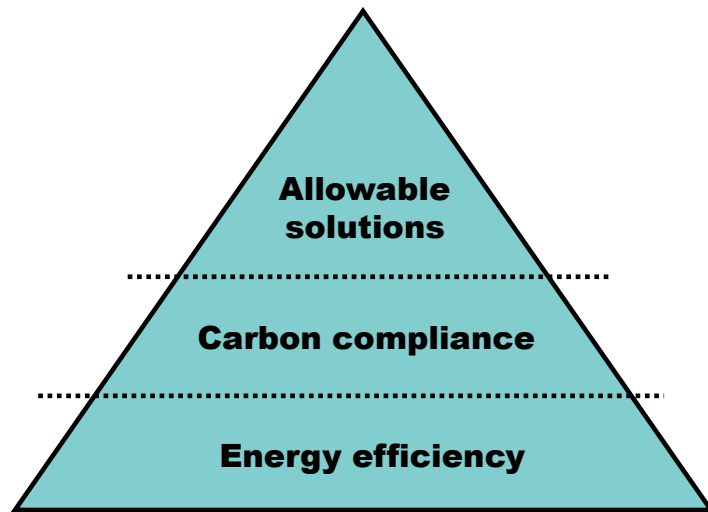


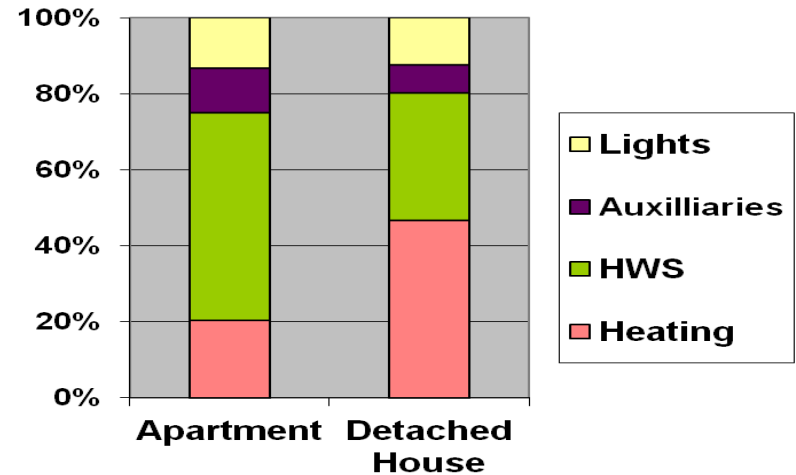
# Building Regulations consultation package Part L proposals

**Paul DeCort**  
**DCLG**  
**2 March 2012**

- Part L Policy Drivers
- New Homes
  - Targets
  - Guidance
  - Compliance & Performance
- Existing Homes
  - Standards
  - Consequential Improvements
- Non Domestic Buildings
- Timetable
- Responding to the Consultation
- Questions



**Relative proportion of end-use energy demands**



- CCA targets, UK Carbon Plan, Greenest Government Ever
- Zero Carbon, commitment to continuous improvements in the energy efficiency of new housing
- European requirements – EPBD Nearly Zero Energy Buildings
- Flexible performance based approach that reflects challenge of improving different types of building

Need new homes and important to cut energy/carbon footprint from them but most homes in 2050 will be existing i.e. pre Part L 2010



Source: "energy efficiency in new and existing buildings: comparative costs and CO2 savings", BRE Trust

