

# Response ID ANON-M9TD-T4QW-E

Submitted to Improving Boiler Standards and Efficiency  
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## About you

What is your name?

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What is your organisation?

Organisation:  
N/A

Are you happy for your response to be published?

Yes

Would you like to be contacted when the consultation response is published?

Yes

How did you hear about this consultation?

Where did you hear of this consultation?:  
Email from elsewhere

Other (please specify):

Mastodon

## Chapter 1: Boiler Efficiency

1 Do you agree that all boilers should be sold with controls that meet Energy Labelling Class VI? Yes/No. Please expand on your views.

Yes

Please expand here:

2 Do you think we should require all gas boiler controls to meet Energy Labelling Class VI, irrespective of whether they are placed on the market with a gas boiler?

Don't know

Please expand here:

3 Should Energy Labelling Class VIII controls be allowed as an alternative route to compliance? Yes/No. Please expand on your views, including on which boiler systems or property types are most suitable for these controls.

Yes

Please expand here:

Older homes with uneven room usage, uneven construction, uneven solar gain, and (eg) uneven wind-driven losses are more likely to gain from zoning (a) reducing overheating and (b) reducing heat demand for unused areas. A canonical example may be 'empty nester' pre-1950s house after children have left home with many rooms in practice vacant but s signficiant heat energy sink through uninsulated solid walls if per-room zoning is not in place.

4 a) Is it necessary to mandate that all available boilers and controls use open protocols? Yes/No. Please expand on your views.

Yes

Please expand here:

Yes, and actually open, with \*FREE\* access to the specifications and preferably management of the protocol standards via a reputable non-industry body with no IPR-encumbered elements, eg no royalties payable for implementations that meet spec from submarine patents. Some of the named 'open' protocols are NOT in practice open for small innovating businesses.

Those protocols need not necessarily be complex.

There should be mandatory compliance and interoperability testing and certification.

4 b) Is an appropriate route for achieving this through a government mandate that boilers are sold with open protocol adaptors? Yes/No. Please expand on your views.

Yes

Please expand here:

Some variant of mandating actually open management, with penalties for malicious compliance (and non-compliance) and misleading documentation with the product or online for the product as a whole or its interfaces, or for 'bugs' that prevent interop in the field.

5 a) Should FGHR systems be required as an alternative or additional requirement to Class VI controls, for example, alongside larger combination boilers over 35kW? Yes/No. Please explain your answer

Don't know

Please explain your answer here:

Not as an alternative.

5 b) If so, should this be limited to certain types of FGHR systems, for example, limited to inbuilt Passive FGHR systems with thermal storage? Yes/No.

Don't know

Please expand here:

6 Do you agree that all domestic-scale gas combination boilers should be able to modulate to 10% of their maximum output without on/off cycling? Yes/No. Please expand on your views.

Yes

Please expand here:

As example, my (~24kW) home boiler cannot modulate down to within even a factor of 2 of our typical space heat demand (~3kW) and not even down to our peak demand (~6kW). A 10% modulation would help fix this in our situation much of the time, avoiding a lot of cycling.

7 Should minimum boiler outputs be capped, and, if so, at what level? Please expand on your views.

No

Please expand here:

Especially when a home is using zoned controls and is only partially occupied (eg one adult working from home during the say) 3kW could still be too high. In my situation (~EPC B) well below 1kW would be needed to avoid cycling when I am at my desk.

As homes are refurbished and retrofitted on the way to Net Zero, and especially if thorough insulation works are done well before an upgrade to a heat pump, very deep modulation may be needed to maximise efficiency, especially in shoulder months.

8 Do you agree that we should extend the revised requirements to include system and regular boilers? Yes/No. Please expand on your views.

Don't know

Please expand here:

9 What additional installer training, if any, would be needed to support system and regular boiler inclusion in these requirements?

Please respond here:

10 Do you agree that the minimum modulation range should apply to system and regular boilers? Yes/No. Please expand on your views.

Don't know

Please expand here:

11 What role, if any, can FGHR systems have with system and regular boilers?

Please respond here:

12 Should the tested minimum energy performance standard for a domestic sized gas boiler be increased to a) 93% or b) 94%? Please provide explain your answer.

