

## Housing, Communities and Local Government

### Future Homes Standard consultation

Response by Community Energy England  
February 2020

#### INTRODUCTION

1. This is a response by Community Energy England which represents 239 community energy groups and associated organisations across England involved in the delivery of community-based energy projects that range from the generation of renewable electricity and heat, to the energy efficiency retrofit of buildings, to helping households combat fuel poverty.
2. Our vision is of strong, well informed and capable communities, able to take advantage of their renewable energy resources and address their energy issues in a way that builds a more localised, democratic and sustainable energy system.
3. Community energy refers to the delivery of community led renewable energy, energy demand reduction and energy supply projects, whether wholly owned and/or controlled by communities or through partnership with commercial or public sector partners.
4. We are facing a Climate Emergency of dire proportions which current government decarbonisation targets are woefully inadequate to address. We need to go as far as possible as soon as possible. Zero carbon buildings have been successfully built at a 3% above standard build cost<sup>1</sup>.
5. In 2008 the government put Zero-Carbon Housing into policy for 2016. Within a short time, the big house builders were stepping up to the mark to achieve this.
6. The cost, simply in wasted energy, of abandoning the Zero-Carbon Homes Standard has been estimated at £2bn by the Energy and Climate Intelligence Unit<sup>2</sup>. Add social and economic impacts of that wasted money and the impacts and costs of the extra carbon emissions and that act of policy dereliction becomes more criminal.
7. 92% of our members are primarily motivated by climate change and are committed to working locally on energy to mitigate it as well as bringing local benefit in terms of increases health and well-being, community cohesion and resilience and money

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<sup>1</sup> <https://passivehouseplus.ie/magazine/insight/the-cost-of-building-passive>

<sup>2</sup> <https://www.theconstructionindex.co.uk/news/view/cost-of-scraping-zero-carbon-homes-revealed>

saving. Many of our organisations work on energy efficiency and fuel poverty and see the lamentable state of our housing stock and its impacts at first hand. They also know the extreme difficulty, disruption and expense of retrofitting energy efficiency measures. These are some of the reasons that this no-brainer nettle has never been properly grasped by government. It is much easier to retrofit renewable energy, especially if solar orientation is good which should be a compulsory consideration in all design to optimise passive capture of energy in the winter as well as optimal installation of solar panels, either during the build or afterwards.

8. So, Fabric First must be the first principle of the Future Homes Standard and must be specified in all cases to the very highest standard possible as soon as possible. Enforcement must match the excellence of the standard so that there is NO Performance Gap. It must have full transparency and be based on operational performance outcomes using (metered) kWh/m<sup>2</sup>/yr (e.g. domestic display energy certificate (DEC)).

## Questions

**1. Do you agree with our expectation that a home built to the Future Homes Standard should produce 75-80% less CO2 emissions than one built to current requirements?**

**c. No – 75-80% is too low a reduction in CO2**

**If no, please explain your reasoning and provide evidence to support this.**

In the face of a Climate Emergency that is far graver than the government's targets of net-zero by 2050 would imply we need all new buildings to be designed to achieve net zero much earlier, ideally by 2025. The Future Homes Standard must be based on the operational performance of buildings, as measured at the meter in, say kWh/m<sup>3</sup>/year, including regulated and unregulated energy. Comparing Part L carbon reductions with standards in 2013 disregards the vastly improved carbon intensity of grid average electricity.

Good monitoring and enforcement need to be in place to ensure that there is no Performance Gap and that practice matches standards. This monitoring needs to begin now so that we can identify and fix shortcomings in design and build practice in time to actually meet standards imposed in 2025.

Space heat is one the great challenges. Much is made of electrification as the low-carbon solution but while we're electrifying transport and industry we must reduce demand where we can so that we stand a chance of supplying that in a renewable and genuinely low carbon way. Successive energy ministers have said. "The cheapest energy is the energy we can plan not to need to use". The new buildings sector is one where we can and must genuinely plan to not need to use energy.