Considerable potential remains for cost effective loft and CWI

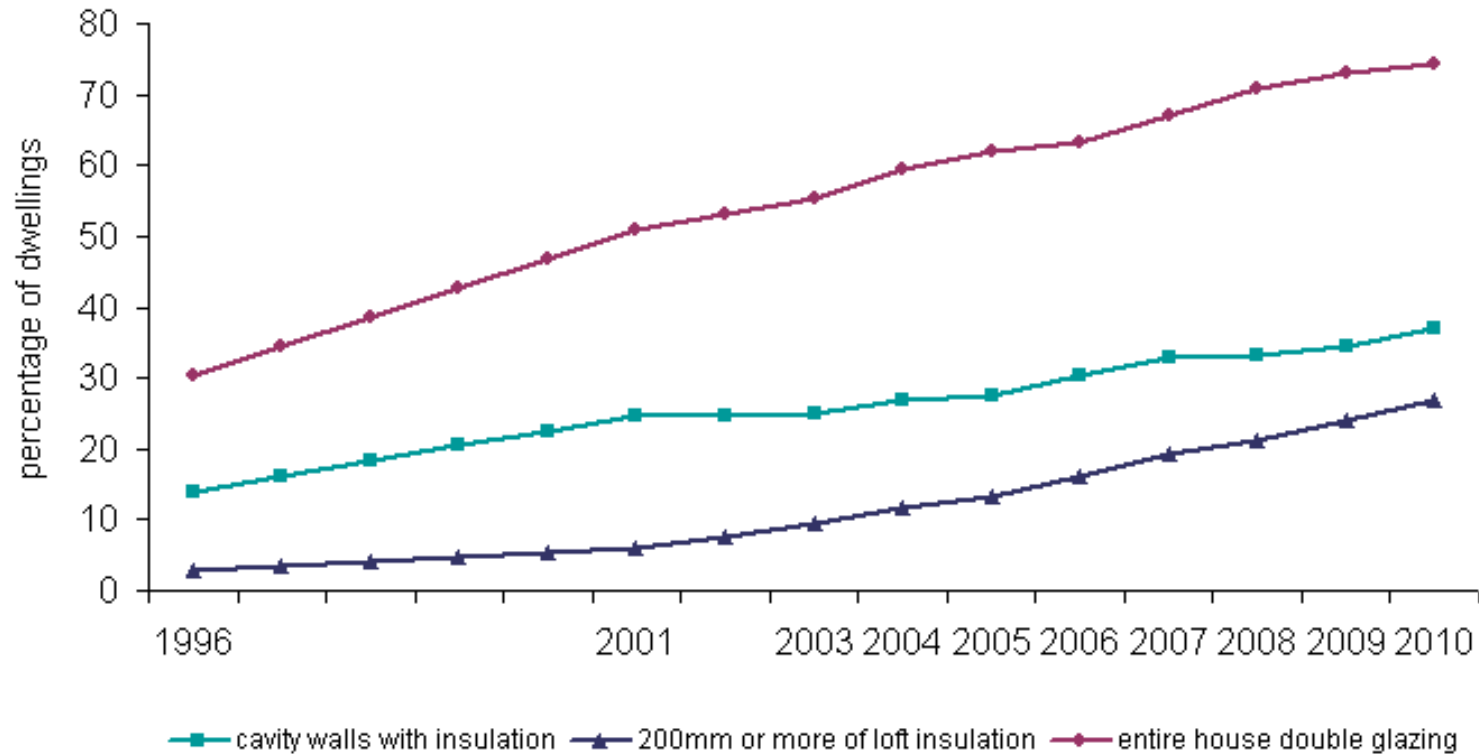


Table 12, Survey of English Housing Headline Report 2010-11

# Part L Consultation Summary

## Aims

- Take meaningful step towards **zero carbon**, 2016 (homes) and 2019 (non-domestic) whilst respecting deregulatory and growth agendas
- Incentivise **quality assurance processes** to help ensure as-designed performance of new homes is delivered on completion
- Explore the dynamics between the **Green Deal** and **consequential improvements** to drive retrofit of existing stock

## Process

- Part of the wider Building Regulations consultation package
- Proposals draw heavily on input from industry working groups, the Hub and BRAC over summer 2011. Contributions have been (and will continue to be) vital to the process
- 12 week consultation on most elements, but accelerated timetable (8 weeks) for elements which link to DECC's Green Deal timetable

## Part L – New Homes Targets

- Part L 2010 CO<sub>2</sub> targets based on a **notional** dwelling (same shape and size as actual dwelling to 2002 elemental standards) plus a common % improvement for all home types
- For Part L 2013 propose CO<sub>2</sub> targets differing by home type based upon a **concurrent** notional dwelling (**2013 recipe**)
- In addition to the 2013 CO<sub>2</sub> target also propose to introduce a specific and **regulatory** energy target
- Propose that the energy target would be based upon the Fabric Energy Efficiency Standard (**FEES**) as recommended by the Zero Carbon Hub
- FEES is an energy demand limit in kWh/m<sup>2</sup>/year covering space heating and cooling
- Propose to retain elemental backstops in guidance as achieving FEES could be dependant on high performance of one specific fabric feature

### Options for 2013 CO<sub>2</sub> targets:

- An **8% aggregate** improvement, with some homes delivering less than 8% and some more, but with 8% delivered overall across the new build mix
- A **26% aggregate** improvement representing approximately a **half way** point between Part L 2010 and 2016 on-site carbon compliance levels as recommended by the Zero Carbon Hub

### Options for 2013 Energy Targets:

- Full FEES: 39 kWh/m<sup>2</sup>/yr for apartments and mid-terrace and 46 kWh/m<sup>2</sup>/yr for end-terrace, semi-detached and attached
- Interim FEE: 43 and 52 kWh/m<sup>2</sup>/yr



## Part L – New Homes Targets

- Government's ***preferred*** option for 2013 CO<sub>2</sub> target is **8% on aggregate** – equivalent to full **'FEES plus efficient services'**
- This takes a meaningful step towards Zero Carbon whilst minimising the cost impact upon housebuilders
- However no preference is expressed for 2013 energy target:
  - Our modelling shows full FEES 39/46 to be most cost effective way to deliver 8% on aggregate target
  - Interim FEE 43/52 offers more design flexibility and some builders finding it challenging to meet full FEES for some dwelling types
- The way users interface with SAP compliance tools will be as currently

