

Tackling Fuel Poverty 2020 -2035

How to respond

This consultation will close on 31 December 2020. You may respond online, by email or by post.

Online - Please complete the online form on the consultation pages of the Welsh Government website

Email - Please send emails with your comments about the draft plan to FuelPovertyandEnergyEfficiency@gov.wales

Post - Please submit your comments in writing to:

Domestic Energy Efficiency and Fuel poverty Team
Third Floor North Wing
Welsh Government
Cathays Park
CF10 3NQ

Consultation Response Form

Your name: Hywel Lloyd

Organisation (if applicable): Active Building Centre

email / telephone number:
Hywel@activebuildingcentre.com

Your address: ABC, c/o Swansea University

Question 1: The Welsh Government proposes to deliver 10 actions over the next two years as part of our efforts to tackle fuel poverty. Are you aware of additional actions the Welsh Government could take, which would contribute to our efforts to reduce fuel poverty in the next two years?

Answer: Yes.

We would first suggest that the debate on energy affordability must to be turned on its head. Too much effort goes into avoiding or reducing fuel poverty (there is now even an annual debate in Westminster!) and not enough into promoting and securing energy wealth.

With a focus on energy wealth we can all start to look at both reducing demand for energy AND increasing local, community and especially home ownership of energy, which in turn will result in reducing, or even eradicating, fuel poverty.

Active Buildings are a powerful device for delivering high energy efficiency, with consequential low demand; AND meaningful amounts of building 'owned' energy through the deployment of energy capture, generation and storage devices on and in buildings.

Our emerging Theory of Activation, below, sets out the essential steps, highlighting the many opportunities for demand reduction and/or energy capture that can move a home towards energy wealth. Even though upgrading homes is a bespoke endeavour we would contend that every home could be made more energy wealthy than it currently is by way of the 'activation' of each home, i.e. at least one of these measures will be applicable to any home.

Draft Theory of Activation:

To make the most of the measures currently available to energy upgrade a home there is a need to understand the energy flows and uses within the home. **Stage One is, therefore, to add 'a brain/nervous system' to a home***, i.e. some sensors to monitor energy use, a small device to collect and display the data that those sensors gather,

and the development of an improvement plan specific to that building. The plan will set out the activation path for home. In some instances this data can reduce demand or improve efficiency of energy use as it provides greater information on what energy is being used when and for what. The system will also provide on-going monitoring to support an intelligent controls system for the home.

With this in-use data we can best understand how then to upgrade the home. Stage Two, can follow different paths of activation. The activation paths have different starting points, which is dependent on the outcomes of the monitoring and assessment. All the paths finish with energy storage, which will support demand shifting and thus allow the adoption of time of use tariffs to reduce energy costs.

Wherever possible **Stage Two will commence with improving the fabric and ventilation of the building.** Building fabric must first be repaired, where required, before any improvements can be made with suitable insulation, draught-proofing, window and door upgrades, ventilation and the like; with due regard to moisture and air flow of the original building design. These measures should reduce demand. Once suitable and appropriate building fabric improvements are made, space heating system upgrades can follow with the installation of heat pumps, or green hydrogen boilers as this technology becomes developed and integrated into the existing gas network. Space heating system upgrades can then be followed by renewable heat generation to further maximise efficiency. For example, a solar hot water system could be added.

Answer: Qu.1 continued –

We note that in some cases fabric improvements will not be necessary, appropriate, possible or cost effective. Likewise, it may not be the right time to upgrade heating systems. In these circumstances **Stage Two can commence with upgrading the heating system, or the electrical systems and then continue onto to add renewable electric energy generation.**

Being able to capture, generate, store and manage the use of such energy can then add to the energy capability of the home. These will help generate energy wealth through capturing energy available in the environment, e.g. from the sun, wind or air/ground/water temperature, and making it available for home use. This will be cheaper than energy drawn from the grid, while a home suitably integrated and wired up can renewably charge an EV, or sell energy to sell to the local grid, both of which can improve home wealth by either saving money or bringing a return.

Finally, Stage Three looks to integrate homes to intelligent micro-grids and energy networks to maximise the opportunities from having an Active Home and thus benefitting from the energy wealth the occupants will then be experiencing.

Question 2: The Welsh Government is proposing to maintain the definition of fuel poverty established in the Warm Homes and Energy Conservation Act 2000 in relation to Wales. Do you think this is appropriate or are you aware of a more appropriate definition to be used in relation to Wales, and if so, why?

