The Future Homes and Buildings Standards: 2023 consultation

The Association for Renewable Energy & Clean Technologies (REA) is pleased to submit this response. The REA represents industry stakeholders from across the sector and includes dedicated member forums focused on green gas & hydrogen, biomass heat, biomass power, renewable transport fuels, thermal storage and energy from waste (including advanced conversion technologies). Our members include generators, project developers, heat suppliers, investors, equipment producers and service providers. Members range in size from major multinationals to sole traders. There are over 500 corporate members of the REA, making it the largest renewable energy trade association in the UK.

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

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

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

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

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

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

The REA believe the Government should be aiming for both high carbon and bill savings within building standards, as suggested by Option 1.

Government should be looking to support higher standards with appropriate supporting policies in place that address the associated higher capital costs. Past failure in building standards and energy policy over the last few decades have demonstrated that failure to invest properly in our building infrastructure will deliver poor returns economically, socially, and environmentally. Pursuing Option 2 may mean lower initial capital costs but will only lead to much higher costs in the future, with expensive retrofits being required and lower quality housing being created. This should be avoided.

The UK must learn lesson from the past, which have resulted in the UK having some of the most energy inefficient houses in Europe. Investing properly now, will mean significant cost savings for both households and government in the longer term.

In delivering Option 1, it is also important that building standards look to make the most of all available low carbon technologies, ensuring that the notional building recognises the need to ensure the use of the right technology for the situation, and recognising the interaction between energy systems. This means ensuring energy systems within properties are appropriately designed, while being cognitive of local factors including accessible energy infrastructure (including both the power and gas networks), viability of heat networks or availability of local feedstock resources.

As the homes decarbonise, with both heat and transport increasingly being electrified, there will be greater electricity demand. This needs to be supported by both grid connections coming into the property, with new builds requiring three phase connections, as well as ensuring the installation of energy storage systems (both electric and thermal) to manage both increased levels of demand and on-site generation.

Equally, the role of bioenergy systems should also be recognised, especially in off gas grid or complex to decarbonise buildings. This includes biomass and renewable biofuel solutions, which will often provide the most cost-effective routes to decarbonisation in such situations. This will also apply to larger buildings where high heat loads maybe required, such as hospitals, care homes or schools.

Recognising Bioenergy within the Notional Building Standard

We are concerned that the consultation states that, in discussing the notional building, "The standards proposed are also unlikely to allow the installation of biofuel systems, including wood and manufactured solid fuel".

Biomass has a valuable role to play in heat decarbonisation and we would encourage the development of a standard that is focused on technology agnosticism – to ensure that the right low-carbon technology is used for the right building. To date biomass has provided the largest contribution to heat decarbonisation, in 2022 60% of all renewable heat generation was produced by biomass – 32,000GWh [1]. Heat pumps are of critical importance to the decarbonisation of most UK homes, but they may not be the optimal solution for every building. For example, Government modelling estimates that 20% of off-gas grids may not be best placed to use a heat pump, either due to low energy efficiency standards or poor local infrastructure to support them [2] . Given there are 1.1 million off-gas grid properties, this means there are likely over 220,000 properties where other solutions are likely to be required. Such local realities could impact new builds as much as retrofit properties.

While building standards may differentiate between what is required for new build and retrofit, It is important to recognise that different approaches may be needed in urban and rural areas, biomass boilers and other drop in biofuels can play a valuable role in decarbonising rural properties, particularly older, complex-to-decarbonise homes – many of which currently use oil heating; as well as newer or retrofit homes that may have electricity supply constraints or poor grid connections. Equally larger buildings, where high heat loads maybe required, such as hospitals, care homes or schools, may also look o bioenergy solutions as important.

The building standard should recognise that in many such cases biomass will be the most cost-effective solution to decarbonise - failure to do so could leave many households and businesses, especially in rural areas, behind without adequate, or financially feasible, options to decarbonise.

Importance of including Solar PV

The REA supports that Option 1 includes requirements for high efficiency solar PV panels as on-site generation will provide the largest cost savings to consumers, especially long-term with the expected demand for electricity to increase with the electrification of heat and transport.

For efficacy and viability, the REA emphasises the need for also including the installation of energy storage within the specification, where economically viable to do so. This should allow for both electrical and thermal storage systems. This will allow homes to make the most of their solar energy systems as consumers will align energy generation and demand, avoiding high-cost electricity during peak times. This will be especially important as more homes combine on-site solar generation with EV charging demand and heat pumps. Just requiring solar installations, while positive, will leave new homes without the ability to make the most of this clean generation, especially as they decarbonise further.

It is worth noting that the cost of both solar PV and energy storage has significantly reduced within the last two years. As such they should not be interpreted as having a significant further impact on high upfront capital cost.

EV Charging Point

In order to maximise carbon savings and lower additional grid connections work, electric vehicle chargepoints should be included in the idea of a notional building. Previously it was declared that Government would commit to including chargepoints in all new build homes across the country. Although this was subsequently changed, the significance of the decision is becoming more stark.

Most estimates suggest there will be at least 10 million electric vehicles on the road by 2030 which will need regular charging. This increased energy demand will result in highly costly grid reinforcement across the country. To dig up the road and upgrade grid connections takes time and is financially costly. To do this once for a new build development will be expensive, but more affordable than digging up the road a second time to retrofit chargepoints in homes across the country.

