

# Wales Building Regulations 2013 Part L1

AECOM

24<sup>th</sup> November 2011



### Format of the Day

- Context and scope of work - *David Ross / Alison Crompton*
- Housing characteristics in Wales – *Simon Hartley*
- Approach to modelling – *Tom Lelyveld*
- Findings to-date – *Jim Proctor / Tom Lelyveld*
- Approach to existing dwellings – *David Ross*
- Transition, compliance and enforcement – *Alison Crompton*
- *Group Session*
- Programme – *Simon Hartley*

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## Wales Part L – Context and scope of work

Alison Crompton, AECOM

David Ross, AECOM



### Content

- Scoping study
- Interaction with policy work in England

### Scoping study

- First stage of AECOM's support – completed April 2011
- Building on our experience of delivering support to DCLG for Part L in England and Wales for 3 updates
- Wales first experience of developing the Building Regulations
- DCLG updates will now apply only to England
- DECC continues to lead on moving the UK towards a low carbon economy

### Scoping study

- Identified relevant policies
- Set out the tasks required:
  - Modelling for new dwellings and targets for existing dwellings (informed by modelling)
  - Targets for new and existing non-domestic buildings
  - Compliance issues
  - Procedural issues – targets, stakeholder engagement, consultation & analysis, approvals, regulations, guidance
  - Developing a Regulatory Impact Assessment - cost benefit assessment

### Scoping study

- Current policy for **new build dwellings**:
  - Part L 2010 requires 25% improvement on Part L 2006
  - National planning policy - 8% improvement on Part L
- Forthcoming policy for new build dwellings announced in July 2010:
  - a 55% improvement on CO<sub>2</sub> emissions over Part L 2006
- Forthcoming policy was in good agreement with the zero carbon homes recommendations from the Zero Carbon Hub to DCLG:
  - Improvement on Part L 2006:
    - 60% for detached houses
    - 56% for other houses
    - 44% for low rise apartment blocks – up to & including 4 storeys
- Good agreement on ways to achieve this too

### Scoping study

- Some differences were also identified:
  - WG to introduce standards in 2013, ZCH recommendation was for 2016
  - ZCH recommended as “as built” standard, Wales to follow the current Building Regulations approach – design stage assessment plus some on-site testing and a requirement for commissioning
- WG would also consider whether targets should be met on a dwelling by dwelling basis or across a development and dwellings off the gas grid
- Early introductory date has an impact on assumed carbon factors and Feed-in-tariffs
- More modelling would need to be done for Wales

### Scoping study

- In a number of key areas, WG has decided to adopt the same approach as DCLG, for example:
- The national calculation methodology (SAP for dwellings, SBEM for non-dwellings)
- System of quality controls for Accredited Construction Details

## Scoping study

- Issues relating to **existing dwellings**:
  - Any increase in standards for major refurbishment
  - Should there be a trigger of “consequential improvements” – if so, what should it be
- Setting targets for **new non-domestic buildings**:
  - What is appropriate based on the build mix in Wales
- Reviewing opportunities to revise requirements for **existing non-domestic buildings**

## Interaction with policy work in England – Regulatory backdrop



- **One in One Out**

‘if you’re a Minister who wants to bring in a new piece of regulation, first you’ve got to find an existing one to get rid of.’ (David Cameron, 2010)

- **2010 Spending Review**

‘[The Government] will also reduce the total regulatory burden on the house building industry over the Spending Review period [2011/12 – 2014/15]. (Treasury, 2010)

- **Budget 2011 – Plan for Growth**

The Government will introduce a moratorium exempting micro and start-up businesses from new domestic regulation for 3 years from 1 April 2011

### Interaction with policy work in England – Regulatory backdrop



- none of these apply in Wales however it is true to say:
- Our regulatory impact policy requires us to consider the impact on SMEs and the regulatory burden on business.
- We are committed to considering the cumulative of regulation on the house building industry as part of the RIA process.

## Interaction with policy work in England – Part L 2013 for England

- Explore options on regulatory and non-regulatory measures to:
  - Facilitate the move towards zero carbon for new homes and non-domestic buildings
  - Support the retrofit agenda in the context of the introduction of the Green Deal
  - Support the UK's transposition of the new Energy Performance of Buildings Directive
  - Explore the implications of improved envelope standards in a changing climate (overheating & indoor air quality) as part of Government's wider adaptation programme
  - Improve compliance and performance



**Any Questions?**

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# Housing characteristics in Wales

Simon Hartley



### Rationale

- Aim is to work with other national building regulators on common issues
- Important that work undertaken, specifically energy and cost modelling, reflects characteristics of construction in Wales
- To be investigated via:
  - Data review (particularly initial WG CBA)
  - Stakeholder engagement (to help address data limitations)
- Key issues identified were:
  - Future location of development and build rates
  - Size and density of development
  - Future development mix

## Location of Development

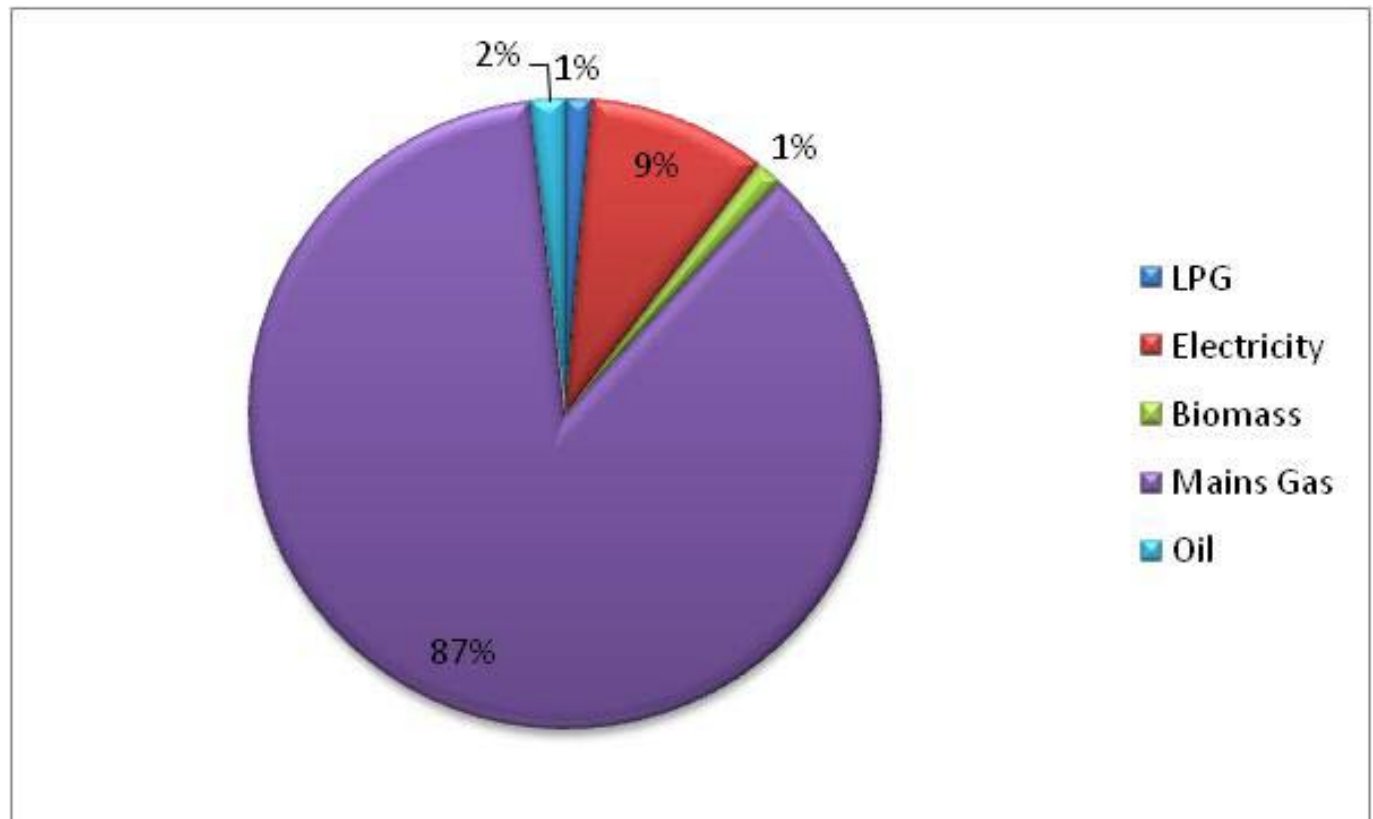
Location of future development  
introduces potentially significant  
differences