## Part L: New Homes Targets

	2010	2013 'FEES plus services' option and hybrid approach (preferred option)	2013 'Halfway point' option and full absolute approach
<b>Metric for <u>regulatory</u> CO<sub>2</sub> target</b>	Relative improvement on 2002 notional building (same shape and size as actual building)	Concurrent notional building (same shape and size as actual building)	Absolute kgCO <sub>2</sub> /m <sup>2</sup> /yr
<b>Metric for <u>regulatory</u> energy target</b>	No energy target	Absolute kWh/m <sup>2</sup> /yr	Absolute kWh/m <sup>2</sup> /yr
<b>Set the <u>regulatory</u> energy target at...</b>		'Full FEES' levels of 39/46 kWh/m <sup>2</sup> /year	'Full FEES' levels of 39/46 kWh/m <sup>2</sup> /year
<b>...or...</b>	n/a	'Interim FEES' levels of 43/52 kWh/m <sup>2</sup> /year	'Interim FEES' levels of 43/52 kWh/m <sup>2</sup> /year
<b>Elemental backstops in guidance?</b>	Yes	Yes	Yes

## Part L: New Homes Targets

### % Improvement over Part L 2010 by Dwelling Type

	Mid terrace house	End of terrace house	Detached House	4-storey apartment block	4-storey apartment block	Aggregate % reduction from 2010 Lifetime CO <sub>2</sub> savings
<b>'FEES plus efficient services'</b>	<b>4%</b>	<b>7%</b>	<b>15%</b>	<b>0%</b>	<b>12%</b>	<b>8%</b> <b>7 MtCO<sub>2</sub></b>
<b>'Half-way point' rounded</b>	26%	28%	29%	19%	28%	26% 11 MtCO <sub>2</sub>
<i>Fuel assumed</i>	<i>Gas</i>	<i>Gas</i>	<i>Gas</i>	<i>Gas</i>	<i>Electricity<sup>1</sup></i>	<i>Mix</i>

<sup>1</sup> If the fuel factor was retained at 2010 levels these figures would be as for the gas heated 4 storey block.

## Part L: New Homes Estimated Incremental Capital Costs

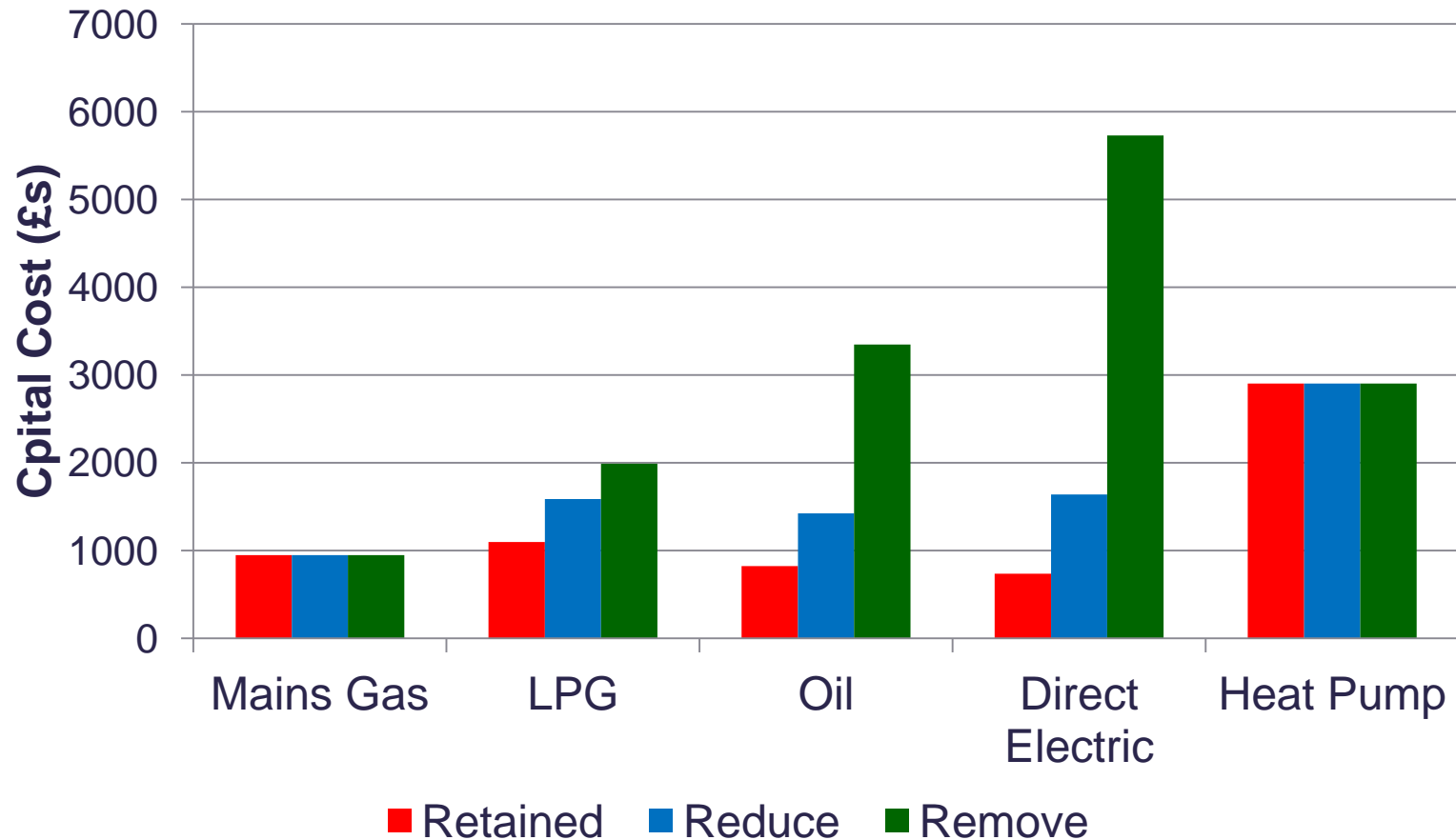
	Mid terrace house	End of terrace house	Detached house	4-storey apartment block	Average cost per dwelling
FEES plus efficient services	<b>£294</b>	<b>£755</b>	<b>£2,622</b>	<b>£248</b>	<b>£795</b>
Half-way point	£2,517	£3,131	£4,910	£1,959	£2,866

