Ministerial Statement on local energy efficiency standards (2023). Available at: Written statements - Written questions, answers and statements - UK Parliament

at consultation stage. This has led to higher estimated carbon savings and an increase in capital costs.

11.8 Some developers or local authorities may still choose to implement their own 'net zero' commitments when constructing new homes. In such cases, they would incur the capital cost uplift associated with building to a higher energy efficiency standard, even in the absence of the FHS. However, due to insufficient availability of evidence to suggest how widespread these commitments are, this has not been included in the counterfactual. This may result in a slight overestimation of capital costs and carbon savings for the preferred policy option.

12. Preferred Option

Additional costs and benefits

12.1 Table 9 below lists the key additional monetised costs and benefits of the preferred option relative to the counterfactual. These are discussed in more detail in the results and business and household impact sections below.

Table 9: Key additional monetised costs and benefits of the preferred option relative to the counterfactual

Agent		Additional costs	Additional benefit
Businesses	**Developers**	One-off additional capital costs of building a FHS home (relative to a Part L 2021 home)	
	Developers and other building professionals	One-off administrative/familiarisation costs	
	Private landlords	Maintenance and repair costs	
	Social landlords	Maintenance and repair costs	
Households		Maintenance and repair costs	Average bill savings from more energy efficient home
Social impacts		As business and household costs	Air quality improvements
			Energy savings from more energy efficient homes
			Carbon savings

Phase-in assumptions and transitional arrangements

12.2 The assumptions on phase-in are the estimated proportion of new dwellings completed to the FHS standards following implementation of the legislation. These assumptions are informed by discussion with industry experts and analysis of EPC register data following previous uplifts to Part L.

12.3 The phase-in assumptions for the final IA have been revised downwards. This reflects the more gradual adoption of the previous standards than assumed at the consultation IA stage. Table 10 outlines the phase-in assumptions used at the consultation and in the final IA for all dwelling types, excluding high-rise flats

12.4 High-rise flats are subject to the new Gateway process enforced by the Building Safety Regulator. Developers for HRBs have a maximum of 4.5 years from the date of laying the FHS legislation to commence construction of a HRB if they wish to complete to the previous standards. This is reflected in the final IA phase-in assumptions and expected to impact approximately 20% of new dwellings over the 10-year appraisal period.

Table 10: Phase-in assumptions (% of new homes excluding HRBs completed to FHS 2025 requirements)

	2026	**2027**	**2028**	**2029**	**2030 onwards**
New domestic excluding HRBs	0%	10%	35%	80%	100%

Table 11: Phase-in assumptions for HRBs (% of HRBs completed to FHS 2025 requirements)

	2026-2030	**2031**	**2032**	**2033**	**2034 onwards**
New HRB dwellings	0%	10%	35%	80%	100%

Closing Transitional Arrangements

12.5 The proposals for the 2025 regulations and statutory guidance will apply to all domestic buildings that have not commenced development within 12 months of the regulations coming into force. MHCLG thinks that it is unlikely that many planning consents will need to be amended due to the impact of these proposals. With transitional arrangements in place, the need to amend designs for projects which are already underway will be minimised.

12.6 MHCLG will be closing previous transitional arrangements. This would mean that any homes not commenced before the end of the transitional period - regardless of whether they previously benefited from historic transitional arrangements - would need to be built to the FHS. The potential additional cost to developers from this change has not been quantified in the final IA due to insufficient data. However, new evidence from the EPC register indicates that the number of new dwellings completed to standards earlier than Part L 2013 is low and decreasing each year. Therefore, any cost impact is expected to be minimal.

Heat Networks

12.7 The notional buildings for mid- and high-rise flats are modelled with a heat network, which is assumed to be the most cost-effective and practical route to compliance for new dwellings of these types in most cases. While heat networks may also be the most cost-effective route to compliance for other dwelling types in certain locations/circumstances, this has not been captured in the notional building modelling approach taken for this IA.

12.8 The analysis does not account for any wider Government policies on heat networks which have not been finalised, such as DESNZ's heat network zoning policy. The impact of these policies will be appraised in policy specific IAs as necessary.

12.9 The analysis assumes costs based on construction of new heat network infrastructure. Differences in the carbon emissions and capital costs for connections of new buildings to pre-existing infrastructure have not been included in the analysis due to insufficient data and wide variation between heat network sites.

12.10 The FHS will prohibit fossil fuel temporary heating solutions as an interim measure before housing is connected to a low-carbon heat network. This carries a potential cost to business, but due to the high variability of these costs and insufficient evidence on the prevalence of these solutions, these have not been estimated or quantified in the analysis.

Grid connections

12.11 Homes built to the FHS standard no longer require a gas connection. However, there is no assumed gas connection capital cost savings to business under the FHS. This is due to the assumption that the cost of the gas asset can be recovered through sale to a third party upon completion, meaning there is little or no cost to business from installing the gas supply in the counterfactual.

12.12 The analysis includes an assumed capital cost uplift to business from connection to the electricity grid for dwellings with a heat pump. This does not account for any wider grid infrastructure reinforcements which might be required to the distribution network. This cost may fall on businesses in certain cases, for instance where the distribution infrastructure is a sole use asset or where reinforcement costs breach the High-Cost Project Threshold. DESNZ and DNOs have indicated that these costs can be highly variable and are uncommon in new domestic housing developments, therefore have not been estimated or monetised in this impact assessment.

Comfort taking

12.13 Comfort taking refers to occupiers choosing to heat their homes to higher temperatures or for longer when heating becomes more affordable. It was considered whether comfort taking should be included in the modelling for new homes. However, as the FHS does not improve fabric standards beyond Part L 2021, significant comfort taking is not expected.

13. RESULTS

13.1 A summary of the main policy changes in the FHS relative to Part L 2021 are summarised in table 12. All figures are Net Present Values (NPV) over 10 years of policy and a subsequent 60-year life of the buildings. Negative NPVs are given in parenthesis and represent costs. The figures represent the aggregate impact across the building mix.

13.2 Overall, the preferred policy option is expected to deliver a multi-billion-pound net benefit to society. This is primary driven by the value of the carbon savings associated with gas savings from household energy usage under the preferred policy option.

13.3 The preferred policy option saves £126m in net energy consumption costs. There is lower gas usage and more energy efficient homes. This is offset by higher electricity usage (due to the switch to low-carbon heating) and cost with the per unit electricity price estimated to be around four times that of gas.

13.4 This gain in energy bill savings comes at a greater capital cost to developers and other parties paying for the initial work, relative to the counterfactual. The policy costs £9,384m in capital, maintenance and replacement costs. In 2025 prices, the estimated average increase in capital costs, weighted for an assumed build mix, is £4,350 per dwelling. This average capital cost uplift varies by dwelling type, ranging from £5,690 per mid-terrace dwelling to £1,550 per dwelling in a high-rise flat block (>18m).

13.5 In terms of carbon savings, the preferred option delivers substantial carbon savings of 117 MtCO2e (table 12) equating to £19,824m. All carbon savings come from the non-traded sector, through the mitigation of gas consumption. The savings in non-traded carbon come at a cost of £74/tCO2e. The abatement cost per tonne is well below the calculated cost comparator of £169 over the 70-year appraisal period. This comparison indicates that the carbon abatement of the preferred option represents value for money. By 2040, the FHS preferred option is estimated to contribute around 50% of the 34.5 MtCO2e emission savings recommended by the CCC's balanced pathway[27] as modelled in this appraisal.

13.6 Broadly capital and installation costs will be split between private developers, Private Rented Sector (PRS) landlords and Housing Associations (HAs), with the majority being incurred by private developers. Historically costs have been factored into land prices and passed onto landowners; this is corroborated by stakeholder engagement. Private developers over the medium-long term may pass on costs to buyers in the form of higher house prices, at least in areas of high demand, or development costs may become factored into land prices and therefore passed onto landowners. In the short term, however, this is unlikely.

13.7 Some or all the costs incurred by the PRS may be passed onto consumers/occupiers in the form of higher rent prices. For HAs, it is unlikely businesses will be able to pass on the costs due to social rented sector rent levels being set by HMG. In this case, costs may be passed onto HMG through HAs demanding higher grants to cover additional costs to build social rented sector accommodation.