which may require flexing of policy.  
Spatial differences include:

- Land values & level / balance of  
developer  
contributions/regulatory  
burdens
- Development mix
- Reduced access to gas grid

## Location of Development & Infrastructure- “Off gas grid”

- Further investigation was undertaken to identify a definition of “off-gas development” and to better understand whether there are disproportionate numbers and what the typical solutions were.





## Location of Development & Infrastructure- “Off gas grid”

- Smaller house-builders are not well versed in the use of community renewable solutions due to:
  - lack of readily available guidance and information
  - disparity in resource between family-run house-builders and the larger firms
  - land procurement process means that off-gas grid development has not been explored in great numbers

### Likely Build Rates

- To inform discussions regarding the adoption of a flat or aggregate approach to target setting and, if 'aggregate', whether an absolute or relative approach is taken, it is important to obtain a picture of the number of dwellings likely to be constructed in Wales prior to the commissioning of any Welsh specific modelling
- Using a 10-year average based on historic build rates, it is estimated that new housing completions will be between 7,000 and 8,000 in 2011-12.
- Between 2012 and 2016 we estimate that new housing completions are likely to be between 8,000 and 9,000 per annum.

### Likely Build Rates

- Utilising a combination of datasets from LABC and NHBC quarterly returns, 4 year averages (01-04-2006 to 31-03-2010) of completions covering all tenures reveal the following:
  - 7,821      100.00%      All completions
  - 5,226      66.82%      House completions
  - 2,595      33.18%      Apartment completions

Development total for the year was 6,174, (13.3% lower than projection).

Apartment completions have fallen for the last 3 years from 2,928 to 1,898

Figures suggest few apartments being developed in 2011/12

Number of houses constructed has also fallen in recent years (6,433 to 4,276) though figures from the first half of 2010/11 suggest that this trend may have reached its low point.

## Development Mix – What type of dwelling is likely to be built in Wales?

- All near-term development projections are likely to be revised downwards
- Actual development total was 6,174- 13.3% lower than 2010/11 projection
- To better predict future development levels, data has been sought from stakeholders about planned programmes of work
- Type and specification of dwellings constructed differ dependent upon the commissioning client (e.g. RSLs).
- It can be noted that there is a relatively even split between houses inspected by LABC and NHBC AIs though the former tend to inspect a higher proportion of apartments. Given the latter, we have requested more detailed data from LPAs in relation to apartment buildings.
- Views have been sought from stakeholders and elsewhere on the definition of “low-rise” and “high-rise” apartments in order to identify a split

### Development Size & Density

- The importance of understanding typical development size relates to:
  - discussions about meeting targets through development wide solutions
  - viability of connecting to gas grid or alternative heating solutions
- Typical development size is as follows:
  - Urban >10 units 82%; <= 10 units 18%
  - Rural > 5 units 55%; <= 5 units 45%
- The CBA, taken from DCLG's report 'Code for Sustainable Homes: A Cost Review', assume a site of 40 dwellings per hectare: data collected to-date shows this to be accurate (38-40)

## Development Mix – What type of dwelling is likely to be built in Wales?

- The rationale for identifying the particular mix of future dwelling types is:
  - proportions of dwelling type must be forecast to inform aggregate target
  - meeting the 55% target is not easily achievable for all property types
  - Dwelling type standards different to England depending on the mix
- The average dwelling mix for the CBA, taken from DCLG's report 'Code for Sustainable Homes: A Cost Review', assumed the average mix of dwellings per site as 60% terraced, 20% semi-detached and 20% detached.

## Development Mix – What type of dwelling is likely to be built in Wales?

### Development Mix

Other trends have also emerged from data and stakeholder discussion:

- Number of 1-bed houses constructed has risen over the last 4 years (29-63) but now seem to have reached a plateau
- Number of 3 and 4 bed houses constructed fell 3 years in a row only for a slight growth in number to re-emerge in 2009/10: 2009/10 levels seem to have stabilised in 2010/11
- With a slight trend downward, the number of 2 bed houses constructed has fluctuated over the last 4 years
- Higher value detached and semi-detached are likely to increase in proportion
- % of apartments is likely to decrease as the major areas for this type of development have now been built



**Any Questions?**

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## Approach to Modelling [and findings to date]

Tom Lelyveld



### Outline

- Choice of Archetypes
- Overview of modelling methodology
  - Carbon Targets
  - Fabric targets
  - Fabric specifications
  - Technology specifications
  - Aggregate solution
  - CO<sub>2</sub> emission factors
- Modelling results –
  - CO<sub>2</sub> from regulated energy use

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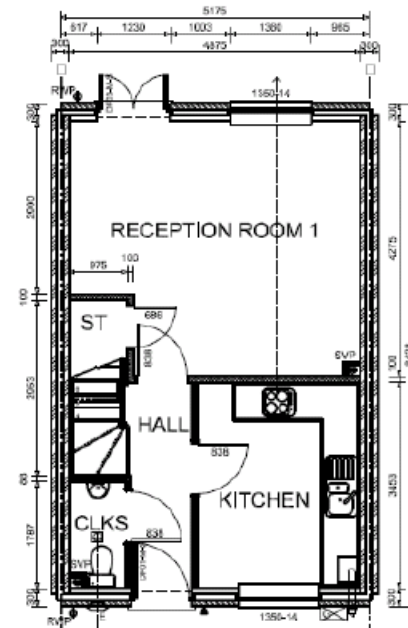
## Choice of Welsh Archetypes



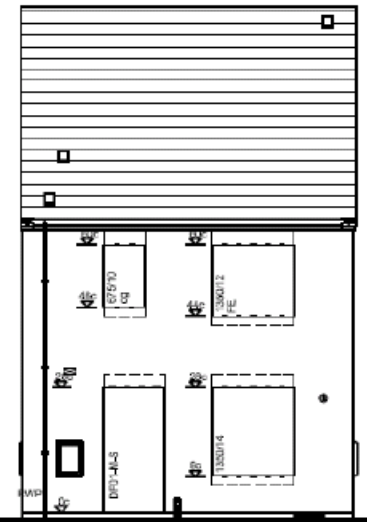


## Choice of Welsh Dwelling Archetypes

- Welsh builders and RSLs contacted to provide indicative range of **typical** house and flat types built
- Anecdotally circa 80% of Welsh homes built by 20% of builders and 20% of Welsh homes built by 80% (SME) of builders
- Response tabulated and reviewed by WAG, AECOM and ZCH technical team members.