**2. We think heat pumps and heat networks should typically be used to deliver the low carbon heating requirement of the Future Homes Standard. What are your views on this and in what circumstances should other low carbon technologies, such as direct electric heating, be used?**

Again, a Fabric First approach to heat delivery must be applied whatever technology is used. And passive heat capture and retention should be mandated to be maximised by designing building and window orientation towards the south. Any thermal mass in the building must be insulated from losing heat to the outside and should be built to receive winter solar gain passively, (south facing floor to ceiling triple glazed windows with appropriate summer solar shading). As a result of better heat retention and taking advantage of passive gain, the total heat demand of the building will be much less and will not need to be supplemented at peak times. If additional heat is required, this can be supplied during periods of low electricity demand from renewable sources. This holistic approach to energy use as advocated by Professor Goran Strbac at Imperial College<sup>3</sup> must be built into new build from now on.

Heat pumps can deliver low carbon heat but only if well designed, specified, installed and operated in appropriately well insulated properties. They are best at delivering low intensity heat and if the building is inefficient it will simply not deliver to requirements and be supplemented or bypassed by less efficient and high carbon backup systems.

COPs are frequently over-quoted: 4 usually delivers 2-3. With air source heat pumps, they must work much harder the colder it gets as there is less warmth in the air to extract and more heat to deliver. This can still create a critical spike in demand for electrical heat during cold periods which will necessitate bringing high carbon generation sources on stream. So again, Fabric First is essential to ensure lower demand in cold periods.

Direct electric heating is less efficient per kWh heat delivered than a heat pump by a factor of 2-3 and is only low carbon if the electricity is low carbon. But, if heat can be delivered at times when this is the case (on a windy night for instance) then it may be low-carbon. But this is difficult to ensure, and it requires smart controllers and a well-insulated building that will not have urgent heat demands that cannot be postponed. Peak time electricity is much more likely to be generated from high carbon sources. As well as storage in the fabric of the building, smart heat storage including using phase change materials should be required as buildings used to be required to have a 40 gallon header tank to ensure water supply resilience in times of intermittency. It is low-tech so inexpensive and reliable and may be appropriate for delivering space heating where heat demand is extremely low, around 15kWh/m<sup>2</sup>/yr or less.

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<sup>3</sup> <https://www.imperial.ac.uk/people/g.strbac>

Similar conditions to those for heat-pumps must apply to heat networks if they are not to be inefficient and demand large inputs of high-carbon feedstock. Most net networks are dependent upon burning fossil fuels which even in CHP units can be high carbon than good domestic boilers due to efficiency losses in the network, lack of control by, and consumption-related billing to, the householder.

There are few or low genuinely low carbon feedstocks to generate large amounts of heat. Biomass (as is being relied upon by the much-cited Danish example) is as high carbon as coal and dangerously polluting. Gas (whether bio-gas or mineral) emits CO<sub>2</sub> when burned and is 100 times worse than CO<sub>2</sub> in any time-frame that matters when it escapes. 'Green-gas', hydrogen and power to gas are 'future technologies' we must not rely on.

We urgently need regulation of the heat sector but immediately we need to be designing heat demand out of our new building stock.

**3. Do you agree that the fabric package for Option 1 (Future Homes Fabric) set out in Chapter 3 and Table 4 of the impact assessment provides a reasonable basis for the fabric performance of the Future Homes Standard?**

**c. No – the fabric standard is not demanding enough**

**If no, please explain your reasoning.**

The Future Homes Standard must be Fabric First and build this to the highest standard possible as soon as possible even if this initially costs a bit more. This is essential to reducing emissions which needs to happen far faster than current government net-zero targets. Scrapping the Zero-Carbon Homes programme has cost more than £2bn in wasted energy. We must invest to save. Retrofitting will be more expensive, disruptive and in many cases will be unaffordable and will not be done so the extra emissions and all the other impacts of sub-optimal building are locked in for the building's life - likely to well beyond design life.

Option 1 does not go far enough. The IPCC's recent report says that we need to achieve 50% reductions by 2030 and zero-carbon by 2050. This is a conservative document that applies to global emissions. Many nations and sectors will lag. Those countries and sectors that have the resources and knowledge to go beyond targets must do so to increase global ambition and pioneer the methods.

Planning to achieve less than 50% is planning to fail. Ideally the target should be at least 60%.

In particular an air permeability standard of 5m<sup>3</sup>/h.m<sup>2</sup> @50Pa is too high.

The loss of the Fabric Energy Efficiency Standard (FEES) means that new homes could be less efficient in 2020 than they were in 2013 under Building Regulations. This does not amount to a *'meaningful uplift to energy efficiency standards as a stepping stone to the Future Homes Standard'*.