We strongly suggest that to future proof properties and improve property resale that EV chargepoints are included in all new developments.

We note that without this being built into building standards, the cost of inaction will fall on the consumer who could be burdened with restrictive grid reinforcement costs which may slow down or prevent adoption of an electric vehicle. If a consumer is forced to choose an ICE vehicle over a BEV due to the cost of grid reinforcement the life time emissions of that ICE vehicle will continue to grow and would mitigate carbon savings achieved through other measures listed in this document.

[1] REA (2023) Review23 https://www.r-e-a.net/resources/review23/
[2] DESNZ (2023) Biomass Strategy 2023 https://www.gov.uk/government/publications/biomass-strategy

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

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

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

We encourage the government to consider all forms of low-carbon heat and energy technology in the notional buildings for heat networks element of the standard. Many technologies, including, but not limited to, biomass, green gases, thermal storage, geothermal (both shallow and deep) and energy from waste, could be valuable heat sources for powering heat networks. Again it is important that the right technology is used in the right situation, and that an assessment is made of which low carbon sources are most appropriate at the local level.

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

a. Option 1
b. Option 2

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

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

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

Including Solar and Storage

The REA agrees with the Government's proposal that non-domestic buildings should include "Solar PV panel coverage equivalent of 40% of the building's foundation area for side-lit spaces and 75% for top-lit spaces". The installation would lead to the effective use of commercial roof space, leading to better energy efficiency of use within buildings. For efficacy and viability, the REA emphasises the need for including the installation of energy storage within the specification. This should allow for both electrical and thermal storage.

It is important to recognise that while initial capital costs may by higher in the short run, the installation will lead to lower energy bills and avoid the need for expensive retrofits in the future.

The REA would like to highlight that in considering the future buildings standard, government should also address standard terms for leased assets i.e. warehouses where ownership of land,

use of asset, and building responsibility can be separate between the owner and the tenant. A standardised contract for leasing arrangements will provide more of a legal blueprint for both tenants and landlords, encouraging further clarification, investment and installation.

Allow for all forms of low carbon heat

Whilst heat pumps will be able to decarbonise most non-domestic buildings, electrification may not be the most suitable solution in all situations. Biomass boilers and other biofuels, work particularly well at medium-large scales due to higher heat loads, making them suitable for use in larger properties including hospitals, schools, hotels, B&Bs, care homes and other non-domestic situations. They are also provide valuable high temperature heat source for businesses that require this, particularly food and beverage processing and manufacturing, such as distilleries and fish hatcheries. The Future Building Standard should encourage the consideration of the right technology for the right situation, and be agnostic in terms of what low carbon heating technology is included in the notional building standard.

EV Charging points

The REA notes that the inclusion of chargepoints in this section would enable nondomestic buildings to achieve significant bill savings through the opportunity to benefit from solar and potentially battery storage to directly power the chargepoints. This would lower the cost of the final bill, while enabling a quicker electrification of fleet vehicles, leading to additional carbon savings by not requiring owners to first purchase chargepoints and get additional grid capacity which can take up to ten years.

With the growth in areas like vehicle to grid, the inclusion of a chargepoint could lead to further bill savings and enable fleet owners to use savings to make additional carbon savings such as through reinvesting savings in additional electric vehicles, accelerating carbon savings.

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

a. Yes
b. No

Yes, the REA supports proposals for high efficiency solar PV panels covering the equivalent of 40% of the ground floor area, in both low rise MCUs and mid and high-rise MCUs.

Heat Networks

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

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

We encouraged the government to consider all forms of low-carbon heat and energy technology when developing the standards for allowing domestic and non-domestic buildings to connect to a heat network . This includes, but not limited to, biomass, green gases, thermal storage, geothermal, heat pumps, energy from waste and solar. Such thermal sources should be allowed to connect to low carbon heat networks where economic to do so.

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

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

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

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

Overall we agree with this policy assuming that the assessment of low carbon capacity is done in accordance the UK GHG Conversion Factors methodology. This is important to ensure that all low carbon technologies that are able to power heat networks are considered appropriately and ensure consistency across policies.

See Methodology Documentation https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023

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

The government should match building standards with supportive policies that ensure that low-carbon heat is used. Tariff-based support schemes, like what was available under the Renewable Heat Incentive, are particularly effective in ensuring the investment in a low-carbon solution is met using that system. This is due to a tariff, as opposed to an upfront grant, addressing operational costs, so ensuring a long-term advantage to the use of the system. Going forward a fuel-switching tariff should be developed by the government to see this delivered.

In the longer term, carbon taxation on fossil heating systems should also be explored to ensure low-carbon fuel systems are used.

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

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

We support the overhaul of the SAP. There is widespread industry agreement that the methodology used for calculating Energy Performance Certificates (EPCs) is outdated. This is barrier to their use and value within the scheme. EPCs are determined by the Standard Assessment Procedure (SAP), but the SAP does not use up-to-date figures on cost, efficiency, and carbon intensity. These outdated methods regularly produce inaccurate results that underestimate low-carbon technologies while promoting the continued use of fossil-fuel heating systems.

It is important that the Home Energy Model ensures updated methodologies where renewable energy is the primary focus within the next version of SAP. This would more fairly reflect the benefits of renewable energy and low-carbon technologies and should be updated more frequently to ensure correct assumptions.

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