Answer: While some of the drivers from action on fuel poverty are legislatively driven, they are also based on a deficit model of what is required, i.e. avoiding or reducing fuel poverty, rather than taking an '*Energy Wealth*' approach. This more progressive and economically beneficial approach should inform the Welsh Government's future plans and it should examine how it can help meet, if not exceed any statutory requirements.

Therefore, the Welsh Government should explore a definition for action that builds on yet goes further than the statutory minimum of the 2000 Act, for example this could be reframed as follows:

FROM - as defined in the Warm Homes and Energy Conservation Act 2000, a household is to be regarded as living "in fuel poverty" if a member of a household is living on a "lower income" in a home which cannot be kept "warm" at "reasonable cost".

TO – a household is regarded as living 'in energy wealth' if a member is living on a 'lower income' yet in a home that can be kept 'warm' at a reasonable cost, and with 'reasonable' returns.

Question 3: The WAO suggested the Welsh Government should clearly set out whether, and if so how, it will support fuel poor households who are not eligible for Nest and do not live in an area covered by Arbed. We believe expanding our current programmes to deliver support people living on lower incomes, not necessarily on means tested benefits, is appropriate. Is the lower income definition proposed in this plan an appropriate level to target support, or should the threshold be set at a different level?

Answer: An energy wealth approach can be applied to a wider range of households and their homes than one focused on the statutory minimum, so we agree with taking a wider definition of who might benefit from this strategy, with the caveat that in some areas and geographies it can be more beneficial (in terms of energy efficiency achieved and investment cost of works) to take a whole area approach and include everyone regardless of income.

Question 4: The Welsh Government proposes to amend the definition of a home vulnerable to being “at risk” of living in fuel poverty to include homes with single occupants aged under 25 years of age. Do you agree young people living alone should be included in this definition, or should the definition in the 2010 Strategy be retained?

Answer: Nothing to add

Question 5: The Welsh Government proposes to maintain the current measures of fuel poverty used in relation to Wales, adding the measure of 8% to measure homes “at risk” of fuel poverty and a measure of persistent fuel poverty as being fuel poor for two out of the last three years. Do you consider these measures to be appropriate for measuring fuel poverty in Wales or should alternative measures be developed?

Answer: We would be keen to explore how an energy wealth approach, using Active Building technologies and approaches, could impact on the underlying objectives of this strategy, i.e. to improve the impact of energy costs on the least well off.

Question 6: Do you think the reduction in kWh is a more effective measure for improving home energy efficiency in homes experiencing fuel poverty, or should the current EPC measures be retained as a measure of success?

Answer: It is clear that an absolute measure is the only way to proceed if we are to get real gains in energy performance of homes, avoid ‘gaming’ relative metrics and moving on from the known flaws in the EPC modelled. This is particularly pertinent to managing and eradication fuel poverty and establishing energy wealth. There are too many variables and assumptions associated with EPCs. Using an absolute measure gives an accurate picture and thus supports a strategy for moving forward. ‘You cannot manage what you do not measure’.

We agree that kWh and reductions in Wh (per msq) are the most effective measures of success; which suggests two measurements are adopted – both using kWh/m²/yr:

1. Energy Use Intensity – regulated & unregulated energy, excluding renewable energy generation
2. Heat demand

These follow the established approach developed by LETI¹, which set out the target that needs to be achieved to enable net zero carbon by 2050. This guidance is being considered by many local governments, and regions across the UK, as a robust and consistent approach to delivering net zero carbon buildings. EUI can be established by taking the total annual energy consumption of a building and dividing it by the Gross Internal Area (GIA).

Heat demand can be determined through sub-metering (during the monitoring and assessment stage set out above) to establish the annual energy use and then dividing by the GIA. Alternatively, as an early indication until the monitoring and assessment is established, the estimated 60% of energy used in homes for space heating could be used as a guide (using the EUI as a basis for this calculation).

Answer: Qu.6 continued –

The LETI recommended targets for residential buildings are an EUI of 35 kWh/m²/yr with a heat demand of 15 kWh/m²/yr. Achieving these figures would promote and establish energy wealth and thus eradicate fuel poverty.

Even new homes built today will need to be upgraded as they do not support the achievement of net zero carbon and energy wealth, thus risking people living in fuel poverty. Typically, current Part L of the building regulations for new build achieves an EUI of 140 kWh/m²/yr.