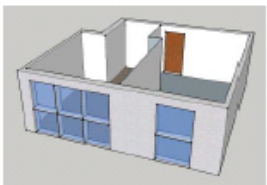
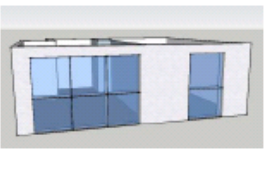

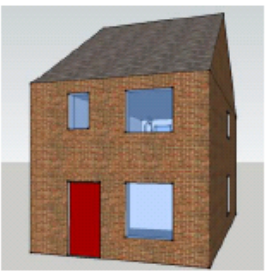
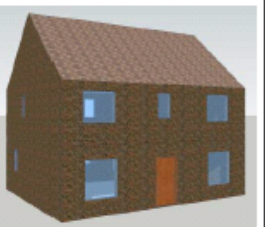
GROUND FLOOR



FRONT ELEVATION

## Choice of Welsh Dwelling Archetypes

- In developing a Fabric Energy Efficiency Standard (FEES) a series of typical dwelling model types were chosen by Zero Carbon Hub in consultation with national housebuilders

	Small Apartment	Large Apartment	Mid terrace house	End terrace / semi detached house	Detached house
					
	Top floor Mid floor Ground floor	Top floor Mid floor Ground floor			
<b>TFA (m<sup>2</sup>)</b>	43	66	76	76	118

### 4-Storey Apartment block

(4x small & 4x large per floor)



## Characteristics of Dwelling Types

- The UKZCH modelled apartments for low rise 4 storey and high rise 8+ storeys.
- The UKZCH also tested additional dwelling types for sensitivity including:
  - Large detached house 212m<sup>2</sup>
  - Detached/ bungalow 73m<sup>2</sup>
  - Small mid terrace 62m<sup>2</sup>
  - Large mid terrace house 86m<sup>2</sup>
  - 3-storey mid-terrace house with integral garage 107m<sup>2</sup>
  - Room in roof, mid-terrace house 122m<sup>2</sup>

## Choice of Welsh Dwelling Archetypes

Detached	Number	max area	min area	mean area
		m <sup>2</sup>	m <sup>2</sup>	m <sup>2</sup>
5 bed	8	361	180	275
4 bed	39	276	102	188
3 bed	28	251	78	147
2 bed	8	192	76	110
<b>All</b>	<b>84</b>	<b>361</b>	<b>76</b>	<b>175</b>

Semi Detached	Number	max area	min area	mean area
		m <sup>2</sup>	m <sup>2</sup>	m <sup>2</sup>
4 bed	3	140	114	129
3 bed	11	88	69	81
2 bed	3	86	46	64
<b>All</b>	<b>17</b>	<b>140</b>	<b>46</b>	<b>87</b>

Mid/End Terrace	Number	max area	min area	mean area
		m <sup>2</sup>	m <sup>2</sup>	m <sup>2</sup>
4 bed	3	63	63	63
3 bed	2	100	100	100
2 bed	2	140	114	129
<b>All</b>	<b>11</b>	<b>140</b>	<b>63</b>	<b>97</b>

- ‘Typical types’ received from larger builders (Redrow, Barrett etc) were very similar to the standard types of the UK Zero Carbon Hub
- Range of housetypes (table to left) collected included a large number from rural areas which featured a wide range of dwelling sizes (both larger and smaller) compared to the UKZCH types.
- Choice made to use the UKZCH housetypes for core modelling to develop proposed standards and to include a range of ‘sensitivities’ to test these proposed standards on a wider range of types

## Choice of Welsh Dwelling Archetypes Summary

- ‘UK ZCH types chosen for Core
- A range of welsh buildings archetypes were modelled in SAP to be compliant with PPW 2010.
- Types that had to ‘work harder’ to achieve a performance target were chosen as a sensitivity.
- Where the specification was less onerous to achieve PPW 2010 then no need to test as a sensitivity.

Core Models (ZCH)	TFA m <sup>2</sup>
Detached house	118
End terrace house	76
Mid terrace house	76
4 storey apartment block	1,747

Sensitivity models (Wales)	TFA m <sup>2</sup>
Small detached house	80
Small end terrace house	61
Detached bungalow	110
2 storey apartment block	874
8 storey apartment block	3,494
Mid Terrace Room in roof	122
Mid Terrace Room increased floor to ceiling	76

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## Approach to Modelling

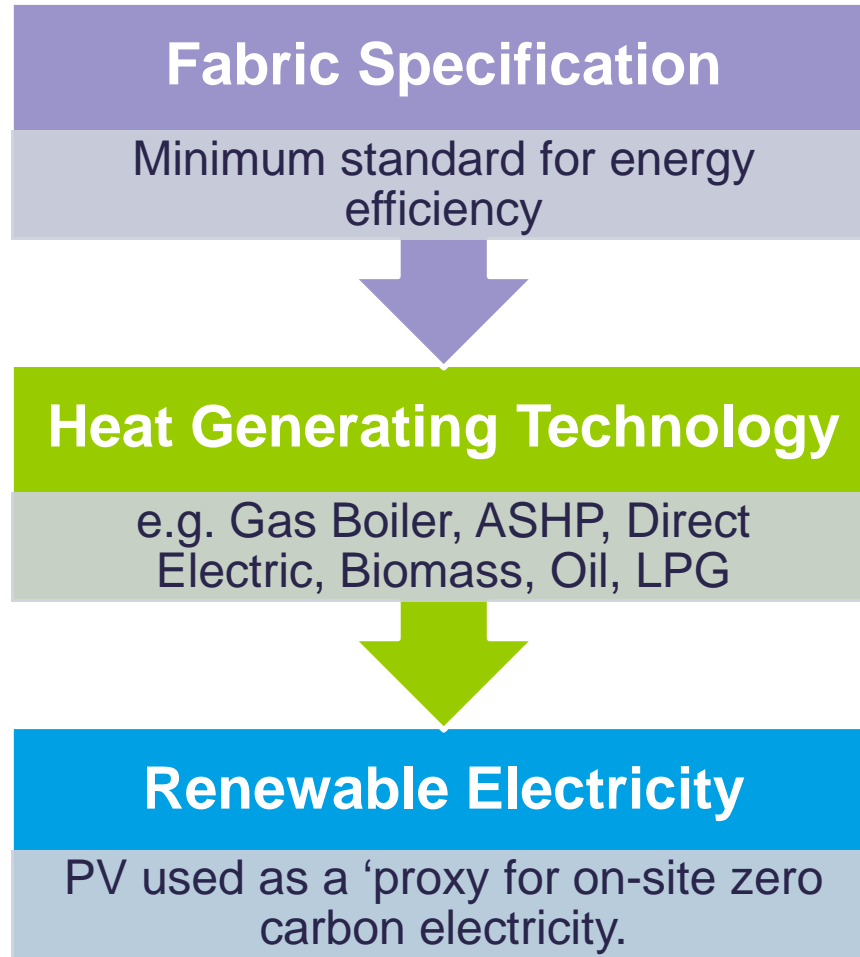


### Methodology - Carbon target

- Policy statement available on the WAG website (9<sup>th</sup> July 2010 )
  - 55% improvement above Part L 2006 for domestic new build
  - Equivalent to a **40% improvement above Part L 2010**
- For demonstration purposes assessing 2 steps towards in carbon emissions in the range from current Planning Policy Wales (PPW) 2010 standards to 2013 proposed standard
- Baseline taken to be the PPW requirement of an 8% improvement over Approved Document Part L1A 2010,( 31% improvement over ADL1A 2006)



