

Local Government and the Path to Net Zero: Call for Evidence: IET response

About the IET

The Institution of Engineering and Technology (IET) is one of the world's largest engineering institutions with over 168,000 members in 150 countries. Our aim is to inspire, inform and influence the global engineering community to engineer a better world. We are a diverse home across engineering and technology and share knowledge to engineer solutions to global challenges like climate change. With our roots in electrical engineering, we have been championing engineering solutions and the people who deliver them for 150 years.

The IET provides independent, impartial, and expert advice, spanning multiple sectors including Energy, the Built Environment, Transport, Manufacturing and Digital.

On behalf of the profession, the IET strives to inform and influence government on a wide range of engineering and technological issues. The organisation's membership spans a broad range of professional knowledge, and regularly offers unbiased, independent, evidence-based advice to policymakers via several channels. We believe that professional guidance, especially in highly technological areas, is critical to good policymaking.

The IET welcomes the opportunity to comment on options for Local Government and the path to Net Zero.

New homes: the Future Homes Standard and Future Buildings Standards

- ***Do the government's proposals for improving the energy efficiency of new homes by 2025 go far enough?***

We believe there the proposals should go further. We have outlined specific areas in the response below as well as in our institutional response to the Future Buildings Standards can be found at the following www.theiet.org/impact-society/government-policy-and-submissions/submissions-archive/.

It is essential that when establishing legislation for the energy efficiency of new homes we consider the impact of technology change, major projects and emerging trends on longer time scales; beyond the end of life of the engineered product. It is essential that the longer-term impacts and the engineering consequences are considered and that resilience and adaptation are built-in to be agile to the increasing complexity of our energy, built environment and transport systems.

- ***Is the government right to anticipate that heat pumps will become the primary heating technology for new homes?***

The improvement in operational efficiency through the adoption of highly efficient and sustainable technologies should be considered as the strapline to successfully delivering net zero or beyond targets. The energy equation of decarbonised primary energy coupled with the transfer and consumption of energy within a building must be targeted as the fundamental aspiration of the FBS. The commercial realities of transferring to alternative fuel types e.g. Fuels cells have prevented the advancement of such technologies, solar systems, district heating, hydrogen all have similar

commercial issues to be resolved if they are to be adopted. Reducing demand must be maintained as the key initial focus to minimise the cost of change and to achieve it progressively.

- ***Will the proposals address the performance gap between design intent and build quality of new homes?***

We believe there the proposals should go further. Reduced occupant consumption and volumetric allowances must be developed, accepted, and incorporated into the FBS. The energy performance gap is fundamentally driven by too high design allowances, poor occupation profiling and now the change in non-domestic (office) operations will be become a fundamental calculation consideration.

The commercial office will change to meet workplace challenges and a reduction in daily occupation can be expected. This will drive efficiency metrics, emission levels and determine respective future building /occupant consumption ratios.

Modelling should become a fundamental part of the design stages and into use. A single focused design statement should be produced and issued at each design stage, construction phase and handover milestone, and annually >5yrs operation.

The design and construction process are fundamental phases in determining the eventual building energy performance characteristic, therefore setting the design and selection of systems, assets and controls should become the sole responsibility of the designer and not the construction supply chain. Key also is to STOP the over design of systems such that redundant systems are installed within non-domestic buildings. Duplicate power supply, cooling or heating systems are not required within the ICT industrial revolution we are currently experiencing. Designing to “N” levels of system redundancy while maintaining functional operational uptime of the selected business output is realistically achievable and would provide significant embedded and operational carbon savings over the >50yr life expectancy of a building.

A clear “system configuration” clause within the FBS and subsequently building regulations would deliver real and tangible energy and emissions reductions. The clause - “that any installed system within a non-domestic building should only be arranged within a single “N” configured arrangement such as to minimize the construction and operational emissions impact from the building”.

Exceptions to this requirement being Life Safety systems; effluent management systems; heat reclaim systems; and management systems to effectively control the safe operation of the building and to safeguard building occupants. Building commissioning to be made a certification requirement from Building Control, and such certification to be made a statutory obligation to be maintained on a <5yr basis returning to baseline and determined through an improved calculation model.

- ***Is the government right to introduce revised transitional arrangements? In addition, the Committee seeks evidence on any other issues relating to either the Future Homes Standard or the Future Buildings Standards.***

Water heating is a mature market and therefore adoption could be deployed faster and directed specifically to available technology and energy types. The adoption of all electric heating within a decarbonised supply industry will need to be managed and the availability of supply arranged per development opportunity. This we believe can be achieved by 2025.

The heat pump and water industry however, are not yet ready to meet this challenge nor indeed are the many planning authorities to whom an understanding of the intricacies of the equipment to

which may need to be deployed. The commercial reality of this technology also needs to be marketed, as currently the cost vs. payback is not attractive in many cases. Any building regulatory change would therefore need to enforce the adoption of such technologies based upon calculated performance characteristics specific to the defined and categorised building types. A phased approach <2030 and >2030 aligned to the specific building categorisations would seem appropriate. This would allow suitable time to model the commercial realities against the defined building types and allow technology funding opportunities to be developed if appropriate. The commercial reality of heat recovery e.g. large cooling tower or air/air chiller installations should be taken into consideration.

Local government's path to net zero

- ***The Committee also seeks submissions on how else local government help the UK achieve “net zero” emissions by 2050, particularly in relation to improved and decarbonised public transport, waste management and decarbonising the electricity grid.***

We believe it is essential that local government must be supported with good engineering practices and knowledge in order to achieve “net zero”. Systems thinking and broad stakeholder engagement are key to ensuring success.

The IET have, through current and previous activities, established links to Local Authorities across the UK and regularly carry out workshops involving industry specialists and Local Authority representatives to ensure that current good engineering practices and knowledge is included into Local Authority decision making and planning. We also disseminate this information in publications, both hard copy and digital, and provide online supporting tools and learning resources to ensure that Local Authorities have access to the most up to date tools and information on good engineering practices. We believe that this approach would strongly benefit local government's ability to deliver solutions which work for the long-term.

We have previously published a local authority guide to emerging transport technology - www.theiet.org/impact-society/factfiles/transport-factfiles/local-authority-guide-to-emerging-transport-technology/ and our Codes and Guidance team are currently working with the Department for Transport and the Office for Zero Emissions Vehicles (OZEV) to develop **guidance for Electric Vehicle Charging Infrastructure for Local Authorities**.

Identifying solutions that satisfy the needs of Local Authorities across large cities, small towns, urban, and rural locations requires input from representatives from all of these. To facilitate this and encourage ownership from the whole target audience we held several workshops that involved representatives from every type of Local Authority and Electric Vehicle Charging systems technical specialists.

We will be issuing draft guidance soon for public comment and will invite all local authorities and technical experts to feedback comments and recommendations with final publication planned for October 2021. Once the content is published, we will provide additional supporting resources and knowledge is provided, to assist those with limited knowledge or experience, through the development of a support package made available on our Academy online services. This approach ensures that, regardless of current levels of knowledge, any Local Authority representative has all the support necessary to enable decisions on strategy and planning to be made confidently.

With our track record at the IET we would be happy to discuss our experiences providing guidance, publications and support materials to the Local Authorities and where we see the gaps and opportunities for greater support.

If you would like to discuss further anything in this response, please contact:

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