Note: Estimated costs from impact assessment based upon gas heating

## Part L: New Homes Fuel Factor

- CO<sub>2</sub> targets are set for a new home with a mains gas supply
- The fuel factor provides partial relaxation of the CO<sub>2</sub> target for off-gas developments
- Reducing or removing the fuel factor would aid transition to zero carbon and drive market in low-carbon heating systems
- But it does mean some increase in build costs for off-gas and implications for overall burden on housebuilders
- Consultation considers retain/reduce/remove options and the impact is clearly set out in the impact assessment
- No firm preference expressed – views welcomed

## Impact of amending the fuel factor (FEES plus efficient services, end-terrace home)



- Full draft of ADL1A in new single column format
- Tables of changes to Domestic Building Services Compliance Guide

### Compliance Criteria

- DER $\leq$ TER and Dwelling Fabric Energy Efficiency (DFEE) < Target Fabric Energy Efficiency (TFEE)
- Limits on design flexibility
- Limiting the effects of heat gains in summer
- Quality of construction & commissioning
- Providing information / O&M instructions - Quick Start Guide easy to understand format including locations and how to operate building services – example provided

## New Homes Criteria 1 changes

- An example specification that complies with the preferred “FEES plus Efficient Services” CO<sub>2</sub> target is provided here.
- A FEES energy target would ensure learning to build to full FEES now.
- An interim FEES energy target would provide greater flexibility for balancing fabric and services efficiency. However, at current costs including PV say is unlikely to be the most cost-effective option.