Please respond here:

Yes, in the same spirit as continuous energy-performance-band uprating for other household appliances (eg TVs, washing machines, fridges) to drive product development and average performance,

13 What real-world efficiency benefits might be realised by such an increase to minimum energy performance standards?

Please respond here:

Driving the average efficiency up and removing the worst performing products from the market.

14 What risks or disbenefits might arise from such an increase to minimum energy performance standards?

Please respond here:

1) The increased CAPEX may be too high for some consumers, even if overall TCO (Total Cost of Ownership) would be lower (and the climate better off). One case is the split incentive where a landlord pays for the boiler and a tenant pays for energy.

2) The number of participants in the market might be reduced, undermining competition.

15 Do you agree that the government should set a requirement for all cylinders to have a minimum efficiency rating of B? Yes/No. Please expand on your views.

Yes

Please expand here:

Efficiency is often the cheapest form of climate protection and reduces TCO.

16 What additional measures may be required to ensure that cylinders are future-proofed for use alongside heat pumps?

Please respond here:

The aim should be to reduce heat-loss to the levels of some heat-storage products already on the UK market with vacuum panel insulation, ie to allow multi-day retention of significant heat. This (a) saves energy/emissions/money and (b) allows provision of demand flexibility to the electricity grid for heat pumps\* up to the point of significantly helping with "dunkelflaute" aka DECC's "five cold dark still days".

\*This also smoothes and lowers demand on the gas grid in the interim.

17 a) What additional information can be collected or recorded by installers to ensure full commissioning for boiler installations take place, for example should heat loss calculations be recorded?

Please respond here:

Yes, record heat loss calcs.

Record actual flow and return (and outside weather conditions).

Record results of follow-up tuning visit(s). Yes, they should happen.

Record user comments on system operation at delivery, 6M, 1Y.

17 b) What available technologies can be used to speed up this process, including more time-consuming practices like hydraulic balancing?

Please respond here:

18 How can regular heating system servicing be encouraged, what practices should be included and what are the potential benefits and costs consumers should expect?

Please respond here:

During annual gas safety inspection flow and return temperatures should at a minimum be checked to allow condensing.

Legally insist that \*all\* fossil fuel heating systems do get an annual comprehensive service, possibly subsidised for fuel-poor households.

Possibly time and temperature and other controls should be checked for (a) continued correct functioning and (b) end user understanding and use.

Continuing to wilfully operate a fossil fuel (or other) heating system inefficiently should not be a cheap and easy option. If bringing some regular pain (eg time and servicing cost) to those who can't be bothered helps reduce the impact on climate and shares some of the cost of the externalities, that might be a good thing.

19 Should low temperature heating system training be mandatory for gas boiler installers to help ensure Building Regulations are met? Yes/No. Please expand on your views.

Yes

Please expand here:

Continuing to wilfully install fossil fuel (or other) heating systems to run inefficiently should not be a cheap and easy option.

Forcing customers to waste money and energy and hurt the climate simply to save the installer a bit of time and maybe avoid possible complaints about being cold is not a good tradeoff for the customers or the planet.

20 What appropriate technological solutions currently exist or could be developed for collecting and displaying real-time efficiency information? Please explain your answer.

Please respond here:

As an example I am developing a sub-£1 user-installable and user-monitorable boiler-agnostic mechanism to ensure that return temperatures are low enough to allow condensing operation.

21 Do you agree that the proposals for new boiler and hot water tank product standards should be applied to new boiler installations from 2025? Yes/No. Please expand on your views.

Yes

Please expand here:

As soon as legally possible. Cumulative carbon emissions (and HMT subsidies of, and interference in, the energy market) are what hurt. Delay hurts.

22 a) Could the proposals be applied to new boiler installations earlier to help lower bills for consumers sooner? Yes/No. Please expand on your views.

Yes

Please expand here:

As soon as legally possible. Cumulative carbon emissions (and HMT subsidies of, and interference in, the energy market) are what hurt. Delay hurts.

22 b) What additional steps or refinements may be required to support an earlier implementation date?

Please respond here:

Clear early warning to supply chains to clear marginal products ASAP.

Some better public education (eg public information campaigns) as to how these measures actually help, eg on the lines of:

<https://moneysavingboilerchallenge.com/>

23 What are your views on the cost implications of the various proposals for the average boiler installation? Please expand on your views.

Please respond here:

Pumping out excess CO2 from inefficiently operated systems has an external cost, and the effects of excess emissions are cumulative.