## Approach to achieving carbon target

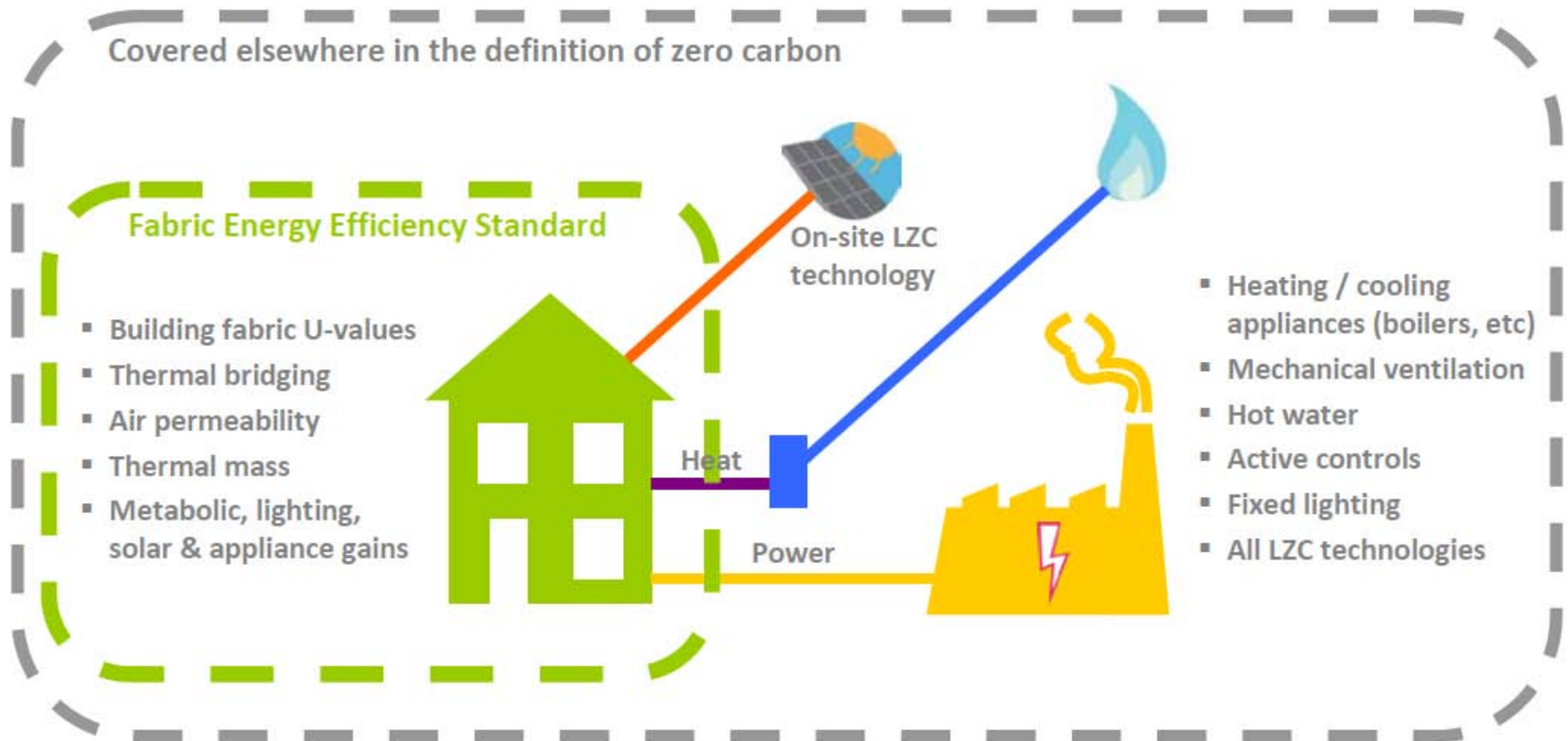


## Methodology - Fabric

- Assessing 3 possible fabric targets for 2013 in the range from current FEES to UKZCH Spec C



## FEES – what is included?



## Fabric Energy Efficiency Specification (FEES) England targets 2016

Fabric energy efficiency levels in the Standard

**39** kWh/m<sup>2</sup>/year

**46** kWh/m<sup>2</sup>/year



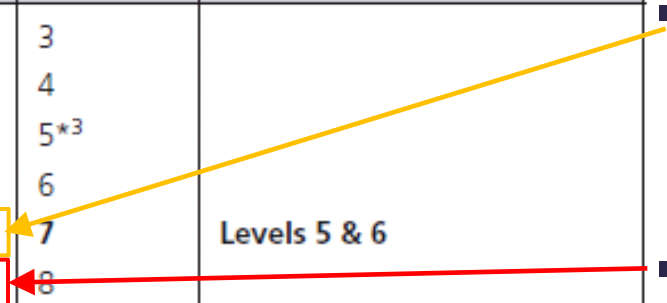
A similar build specification could meet the target in all house types except detached, where a slightly higher specification will be needed.

## Code for Sustainable Homes (Nov 2010)

Criteria			
Dwelling Type* <sup>1</sup>		Credits* <sup>2</sup>	Mandatory Levels
Apartment Blocks, Mid-Terrace	End Terrace, Semi-Detached & Detached		
Fabric Energy Efficiency kWh/m <sup>2</sup> /year			
≤ 48	≤ 60	3	
≤ 45	≤ 55	4	
≤ 43	≤ 52	5* <sup>3</sup>	
≤ 41	≤ 49	6	
≤ 39	≤ 46	7	Levels 5 & 6
≤ 35	≤ 42	8	
≤ 32	≤ 38	9	
<b>Default Cases</b>			
None			

■ FEES  
– Eng 2016

■ FEES+





Specifications modelled - End Terrace example

		2010 PPW Compliant Fabric First	2010 PPW Compliant ShowerSave	FEES	FEES +	Spec C
<b>U value W/m<sup>2</sup>K</b>	<b>Ext. Walls</b>	0.20	0.28	0.18	0.15	0.15
	<b>Party Walls</b>	0	0	0	0	0
	<b>Floor</b>	0.13	0.11	0.13	0.13	0.13
	<b>Roof</b>	0.13	0.12	0.13	0.11	0.13
	<b>Windows (whole window U-value)</b>	1.2 (double glazed)	1.3 (double glazed)	1.4 (double glazed)	1.2 (double glazed)	0.8 (triple glazed)
	<b>Doors</b>	1	1	1	1	1
	<b>Airtightness (m<sup>3</sup>/hr/m<sup>2</sup>)</b>	4.6	6	5.0	4.9	2.9
	<b>Thermal bridging y-value (W/m<sup>2</sup>K)</b>	0.051	0.04	0.05	0.05	0.04
	<b>Ventilation type</b>	Natural (extract fans)	Natural (extract fans)	Natural (extract fans)	Natural (extract fans)	MVHR
	<b>Appendix Q items</b>		Showersave (369kWh/y)			

All with 90% efficient gas boiler (SEDBUK 2009)