**4. When, if at all, should the government commence the amendment to the Planning and Energy Act 2008 to restrict local planning authorities from setting higher energy efficiency standard for dwellings?**

**d. The government should not commence the amendment to the Planning and Energy Act**  
**Please explain your reasoning.**

This measure will limit Local Authorities' ability to take a lead in the race toward net zero thus pioneering the way for others. Some will have more resource in terms of experienced and ambitious developers and more local advantages (e.g. waste heat, geothermal, large bodies of water, rivers). It is (in this government's terms) anti-competitive, against localism and the devolution of responsibility to the most appropriate local level, against 'levelling up' to the level of the best.

Hundreds of councils across the UK have declared Climate Emergencies and some are pioneering best practice which others are watching closely in order to follow. Government should be pledging and planning to support and share the knowledge of those who help push the boundaries of the seemingly possible. Because we need to achieve the seemingly impossible and only ambition, and a freedom to try will enable that.

The London Plan, for instance, already requires a 35% reduction in CO<sub>2</sub> with a 10% reduction in CO<sub>2</sub> through fabric alone. This is ahead of all of your options and would result in large amounts of future development happening at worse than current standards.

The direction of travel in our current Emergency can only be to learn from best practice, strengthen minima and to encourage ambition to exceed them

**5. Do you agree with the proposed timings presented in Figure 2.1 (displayed in Chapter 2) showing the Roadmap to the Future Homes Standard?**

**c. No – the timings are not ambitious enough**

**If no, please explain your reasoning.**

These timing lack the urgency that the situation requires. Many of the answers are already out there and research to collect them should begin now. The consultation on the Future Homes Standard must happen as soon as possible so that practice can start

to up-scale. When the Zero-Carbon Homes programme was announced there was outrage from the large housebuilders. Two years later they were asserting that they were making world-leading progress towards it. Much of the work has already been done.

The timetable doesn't mention the development of a compliance standard

### **Chapter 3 Part L Standards for New Homes in 2020**

#### **6. What level of uplift to the energy efficiency standards in the Building Regulations should be introduced in 2020?**

##### **d. Other**

**Please explain your reasoning.**

As mentioned above, neither option is 'enough soon enough' and especially do not go far enough on fabric efficiency which should, taking into account the energy hierarchy, always be the first step in reducing carbon emissions, with technology then more able to meet the reduced demand and reduce emissions still further.

Under the new regulations new homes could be less insulated in 2020 than under Building Regulations 2013.

The deletion of the Fabric Energy Efficiency Standard (FEES) metric that exists in Part L 2013 means that homes can be designed using the 'minimum' building fabric u-values as long as the building passes the carbon and primary energy targets. Where an energy efficient heating system (such as an air source heat pump) is specified the building is able to pass these targets with a poor building fabric. This, as explained above in question 2, is a nonsense that will likely backfire. But this loophole can override the need to have a well-insulated fabric.

We believe testing has proved that houses that would have failed Part L 2013, due to poor fabric, would significantly exceed the carbon and primary energy targets under Part L 2020.

Not only does the loss of FEES allow the specification of poor fabric, but the introduction of updated carbon factors due to improved carbon intensity of the grid masks the problem further. We have seen evidence that a home that had a 3% reduction in carbon emissions under 2013 regulations could now have a 75% reduction in carbon emissions under the 2020 regulations. The proposed options in the consultation do not take this into account.

Rather than a carbon emission reduction target we advocate an absolute energy consumption target as measured at the meter not via SAP calculations.

**7. Do you agree with using primary energy as the principal performance metric?**

**c. No – another measure should be the principal performance metric**

**Please explain your reasoning and provide evidence to support this.**

The performance metric should be based on actual improved building performance as measured by actual energy use (regulated and unregulated) at the meter(s). As explained above, both primary energy and CO2 can falsify the picture as they can disguise improvements in the wider system as building related improvement

**8. Do you agree with using CO2 as the secondary performance metric?**

**b. No**

**Please explain your reasoning.**

See answer to Q8

**9. Do you agree with the proposal to set a minimum target to ensure that homes are affordable to run?**

**a. Yes**

**Please explain your reasoning.**

Affordability of operation of homes is key. It is not clear how this will be achieved or measured but this target should require ongoing monitoring and assessment of how buildings specified to the standard actually perform. It should ensure that there is less or no Performance Gap .