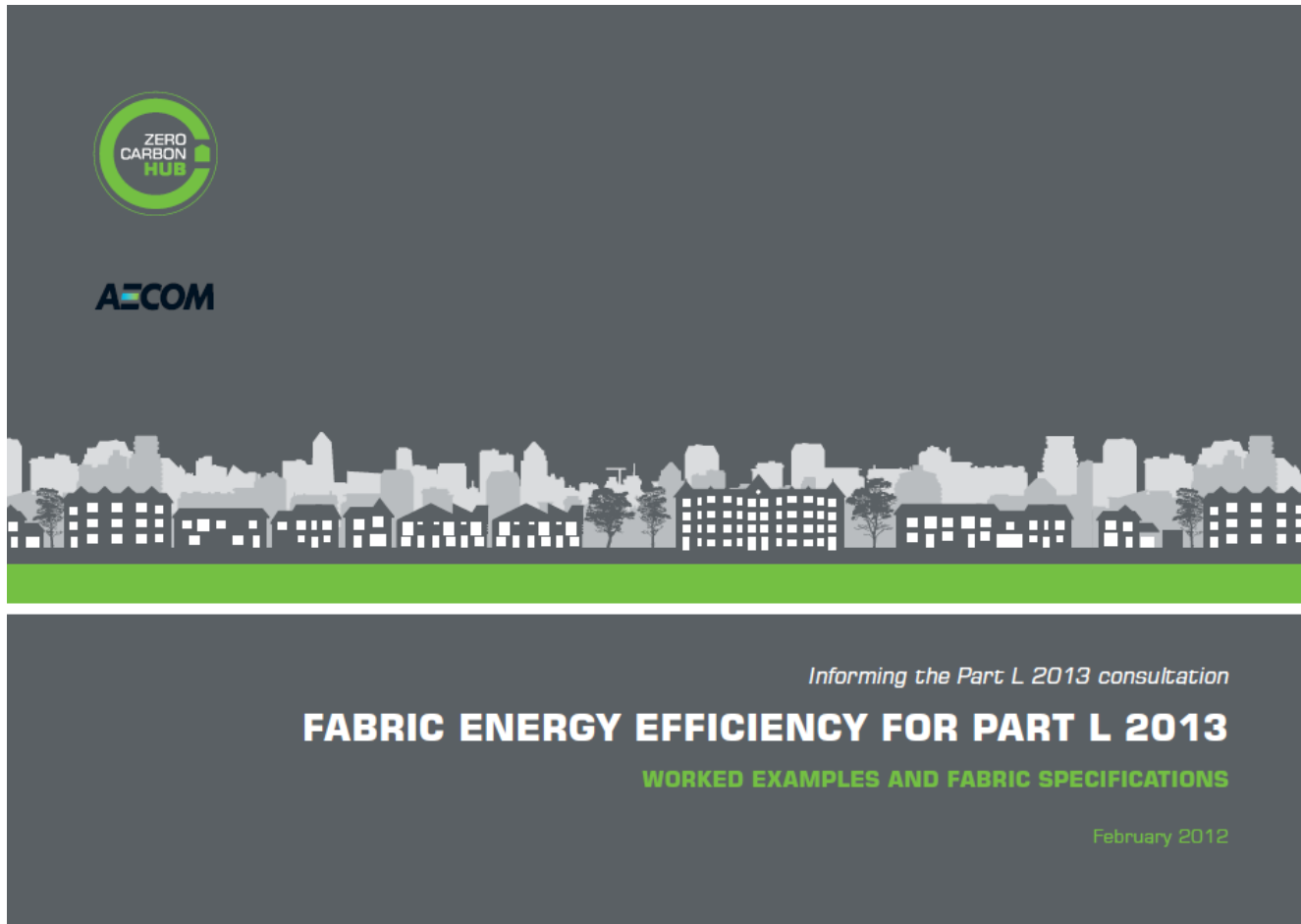
Semi-Detached dwelling, 76m <sup>2</sup>	
External Wall U-value (W/m <sup>2</sup> K)	0.18
Party Wall U-value (W/m <sup>2</sup> K)	0
Ground Floor U-value (W/m <sup>2</sup> K)	0.13
Roof U-value (W/m <sup>2</sup> K)	0.13
Windows U-value (W/m <sup>2</sup> K)	1.4
Doors U-value (W/m <sup>2</sup> K)	1.0
Air permeability (m <sup>3</sup> /hr/m <sup>2</sup> )	5.0
Thermal bridging (W/m <sup>2</sup> K)	0.051
Low Energy Lighting (%)	100%
Gas boiler efficiency (%)	90%



- Propose to keep fabric elemental backstops
  - Achieving the FEE standard could be very dependant on the high performance of one specific feature of fabric design
  - If this feature was to perform less well than expected, it would significantly impact on performance
- Aligns more closely with backstops in ADL1B
- For consultees:
  - Should elemental fabric backstops be kept?
  - Are the revised values appropriate?
- Backstops for building services are set out in Domestic Building Services Compliance Guide

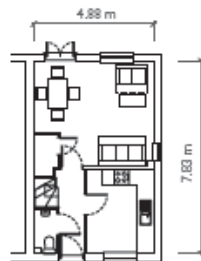
Limiting fabric parameters	
Roof	0.16 W/m <sup>2</sup> .K
Wall	0.20 W/m <sup>2</sup> .K
Floor	0.18 W/m <sup>2</sup> .K
Party wall	0.20 W/m <sup>2</sup> .K
Windows, doors	1.60 W/m <sup>2</sup> .K
Air permeability	10 m <sup>3</sup> /h.m <sup>2</sup>

# Full FEES & Interim FEE Worked Examples



# Full FEES & Interim FEE Worked Examples

	Interim FEE (52 kWh/m <sup>2</sup> /yr)		Full FEES (46 kWh/m <sup>2</sup> /yr)	
	Example 1	Example 2	Example 1	Example 2
External wall U-value (W/m <sup>2</sup> K)	0.18	0.22	0.18	0.20
Party Wall U-value (W/m <sup>2</sup> K)	0.00	0.00	0.00	0.00
Ground floor U-value (W/m <sup>2</sup> K)	0.15	0.20	0.13	0.18
Roof U-value (W/m <sup>2</sup> K)	0.13	0.18	0.13	0.16
Windows U-value (W/m <sup>2</sup> K)	1.4 (double glazed)	1.4 (double glazed)	1.4 (double glazed)	1.2 (double glazed)
Doors U-value (W/m <sup>2</sup> K)	1.6	1.4	1.0	1.0
Air permeability (m <sup>3</sup> /hr/m <sup>2</sup> @ 50Pa)	5.1	5.0	5.0	4.8
Calculated thermal bridging (W/m <sup>2</sup> K)	0.088 (ACD)	0.051 (ECD)	0.051 (ECD)	0.04
DFEE (kWh/m <sup>2</sup> /yr)	51.94	51.96	45.95	45.93