All 'medium' Thermal Mass Parameter

### Modelling Tool assumptions

- Modelling tool = SAP 2009 (NHER Plan Assessor 5.3)
- Draft updated emission factors from DECC
- Fuel factors not used
  - Sensitivity will be carried out
- Heat generating technology
  - Gas boiler (SEDBUK 2009 = 90%)
  - ASHP (default COP = 2.5, Product Database COP = 3.85)
  - Biomass boiler (86%)
  - Oil Boiler (91%)
- Photovoltaics
  - SE/SW orientation, 45°, 7m<sup>2</sup>/kWp

# Modelling Options Matrix

CORE MODELS	MODEL REFERENCE	SPEC	FUEL					DIRECT ELEC
			GAS	LPG	OIL	ASHP	BIOMASS	
DETACHED	DetH	PPW	█					
		FEES	█					
		FEES+	█					
		SPEC C	█					
END TERRACE	EndT	PPW	█	█	█			
		FEES	█	█	█	█	█	
		FEES+	█					
		SPEC C	█					
MID TERRACE	MidH	PPW	█					
		FEES	█					
		FEES+	█					
		SPEC C	█					
4-STOREY	LgFG, LgFM, LgFT, SmFG, SmFM, SmFT	PPW	█					█
		FEES	█	█	█	█	█	█
		FEES+	█					
		SPEC C	█					

SENSITIVIES			GAS
SMALL DETACHED	DetS	FEES+	█
SMALL END TERRACE	EndS	FEES+	█
DETACHED BUNGALOW	BungL	FEES+	█
2 STOREY APARTMENT	TBC	FEES+	█
8 STOREY APARTMENT	AS 4-STOREY	FEES+	█
ROOM IN ROOF	MidR	FEES+	█
MID TERRACE INC F-C	MidXL	FEES+	█

**KEY**

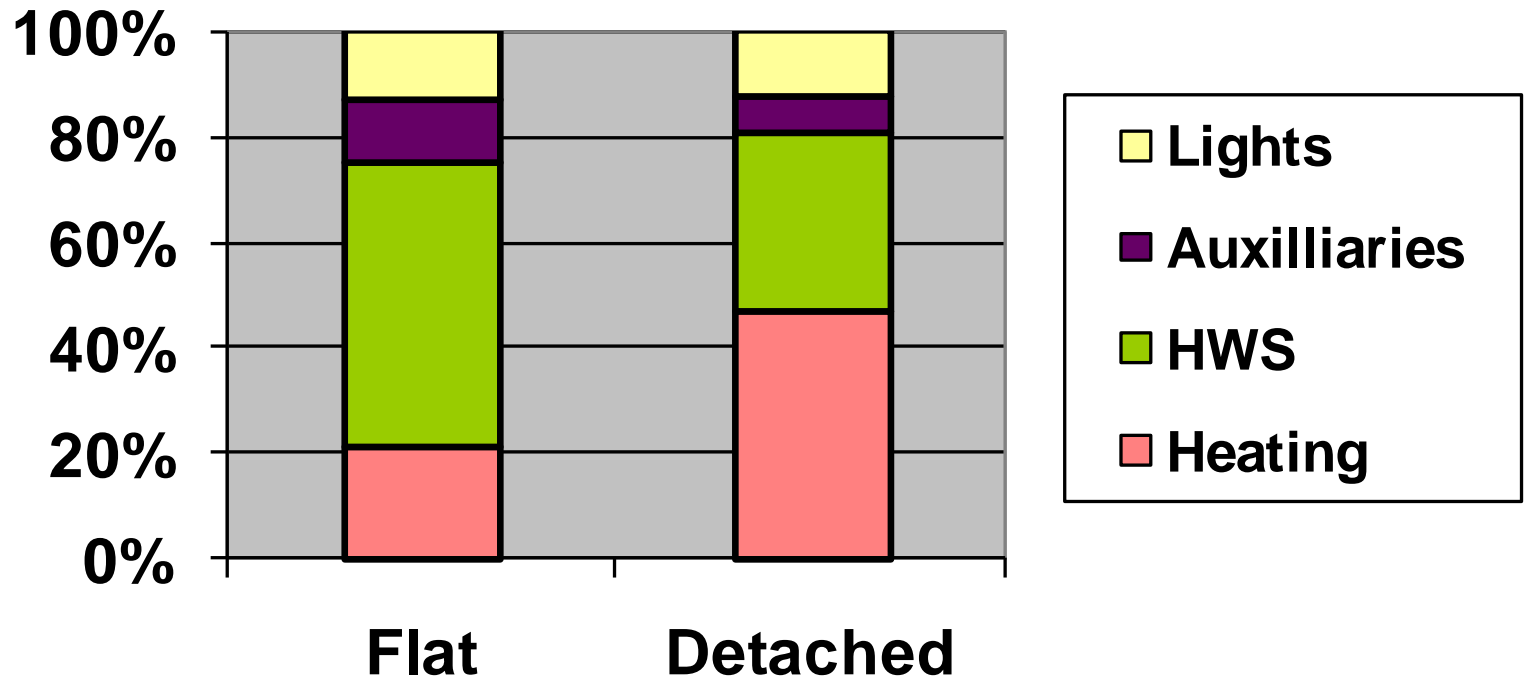
- TO MODEL
- WBR MODELLING
- ZCH MODELLED



### Aggregate versus flat target approach

- Currently L1A2010 uses a '**flat target**' approach - the target is the same no matter the type of dwelling. This results in different dwelling types requiring varying levels of 'effort' to meet a fabric or carbon target
- A key decision is whether to adopt an '**aggregate target**' approach where the carbon target is dependant on the built form of the property. This approach provides a more similar level of challenge to meet a carbon target (represented as a similar % of PV)
- We are investigating the benefits of an aggregate approach for Wales.
- Approach taken is to take a weighted average based on build mix and then chose a roughly equal % of available roof areas of PV to meet carbon target.
- **Important to Note:** From a builders perspective there will be little change to Part L Assessment -- SAP Assessment will provide a TER/DER pass or fail as now