13.8 Whilst most of the costs for any replacements or maintenance will sit with the occupier, some costs will sit with PRS landlords and HAs. PRS landlords in the short term would absorb the cost due to rent prices being locked in by tenancy agreements. Over the longer term however, at the point of renewal, these costs could be passed on to the occupier in the form of higher rent prices.

13.9 All benefits will be experienced by the occupiers (households) in the form of lower fuel bills and by society through better air quality and reduced carbon emissions.

[27] The Seventh Carbon Budget - Climate Change Committee

Table 12: Central Estimate, Summary of Costs and Benefits, Dwelling constructed in 2026-2035 with a 60 year asset life (£m NPV, 2025 prices, 2026 base year)

(Brackets) = Cost/Negative figure	
Transition costs (£m)	(26)
Energy Savings (£m)	126
Capital, Maintenance and Replacement (£m)	(9,384)
Total Financial benefit/(cost) (£m)	**(9,284)**
Carbon Savings - non-traded (£m)	19,965
Carbon Savings - traded (£m)	(141)
Total Carbon Savings (£m)	19,824
Air Quality Savings (£m)	711
Comfort Taking (£m)	0
Total Carbon and Air Quality Savings (£m)	20,535
Net Benefit/(Cost) (£m)	**11,251**
Amount of Gas Saved (GWh)	647,726
Amount of Electricity Saved (GWh)	(93,462)
Amount of CO_2 Saved - non-traded ($MtCO_2e$)	118
Amount of CO_2 Saved -traded ($MtCO_2e$)	(0.618)
Cost Effectiveness – non-traded (£/tCO_2e)	74
Cost Effectiveness – traded (£/tCO_2e)	-

14. Business Impacts

Net Present Cost to Business

14.1 The changes to the energy efficiency requirements of the Building Regulations for new homes will result in increased costs to business of £7.7bn. Table 13 shows the split between administrative costs, which are the transitional costs to business, and policy costs which represent all other costs to business.

Table 13: Net Present Cost to Businesses for Administrative and Policy Costs, Dwelling constructed in 2026-2035 with a 60 year asset life (£m NPV, 2025 prices, 2026 base year)

Type of Cost	Cost
Business Net Present Cost	£7,721m
Administrative Costs	£26m
Policy Costs	£7,695m

Equivalent Annual Net Direct Cost to Business (EANDCB)

14.2 The changes to the energy efficiency requirements of the Building Regulations for new homes will result in increased costs to business of £709m per year over the first 10-years of the policy.

14.3 The direct costs determined to be in scope of the EANDCB are (i) transition costs; (ii) upfront capital and installation costs and (iii) some maintenance and replacement costs. Most of these costs are the capital costs incurred by developers. Other costs are borne by HA and PRS Landlords.

14.4 The EANDCB has been calculated over the first 10-years of the policy and excludes the maintenance and replacements costs which incur beyond the 10-years. This approach is designed to reflect the timing and distribution of costs incurred by businesses as a result of the regulatory uplift. The majority of costs (over 90%) — particularly capital and installation costs — are incurred in the first 10-years.

14.5 The alternative approach would be to include all costs and calculate the EANDCB over 70 years thereby incorporating all future maintenance and replacement costs. However, this would significantly reduce the EANDCB figure by spreading costs over a much longer timeframe. Such an approach risks understating the true financial impact on businesses, given that the bulk of costs are concentrated in the early years.

14.6 There are no direct benefits to business of the new requirements, as the benefits of greater energy savings will be experienced by the occupants, whilst reduced carbon emissions and improved air quality are social benefits. There may be some benefits for developers if prospective buyers find new, more energy efficient dwellings more attractive over existing dwellings (built pre-FHS). This is, however, hard to identify and quantify, therefore no analysis has been taken forward to assess the possible impacts.

Transition/Familiarisation Costs

14.7 There are transition costs incurred by businesses to familiarise their employees with the new technical requirements. The overarching calculation methodology will also be changing under the FHS. Initially developers will be permitted to use either the current methodology of SAP or the new HEM methodology (a ‘dual running’ phase) to demonstrate compliance, but the Government’s intention is to transition to HEM-only in due course.

14.8 The FHS and new methodology will require a variety of professions to familiarise themselves with the new regulations/methodology. MHCLG analysts and consultants considered whether the training of heat pump installers might also represent a transition cost of the FHS. The Government has a suite of polices in place to support the supply and installation of heat pumps. We expect that the costs of training engineers to become heat pump installers would be covered by those policies.

14.9 It is assumed that training is necessary for; developers and associated professional services to design buildings to the new standards and procure the appropriate building components; for the supply chain to be ready to meet this demand, and; for building control to assess the building applications and work.

14.10 Familiarisation costs have been estimated by Adroit Economics through the following process:

- Types of business/organisations that will be affected were identified. These included energy consultants, SAP/HEM assessors, contractors, architects, engineers, energy modellers and building control.
- Types of familiarisation activity were identified. These included preparing training course material, self-study, Continued Professional Development, and formal training courses.
- Industry Consultants then estimated the time/cost likely to be incurred by different professions.
- The costs were then scaled up across the industry based on the number of businesses/organisations.

14.11 In addition to the time for familiarisation, it is anticipated that some of the changes will also involve attendance at external training courses. These are included in the cost estimates. Assumptions on time spent and numbers of professionals receiving training are outlined in Annex D. Table 14 shows the total estimated familiarisation costs for all professions. The total cost of both the new energy efficiency requirements including reading time, internal and external training, as well as SAP/HEM familiarisation, are £25.6m.

Table 14: Estimated Total Familiarisation and training costs (£m, 2025 prices)

Familiarisation & Training Categories	**Cost**
New Energy Efficiency Requirements	£18.1m
SAP/HEM	£7.4m
Total	**£25.6m**

Additional Capital Costs

14.12 The increase in capital costs from the 2025 standards, compared with the continuation of existing 2021 standards, are shown in Table 15. Further breakdown of the costs of the different elements is provided in Appendix C.

Table 15: Additional Capital Costs* relative to Part L 2021 Counterfactual (£, 2025 prices)

	Preferred Option
Detached house	£5,160
Semi-detached house	£5,600
Mid-Terraced house	£5,690
Low Rise Flats (<11m)	£5,300
Mid-Rise Flats (11-18m)	£2,210
High Rise Flats (>18m)	£1,550
Weighted Average (based on assumed build mix)	**£4,350**

*Gross Undiscounted Costs in 2025 prices, excluding gas asset value cost in counterfactual. If included this would lead to the costs presented in table 15 falling.

14.13 Over the longer-term, it is estimated that the costs associated with both heat pumps and solar PV will fall, as supply chains mature and become more integrated, and learning rates take effect. By the end of the first 10-years of the policy period, it is assumed that the cost of a heat pump will be around 70% of the initial cost, whilst for Solar PV they will be around 60% of the initial cost.

Maintenance and Replacement Costs

14.14 Whilst most of the costs for any replacements or maintenance will sit with the occupier, some costs will sit with the PRS landlords and HA. For the EANDCB calculation, maintenance costs incurred in the first 10 years of the policy for PRS and HA have been included. No replacement costs have been included, as none are expected to occur in the first 10 years.

Passthrough

14.15 For new dwellings the capital, transition and installation costs will be paid by business. This is split between private developers, PRS landlords and HAs, with the majority being incurred by private developers. Using English Housing Survey (EHS) data on new build completions by tenure[28], it is estimated that 18% of costs will sit with PRS landlords and 20% will sit with HAs. Private developers over the longer term may pass on costs to owners in the form of higher house prices, at least in areas of high demand. Over the medium-long term, development costs may become factored into the land prices and therefore passed onto landowners, however in the short-term this is unlikely.

14.16 Some or all of the costs incurred by PRS may be passed onto occupiers in the form of higher rent prices. For HAs, it is unlikely businesses will be able to pass on the costs due to social rented sector rent levels being set by HMG. In this case, costs may be passed onto HMG through HAs demanding higher grants to cover additional costs to build social rented sector accommodation.

14.17 Housing developers may be able to pass-through costs to homeowners through higher house prices. However, evidence for this pass-through in new housing is mixed and context

[28] Department for Levelling Up, Housing and Communities (2025). Table 213 House building: permanent dwelling started and completed, by tenure, England (quarterly). Available at: Department for Levelling Up, Housing and Communities

dependent (e.g. house type, region, market conditions)[29]. There is also evidence that energy efficiency premiums are reducing over time as energy efficiency upgrades, such as solar panels, become more common[30]. As such, there is insufficient evidence to make assumptions about pass-through.