Question 7: We would like to know your views on the effects our proposals to tackle fuel poverty could have on the Welsh language, specifically on opportunities for people to use Welsh and on treating the Welsh language no less favourably than English. What effects do you think there would be? How could positive effects be increased, or negative effects be mitigated?

Answer: As a project created and initiated in Wales we are supportive of all measures that help the Welsh language thrive; while our predecessor programme (SPECIFC) have produced Welsh language case studies for some of their early Active Building Demonstrators.

Yet we appreciate that as an ancient language words for new technologies don't often readily translate (e.g. panel solar), which suggests some work required to create Welsh brands and naming for some of these new technologies.

We would be interested in exploring this further with you.

Question 8: Please also explain how you believe our proposals to tackle fuel poverty could be formulated or changed so as to have positive effects or increased positive effects on opportunities for people to use the Welsh language and on treating the Welsh language no less favourably than the English language, and no adverse effects on opportunities for people to use the Welsh language and on treating the Welsh language no less favourably than the English language.

Answer: See above, regarding appropriate or new Welsh words for emerging technologies.

Question 9: We have asked a number of specific questions. If you have any related issues, which we have not specifically addressed, please use this space to let us know what you think:

Please enter here: The Active Building Centre (ABC) is a UK national centre developing modern methods of design, manufacturing and deployment for flexible renewable energy systems in buildings and communities. ABC leads on the integration of energy technologies, to optimise the renewable / low-carbon energy a building can capture, manage, store and use efficiently for day-to-day, week-to-week, season-to-season uses; including the integration of EV technology where appropriate.

Given the UK's commitment to move to a net zero carbon world, free of fossil fuels, the potential of each and every technology that can capture and store renewable energy should be explored, developed and as we learn more about their capabilities, many should be supported to maximise their deployment and export potential.

At the Active Building Centre this means exploring a range technologies that capture energy from varied sources and in various manners. This means:

- Optimising how a building's design can capture the solar energy falling on it, using sensors and controls to manage energy use effectively, while efficiency is in part addressed by building, and upgrading (where appropriate), to high fabric standards. Together these help reduce overall energy demand from buildings.
- Designing and building in, as well as integrating the operation of, storage technologies to provide warmth, power and mobility at the times they are needed.
- Connecting the resulting nano-grid of the Active Building (AB) to the local (micro) electricity grid to allow the AB to contribute to the demands on that local grid, helping to manage, reduce or shift peak demand, by providing electricity to the local grid when appropriate.

The initial concept and programme of work of ABC is focused on developing and deploying the Active approach on new buildings of all typologies, both domestic and non-domestic; with an Active Office, Classroom, Industrial Building and Active Homes already built and operational. These and other projects in the market with ABC partners will provide a growing portfolio of data, which in turn will enhance the knowledge base of how all buildings are designed, how they deploy and integrate energy and digital technologies, to give a much higher building performance for their users, be that as a home, office or service providing setting.

Our programmes of work in research, design, development and commercialisation will, inter alia, explore solutions to the challenge of decarbonising heat, initially through our founding UKI grant and then beyond as we develop as an RTO. Further information on our programme is here – www.activebuildingcentre.com

Further information on the capabilities and potential of Active Buildings can be found in these two recent papers from the ABC research programme:

[Active-Building-Centre-Research-Programme-White-Paper-The-role-of-active-buildings-in-the-transition-to-a-net-zero-energy-system.pdf \(abc-rp.com\)](https://www.activebuildingcentre.com/research/white-papers/active-building-centre-research-programme-white-paper-the-role-of-active-buildings-in-the-transition-to-a-net-zero-energy-system.pdf)

[Active-Building-Centre-Research-Programme-White-Paper-Can-you-make-money-from-active-buildings.pdf \(abc-rp.com\)](https://www.activebuildingcentre.com/research/white-papers/active-building-centre-research-programme-white-paper-can-you-make-money-from-active-buildings.pdf)

While the following links will take you to additional evidence on the design, form, function and potential of Active Buildings in addressing the question of energy benefits and wealth -

<https://www.ukgbc.org/ukgbc-work/case-study-active-office-and-active-classroom/>

<https://www.ippr.org/research/publications/a-distributed-energy-future>

Responses to consultations may be made public, on the internet or in a report.
If you would prefer your response to remain anonymous, please tick here: