



**BEIS**

**Independent Review of Net Zero**

**Call for Evidence on the government's approach to  
delivery its net zero target**

**Submission from the Chartered Institution of Building  
Services Engineers (CIBSE)**

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## **About the Chartered Institution of Building Services Engineers (CIBSE)**

The Chartered Institution of Building Services Engineers, CIBSE, is the professional engineering institution that exists to 'support the Science, Art and Practice of building services engineering, by providing our members and the public with first class information'. With its main office in London, CIBSE has over 20,000 members, with around 75% operating in the UK and many of the remainder in the Gulf, Hong Kong and Australasia. CIBSE accredits building services engineering courses in the UK and overseas. Some two thirds to three quarters of our members work under the jurisdiction of the Act, and many of the companies who employ them also work in England.

CIBSE is the sixth largest professional engineering Institution, and along with the Institution of Structural Engineers is the largest dedicated to engineering in the built environment. Our members have international experience and knowledge of life safety requirements in many other jurisdictions and work extensively on the systems that control the various engineering systems that keep buildings safe, comfortable and healthy.

CIBSE members design, install, operate, maintain and refurbish life safety and energy using systems installed in buildings. They include specialists in digital engineering, the Society of Digital Engineering, a Division of CIBSE, who specialise in digital information management.

CIBSE publishes Guidance and Codes providing best practice advice and internationally recognised as authoritative. These include the Digital Engineering Series of guidance and templates has been produced to assist the full built environment supply chain in tackling the practical challenges, specifically of the BIM processes, of digital engineering more widely.

The CIBSE Knowledge Portal makes our Guidance available online, where CIBSE members can access the guidance as a benefit of membership. The knowledge portal is the leading systematic engineering resource for the building services sector, used regularly by members to access the latest guidance material for the profession. Currently we have users in over 170 countries, demonstrating the world leading position of UK engineering expertise in this field.

CIBSE accredits a range of Continuing Professional Development modules which are offered by a variety of organisations in the sector to provide ongoing training and development to the sector. CIBSE is currently the only Professional Engineering Institution (PEIs) offering specific training on the Building Safety Act through a one day course, which is available to both members and non-members.

CIBSE operates a UKAS accredited energy assessor certification scheme for non domestic assessors of energy performance certificates, display energy certificates and air conditioning inspections and provides an online energy benchmarking tool for non domestic building energy use.

## EVIDENCE

### Summary

This is the Institution's formal response to the Call for Evidence on the government's approach to delivery its net zero target, as part of the Independent Review of Net Zero.

CIBSE supports and wholeheartedly endorses the evidence from the National Engineering Policy Centre (NEPC) of the Royal Academy of Engineering. This comprehensive submission is supported by a significant body of evidence which we recommend for detailed review by the Department. CIBSE is a member of the NEPC and contributed to the response.

### Further comments and evidence

1. In addition to the NEPC response there are several matters where we have additional comments that relate specifically to the built environment, especially the energy using systems in buildings.
2. The Call focuses on the costs of the net zero transition. It is important to consider the potential costs of not transitioning to a net zero carbon pathway. These are very likely to have at least as great an impact on growth, on society and on the environment.
3. It is vital to minimise uncertainty around future policy in order to make investment in net zero related measures more attractive and to reduce the cost of capital for investment in net zero measures. There is an urgent need for a clear national net zero carbon strategy with a particular emphasise on retrofitting the existing building stock, at scale and in line with the need to retrofit some 27-28 million buildings by 2050. Retrofitting involves renovation of existing buildings to make them net zero or ready to be net zero through the installation of appropriate heating and hot water systems at some future point. It therefore involves improvements to the building fabric that reduce demand for heating (and maintain required levels of ventilation to avoid damp, condensation and mould in winter and also to provide adequate cooling in summer without the need for energy using mechanical cooling systems. This underlines the need to reduce energy demand first, and then to satisfy demand using zero carbon supplies.
4. In relation to net zero and growth, there needs to be an explicit commitment by government that where it regulates in this area, it will enforce that regulation. Unenforced regulation is a tax on the lawabiding and compliant and a drag on growth, because it inflicts a competitive disadvantage on those who do comply. One very clear detailed example is Regulation 47 of the Building Regulations 2010 which enshrines in regulation that some 8 of the previous regulations cannot be enforced! If parliament does not think it worth enforcing them then why do they bother to make the regulations in the first place? The regulations that cannot be enforced relate to carbon calculations for energy performance certificates and tests of the airtightness and performance of completed buildings, as well as the regulation requiring commissioning of building services systems. Where these systems are not commissioned they will not work effectively and are very likely to be energy inefficient. The removal of Regulation 47 at the earliest opportunity should be a high priority.

5. And it is not just about enforcement of building regulations, but is also especially relevant in the online marketplace. Without market surveillance and enforcement of online supply of construction products, particularly to the domestic and DIY markets. Where product standards are not enforced legitimate suppliers are penalised. Carbon targets will be missed as non-conforming product will be available and cheaper, but with higher embodied and operational carbon. And there are safety concerns, particularly around electrical imports from some parts of the world. Low income households will be particularly vulnerable as they will be looking for the cheapest products, and will then be penalised financially by higher running costs. This will in turn lead to disillusionment at the cost of going green and consumer backlash, as is well known from the incandescent lamp phase out.

6. **Question 2 – Electricity systems.** The NEPC response has focussed on generation of energy connections into the grid. There are significant concerns about local network capacity and the ability to connect new renewable installations into the grid. District Network Operators are sometimes unable to accept new installations due to network capacity constraints. In order to maximise renewable generation the grid needs to be reinforced and there needs to be a degree of prioritisation to support new renewable facilities. If they cannot be connected in a timely way so as to deliver energy to the grid and generate revenue for those investing in them then they will not be built. This in turn undermines our efforts to improve energy security.

7. Related to this is Question 5 and the Academy response relating to significant use of eHGVs. There will be a need for significant electrical infrastructure upgrades to support eHGV charging requirements and these may potentially not be economically viable. We should not discount the need to transition to hydrogen fuel HGVs as a viable source instead, with hydrogen fuel hubs to support the transport network.

8. **Question 4 – action to reduce barriers to business investment in decarbonisation.** In addition to the grid capacity issues noted in the previous paragraph of this response, there is also limited supply of equipment for low or zero carbon systems. In addition, there is a lack of knowledge and skills in the design, installation and operation of low or zero carbon systems. These shortages lead to increased costs and threatens the viability of decarbonisation investments and business decisions to decarbonise. There is an urgent need to increase supply of both key equipment and people with the skills and knowledge now, so that costs are reduced, to support businesses in their longer term plans to invest in decarbonisation.

9. Coupled to the supply side and grid capacity issues noted above, there needs to be a clear commitment from government to the net zero programme. Government needs to rebuild confidence and trust that when decision are made they will be followed through, and not subject to rapid change. The Green Deal and more recently the Green Home Grant exercises did nothing to enhance investor confidence. The frequent changes in policy relating to insulation of existing homes undermine investment and are also very damaging to the skills base as the short term policy record acts to disincentive investment in upskilling the installer base as there is simply no confidence that the investment will deliver a reasonable return before there is another change of policy. There is an urgent need to build a consistent policy base to support progress. The delays in government policy relating to operational energy use in commercial properties has served to further undermine industry confidence in policy.

10. There needs to be a clear legislative pathway for decarbonisation between now and 2050, with clear targets and identifying decarbonisation pathways for each industry. Providing a clear plan and milestones will allow industries to invest in the upskilling and training required at each stage. It will stimulate growth and development in the Net Zero Carbon skills sectors in all industries.

11. Part of the plan must be a national building retrofit strategy with associated incentives and funding. Targets for retrofit-related decarbonisation should be set as part of the wider decarbonisation plan. The Academy's response clearly sets out the benefits of this. Retrofit in housing and infrastructure should not be London / South of England centric, as this will enforce current social, economic, technological and professional imbalances. There is a huge opportunity to drive renewal across the country.

12. There is a clear need to develop, train and equip a competent workforce to do all the work needed for the transition to net zero. It will take perhaps three to four years to train a person as a competent installer for the work required, perhaps even more if some of this work is to be done with government funding and the administration that would usually require. Before such workforce training can begin there also need to be suitable trainers and training facilities in suitable locations, especially for those working in trades such as electrical distribution and installation, solar installations and improvements to building fabric. The lack of competent designers and installers for net zero building technologies is a barrier to greater uptake of these these solutions today.

13. There is also a need for realistic funding streams to allow lower earning households to upgrade domestic building services to low carbon alternatives. Otherwise these households will be left behind with outdated technology that is increasingly difficult to maintain and expensive to operate. For many households current or previous funding options have required an unrealistic amount of capital input from those who have little to no money to spend on this. Low paid households cannot afford "environmental responsibility" in better economic circumstances, and whilst it is to be hoped that the current inflationary and energy cost pressures will ease in the near term, that will not materially increase the ability of low income households to spend money on net zero installations. There is also a significant behavioural challenge to persuade people to invest – ironically the current energy prices may be doing more than several decades of energy efficiency marketing have achieved.

14. Allied to this, government needs to engage with industry initiatives to drive decarbonisation in the commercial property stock and support the development of schemes such as NABERS UK and the emerging net zero carbon buildings standard.

15. Question 5, para 100. Reference to significant use of eHGV. We should not discount the need to transition to hydrogen fuel HGV as a viable source instead of electric HGV. There will be a need for significant electrical infrastructure upgrades to accommodate HGV site wide charging and potentially not economically viable. Hydrogen fuel hubs need to be considered to support the transportation network.