Small and Micro Business Assessment (SaMBA) and Medium-Sized Business Impact

14.18 Small and micro businesses in the housing sector primarily include developers, architects, and technical specialists. The impacts of the Future Homes Standard on these businesses are expected to be moderate, with developers and heating engineers experiencing the most significant cost and operational changes as they transition to low-carbon technologies, in particular, low-carbon heating. Other stakeholders will primarily face short-term adjustments to professional practices. The nature of costs is likely to be similar for medium-sized businesses.

14.19 SMB and MSB developers face a distinct challenge from the introduction of new regulation in that they may lack access to the in-house technical or analysis capacity which would be available to a larger developer. This means it is harder for them to understand and adjust to new requirements at pace and may increase their familiarisation costs. Conversely, SMBs and MSBs may benefit from increased agility compared to their larger counterparts, as they generally have fewer developments undergoing planning approvals at any given time, and often have shorter contracts with suppliers. This may offset some of the impacts of this policy on SMBs and MSBs.

14.20 The number of medium (50-499 employees), small (10-49 employees) and micro (0-9 employees) businesses in the affected sectors are detailed below. These figures are from the ONS UK Business Counts dataset, broken down by employment band and 5-digit SIC code[31], rounded to the nearest 5. Given data limitations, some of the businesses included below may not be domestic specific – equally there will be other professions that we have been unable to identify that are in the development of new dwellings. Therefore, figures should be treated with caution and should only be used as indicative of the order of magnitude. For builders and developers, 99.6% of the 94,040 enterprises are small or micro businesses, and 0.4% are medium-sized enterprises. For architectural practices, 98.7% of the 12,470 businesses are small or micro businesses, and 1.3% are medium-sized enterprises.

[29] Wei and Peiser, 2025. *Evolving Green Premiums: The Impact of Energy Efficiency on London Housing Prices over Time.* Available: https://doi.org/10.3390/land14102053

[30] Asproudis et al., 2023. *Returns to Solar Panels in the Housing Market: A Meta Learner Approach.* Available: 10.1016/j.eneco.2024.107768

[31] The consensus at the ONS is that the 3 digit SIC code is the optimum level in terms of sample size and confidence in estimates. However, given this assessment is specifically about the construction of dwellings, this requires a more specific SIC code hence the reason for using SIC 5.

Table 16: Numbers of Medium, Small and Micro Businesses in scope of the Regulatory Changes (England)

Business (5-digit SIC code)	Micro businesses	Small businesses	Medium businesses	Total number of businesses	SMBs as a % of total	MSEs as a % of total
Builders and developers[32]	90,805	2,840	360	94,040	99.6%	0.4%
Architects	11,430	880	160	12,470	98.7%	1.3%

14.21 Small and micro businesses are believed to account for a smaller proportion of delivery of new housing annually compared to larger developers. The *State of Play: Challenges and Opportunities Facing SME homebuilders* report from the Home Builders Federation (HBF) estimates that they were responsible for 10% of new homes in 2020.[33] However, the HBF definition of an SMB developer is different to the definition of an SMB in the Better Regulation Framework (BRF.)[34] The former uses number of developments per year to define business size while the latter uses numbers of employees. The difference in definition mean there is uncertainty around the actual proportion of new housing delivered by SMBs. As there is insufficient data to accurately estimate the market share of SMBs as defined in the BRF, the analysis cannot specifically quantify the impacts of the proposals on these businesses.

14.22 A separate report from 2024 on the housebuilding market[35] carried out by the Competition and Markets Authority (CMA) estimates that around 50,000 new houses annually are constructed by SMEs across England, Wales and Scotland. The report uses a definition of SMEs as completing less than 1,000 new homes per year, rather than number of employees and provides no breakdown of this figure by England only. Therefore, this cannot be used to isolate the impact on SMEs as per the BRF definition.

Small and Micro Business Assessment (SaMBA) and Medium-Sized Business Exemption

14.23 There is insufficient data on the proportion of homes constructed by SMEs and MSEs as defined by the Better Regulation Framework (i.e. enterprises split by numbers of employees – 0-9; 10-49; and 50-499). As such, it has not been possible to quantitatively assess the extent to which introducing an exemption for SMBs and MSBs would sacrifice the benefits of the proposal.

[32] Builders and developers combines 2025 ONS business counts in England "Construction of domestic buildings" (SIC 41201) and "Development of building projects" (SIC 41100).

[33] Home Builders Federation (2020) [Available at: https://www.hbf.co.uk/documents/10555/HBF_Report_-State_of_Play_FINAL_V2.pdf]

[34] The HBF defines SMB developers on the basis of the number of units built per year, whereas the BRF defines SMBs on the basis of the number of employees within the business.

[35] CMA, 2024. Report on the UK housebuilding market. Available: England summary

14.24 Any mechanism for exempting homes constructed by SMBs and MSBs would have to be robust enough to prevent exploitation by larger developers, as any exploitation would likely prevent the overarching policy objectives from being achieved. A blanket exemption for homes developed by businesses with fewer than 500 employees, for example, would be without precedent in previous updates to Part L. Such a mechanism would likely not prevent exploitation of the exemption by larger developers through the setting up of separate smaller legal entities which could have fewer than 500 employees. Another method of possible exemption considered was exempting developments of less than ten dwellings per site – however, exploitation of this could not be avoided without significant local compliance efforts, which would require significant new resource and funding. More broadly, an exemption for SMBs and MSEs could create a complex regulatory environment in the homebuilding sector, where monitoring and enforcing compliance with multiple varying standards based on developer size would become prohibitively challenging for building control bodies. As well as this, it would create a permanent and confusing two-tier energy efficiency market of new dwellings for occupants, and create a permanent stock of new dwellings requiring later, much more expensive, retrofitting in order to achieve net zero. As such, the approach of exempting small, micro and medium sized businesses from new regulatory requirements would be inappropriate in this situation and the Government has sought to mitigate the impacts of the proposal via other means.

Small and Micro Business Assessment (SaMBA) and Medium-Sized Business Mitigations

14.25 The updated solar proposal included in the final package provides developers, regardless of size, with greater flexibility in how they can deliver on-site renewable generation for their dwellings through the new legislative requirement. This could offer particular benefits to micro, small and medium-sized businesses, who often face tighter cost constraints and site-specific limitations. However, there will be a learning curve for all developers in understanding how the new approach to solar under the Future Homes Standard operates, and this may place a relatively greater technical capacity burden on smaller developers compared to larger housebuilders.

14.26 The Government is committed to supporting small, micro, and medium-sized businesses through the implementation phase. The industry-led Future Homes Hub, backed by government departments including MHCLG and DESNZ, will play a central role in providing technical guidance, pilot developments, and practical solutions tailored to the needs of smaller firms to help them adjust to the new requirements. This will be following a similar approach to the successfully implemented Part L 2021 requirements.

14.27 The publication of the full technical specification well in advance of the regulations coming into force in 2027 is intended to give businesses sufficient time to prepare and adapt. The transitional arrangements have also been designed to provide flexibility and reduce disruption across the sector. The decision to implement the longer option for transitional arrangements was partially informed by targeted engagement to understand the likely impact of the standards on Small and Medium-sized Enterprises (SMEs), where it became clear the additional time will be important for SMEs to adapt.

14.28 The Standard Assessment Procedure (SAP) and the Home Energy Model (HEM) are the compliance tools that industry use to assess the energy and carbon performance of new dwellings, with HEM set to replace SAP under the Future Homes Standard. However, to help manage the administrative burden of transitioning to the new standard further, SAP will not be retired for the Future Homes Standard. Instead, a dual running period of at least 24 months for SAP and HEM will allow developers and assessors to gain familiarity with the new methodology without disruption to delivery, before a decision is then made to retire

SAP. This will also particularly benefit SMBs and MSBs without access to in-house technical or analytical capacity during the transition to the FHS, as they will be able to continue using a compliance tool they are familiar with and have more time to prepare to transition to HEM.

14.29 The rationale for non-exclusion and outlined mitigations for SMBs also apply to medium businesses in the context of the FHS.

15. Household Impacts

Net Present Cost to Households

15.1 The changes to the energy efficiency requirements of the Building Regulations for new dwellings will result in increased costs to households of £2.5bn. This is mainly driven by increased replacement and maintenance costs relative to the counterfactual.