Ground floor plan



First floor plan

Gross internal area: 76.32 m<sup>2</sup>  
 Ground floor area: 38.16 m<sup>2</sup>  
 Roof area: 38.16 m<sup>2</sup>  
 Zone 1 area: 19.74 m<sup>2</sup>  
 External wall area: 89.65 m<sup>2</sup>  
 Party wall area: 39.92 m<sup>2</sup>  
 Opening area: 15.48 m<sup>2</sup>

Average internal heights:  
 Ground floor: 2.40 m  
 First floor: 2.70 m

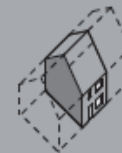
## House type 2: Semi-detached / end-terrace house

The semi-detached / end-terrace house has three bedrooms and an internal floor area of 76 m<sup>2</sup>.

For examples of averaging across a terrace, please refer to page 7.



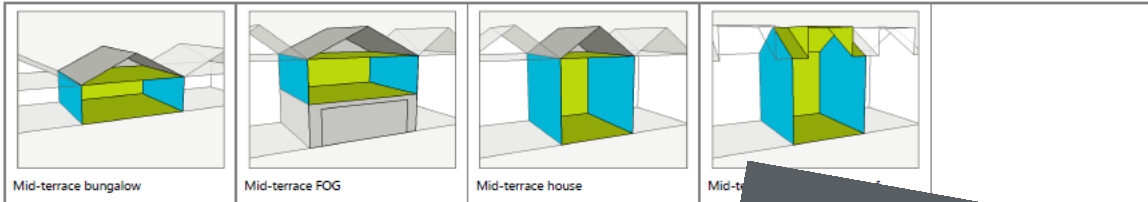
House type 2:  
semi-detached house



# Dwelling type classification

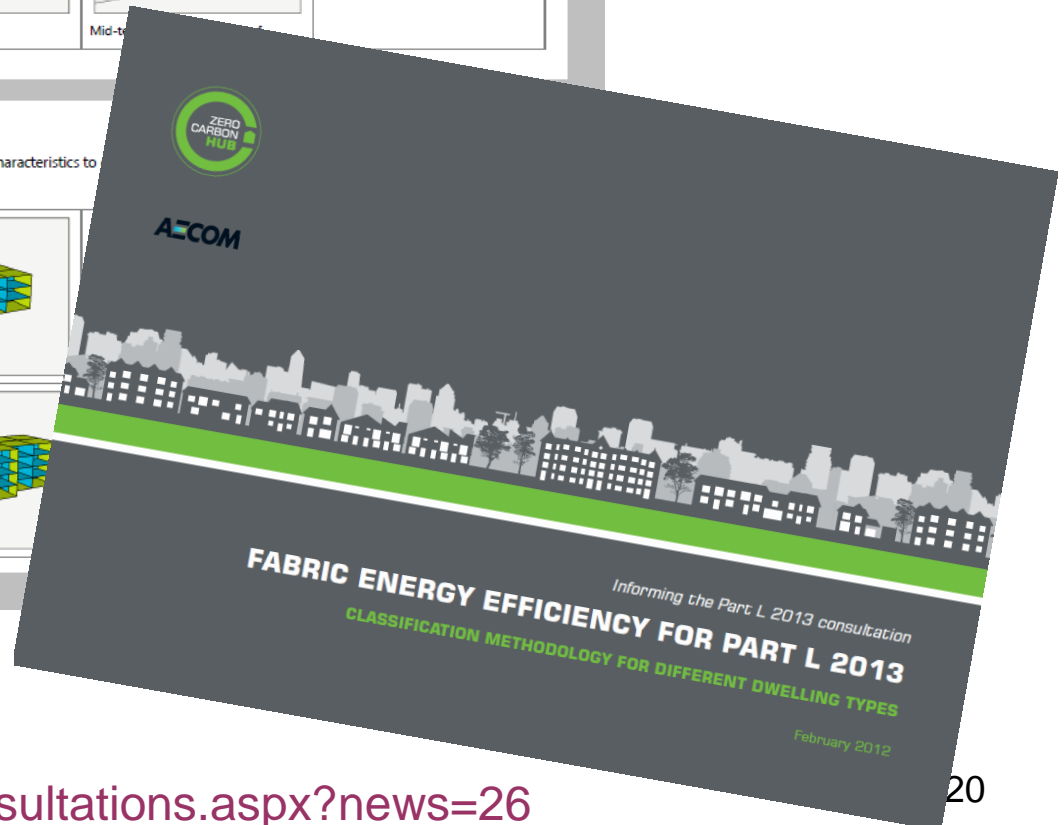
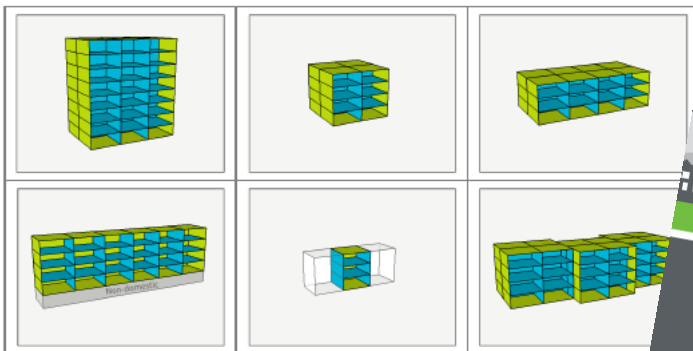
## Lower limit – Mid-terrace houses & FOGs (43 for 'Interim FEE'; 39 for 'Full FEES')