If the added costs of installation are comparable to those externalities then they should be compulsory, else the new gas installation is free-riding and being subsidised to pollute and hurt the rest of us.

In any case, pushing people away from new gas installations and towards considering heat pumps is a social and economic good. The UK has ~20M gas boilers to replace with heat pumps by 2050: encouraging a shift sooner by making gas installations harder may well be acceptable.

24 Do you agree that the government should use Ecodesign legislation to implement the proposals? Yes/No. Please expand on your views.

Yes

Please expand here:

Seems a reasonable approach.

Avoiding unnecessary divergence from EU standards will keep manufacturing and compliance costs down.

25 What are your views on extending the regulations to cover all gas boilers up to 70kW? Please expand on your views.

Please respond here:

## Chapter 2: Hydrogen-Ready Boilers

26 What opportunities and challenges would requiring all newly installed domestic-scale natural gas boilers to be hydrogen-ready from 2026 present? Please provide evidence and reasoning to support your answer.

Please respond here:

It seems highly unlikely that hydrogen is appropriate from domestic space heating at scale, eg with ~5x or 6x worse end-to-end thermodynamic efficiency than heat pumps from renewable electricity for example. Plus the costs of infrastructure renewal right up to the last meters of pipework in every home.

Adding hydrogen compliance costs to all users for this poor-efficiency case is dubious. On the other hand, if this acts as a further deterrent to new gas installations (as a Pigouvian tax) then it may be acceptable, but should be declared candidly.

27 If made mandatory, can hydrogen-ready boilers match the cost of current natural gas boilers? Yes/No. Please provide evidence and reasoning to support your answer.

Don't know

Please expand here:

28 Do you anticipate the installation of a hydrogen-ready boiler to take the same time as a natural gas boiler replacement? Yes/No. Please expand on your views.

No

Please expand here:

Especially if the boiler the first H2 appliance in a home, it may force invasive changes such as pipework size and/or safety upgrades.

29 a) For early adopters of hydrogen-ready boilers, in advance of a Government mandate, can consumers expect to pay more for hydrogen-ready boilers? Yes/No. Please expand on your views.

Don't know

Please expand here:

29 b) What protection can be put in place to support consumers?

Please respond here:

30 Do you agree with the proposed basis for a definition for hydrogen-ready boilers? Yes/No. Please expand on your views.

Don't know

Please expand here:

31 a) Do you agree that domestic-scale hydrogen-ready boilers should continue to meet 92% ErP efficiency? Yes/No. Please expand on your views.

No

Please expand here:

Should at least match natural gas efficiencies given the lower thermodynamic efficiency and volumetric energy density of the fuel (eg current pipework may struggle already to supply energy fast enough after CH4 -> H2 change).

31 b) If ErP efficiency standards for gas boilers were raised to 93% or 94%, as set out in question 12, could hydrogen-ready boilers meet this increased standard, when operating using both natural gas and hydrogen? Yes/No. Please expand on your views.

Don't know

Please expand here:

32 Could hydrogen-ready boilers meet lower nitrogen oxide emission limits, when running on hydrogen gas? Yes/No. Please provide evidence and reasoning to support your answer.

Don't know

Please expand here:

33 Do you agree that any requirement for domestic gas boilers to be hydrogen-ready in 2026 should be made through an update to UK Ecodesign legislation? Yes/No. Please expand on your views.

Don't know

Please expand here:

34 Would you support increasing the scope of the hydrogen-ready mandate to include gas boilers with capacity up to 70kW in 2026 or at a later date? Yes/No. Please expand on your views.

Don't know

Please expand here:

35 Do you agree that hydrogen-ready boiler conversion kits should only be supplied when a hydrogen grid conversion of an area has been confirmed? Yes/No. Please expand on your views.

Don't know

Please expand here:

36 Do you agree that information regarding the location and model of the hydrogen-ready boiler needs to be collected in an easily accessible format for manufacturers and networks to ensure a smooth future hydrogen conversion and roll out? Yes/No. Please expand on your views.

Yes

Please expand here:

37 Building on question 18, we welcome views as to whether the change to hydrogen-ready boilers is likely to mean the government should look to strengthen the amount of regular maintenance required on boilers throughout their life span, given the need to ensure their fitness for hydrogen conversion can be preserved? Please expand on your views.