Equivalent Annual Net Direct Cost to Households (EANDCH)

15.2 The changes to the energy efficiency requirements of the Building Regulations for new dwellings will result in an equivalent net direct cost to households of £90.5m per year over the 70-year policy period. To note, this cost is calculated relative to the Part L 2021 counterfactual. Relative to the typical existing dwelling (EPC D)[36], this would likely represent a net cost saving to households.

15.3 The direct costs determined to be in scope of the EANDCH are maintenance and replacement costs for owner occupier households. The direct benefit determined to be in scope of the EANDCH are annual regulated energy bills.

15.4 In contrast to the EANDCB, the EANDCH has been calculated over the 70-year policy appraisal period. This is because most of the maintenance and replacement costs which fall on owner occupier households will over the asset life of the dwellings, rather than at point of construction in the first 10-years of the policy period. Calculating the EANDCH over a shorter period would therefore risk understating the true financial impact on households.

15.5 Beyond the direct costs and benefits to households included in the EANDCH, there may be additional costs to households if developers are able to pass-through some of the additional capital costs of construction through to house prices. There is some limited mixed evidence of households having a higher willingness to pay for more energy efficient dwellings, which are expected to have lower energy costs compared to a typical existing home. This has not been included in this analysis due to insufficient evidence.

15.6 Table 17 shows the estimated EANDCH and a breakdown of the equivalent annual benefits and costs which fall on households.

[36] Energy efficiency of housing in England and Wales: 2024 (2024). Available at: Energy efficiency of housing in England and Wales - Office for National Statistics

Table 17: Equivalent Annual Net Direct Cost to Households, Dwelling constructed in 2026-2035 with a 60 year asset life (£m, 2025 prices) (Costs are negative and shown in brackets)

Type of Cost/Benefit	Benefit/Cost
EANDCH	(£90.5m)
Benefits (savings in energy costs and standing charges)	£4.6m
Costs (maintenance and replacement costs)	(£95.1m)

Household energy costs savings

15.7 Estimates of household energy cost savings follow Green Book guidance using retail prices for energy multiplied by energy usage estimates for each notional building archetype from the HEM model. This results in an estimated annual saving to households in regulated energy bills and is driven primarily by higher efficiency solar panels than the counterfactual specification, which allows the household to offset energy bills through consumption and export of generated electricity back to the grid.

15.8 Despite improvements to energy efficiency relative to the counterfactual, there may be cases where individual household bill savings are small or negative on a per dwelling basis. This is due to due most dwellings in the counterfactual having a gas boiler, rather than a heat pump and the price of electricity being around four times that of gas per unit[37]. If the policy option is compared against the typical existing home (EPC D)[38], the annual fuel savings to households would be considerably higher.

15.9 There may be some new build sites where solar export to the grid is not possible with current infrastructure. In these instances, households impacted would only realise partial or no benefits from solar export. Engagement with industry indicates that the incidence of this should be low. In addition, the assumed solar export price may be higher or lower than assumed in this analysis. Accounting for these uncertainties, a scenario where the solar export price is set to zero is outlined in the Sensitivity Analysis.

15.10 In addition to savings from energy consumption, occupiers in dwellings pay standing charges, which are fixed daily charges that cover the cost of supplying gas and electricity to a home. Given the FHS is fully electric, any occupiers in a new FHS home will no longer have to pay a standing charge for gas, due to there being no gas supply to the home. Therefore, this cost is removed, which means a bill saving increase compared to the gas boiler compliance route of the counterfactual. This is captured by the Green Book retail prices for energy[39]. From a social perspective, there is no saving as the fixed cost of the gas infrastructure will still need to be covered by other households or industry.

16. Non-monetised Impacts

16.1 There are several non-monetised costs and benefits that are not captured in the cost-benefit analysis, including those outlined below.

[37] Gas and electricity prices during the 'energy crisis' and beyond (2025): Available at: CBP-9714.pdf

[38] Energy efficiency of housing in England and Wales: 2024 (2024). Available at: Energy efficiency of housing in England and Wales - Office for National Statistics

[39] Figure 5.1: Components of energy prices (2023). Available at: Valuation of energy use and greenhouse gas: background documentation

Supply Chain Development

16.2 The FHS encourages deployment in low-carbon technologies such as solar PV and heat pumps relative to the counterfactual. The FHS will be stimulating growth in sustainable construction materials and products and green infrastructure. It will also help create green jobs and create opportunities for UK manufacturers. If monetised, these would have a positive impact on the net present social value (NPSV).

16.3 Further supporting low-carbon technologies will reduce costs and possibly increase performance over time through innovation, as supply chains develop and barriers that customers currently face are reduced through technologies being deployed successfully. Reduced unit costs have been monetised in the main cost-benefit analysis but the potential performance improvement benefits are not quantified. If monetised, they would have a positive impact on the NPSV.

Improved energy security and stable prices

16.4 Higher standards of energy efficiency and moving to cleaner sources of heat through the FHS can help England to reduce reliance on other countries for non-renewable energy sources thus increasing energy security. Energy security is a key condition for sustainable economic growth. Being energy secure means less susceptibility to external supply and price shocks and lessens the negative impact on economic growth of these shocks. These benefits have not been monetised. If monetised, they would have a positive impact on NPSV.

16.5 Previous shocks due to events such as Covid-19 and the Russo-Ukrainian war have had direct impacts on economic growth. The OBR estimates that responding to future gas price shocks could be twice as costly as direct public investment needed for the Net Zero transition.[40]

- Imported gas tends to have more volatile prices than electricity due to geopolitical risk, international market exposure, and supply chain disruptions. It is often sold through short-term contracts.

- Decarbonised electricity prices are generally more stable, especially with diversified renewables, domestic sources, longer-term contracts and stable policy support. Additionally, gas storage limitations contribute to price volatility, while renewable electricity grids benefit from storage systems and demand-response mechanisms, further reducing price swings.

- Recent energy price increases and shocks have highlighted the urgent need for improved energy efficiency and to decrease energy demand.

Grid infrastructure reinforcements to businesses

16.6 The cost-benefit analysis includes an assumed capital cost uplift to business from connection to the electricity grid. However, this does not account for any wider grid infrastructure reinforcements which might be required to the distribution network. This cost

[40] OBR: UK's current gas reliance likely to be as costly as net-zero transition, 'The OBR states that if gas price spikes occur every decade, it could cost the UK between 2-3% of GDP annually, adding 13% of GDP to public debt by 2050. Under these scenarios the dependence on gas could be twice as costly as the net-zero transition.', https://www.edie.net/obr-uks-current-gas-reliance-likely-to-be-as-costly-as-net-zero-transition/

may fall on businesses in certain cases, for instance where the distribution infrastructure is a sole use asset or where reinforcement costs breach the High-Cost Project Threshold. DESNZ and DNOs have indicated that these costs can be highly variable and are uncommon in new domestic housing developments, therefore have not been estimated or monetised in this analysis. If monetised, this might have a marginal negative impact on business costs.

Housing Supply Impacts

16.7 As there are cost increases arising from the policy, it is expected that where developers cannot absorb these costs or pass them onto landowners, there might be some negative viability impact on housing supply. These have not been monetised. If monetised, this might have a negative impact on NPSV in the short-term and a redistribution impact in the long-term.

16.8 Areas in London and the south might be expected to be able to cope better with cost impacts given the larger gap between development cost and sale prices when compared with areas with lower sale prices, for example in the North West of England. Brownfield sites with high land remediation costs are also expected to be a less viable from cost increase arising from the policy.

16.9 In the short-term it is unlikely that house prices will be able to fully absorb the cost increase arising from this policy as broader market drivers are likely to dominate. However, as we move to the long-term, we are likely to see developers passing the costs onto land owners through lower land prices, because the regulation sets a level playing field. They may also be able to offset higher costs through higher sales prices in areas of high demand, where consumers are willing to absorb a higher price for these homes (benefit to business; cost to consumers).

17. Impact on Wider Government Priorities

17.1 The FHS is a key part of our decarbonisation plans for homes, providing several growth impacts. It will deliver higher standards of energy efficiency and move to cleaner sources of heat improving the quality of our buildings and contributing to greater energy security. This will likely increase build costs but there will also be wider benefits through increased investment to local supply chains for renewable technologies and in skills development for the future.