### Relative proportion of end-use energy demands (dwellings)



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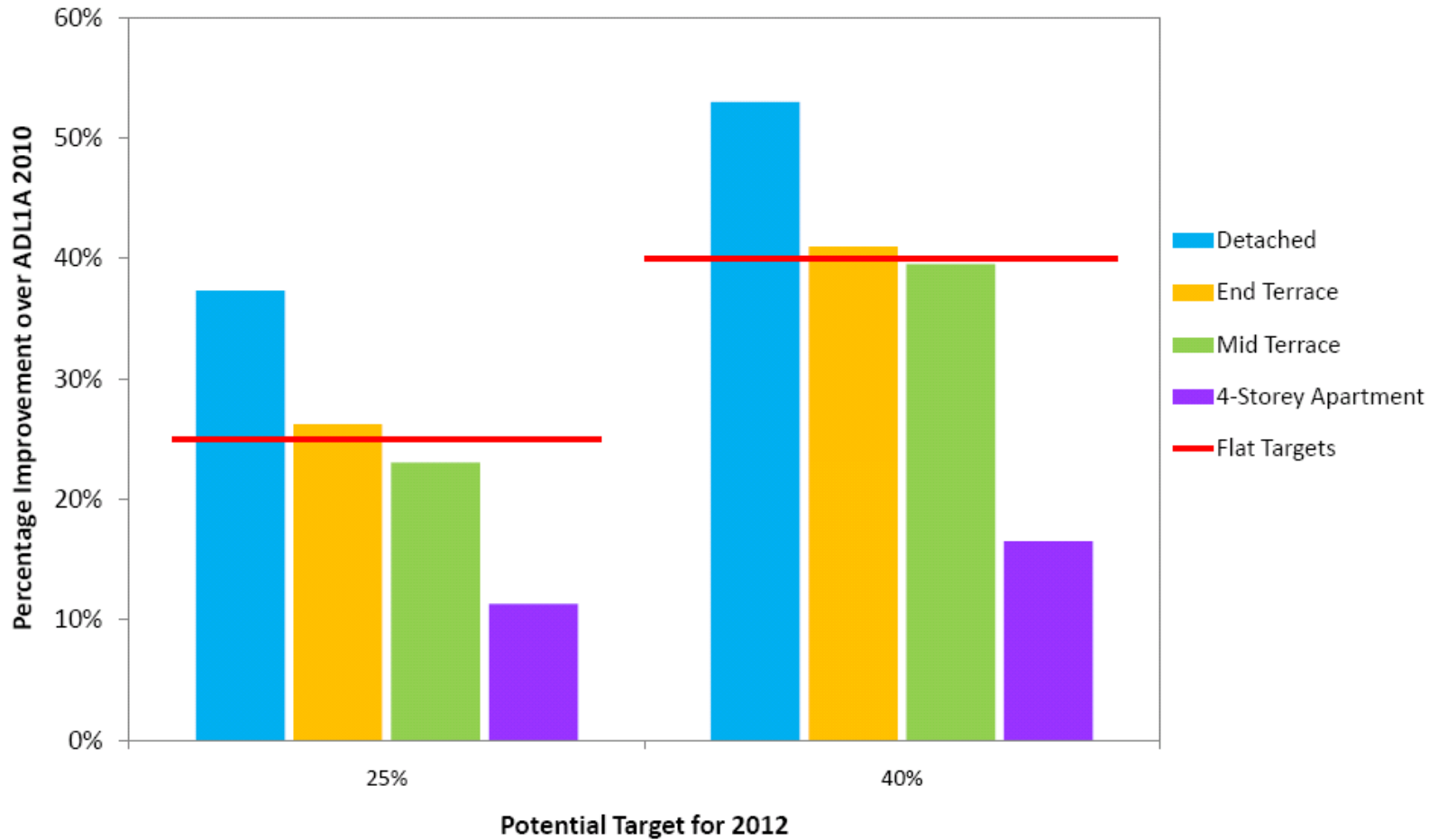
# Initial Results of Energy modelling and Cost work

Tom Lelyveld, AECOM

Jim Proctor, Davis Langdon



# Aggregate vs. Flat: Comparison of targets for dwelling types Part L 2010



### Impact on other parts of Building Regulations

- In improving energy and carbon performance, important to identify any interactions with other Parts of Building Regulations.
  - Will it cause difficulties in achieving other Parts e.g. increased airtightness resulting in under-ventilation (Part F)
  - Will other Parts hinder achieving the proposed changes to Part L
- Important to engage with industry to identify potential issues early and implications for proposals

## Impact on other parts of Building Regulations

- Organising interviews with 10-15 developers that have built to Code 4 or better
  - Larger developers and SMEs
  - Wales and England
  - Urban and rural
- Series of questions
  - Do B. Regs provide any barriers to meet higher carbon standards?
  - Do higher carbon standards provide a barrier to meeting B. Regs?
  - In designing to higher carbon standards, was there a problem in achieving them or meeting the SAP overheating test?
  - Occupant feedback: indoor air quality, ventilation, heating bills, overheating

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## Approach to Cost Benefit Analysis and initial results

Jim Proctor, Davis Langdon

Tom Lelyveld, AECOM



## Basis of Cost Information

- Fabric
  - Based on local knowledge from our Cardiff office
  - Use of schedules of rates and cost plan data to build up cost modelling data for archetypes
  
- Heat Generating Technologies
  - In house cost database with input from our Cardiff office
  
- Renewable Electricity
  - Manufacturer's costs and in house cost database

## Approach to Cost Modelling & Assumptions made

### Considering Both Capital & Life Cycle Costs

#### **Fabric**

##### 1) U-values

- Full range of U-values that need to be modelled built up from schedules of rates for all building elements.....walls, floor, roof, windows & doors
- Life cycle cost allowance for replacement of windows and doors once in the 60 year period

## 2) Air-tightness

- Range of values from
  - $7\text{m}^3/\text{hr}/\text{m}^2$  which is standard practice
  - to  $1\text{m}^3/\text{hr}/\text{m}^2$  which requires enhanced detailing & includes additional materials, training, supervision and testing

All intermediate values between these are defined by a scope of the requirements which get more onerous as the standard improves

- No life cycle cost allowance ??

### 3. Thermal Bridging

- Range of values from
  - Standard accredited details(no specific measures)
  - to enhanced details which require additional materials, sealing at junctions, calculation and design, training, supervision and testing

All intermediate levels between these are defined by a scope of the requirements which get more onerous as the standard improves

- No life cycle cost allowance

#### 4) Ventilation

- For air-tightness levels of  $3\text{m}^3/\text{hr}/\text{m}^2$  or less, we need to incorporate MVHR
- To achieve a like for like comparison, we need to include the comparable ventilation requirements for the values above  $3\text{m}^3/\text{hr}/\text{m}^2$
- For values above  $3\text{m}^3/\text{hr}/\text{m}^2$  we have allowed for standard extract ventilation to the kitchen & bathrooms
- Life cycle cost allowance for all ventilation systems.....replaced 3 times in 60 year period plus cost of servicing

## Heat Source

- Consideration of different fuel sources....Mains gas, ASHP (electric), biomass, LPG & oil
- Looking at the fuel supply costs (fixed) and the cost of the heat source (boiler, heat pump etc.)
- Life cycle cost allowance for replacement of any elements of the fuel supply system as required and replacement of heat source as required, i.e. boiler 3 times in 60 year period plus cost of servicing