**Other Building Regulations issues**

16. Buildings and construction account for 40% of UK emissions. As we reduce the operational carbon then the embodied carbon becomes more significant. This can be phased, starting with mandatory measurement and disclosure of embodied carbon, but needs to follow a swift trajectory. The Industry proposal for a new Part to the Building Regulations dealing with the measurement of embodied carbon should be implemented without any more delay than is absolutely required by due process to introduce a new Part. as an initial step. The Environmental Audit Committee report provides ample evidence of the need, the industry consensus and the urgency. It may be that the Building Regulations function will need additional resource to address this due to the current focus on the implementation of the Building Safety Act, transfer of responsibility for Building Regulations to the new Regulator and the understandable and absolutely correct focus on improving fire and structural safety in the building stock.

17. Retrofit of existing buildings for zero carbon will need to be undertaken with full regard to fire and structural safety. There is an opportunity for the retrofit programme to aid the wider building safety agenda by providing an opportunity for a full structural appraisal of older multi-storey buildings to assess their capacity to be retrofitted and also to assess their residual life so as to avoid investing in retrofitting of buildings which it may not be economic to upgrade.

18. Building regulations as currently defined are not able to support the net zero agenda as they consider installed load and not actual use. This underrates or ignores many control technologies and potentially the use of AI to manage building energy use in the future. There is a need to regulate operational use of energy and to base that regulation on real energy passing through the meter, not on models. Alongside this there should be incentives for in-use building energy measurement and disclosure. Incentives should be tied to building occupancy to avoid accidentally rewarding unused buildings for efficient energy consumption. These incentives should be used to build capacity and capability ahead of regulated measurement and disclosure for all buildings. There is already an effective mechanism for this in Display Energy Certificates, which would benefit from being reviewed and updated at this time for wider application than just public buildings. A review of the DEC regime is also made easier by our departure from the EU.

19. There is a wider need for an environmental “golden thread” throughout the procurement and operational processes to ensure that products used perform as specified. The use of the “Equal and approved” approach in terms of environmental performance is currently unlikely to be effectively applied and there is a risk that product substitution will compromise environmental performance.

20. In recent years CIBSE has responded to a number of BEIS consultations related to net zero carbon and these are listed in Annex A to this response, as they remain relevant and, in some cases, the consultations have not received a formal government response, so we are reiterating these response, which represent significant effort by volunteers and staff.

**END**

Please do not hesitate to contact us for more information on this response.

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## ANNEX A

CIBSE Responses to low carbon and energy efficiency related consultations and calls for evidence. Since 2018 the Institution has invested significant charitable resources in responding to the following government consultations. There is significant material related to this call for evidence already been made available to government and will support the analysis of the Independent Review of Net Zero.

### 2022

[Net Zero and Heat and Buildings Strategies](#)

### 2021

[Heat network zoning](#)

[Competition law and co-operation for sustainability and zero carbon](#)

[UK Hydrogen Strategy](#)

[Energy Savings Opportunity Scheme \(ESOS\)](#)

[Role of biomass in achieving net zero](#)

[A performance-based policy framework in large commercial and industrial buildings](#)

[Heat in Buildings Strategy for Scotland](#)

[Future Buildings Standards: Building Regulations Part L & F, and overheating](#)

[National retrofit strategy](#)

[Review of Welsh Building Regulations Part L and F](#)

[Improving home energy performance through lenders](#)

[Green Heat Network Fund](#)

[Improving the energy performance of privately rented homes](#)

### 2020

[Greening the post-Covid recovery](#)

[Changes to the Energy Performance of Buildings Regulations](#)

[Energy Efficiency of Existing Homes](#)

[Future support for low carbon heat](#)

[Changes to the non-domestic Renewable Heat Incentive scheme](#)

[Heat networks: Building a market framework](#)

[The Future Homes Standard: Changes to Part L and F of the Building Regulations for new dwellings](#)

[Changes to the Standard Assessment Procedure \(SAP\)](#)

[Proposals for the minimum energy efficiency standard for non-domestic Private Rented Sector](#)

### 2019

[Net zero government inquiry](#)

[Decarbonising heating: Overview of current evidence](#)

[Energy efficiency inquiry](#)

[Draft Guidance on Streamlined Energy and Carbon Reporting](#)

### 2018

[Renewable Heat Incentive: Biomass combustion in urban areas](#)

[Technologies for meeting Clean Growth emissions reduction targets](#)

[Energy Performance Certificates for buildings](#)

[Helping businesses to improve the way they use energy](#)

[Scottish Building Regulations Review of Energy Standards](#)

[A future framework for heat in buildings](#)

[Heatwaves: Adapting to Climate Change](#)

[Amending the Private Rented Sector Energy Efficiency Regulations](#)

[Building a market for energy efficiency](#)

[Streamlined Energy and Carbon Reporting](#)