**10. Should the minimum target used to ensure that homes are affordable to run be a minimum Energy Efficiency Rating?**

**b. No**

**If yes, please suggest a minimum Energy Efficiency Rating that should be achieved and provide evidence to support this.**

**If not, please suggest an alternative metric, explain your reasoning and provide evidence to support this.**

An EPC rating is a very poor predictor of energy consumption and therefore energy bills.

The Standard should be monitored by real world testing, increasingly possible in a smart meter world.

**13. In the context of the proposed move to a primary energy metric and improved minimum fabric standards, do you agree with the proposal to remove the fabric energy efficiency target?**

**b. No**

**If no, please explain your reasoning.**

Reasoning has been explained above.

**16. Do you agree with the proposal of removing the fuel factors to aid the transition from high-carbon fossil fuels?**

**a. Yes**

**If no, please explain your reasoning.**

**17. Do you agree with the proposed changes to minimum building services efficiencies and controls set out in table 3.2?**

**a. Yes, BUT...**

We think the standards could go further.

**18. Do you agree with the proposal that heating systems in new dwellings should be designed to operate with a flow temperature of 55°C?**

**d. No – we disagree for another reason**

**If no, please explain your reasoning and provide evidence.**

We agree that heating systems should be designed to operate at low flow temperatures, but this should be 45°C. The efficiency savings increase in Heat Pump as the delivery temperature is reduced. This is still suitable for low temp radiators. This should be mandated now.

**19. How should we encourage new dwellings to be designed to operate with a flow temperature of 55°C?**

**a. By setting a minimum standard**

**Please explain your reasoning.**

See answer to Q18. Temperature should be 45 degrees and should be set in the Approved Document.

**20. Do you agree with the proposals to simplify the requirements in the Building Regulations for the consideration of high-efficiency alternative systems?**

**a. Yes**

**21. Do you agree with the proposal to adopt the latest Standard Assessment Procedure, SAP 10?**

**a. Yes**

**b. No**

**If no, please explain your reasoning.**

We do not have expertise to answer this question fully. Talking to members and colleagues they say the SAP methodology is deeply flawed. We should be aiming at zero-carbon building measured at the meters, not percentage reductions over an ill-defined baseline.

### **Questions 22-56**

We do not have expertise to answer these questions in detail but have been advised by several members to endorse the responses of the London Energy Transformation Initiative on these points.

### **Chapter 6 Compliance, Performance and Providing Information**

**57. Do you agree with the introduction of guidance for Build Quality in the Approved Document becoming part of the reasonable provision for compliance with the minimum standards of Part L?**

**a. Yes**

**58. Do you have any comments on the Build Quality guidance in Annex C?**

No

**59. Do you agree with the introduction of the standardised compliance report, the Building Regulations England Part L (BREL) report, as presented in Annex D?**

**a. Yes**

**60. Do you agree with the introduction of photographic evidence as a requirement for producing the as-built energy assessment for new dwellings?**

**a. Yes**

**61. Do you agree with the proposal to require the signed standardised compliance report (BREL) and the supporting photographic evidence to be provided to Building Control?**

**a. Yes**

**62. Do you agree with the proposal to provide homeowner with the signed standardised compliance report (BREL) and photographic evidence?**

**a. Yes**

**63. Do you agree with the proposal to specify the version of Part L that the home is built to on the EPC?**

**a. Yes**

**Q64**

**Do you agree Approved Document L should provide a set format for a home user guide in order to inform homeowners how to efficiently operate their dwelling?**

**a. Yes**

## **Chapter 7 Transitional Arrangements**

**65. Do you agree that the transitional arrangements for the energy efficiency changes in 2020 should not apply to individual buildings where work has not started within a reasonable period – resulting in those buildings having to be built to the new energy efficiency standard?**

**a. Yes – where building work has commenced on an individual building within a reasonable period, the transitional arrangements should apply to that building, but not to the buildings on which building work has not commenced**

**67. What is your view on the possible transitional arrangements regarding changes to be made in 2025?**

For a speedier and smoother transition and to get the new regulations applied to new buildings earlier, consultation on proposed 2025 regulations should begin as soon as possible.

## **CONTACTS**

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## **FURTHER INFORMATION**

**Community Energy England (CEE)** was established in 2014 to provide a voice for the community energy sector, primarily in England. Membership totals 239 organisations. Many of the member organisations are community energy groups, but membership extends across a wide range of organisations that work with and support the community energy sector.

[www.communityenergyengland.org](http://www.communityenergyengland.org)