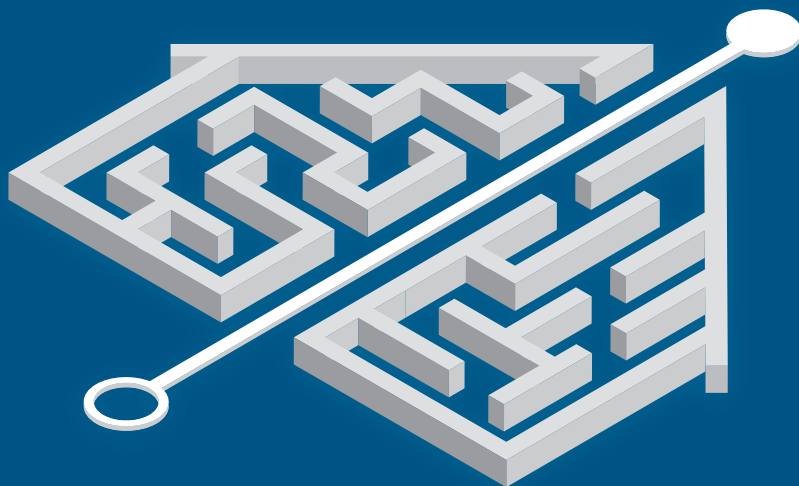


SUMMARY: THE PERFORMANCE GAP - END OF TERM REPORT

A summary of the Zero Carbon Hub's
End of Term report on Closing the Gap
between Design and As-Built Performance

July 2014



In recent years, the housebuilding industry and government have grown increasingly concerned over the potential gap between design and as-built energy performance.

It could undermine a building's vital role in delivering the national carbon reduction plan, present a reputational risk to the housebuilding industry and damage consumer confidence if energy bills are higher than anticipated.

In response, the Zero Carbon Hub was commissioned to review evidence for the significance of this gap, explore potential reasons for it and set out proposals to address these reasons. The Zero Carbon Hub were also asked to identify potential methods for industry to demonstrate progress in achieving the '2020 Ambition'.¹

Evidence and Prioritisation: With the involvement of 160 experts from across industry, potential issues creating the gap were identified, from across the design and delivery process. Next, detailed evidence was gathered, including questionnaires, a SAP² analysis, a study of existing literature and a Housebuilding Process Review, gathering primary evidence from live sites. This revealed a widespread Performance Gap, and was used to prioritise research on high impact issues with a strong evidence base, as well as identifying areas for further research. This identified three cross-cutting themes as primary concerns: unclear allocation of responsibility; inadequate communication of information; and a lack of understanding, knowledge and skills.

This document summarises the End of Term Report, which draws together project findings, building on the Interim Progress Report (July 2013), the Evidence Review Report (March 2014)³ and the proposed solutions and recommendations.

CLOSING THE PERFORMANCE GAP: THE 2020 AMBITION

From 2020, to be able to demonstrate that at least 90% of all new homes meet or perform better than the designed energy / carbon performance.

1. *The 2020 Ambition was set in February 2011 by a Zero Carbon Hub task group, in its recommendations to government on Carbon Compliance.*

2. *'Standard Assessment Procedure': the compliance tool used for energy performance of homes*

3. *Both reports are available from: www.zerocarbonhub.org*

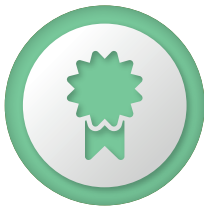
Areas for Change

A number of solutions, grouped into five key themes, are proposed to address, in particular, the priority issues identified in the Evidence Review Report. While some apply across the entire industry, others may only be relevant to certain sectors, professions or organisations.



Energy Literacy

There is limited industry understanding of as-built energy performance and the Performance Gap. This must be urgently addressed in the training of new entrants and the ongoing training of existing practitioners, including everyone from planners and designers to SAP assessors and contractors. An industry recognised card scheme is needed for people to demonstrate the necessary energy performance knowledge and skills.



Improving Quality Output

Design continuity is needed, by clearly assigning responsibility for championing energy performance, introducing 'gateways' and improving learning loops. A more robust industry-led approach to construction detailing is needed, linked to improved quality control. Manufacturers could improve product labelling, design and installation instructions; and procurement teams should prioritise energy performance when procuring materials and labour.



Demonstrating Performance

Existing diagnostic tests need to be made more useful, usable and consistent; and manufacturers should develop and adopt tests that better reflect their products' performance as 'systems' within actual buildings. A commercially viable way to demonstrate a building's as-built performance is urgently required as part of the '2020 Ambition'.