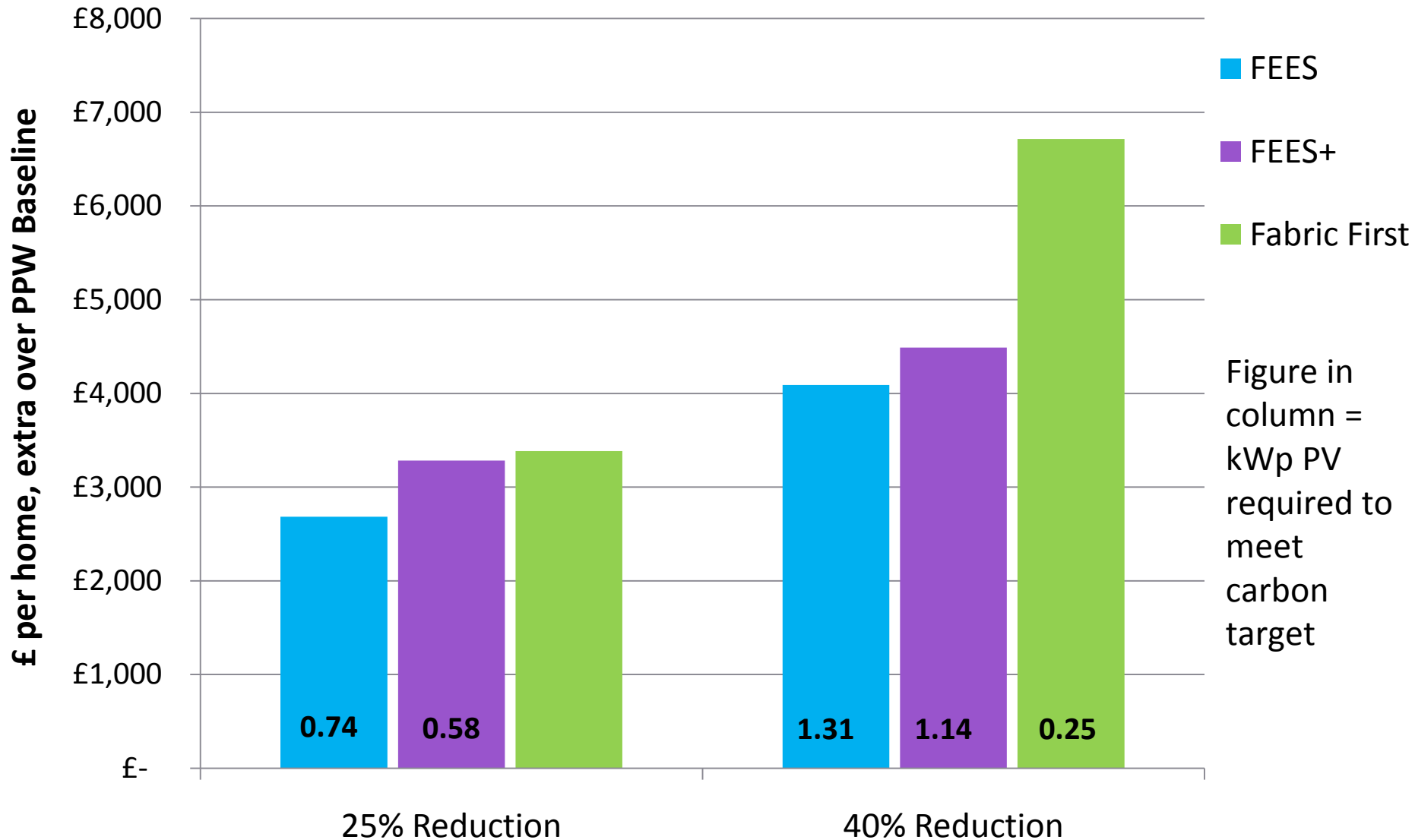
## Renewable Electricity

- PV (as a cost indicator for any renewable power provision)
- Life cycle cost allowance
  - Replacement of inverters every 15 years
  - Replacement of panels once in 60 year period
  - Replacement of electrical wiring once in 60 year period
  - Plus cost of servicing

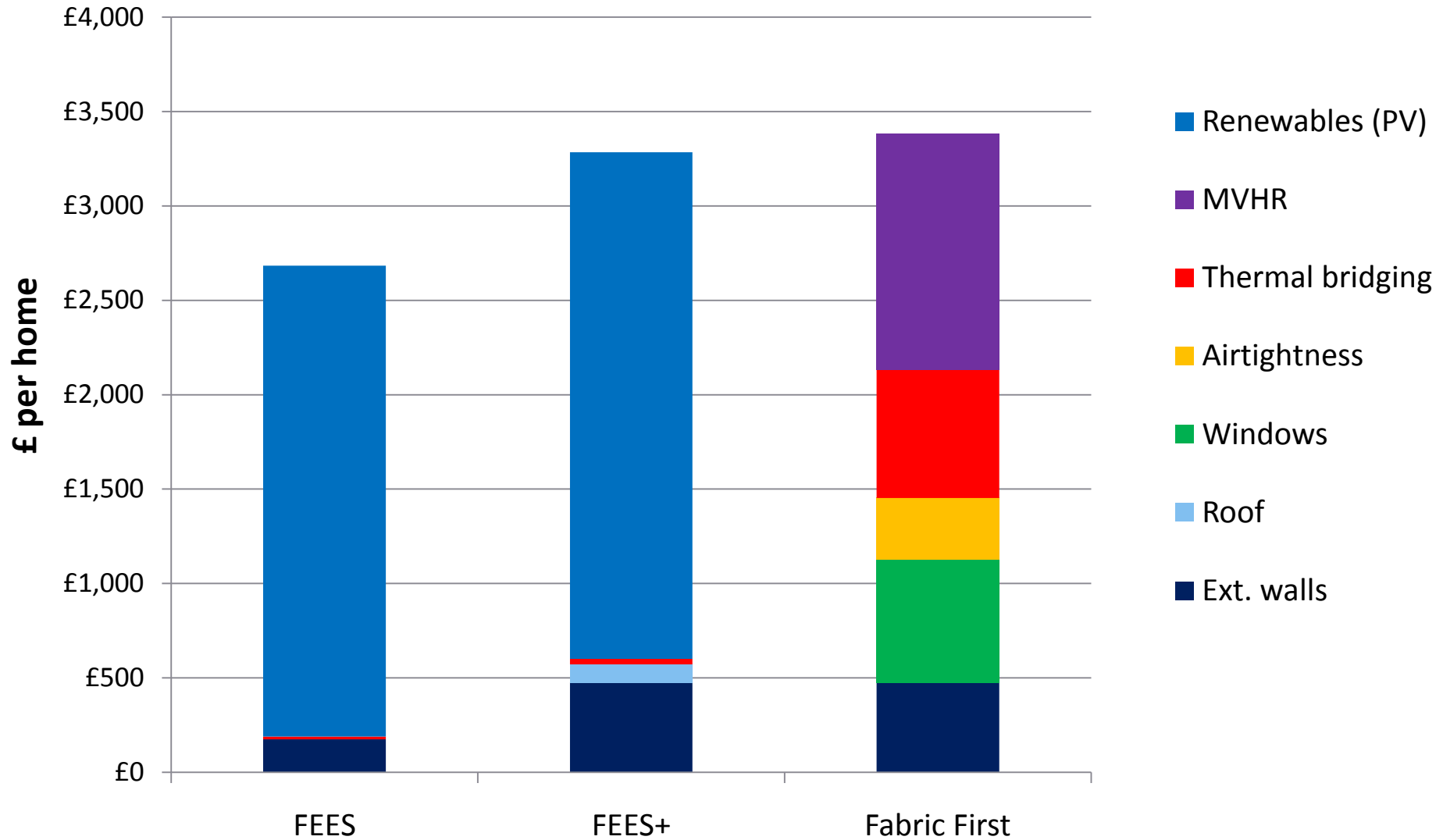
### Findings to Date

- The results of the end terrace house are shown overleaf.
  - Note the life cycle cost includes only the cost associated with the maintenance and replacement of the components that comprise the system over a 60 year period.