This applies to mid-terrace dwellings where all side walls are party walls. Refer to Sliding Scale section for all other cases.



## Lower limit – Apartments (43 for 'Interim FEE'; 39 for 'Full FEES')

This applies to all apartment blocks except for those small blocks which have similar heat-loss characteristics to Apartments).



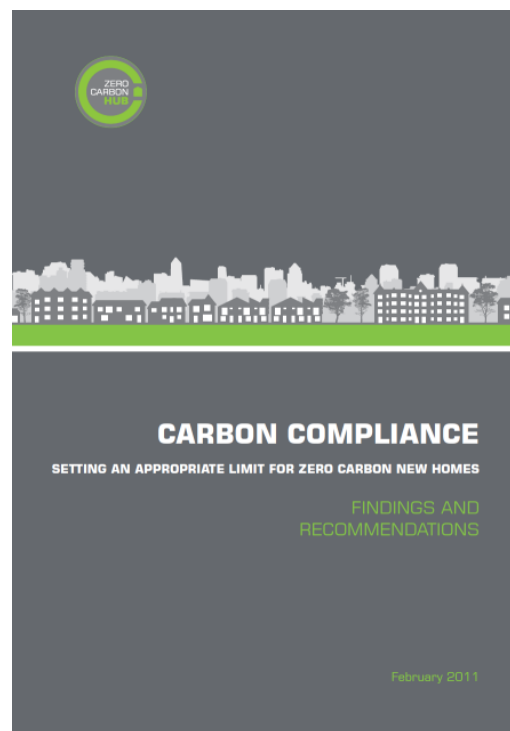
- DECC SAP2012 and CO<sub>2</sub> factor consultation (separate presentation)  
[www.bre.co.uk/sap2012](http://www.bre.co.uk/sap2012) - closing date 28 March
- **cSAP** provided to help consultees assess the impact and inform consultation response and is available for download from:  
<http://www.2013ncm.bre.co.uk/>

## Criterion 1: Predicted CO<sub>2</sub> emission from proposed dwelling does not exceed the target

Dwelling Emission Rate (DER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	15.19		
Emission rate from notional building, kgCO <sub>2</sub> /m <sup>2</sup> .annum	17.65		
Target Emission Rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	Fuel Factor Consultation Options		
Target CO <sub>2</sub> Emissions Equation Consultation Options	Full	Reduced	None
FEES + efficient services approach	25.87	21.25	17.65
Half-way point absolute target approach	18.93	15.6	13

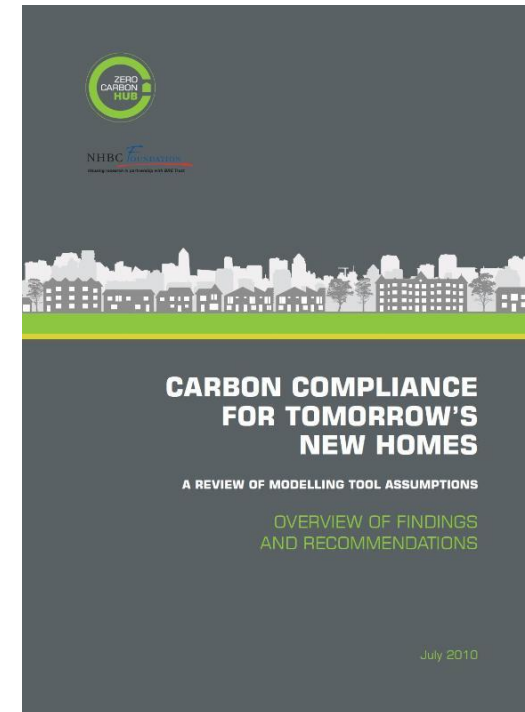
## Part L: New Homes Compliance & Performance