National Compliance Method and Regime

SAP is critical in assessing a building's energy and carbon performance, and the outputs need to be made more useful for developers, designers, statutory bodies and occupants. Housebuilders should sign a more comprehensive 'Product Specific Plain Language Compliance Report', and conventions to calculate fabric and building services inputs need to be reviewed and linked to qualification schemes.



Continued Evidence Gathering

Expansion of the current evidence gathering process is needed to increase understanding of the Performance Gap and disseminate findings and feedback to developers, industry and government. To drive the cultural change required, this communication needs to be specifically targeted to different audiences.

Next Steps

Industry recognises the challenge of the Performance Gap and the need to proactively address it. Rather than relying on increasingly onerous regulation, industry is very capable of developing innovative, commercially viable methods to demonstrate their success. This demands immediate co-ordinated, pan-industry activity to trigger a cultural shift, so that as-built performance becomes a core element of delivering high quality new housing. A strategically timed series of actions is needed by industry and government between now and 2020, as set out in the following summary Route Map.⁴

4. A detailed 'Route Map to 2020' is included in the full report

2014 2015 2016 2017 2018 2019 2020

Energy Literacy

Develop as-built energy performance course content for new and existing workforce

Launch industry 'energy certified' professionals & operatives scheme

Government requires 'energy certified' professionals & operatives on public land developments

As-built energy performance knowledge and skills embedded within everyday activities for professions and operatives

Improving Quality Output

Launch industry owned and managed Construction Details Scheme

Housebuilders and wider supply chain increasingly understand as-built performance; they innovate and demand more of their products and systems

Demonstrating Performance

Industry R&D to develop in-situ fabric and services systems tests, in use monitoring, whole house analysis and process controls

Industry agreed 'demonstrating performance' protocols

Launch government 'demonstrating performance' approvals process

National Compliance Method & Regime

Part L 2016 consultation includes changes to SAP, fabric / services calculations, qualified person schemes and verification procedures

Part L 2019 consultation includes refinements to conventions and procedures based on industry R&D activity

Continued Evidence Gathering & Dissemination

Government and European sourced funding support for industry R&D

Co-ordinated strategic research activities including roll out of Zero Carbon Hub 'Housebuilding Process Review' and creation of online Knowledge Hub

Headline Recommendations

It is clear that actions are needed by both government and industry to close the Performance Gap. Key recommendations are listed below, though it should be noted that because of the many cross-cutting themes, these are not exclusive and should be read in the context of the full report.



PRIORITY ACTIONS FOR INDUSTRY

To commit to providing the investment for:

- 1. Performance Assessment R&D:** Undertake the research and development necessary to create innovative testing, measurement and assessment techniques to understand the Performance Gap and develop commercially viable methods acceptable across industry to demonstrate performance.
- 2. Skills & Knowledge Development:** Ensure that as-built energy performance knowledge, including learning from ongoing research and development, is embedded into training and up-skilling for professionals and operatives.
- 3. Construction Details Scheme:** Develop an industry owned and maintained Construction Details Scheme providing 'assured' as-built energy performance for the most common major fabric junctions and systems.
- 4. Continued Evidence Gathering:** Support further evidence gathering processes and coordinated feedback to ensure accelerated continual improvement across all sectors of industry.



PRIORITY ACTIONS FOR GOVERNMENT

To accept the Zero Carbon Hub's recommendations to:

- 1. Signal Clear Direction:** Clearly indicate that, in place of immediate additional regulation, it expects the construction industry to act now and have put in place a number of measures to ensure that the Performance Gap is being addressed and to demonstrate this by 2020.
- 2. Stimulate Industry Investment:** Signal their long term intent, by funding research and development into testing, measurement and assessment techniques with immediate effect. Support the industry in providing the information necessary to quantify the Performance Gap and create the learning loops required to drive continuous improvement. Additionally, provide 'pump-prime' funding so that industry can develop a Construction Details Scheme.
- 3. Strengthen Compliance Regime:** Take action by 2016 on the Zero Carbon Hub recommended revisions to energy modelling practices, SAP processes and verification procedures. Put in place a strong regime to ensure that only suitably qualified persons carry out energy modelling and assessment.
- 4. Support Skills & Knowledge Development:** Accelerate the demand for industry developed qualification schemes by requiring energy certified operatives and professionals for developments on public land from 2017.

The recommendations detailed in this document are crucial in closing the Performance Gap and demonstrating the '2020 Ambition'. A concerted effort is also needed to implement the many detailed recommendations listed in the full End of Term Report.



The Zero Carbon Hub was established in 2008, as a non-profit organisation, to take day-to-day operational responsibility for achieving the government's target of delivering zero carbon homes in England from 2016. The Hub reports directly to the 2016 Taskforce.

Get in touch to find out how we can assist you

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