17.2 The way homes perform can impact the energy bills occupants incur and the comfort they feel. Improved fabric 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. There is uncertainty and significant variation in real-world energy consumption and running costs across the full range of dwelling types. Improvements to energy efficiency and ventilation can also prevent damp and mould, excess cold and heat, and improve air quality.

Business environment

Competition

17.3 The principal markets affected by the Future Homes Standard are the markets for the development of new dwellings along with the supply chains to produce construction materials used in those developments.

17.4 As a result of higher standards for new dwellings from 2025, building developers would have to comply with the more stringent targets and as a result would see costs rise. The increased costs are expected to affect developers with similar house designs and developments in similar ways. Therefore, any competitive effects in the market for building development are likely to be negligible.

Innovation

17.5 There should be the potential for new firms to enter the market due to the setting of higher standards and the flexibility for developers to choose building technologies to meet these standards. This should encourage innovation among manufacturers.

17.6 The FHS will set performance-based standards, rather than prescriptive standards. This means the standards are technology agnostic and businesses will have flexibility in their routes to compliance so long as the specified energy efficiency standards are met. The freedom and market incentives to develop low/zero carbon technologies that performance-based standards encourage may result in innovations.

17.7 The standards will result in an increased use of low/zero carbon heating technologies. There is competition in the supply of such technologies with a mix of large and small suppliers. As the cumulative production of such technologies rises, learning effects coupled with competition should bring down the unit cost. This learning effect has been built into our modelling of costs in the main cost benefit analysis. The reduction in unit cost will likely have wider benefit for decarbonisation of existing housing stock, encouraging and enabling more retrofitting to achieve our net zero commitments.

International Considerations

17.8 The more stringent energy efficiency standards for 2025 are set out in the Approved Document guidance standards for a range of products across the new stock. Performance based standards are set through the notional building specification and approved methodologies, which do not mandate the specific technologies or products to be used.

17.9 However, given that many businesses will decide to follow the Approved Document guidance, this decision could lead to an increase in costs where the suggested standard is set above the current market level, leading to businesses needing to produce more efficient products. If these firms are unable to absorb the costs and are actively engaged in international trade, then this could lead to exports falling as these goods become less competitive. However, this depends on a wide range of factors, including; whether the market is predominantly domestic or international; if England has a comparative advantage/disadvantage in these goods; what overseas standards there are, and; the price of goods on the international market. HMG also has a suite of polices in place to support businesses and consumers to bring more heat pump manufacturing to the UK[41].

17.10 Neighbouring markets, such as the EU, have taken significant action to require new buildings to be highly energy efficient. As of 2020, new buildings in the EU have been required to be 'nearly-zero energy buildings'. This is being increased to a 'zero-emission buildings' requirement, starting from 2028 for new buildings owned by public bodies and

[41] HM Government (2023). Heat Pump Investment Roadmap. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1166439/heat-pumps-investment-roadmap.pdf

2030 for all other new buildings. The Future Homes Standard aligns with this trajectory and sets a clear direction forward for UK based developers, manufacturers, supply chains and innovators. International cases suggest that clear performance signals can help maintain competitiveness and avoid trailing in markets where energy-efficient design is already standard practice.

17.11 There could also be some indirect economic impacts, particularly by encouraging innovation. If product innovation occurs, particularly in lower carbon forms of heat, this could lead to the development of new products and higher demand in clean growth/ renewable markets. If there is global demand for these goods then businesses will be incentivised to sell their products abroad, thus increasing international trade. This could also lead to benefits for key UK sectors, such as manufacturing, if innovation takes place in a market where the UK holds a comparative advantage.

Natural Capital and Decarbonisation

17.12 A primary objective of the FHS is to support the decarbonisation of regulated energy usage in domestic dwellings. Given that household heating makes up the largest proportion of carbon emissions arising from domestic dwellings[42], the higher energy efficiency performance standards required to meet the FHS will be an important policy in the long-term ambitions to decarbonise the building sector.

17.13 The switching to solely electrified sources for regulated energy usage in new domestic dwellings is expected to have significant carbon emission savings relative to the counterfactual, which includes many new dwellings with gas boilers. This will especially be true as the wider electricity grid decarbonises. The estimated capital, maintenance and replacement costs of dwellings completed to the FHS standard is expected to be strongly offset by the monetised value of the carbon emission savings and air quality improvements.

Equalities Assessment

17.14 Under the Equalities Act 2010, all public authorities are required to have due regard to the need to:

a. Eliminate unlawful discrimination, harassment and victimisation and other conduct prohibited by the Act.

b. Advance equality of opportunity between people who share a protected characteristic and those who do not.

c. Foster good relations between people who share a protected characteristic and those who do not.

17.15 This means there is a statutory duty to consider the impacts of the policy changes in this impact assessment on people with the protected characteristics of age, disability, gender reassignment, marriage or civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation.

[42] Seventh Carbon Budget, Climate Change Committee (2025)

17.16 MHCLG have carried out a Public Sector Equality Duty assessment for the policies implemented under the FHS. The evidence base for making this assessment included engagement with industry stakeholders, a review of correspondence received by the Department and responses to the consultation. This process has helped identify where the FHS can support those with protected characteristics. MHCLG have made adjustments to the Future Homes Standard where appropriate and have not identified any significant or disproportionate impacts resulting from the final standard on individuals with protected characteristics.

Appendix A – Net Additional Dwelling Trajectories

Table A1 below sets out an estimated trajectory for the number of new domestic dwelling completions in England between 2026-2035. This trajectory is used in cost benefit modelling to assess the impact of changes to the energy efficiency requirements of the Building Regulations. These estimates are indicative and used for appraisal purposes only. They do not represent an official forecast of changes in housing supply and should be taken as for appraisal purposes only.

Central Trajectory: aligned with the OBR's March 2025 forecast of housing stock[43]

- For 2024-25, this trajectory is based on MHCLG's published nowcast estimate of 199k dwellings.[44]
- In their latest outlook, the OBR present two forecasts for housing supply in the UK: a 'pre-measures forecast' and a forecast that includes the impact of changes to the National Planning Policy Framework (NPPF). Between 2025Q2 and 2030Q1, MHCLG assume net additions in England are 86%[45] of the pre-measures forecast for the UK plus 100% of the impact of the NPPF measures (which only apply to England).[46]
- Beyond 2030Q1 (when the OBR forecast ends), MHCLG assume net additions grow more slowly (at a constant rate as a proportion of dwelling stock - roughly 1% of stock per year).
- This trajectory is similar to the OBR-aligned trajectory used in the Planning and Infrastructure Bill Impact Assessment.[47] However, MHCLG have updated the trajectory to reflect the latest OBR forecast at the time of the modelling.[48]

Table A1: Central trajectory for new domestic dwelling completions used in cost benefit analysis

Net Completions	Total
2026	181,000
2027	216,000
2028	252,000
2029	270,000
2030	273,000
2031	276,000
2032	279,000
2033	281,000
2034	284,000
2035	287,000

[43] Economic and fiscal outlook – March 2025 - Office for Budget Responsibility
[44] Housing supply: indicators of new supply, England: October to December 2024 - GOV.UK
[45] Net additions in England have made up 86% of net additions in the UK in the period 2021-22 to 2023-24, based on a comparison of MHCLG's Live Table 120 and OBR's Detailed forecast tables: economy - Table 1.16.
[46] March 2025 Economic and fiscal outlook – charts and tables: Chapter 3
[47] Planning and Infrastructure Bill: Impact assessment - GOV.UK
[48] Given the strong growth at the end of the latest OBR forecast, it is no longer appropriate to assume this continues indefinitely, as we did for the PIB IA. Instead, we assume net additions continue growing, but at a lower rate (constant as a proportion of dwelling stock - roughly 1% of stock per year).

- This illustrative trajectory assumes housing ramps up quickly, yielding 1.5m homes this parliament. MHCLG assume the bulk of this increase happens at the end of the parliament. It is not based on specific policy interventions. Instead, it is one possible trajectory that achieves 1.5m homes this parliament.

- For 2024-25, this trajectory is based on MHCLG's published nowcast estimate of 199k dwellings.[49]

- MHCLG assume housing remains constant at the nowcast level (199k) for 2025-26. MHCLG then assume a large increase in housing supply for the final three years of the parliament. In the final year of the parliament, net additions reach 370k per year, roughly in line with achieving the level of housing associated with Local Housing Need.[50] Beyond the first parliament, MHCLG assume net additions grow at a slower rate (constant as a proportion of stock - roughly 1.4% of stock per year).