Please respond here:

Maintenance should be at least as stringent and regular as the strengthened fossil fuel appliance schedule I suggest above, especially given novel safety risks and lower whole-system thermodynamic efficiency.

38 Do you agree that installers should be required to complete a module in hydrogen training prior to being permitted to fit hydrogen-ready boilers? Yes/No. Please expand on your views.

Yes

Please expand here:

### Chapter 3: Hybrids

39 What is a reasonable minimum SSHEE value for hybrid heat pumps? Please provide evidence and reasoning to support your answer.

Please respond here:

40 What is a reasonable minimum seasonal heating output, from the heat pump, for a hybrid system? Please provide evidence and reasoning to support your answer.

Please respond here:

41 Do you think specific smart controls standards, that go beyond those for smart heat pumps, are needed for hybrid heating systems? Yes/No. Please expand on your views.

Yes

Please expand here:

Selective fuel switching based on current electricity grid intensity and stress would be an obvious benefit and the technology already exists, for free.

42 Do you think other measures are required to support low-carbon operation of hybrid heating systems? Please expand on your views.

Please respond here:

There underpinning data for dynamic responses as above would need to be provided on a more reliable and open basis than currently, eg mandated open access with high uptime/availability 24x7, especially when human operators are in short supply overnight.

43 What further measures can the government and industry take to support consumer choices and ensure hybrids are installed where most appropriate?

Please respond here:

Good low-politics (high-thermodynamics accuracy) public information campaigns and installer training.

44 Do you agree that installers of hybrid heating systems should develop all of the skills required to install standalone heat pumps, to be considered competent to install hybrid systems (excluding when installing a compact hybrid)? Yes/No. Please expand on your views.

Yes

Please expand here:

45 Do you think there is sufficient guidance available on ensuring that hybrid installations comply with appropriate regulations e.g., Gas Safety Regulations and Building Regulations? Yes/No. Please expand on your views.

Don't know

Please expand here:

46 Do you have suggestions on how the relevant standards regimes (e.g., Building Regulations, competent person schemes) should be expanded or altered to adequately cover hybrids systems? Please expand on your views.

Please respond here:

As there is a fossil fuel element, I suggest that all these and inspection and maintenance systems should be strengthened together as suggested above for gas.

47 Do you agree with our assessment of the significance of the flexibility benefits provided by the deployment of hybrids, in the time frame until 2028? Yes/No. Please expand on your views.

Yes

Please expand here:

Flexibility, peak shaving, demand shifting, pre-heating, etc, are likely to be very valuable over the life of any hybrid system installed in the next decade. Value may diminish after that as the gas grid atrophies.

48 Do you agree with our current understanding of risks and benefits of widespread deployment of hybrids from 2028? Yes/No. Please provide evidence and reasoning to support your answer

Yes

Please expand here:

Broadly.

49 What levels of energy efficiency and carbon-intensity may be achievable for compact hybrids or other hybrid technologies with further innovation and investment? Please provide evidence and reasoning to support your answer and please specify to which types of hybrid system your answer refers.

Please respond here:

50 What further technological developments can be expected from compact hybrid systems, or hybrids of other types, to support the widespread roll out of hybrids across the UK building stock? Please provide evidence and reasoning to support your answer and please specify to which types of hybrid system your answer refers.

Don't know

Please expand here:

51 What scale of cost reductions is possible for compact hybrids, or hybrids of other types, and what are the conditions required to deliver such cost reductions? Please provide evidence and reasoning to support your answer and please specify to which types of hybrid system your answer refers.

Please respond here:

## Equality Act

52 Do you have views on whether, and to what extent, the policy proposals here might disproportionately impact upon certain types of consumer, with a particular focus on those in groups with protected characteristics? Please provide evidence and reasoning to support your answer.

Please respond here:

The fuel poor (or their landlords) may find extra CAPEX of improved products too high.

Also the split-incentives of the increased CAPEX vs reduced OPEX often paid by different parties may amplify this.

But the fact remains that NOT reducing emissions has a socialised external cost. Policy should help fix this, eg through ECO 4 and beyond.

## End of consultation

53 Do you have any further views to make on our proposals that are not already captured in your responses to the previous consultation questions?

Please respond here:

None of this used be used as a lever by incumbent fossil-fuel retailers, pipeline operators or appliance manufacturers to delay electrification and retrofit.