TACKLING THE PERFORMANCE GAP IN NEW HOMES

Strategies for Action

Ecobuild 2015

3rd. March 2015
PURPOSE AND STRATEGIC OBJECTIVES

Facilitate the mainstream delivery of low and zero carbon homes working across boarders

- Provide leadership and create confidence
- Reduce risk
- Disseminate information
MOVING FORWARD TO A FABRIC FIRST APPROACH
THE EFFECTS OF CLIMATE CHANGE

Temperature change, °C

- Observations
- Medium-High emissions

1900 1950 2000 2050 2100
A housing stock fit for the future: Making home energy efficiency a national infrastructure priority

- Reduce carbon emissions
- Drive economic growth and create jobs
- Improve health and wellbeing
- Reduce energy bills and fuel poverty
- Increase energy security

BILL
CARBON CULPRITS

Culprits: most CO2 from buildings stems from heating. Houses are particularly energy-inefficient.
Government Policy

Zero Carbon 2016
The Zero Carbon Hierarchy – stepped progress towards a workable definition.

**Zero Carbon =**
- Solutions addressing the carbon emission reductions that are difficult to achieve on site

**Carbon Compliance =**
- On-site heat and power generation

**On-site low/zero carbon energy (and connected heat)**

**Energy efficiency**

**Allowable solutions**

95% Complete

75% Complete

5% Complete
Fabric Energy Efficiency

On-site LZC Heat and Power

Allowable Solutions

Zero carbon 2011 definition

Carbon Compliance: Zero kgCO₂/m²/year

Carbon Compliance: 10, 11 or 14* kgCO₂/m²/year

Fabric Energy Efficiency

2016 Zero Carbon Home

Code 5 Home

* Specific values recommended for particular dwelling types: Zero Carbon Hub 2011.
FABRIC ENERGY EFFICIENCY

Approx. 300 mm insulation
0.11 W/m²K
Target Carbon Compliance of **10 kg CO₂/m²/year** for detached homes

**11 kg CO₂/m²/year** for attached homes

**14 kg CO₂/m²/year** for apartments

Approach provides solutions for a range of practical situations:

- **On gas grid ‘PV’**
- **On gas grid ‘Fabric’**
- **Off gas grid Heat Pump**
- **Community Heat Network**
ALLOWABLE SOLUTIONS

- Investment in offsite LZC (financial return)
- Continue FABRIC FIRST & carbon compliance onsite
- Export LZC heat to existing stock
- Improve existing stock fabric
- Offsite LZC electricity with direct physical connection
- Efficient appliances and controls
- Section 106 credit

2016 Allowable solutions
UNDERSTANDING CONSUMER COSTS

Annual Household Energy Spend

<table>
<thead>
<tr>
<th>House Type</th>
<th>Victorian</th>
<th>New Build</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-bed Detached House</td>
<td>£2,379</td>
<td>£1,187</td>
<td>£504</td>
</tr>
<tr>
<td>3-bed Semi-detached House</td>
<td>£1,621</td>
<td>£888</td>
<td>£361</td>
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<tr>
<td>3-bed Mid-terrace House</td>
<td>£1,388</td>
<td>£864</td>
<td>£405</td>
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<tr>
<td>1-bed Ground Floor Flat</td>
<td>£915</td>
<td>£489</td>
<td>£346</td>
</tr>
</tbody>
</table>

Victorian with modern day improvements
New Build built to 2006 regulations
Future 2016 aspirations
ZCH Overheating Project
OAPs 'could die in Green Deal homes': Energy saving scheme could leave homes dangerously overheated

Temperatures could reach dangerous levels in some homes fitted with energy-saving measures like insulation, installed under Green Deal scheme.

Point of scheme was to save winter fuel bills and protect the environment.

But experts are warning that heat that builds up in the day does not easily dissipate at night and leads to poor air quality, which could kill.

The elderly and infirm as well as people living on the top floor of 1960s tower blocks and modern detached houses are most at risk.
THE PERFORMANCE GAP

Mending the Gap
CLOSING THE PERFORMANCE GAP

Carbon Compliance report (Feb 2011)

- Recommendation 1:
  *The Carbon Compliance limit should apply to ‘built’ performance*

- 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.*

- The journey:
  - 2013 > 2016 > 2020
INDUSTRY RECOMMENDATIONS
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 methodologies acceptable across industry for 'demonstrating performance'.

2 - SKILLS AND 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 trades.
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.
ROUTE MAP TO 2020

The challenge ahead
Thankyou !

Stand N7090