- This is similar to the 1.5m trajectory used for the Planning and Infrastructure Bill IA. However, we have updated the trajectory to reflect the more recent outturn data from MHCLG's published nowcast.

Table A2: Alternative scenario for new domestic dwelling completions used in cost benefit sensitivity analysis

Alternative Trajectory: aligned with hitting 1.5 million homes target this parliament

Net Completions	Total
2026	302,000
2027	349,000
2028	366,000
2029	372,000
2030	377,000
2031	382,000
2032	388,000
2033	393,000
2034	398,000
2035	404,000

[49] Housing supply: indicators of new supply, England: October to December 2024 - GOV.UK
[50] Published Output of Standard Method for Local Housing Need

Appendix B – Sensitivity Analysis

Sensitivity Analysis 1: Carbon Values Sensitivity Analysis

Sensitivity analysis was taken forward using the higher and lower estimates of carbon values, using Table 3 in the November 2023 Green Book Supplementary Guidance[51] (see below). Figures used are consistent with the target-consistent approach and reflect the marginal abatement cost required to meet the UK's statutory carbon budgets and Net Zero commitments. This is the recommended approach as laid out in Government guidance on valuation of greenhouse gas emissions[52].

Table B1: Green Book Carbon Values (£/tCO2e) (2025 Prices)

Year	Low	Central	High
2026	154	309	463
2027	157	313	470
2028	159	318	477
2029	161	323	484
2030	164	328	492
2031	166	333	499
2032	169	338	507
2033	171	343	514
2034	174	348	522
2035	177	354	530

The range of values are used to portray potential changes in the valuation of carbon used in appraisal. Lower carbon values result in lower monetary benefits associated with the carbon saved and so reduce the net benefits of the FHS. Higher carbon values increase the value of carbon saved in the policy options and will appear as a larger net benefit. The results for new domestic dwellings are as follows:

[51] 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. Available at: https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal

[52] DESNZ/BEIS, 2021. Available: Valuation of greenhouse gas emissions: for policy appraisal and evaluation - GOV.UK

Table B2: Carbon Value sensitivity analysis, estimates for New Dwellings

(Brackets) = Cost/Negative figure	Low	Central	High
Transition costs (£m)	(26)	(26)	(26)
Energy Savings (£m)	126	126	126
Capital, Maintenance and Replacement (£m)	(9,384)	(9,384)	(9,384)
Total Financial benefit/(cost) (£m)	**(9,284)**	**(9,284)**	**(9,284)**
Carbon Savings - non-traded (£m)	9,983	19,965	29,948
Carbon Savings - traded (£m)	(71)	(141)	(212)
Total Carbon Savings (£m)	9,912	19,824	29,735
Air Quality Savings (£m)	711	711	711
Comfort Taking (£m)	0	0	0
Total Carbon and Air Quality Savings (£m)	10,623	20,535	30,446
Net Benefit/(Cost) (£m)	**1,339**	**11,251**	**21,162**
Amount of Gas Saved (GWh)	647,726	647,726	647,726
Amount of Electricity Saved (GWh)	(93,462)	(93,462)	(93,462)
Amount of CO_2 Saved - non-traded ($MtCO_2e$)	118	118	118
Amount of CO_2 Saved -traded ($MtCO_2e$)	(0.618)	(0.618)	(0.618)
Cost Effectiveness – non-traded (£/tCO_2e)	73	74	74
Cost Effectiveness – traded (£/tCO_2e)			

Sensitivity Analysis 2: Replacement of Gas Boilers to ASHP Counterfactual

Sensitivity analysis 2 considered the scenario where homes originally built with a gas boiler in the counterfactual had this heating system replaced with an ASHP at the replacement cycle (after 15 years). From this point the home would continue to rely on heat pumps for heating and hot water supply. As well as changing the energy consumption by fuel type, this scenario also accounted for the higher costs of switching from a gas boiler to an ASHP in comparison to a like for like replacement. This broadly results in the costs of both options falling, and the carbon and energy savings also falling, relative to the counterfactual. The results are shown in Table B3.

Table B3: Replacement of Gas Boiler to ASHP within the counterfactual

(Brackets) = Cost/Negative figure	**Central Estimate (gas boiler to gas boiler replacement)**	**G2E (gas boiler to ASHP replacement)**
Transition costs (£m)	(26)	(26)
Energy Savings (£m)	126	2,747
Capital, Maintenance and Replacement (£m)	(9,384)	(3,627)
Total Financial benefit/(cost) (£m)	**(9,284)**	**(905)**
Carbon Savings - non-traded (£m)	19,965	7,414
Carbon Savings - traded (£m)	(141)	(79)
Total Carbon Savings (£m)	19,824	7,335
Air Quality Savings (£m)	711	249
Comfort Taking (£m)	0	0
Total Carbon and Air Quality Savings (£m)	20,535	7,584
Net Benefit/(Cost) (£m)	**11,251**	6,678
Amount of Gas Saved (GWh)	647,726	169,895
Amount of Electricity Saved (GWh)	(93,462)	86,248
Amount of CO_2 Saved - non-traded ($MtCO_2e$)	118	31
Amount of CO_2 Saved -traded ($MtCO_2e$)	(0.618)	(0.181)
Cost Effectiveness – non-traded (£/tCO_2e)	74	24
Cost Effectiveness – traded (£/tCO_2e)	-	-

Sensitivity Analysis 3: Counterfactual Routes to Compliance Sensitivity Analysis

The 2021 energy efficiency requirements are performance-based standards requiring significantly less emissions than 2013 levels, aggregated across the build-mix, based on performance-based targets for primary energy, CO2 emissions and fabric energy efficiency. Consequently, there are several ways in which a housebuilder can comply with the regulations. The most likely means of compliance is the specification which has a high level of energy efficiency, a gas boiler, solar panels and wastewater heat recovery. The main alternative means of compliance for housebuilders is with a heat pump. The evidence showing this split in routes to compliance has been found in EPC data showing the majority of Part L 2021 dwellings have been built with a gas boiler, with the rate unchanging, which differs to the consultation IA estimates which suggested that the majority of Part L 2021 dwellings would eventually be built with heat pumps.

Given the remaining uncertainty over what proportion of housebuilders will choose which route to compliance under the 2021 regulations, sensitivity analysis has been taken forward to test this. In addition to the central scenario that has been modelled for the main cost benefit

analysis, an illustrative sensitivity scenario has been used to show the possible range in costs and benefits, with a comparison of the costs and benefits of the overall policy changes are based on a central and high heat pump take up scenario. The central scenario can be seen in the Counterfactual: Routes to Compliance section (Paragraph X-X), with the higher scenario shown below

Table B4: Routes to Compliance, sensitivity analysis scenarios

	Route to Compliance	**2025 onwards**
Baseline Scenario	BR2021 Gas boiler and solar panels	70%
	BR2021 ASHP	30%
Scenario 1: High ASHP Estimate	BR2021 Gas boiler and solar panels	30%
	BR2021 ASHP	70%

SOURCE: MHCLG and AECOM

In the high heat pump take-up scenario, both the costs and benefits of the options fall, still resulting in a multi-billion-pound net benefit to society. Net financial costs are £2,435 m (£6,951m in baseline) and net benefits from carbon and air quality savings are £8,710m (£19,824m in baseline) with 52 MtCO2e (11 MtCO2e in baseline) saved. The lower carbon savings in the high option is because more heat pumps are used in the counterfactual, which means gas consumption/non-traded emission savings are considerably lower. In either case, this still leads to a multi-billion-pound benefit to society. Table B5 below shows the difference in the costs, benefits and savings of the high ASHP take-up scenario, with the baseline heat pump take-up scenario in the neighbouring columns in each table to allow for comparison.