- Recent research indicates the risks of wide spread discrepancy between **'as designed'** and **'as built'** performance
- Government consider the risks are such that action needs to start now if we are to achieve Zero Carbon Hub industry group recommended **90% 'as designed' performance from 2020**
- Consultation proposes use of the regulations to encourage industry to develop and adopt a quality assurance (QA) approach for design and construction of new homes
- Potentially in the form of BSI Publicly Available Specification (**PAS**)
- Demonstrating equivalent QA has been adopted would be an option for those who don't want to follow PAS
- A **3% confidence factor** on the CO<sub>2</sub> compliance target would be applied where no QA is demonstrated



- What a PAS or similar might include:
  - Quality assurance of design and construction processes
  - Testing (in production and post production)
  - Sample whole house testing ?
  - Accreditation ?
  - Data collection and feedback ?
- Want something that delivers/demonstrates improved compliance/performance but not overly bureaucratic/burdensome
- Cross industry / Government group to develop a PAS or alternative framework – who?

and what about SAP ??



- Tighten **performance standards** where cost effective
- Revised standards for new thermal elements & controlled fittings

	Part L 2010	Proposed for 2013
Walls	0.28	0.20
Floors	0.22	0.17
Roofs	0.16/0.18	0.15
Windows	C/1.6	B/1.4
Doorsets	1.8	D/1.4

- Controlled Services: revised standards and guidance in Domestic Building Services Compliance Guide
- 9 MtCO<sub>2</sub> in lifetime savings (by 2022)



# Part L: Consequential Improvements

## Approach

- Notifiable building work
- Proportionate requirements
- Green Deal
- “Technically, functionally and economically feasible”

## Part L: Consequential Improvements

### Triggers for homes



Boiler replacement

Replacement windows >50%

### Homes below 1000m<sup>2</sup>

Extensions

Increase habitable area – loft conversions, integral garage conversions



## Required measures for homes

### Extensions etc..

Higher value works

Flexibility within list of SAP / Green Deal eligible measures + Green

Cap requirement at 10 % of principal works



### Boilers and Windows

Identified specific improvements

Focus on relatively inexpensive, standard energy efficiency measures

- loft insulation
- cavity wall insulation,
- hot water cylinder jacket
- draught proofing

## Making the assessment

A number of options

- **Green Deal** assessment – combines Energy Performance Certificate (EPC) with occupancy assessment to generate package of measures meet “**Golden Rule**”
- Consult valid **EPC** – include recommendations on cost effective energy efficiency improvements
- Discuss with builder and liaise with Building Control Body (extensions)

Supported by Approved Documents with information available via DirectGov, Planning Portal, Green Deal Advice Service and LAs

## Implementation

- All requirements come into force from October 2012, or
- Domestic extensions & increase habitable space only from October 2012 with all other requirements including non-domestic from April 2014
- Government preference for **phased approach**, estimated to achieve:
  - 1m homes installing energy efficiency measures in 2015
  - Average annual savings of £115 – upper range £440
  - 130 MtCO<sub>2</sub> in lifetime savings (by 2022)
  - £11.66bn net benefit

## Part L: Non-domestic buildings

### New Non Domestic

- Move towards **zero carbon** – similar principles as for new homes - though longer trajectory to 2019
- Two options for 2013
  - 11% improvement
  - 20% improvement – *the preferred option*
- Metrics to stay the same for 2013 i.e. based on **'aggregate'** approach differentiated by building type – reflects diversity

### Existing Non Domestic

- Revised standards for new thermal elements & controlled fittings
- Controlled Services: revised standards and guidance in Non Domestic Building Services Compliance Guide
- Consequential improvements upon extensions <1000m<sup>2</sup> and replacement services? from April 2014

We are proposing that changes come into force on:

- Domestic consequential improvements (extensions) – October 2012
- Deregulatory changes – April 2013
- Regulatory changes – October 2013 (with aim of having published 6 months before this)
- Remaining domestic and non-domestic consequential improvements – April 2014

Also signalled that we would consider timings and **transitional arrangements** as part of the consultation eg to minimise the impacts on small businesses

## Consultation timetable

- Consultation closes 27 April
- Part L consequential improvements / Green Deal aspect by 27 March

## How to respond

- Consultation documents including an **easier to read summary**, impact assessments, supporting research and response forms available on DCLG website (Future of Building Regulations page):  
<http://www.communities.gov.uk/planningandbuilding/buildingregulations/buildingregulationschanges/>
- Email responses – preferably on standard form – to:  
[building.regulations@communities.gsi.gov.uk](mailto:building.regulations@communities.gsi.gov.uk)



**THANK YOU**

**Any Questions**