PERFORMANCE GAP:
INITIAL FINDINGS AND RECOMMENDATIONS

Ross Holleron
May 2014
Overview

- Introduction to the issues
- Why this is important to industry
- Current ZCH project
- Indications for the future
Evidence assembled for CC4TNH

Measured v Predicted whole-house fabric performance

Figure 1: Measured v Predicted whole house heat loss for 16 dwellings.
Closing the performance gap

- Carbon Compliance report, Recommendation 4a:
  
  *From 2020 the test results distribution should demonstrate that at least 90% of all dwellings would meet or perform better than the designed energy / carbon performance.*
  
  *Feb 2011*

- The journey:
  
  - 2013 -> 2016 -> 2020
Why it’s important to industry

- Improving quality throughout the process
- Improving occupant satisfaction
- Levelling the ‘playing field’
- Improving links between parts of industry to reduce overall costs
- An alternative to Regulation
The Performance Gap Project

CLOSING THE GAP BETWEEN DESIGN AND AS-BUILT PERFORMANCE
NEW HOMES
INTERIM PROGRESS REPORT
July 2013

CLOSING THE GAP BETWEEN DESIGN & AS-BUILT PERFORMANCE
Evidence Review Report
February 2014
Aims and objectives

- To improve the as-built performance of new homes and enable the 2020 ambition to be met
- Collate and develop all strands of work in this area

What are we trying to do?
- Find solutions that suit industry & government
- Preferably at no extra cost
**Work plan**

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<th>Activity</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
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<td>Launch of this report at EcoBuild</td>
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<td>Develop proposals to address ‘Priority For Action’ issues</td>
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<td>Develop a research programme for ‘Priority for Research’ Issues</td>
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<td>On-going activities (not yet funded) including further evidence gathering and development of solutions</td>
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Literature Review
- 100 reports / documents
- Academic, industry, laboratory and field trials

Housebuilding Process Review
- Interviews, Design Review & Construction Walkthrough
- SAP Process analysis and input sensitivity
- Looking for good practice as well as bad!
Evidence / Impact matrix
CROSS-CUTTING THEMES

- KNOWLEDGE & SKILLS
- RESPONSIBILITY
- COMMUNICATION

AS-BUILT PERFORMANCE - PRIORITY FOR ACTION

CONCEPT DESIGN & PLANNING

Limited understanding of impact of early design decisions on energy performance
PROJECT PROGRESSION

Developing commercially viable process controls towards 2020
Moving to solutions

SPECIALIST WORK GROUPS

Speculative Builders
Design and Build
Feedback and performance
Research programme
Feedback and performance

Thermographic imaging

- Internal & external images of the building fabric taken during the co-heating testing
- Carried out early in the morning to minimise distortion to surface temperatures

Observations

- Thermographic images reveal weaknesses in the build and design
- Analysis must be carried out by an experienced person
Feedback and performance

In-situ U-value measurement

- Heat flux testing carried out during co-heating test in one flat in each block
- Heat loss measured across north-facing external walls and also party walls

Observations

- The difference in measured and calculated U-values is similar to tests of this nature
- A party wall bypass was noted in both blocks
Feedback and performance

Co-heating observations

- Test carried out in April, at very end of what is considered the suitable period
- Active site, so difficult to maintain controlled temperature in adjacent units

Observations on results

- Measured heat loss was greater than calculated heat loss
- Result at higher end of scale of published test results

We need ‘inline’ and ‘end of line’ techniques
A reminder why it’s important to industry

- Improving quality throughout the process
- Improving occupant satisfaction
- Levelling the ‘playing field’
- Improving links between parts of industry to reduce overall costs
- An alternative to Regulation
THANK YOU

Ross Holleron, Zero Carbon Hub