Table B5: Routes to compliance, High ASHP uptake compared to Central Scenario

(Brackets) = Cost/Negative figure	**Baseline (30% CF)**	**High (70% CF)**
Transition costs (£m)	(26)	(26)
Energy Savings (£m)	126	4,627
Capital, Maintenance and Replacement (£m)	(9,384)	(8,036)
Total Financial benefit/(cost) (£m)	**(9,284)**	**(3,435)**
Carbon Savings - non-traded (£m)	19,965	8,556
Carbon Savings - traded (£m)	(141)	154
Total Carbon Savings (£m)	19,824	8,710
Air Quality Savings (£m)	711	315
Comfort Taking (£m)	0	0
Total Carbon and Air Quality Savings (£m)	20,535	9,025
Net Benefit/(Cost) (£m)	**11,251**	**5,590**
Amount of Gas Saved (GWh)	647,726	277,597
Amount of Electricity Saved (GWh)	(93,462)	114,119
Amount of CO_2 Saved - non-traded ($MtCO_2e$)	118	51
Amount of CO_2 Saved -traded ($MtCO_2e$)	(0.618)	(0.662)
Cost Effectiveness – non-traded (£/tCO_2e)	74	59
Cost Effectiveness – traded (£/tCO_2e)	-	-

Sensitivity Analysis 4: Alternative housing trajectory

The baseline for the number of new domestic dwelling completions in England between 2026-2035 is an indicative trajectory used for appraisal purposes only and do not represent an official forecast of changes in housing supply. An additional sensitivity has been produced with a higher building trajectory based on the government's 1.5 million housing target. In this scenario financial costs are higher, due to the increased number of dwellings, as are the carbon savings benefits, leading to a higher total net benefit.

Table B6: Housing Supply, Alternative Trajectory Compared To Central Trajectory

(Brackets) = Cost/Negative figure	Baseline	1.5 Million
Transition costs (£m)	(26)	(26)
Energy Savings (£m)	126	178
Capital, Maintenance and Replacement (£m)	(9,384)	(13,303)
Total Financial benefit/(cost) (£m)	**(9,284)**	**(13,150)**
Carbon Savings - non-traded (£m)	19,965	28,297
Carbon Savings - traded (£m)	(141)	(201)
Total Carbon Savings (£m)	19,824	28,096
Air Quality Savings (£m)	711	1,008
Comfort Taking (£m)	0	0
Total Carbon and Air Quality Savings (£m)	20,535	29,104
Net Benefit/(Cost) (£m)	**11,251**	**15,953**
Amount of Gas Saved (GWh)	647,726	917,955
Amount of Electricity Saved (GWh)	(93,462)	(132,483)
Amount of CO_2 Saved - non-traded ($MtCO_2e$)	118	168
Amount of CO_2 Saved -traded ($MtCO_2e$)	(0.618)	(0.879)
Cost Effectiveness – non-traded (£/tCO_2e)	74	74
Cost Effectiveness – traded (£/tCO_2e)	-	-

Sensitivity Analysis 5: No Solar Export

The no export sensitivity assumes no energy cost saving to households through solar export to the grid in the preferred policy option or the counterfactual. As the solar export price is determined by utility companies based on market forces, increased supply through solar export could potentially reduce solar export prices over time. There is no evidence to suggest that significantly lower or zero prices are likely in the future, however, to account for the uncertainty in this modelling assumption and account for the scenario where grid infrastructure upgrades are required to fully export to the grid, a no export scenario has been modelled.

Relative to the baseline, no export would reduce the energy cost savings to households from £126m to -£1,879m. The NPSV of the FHS would still remain positive under this scenario, but reduce from £11,251m to £9,124m against the baseline analysis.

Table B7: Central Estimate, Summary of Costs and Benefits (£m) (Solar Export Excluded)

(Brackets) = Cost/Negative figure	Central Estimate	No export
Transition costs (£m)	(26)	(26)
Energy Savings (£m)	126	(1,879)
Capital, Maintenance and Replacement (£m)	(9,384)	(9,384)
Total Financial benefit/(cost) (£m)	**(9,284)**	**(11,288)**
Carbon Savings - non-traded (£m)	19,965	19,965
Carbon Savings - traded (£m)	(141)	(258)
Total Carbon Savings (£m)	**19,824**	**19,707**
Air Quality Savings (£m)	711	705
Comfort Taking (£m)	0	0
Total Carbon and Air Quality Savings (£m)	20,535	20,412
Net Benefit/(Cost) (£m)	**11,251**	**9,124**
Amount of Gas Saved (GWh)	647,726	647,726
Amount of Electricity Saved (GWh)	(93,462)	(179,443)
Amount of CO_2 Saved - non-traded ($MtCO_2e$)	118	118
Amount of CO_2 Saved -traded ($MtCO_2e$)	(0.618)	(1.123)
Cost Effectiveness – non-traded (£/tCO_2e)	74	92
Cost Effectiveness – traded (£/tCO_2e)	-	

Appendix C – Cost Breakdown and Lifespan of Assets

Elemental cost estimates have been developed by Currie & Brown's cost specialists, drawing on a combination of internal cost datasets, recently published data, and supplier input. The analysis reflects typical national costs as of Q2 202553, based on a housebuilder delivering over 1,000 homes annually using traditional masonry construction methods.

The estimates assume reasonably efficient supply chains, design development, and construction processes. However, it is recognised that some technologies—such as heat pumps—are still maturing, with limited historic deployment influencing current cost certainty.

Costs will vary between organisations depending on procurement strategies, geographic location (with higher costs expected in areas such as London and the South East), and specific housing designs. These factors could result in a cost variation of approximately ±30% or more. Despite this variability, the proportional uplifts associated with moving from one energy efficiency specification to another are expected to remain broadly consistent across market segments[54].

To contextualise these variations, indicative build costs (£/m²) have been estimated for each building archetype using Currie & Brown's internal data. These figures represent typical costs for homes built to FHS 2025 requirements. They are indicative only, as actual costs are sensitive to a wide range of design, specification, and regional factors.

Costs are in 2025 prices and subject to learning effects for technologies that have not yet reached a mature market position. It should be noted that construction costs are subject to significant and rapid fluctuations in response to market conditions, particularly where changes in demand affect the availability of skills and materials. In such cases, cost shifts of several percentage points over short periods are not uncommon.

Tables C1 and C2 includes details of the cost information used for each specification option. Table C1 shows costs that are consistent across the counterfactual and a FHS home. Table C2 includes any variations between the counterfactual and FHS notional building specifications. These do not include expected learning rates.

For maintenance and replacement costs, estimates were made of the lifespan of assets as outlined in table C3 below. Only the elements of lifecycle costs that differentiated from the costs incurred in the counterfactual were considered. For example, general repair and decoration costs were excluded from the analysis, as these would be common to all new constructions, irrespective of the energy performance options presented in this IA.

[53] Cost analysis was reviewed in Spring 2025 and some elements updated to reflect changes in market rates and new information. Changes principally affected the variable costs of photovoltaic panels and heat pumps.

[54] Costs increases may be outside the described range for highly bespoke designs; however, these homes are typically more expensive to build and so the relative impact on build costs may be similar or potentially smaller than for more typical homes built in higher volumes.

Replacement costs are assigned to specific components which make up elements. This means that replacement of an element may not include all components within that element. For example, replacement of a boiler after 15 years is not assumed to include the hot water tank or gas supplies within the boiler. The replacement costs include an additional allowance for the disposal of the end-of-life components.

Table C1: Cost data for fabric elements that are consistent across the selected specifications for new dwellings and the counterfactual 2021 specification (£, 2025 Prices)

Element	Specification	Unit	New cost (£ per unit)
External Wall – plasterboard, blockwork, mineral wool brick, lintels, ties and cavity trays/closers	0.18 W/m².K	m²	£268
Ground / Exposed Floor	0.13 W/m².K	m²	£192
Roof – mineral wool insulation at joist level	0.11 W/m².K	m²	£222
Windows uPVC	1.2 W/m².K	m² glazed area	£397

Table C2: Cost data for fabric elements that vary between the selected specifications for new dwellings and the counterfactual 2021 specification (£, 2025 Prices)

Wastewater Heat Recovery	Vertical pipe system (houses and upper floor flats)	Per Unit	£475
	Tray system (ground floor flats)	Per Unit	£1,426
Roof mounted - photovoltaic panels	Fixed costs for systems <4kWp	Per installation	£1,219
	Variable costs for systems <4kWp	Per kWp installed	£696
	Variable costs for systems >4kWp	Per kWp installed	£696
Heating plant	Gas boiler system and hot water cylinder (detached home)	Per Unit	£2,803
	Gas boiler combi (other house types)	Per Unit	£1,554
	Air Source Heat Pump (5-8kW) including hot water cylinder	Per Unit	£5,460-£6,647
	Hybrid communal heating system combining ASHP (1kW per home) and gas (2 kW per home) with associated distribution and heat interface units	Per Unit	£5,124
	Communal heating system using ASHP (2kW per home) with associated distribution and heat interface units	Per Unit	£5,380
Gas connection	10 or more homes	Per Unit	£1,174[55]
Enhanced power supply	Additional 1.5 kVa capacity to support use of heat pump	Per Unit	£101
Enhanced airtightness	Airtightness of 4m3m2hr when tested at 50Pa.	m2	£5-12 depending on house type.

Table C3: Estimated Lifespan of Key Assets used in the IA

Asset	Asset life (years)	Source
Building fabric insulation (external walls, floors, roofs)	60	Indicative values provided in Annex E of *BS EN 15459 Energy performance of buildings – Economic evaluation procedure for energy systems in buildings*.
Other building fabric insulation - external windows and doors	30	
Gas boilers and heat pumps	15	Indicative values provided in *CIBSE Guide M – Maintenance engineering and management*.
hot water stores having a lifespan of 20 years.	20	
wastewater heat recovery systems	50	
Solar Photovoltaic systems	25	

Appendix D – Familiarisation Cost Estimates

Table D1 outlines the numbers of hours spent per profession to familiarise themselves with the new energy efficiency requirements and SAP/HEM. Table D2 shows the estimated number of individuals that will need to become familiar with the changes.

Table D1: Number of hours spent per profession to familiarise with new requirements and new SAP/HEM (hrs)

Professional Category	New Energy Efficiency Requirements	SAP/HEM
Energy Consultant	10	9
SAP Assessor	26	44
Designers - Architects	15	35
Designers - Engineers	26	44
Heat pump Commissioning	26	0
Ventilation Commissioning	26	0
Principal Contractors	99	2
Sub-Contractors	4	0
Developers	438	0
Building Control	8	1
Planners	1	1

Table D2: Estimated number of individuals need to become familiar with the regulation changes, by profession

Professional Category	**Estimated number of individuals**
Energy Consultant	14,900
SAP Assessor	3,470
Designers - Architects	38,180
Designers - Engineers	10,200
Heat pump Commissioning	5,110
Ventilation Commissioning	260
Principal Contractors	65,900
Sub-Contractors	31,350
Developers	131,860
Building Control	3,000
Planners	34,650
Total	**338,880**

Appendix E – Options monetised at consultation stage

Option 1: The notional building for new dwellings would include a heat pump, solar PV (covering equivalent of 40% of the ground floor area), wastewater heat recovery, improved airtightness, and decentralised mechanical ventilation.

Option 2: The notional building for new dwellings would include a heat pump, but not the other technologies included in Option 1.

Option 1 and 2 are modelled with a 24-month transitional period.

Further details can be found in the consultation impact assessment:
Future Homes Standard consultation stage impact assessment

Table E1: Central Estimate, Summary of Costs and Benefits, Dwelling constructed in 2026-2035 with a 60-year asset life (£m NPV, 2022 prices, 2025 base year)

(Brackets) = Cost/Negative figure	**Option 1**	**Option 2**
Transition costs (£m)	(19.1)	(14.3)
Energy Savings (£m)	3,716	(1,395)
Capital, Maintenance and Replacement (£m)	(3,039)	833
Total Financial benefit/(cost) (£m)	**658**	**(576)**
Carbon Savings - non-traded (£m)	6,340	6,340
Carbon Savings - traded (£m)	82	(281)
Total Carbon Savings (£m)	6,422	6,060
Air Quality Savings (£m)	136	128
Comfort Taking (£m)	0	0
Total Carbon and Air Quality Savings	6,559	6,187
Net Benefit/(Cost) (£m)	**7,217**	**5,611**
Amount of Gas Saved (GWh)	234,223	234,223
Amount of Electricity Saved (GWh)	44,167	(132,648)
Amount of CO_2 Saved - non-traded ($MtCO_2e$)	43	43
Amount of CO_2 Saved -traded ($MtCO_2e$)	0.4	(1.3)
Cost Effectiveness – non-traded (£/tCO_2e)	(20)	17
Cost Effectiveness – traded (£/tCO_2e)	N/A	N/A

Appendix F – Glossary

This appendix defines terms used in this impact assessment

Airtightness	The resistance of the building fabric to unintended air leakage through gaps, cracks, and joints, expressed as air permeability and measured in accordance with Building Regulations and supporting guidance.
Approved Documents	Statutory guidance that provides practical guidance on ways of complying with the requirements of the Building Regulations.
As-built performance	The actual energy performance of a building once it has been constructed and commissioned, which may differ from performance estimated at the design stage.
Asset lifespan / maintenance and replacement costs	Lifecycle concepts used to assess costs and benefits over time, including scheduled maintenance and replacement of building components.
Building archetypes / archetypes	Representative building types used in modelling to estimate costs, energy use and emissions impacts.
Building Regulations	Statutory regulations made under the Building Act 1984 that set functional requirements for the design and construction of buildings, including provisions for safety, health, energy efficiency, and ventilation.
Business as Usual (BAU) / Counterfactual	The scenario used in the impact assessment to represent what would happen in the absence of the Future Homes Standard, based on continued application of Part L 2021 requirements.
Decentralised Mechanical Extract Ventilation	A low-energy, continuous mechanical extract ventilation system designed to remove moisture laden air from wet rooms (such as bathrooms, utility rooms, and kitchens), offering a quieter and more efficient alternative to intermittent extract fans.
Delivered energy	The amount of energy supplied to a dwelling for use, measured at the point of delivery (e.g., electricity or fuel provided to the home). This differs from calculated energy demand, which is a modelled estimate used for monitoring and evaluation purposes under the Home Energy Model (HEM).
Familiarisation costs / familiarisation time	One-off costs and time incurred by industry and regulators to understand and adapt to new regulatory requirements.
Functional requirement	A requirement set out in the Building Regulations that defines the outcome to be achieved, without prescribing the specific method or materials for delivering that outcome.

Gateway 2	A regulatory approval stage for higher-risk buildings that must be successfully completed before construction can commence. It involves the Building Safety Regulator reviewing and approving detailed design and safety documentation to ensure compliance with building regulations.
Heat Networks	District or communal heating systems referenced as a compliance route for certain dwellings, particularly flats, and as a pathway for connecting buildings to low-carbon heat.
Heat pump	A space heating and hot water system that uses electricity to transfer heat from a source, such as air or ground, into a dwelling.
HEM	The calculation methodology that will be introduced under the Future Homes Standard to assess the energy performance and carbon emissions of new dwellings. It is intended to replace the Standard Assessment Procedure (SAP). During the transitional phase, both HEM and SAP will be recognised compliance methods.
Mechanical ventilation	Ventilation provided by mechanically driven fans that extract air from, or supply air to, a dwelling in order to achieve adequate indoor air quality by extracting or supplying air.
Net-Zero ready	A standard under which a dwelling is designed and constructed to ensure that it can achieve net zero carbon emissions in use, without requiring retrofit works, by balancing any remaining operational emissions. This can include offsetting carbon emissions.
Notional building	A reference building specification defined in the Building Regulations compliance, methodology, used to set performance targets against which the proposed dwelling is assessed.
On-site renewable	Electricity generated from renewable sources located at or near the dwelling, such as solar photovoltaic (PV) panels contributing to compliance with Building Regulations requirements.
Operational energy use	Energy used by a dwelling for regulated purposes during occupation, including space heating, hot water, lighting and ventilation.
Solar photovoltaic (PV) panels	Panels that convert light energy from the sun direction into electricity using a process called the photovoltaic effect.
Standard Assessment Procedure (SAP)	The existing methodology for assessing the energy performance and carbon emissions of new dwellings (and for generating EPCs). SAP is currently in use but will be available alongside the Home Energy Model during the transition to the FHS, before eventually being replaced.
Sunsetting	The process of ending or removing historic transitional arrangements after a defined period.
Wastewater heat recovery	A system that recovers heat from warm wastewater to pre-heat incoming cold water, reducing energy demand for domestic hot water.

Zero-Carbon ready	A standard under which a dwelling is designed and constructed to ensure that, in the future, it will achieve zero carbon emissions in use without requiring retrofit works once the electricity grid is fully decarbonised. This does not allow for the use of offsetting.