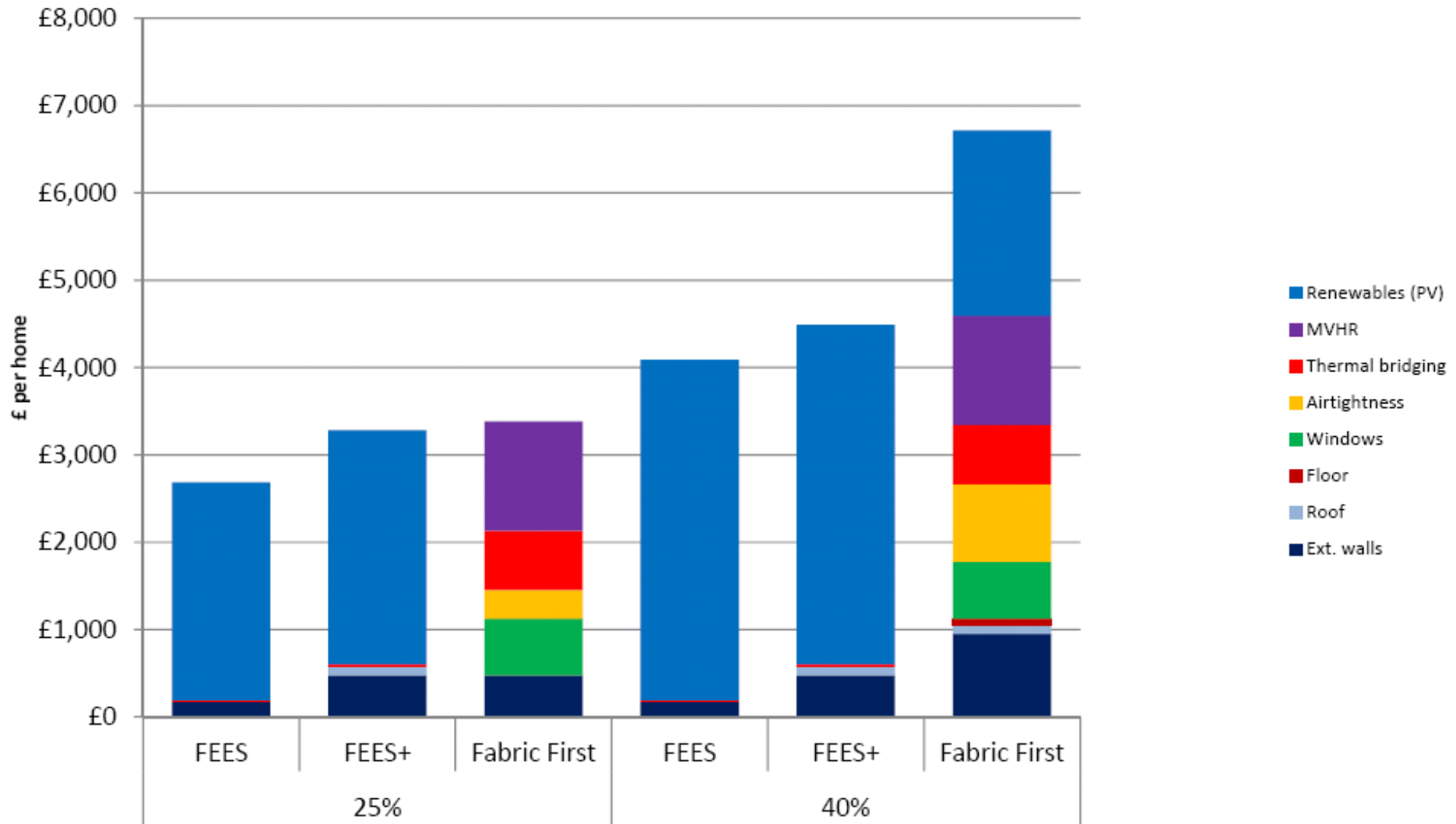
## Capital Cost: End Terrace House – Gas Boiler (+PV)



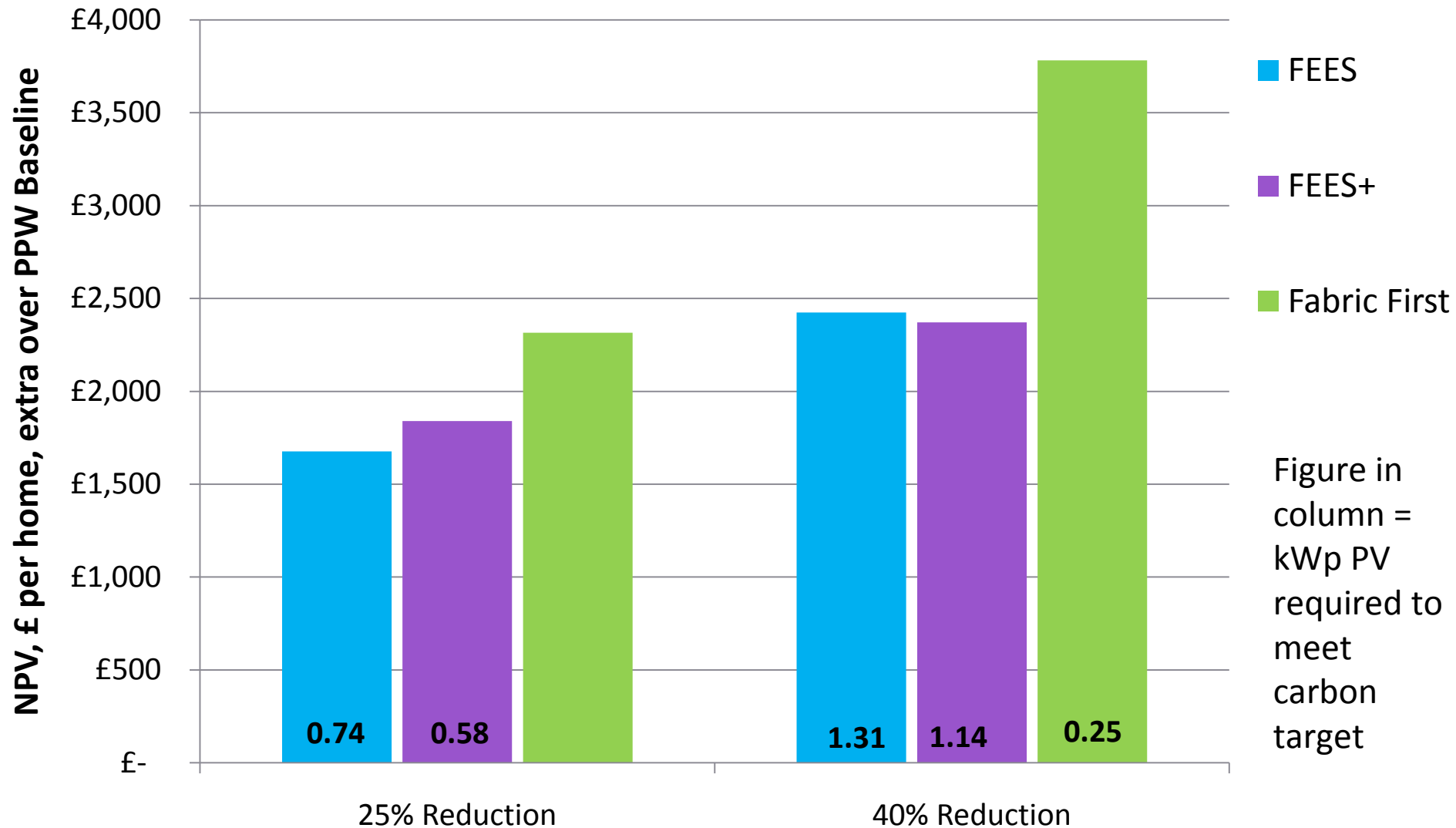
## Capital Cost: 25% End Terrace House – Gas Boiler (+PV)



## Capital Cost breakdown : 25% and 40% End Terrace House – Gas Boiler (+PV)

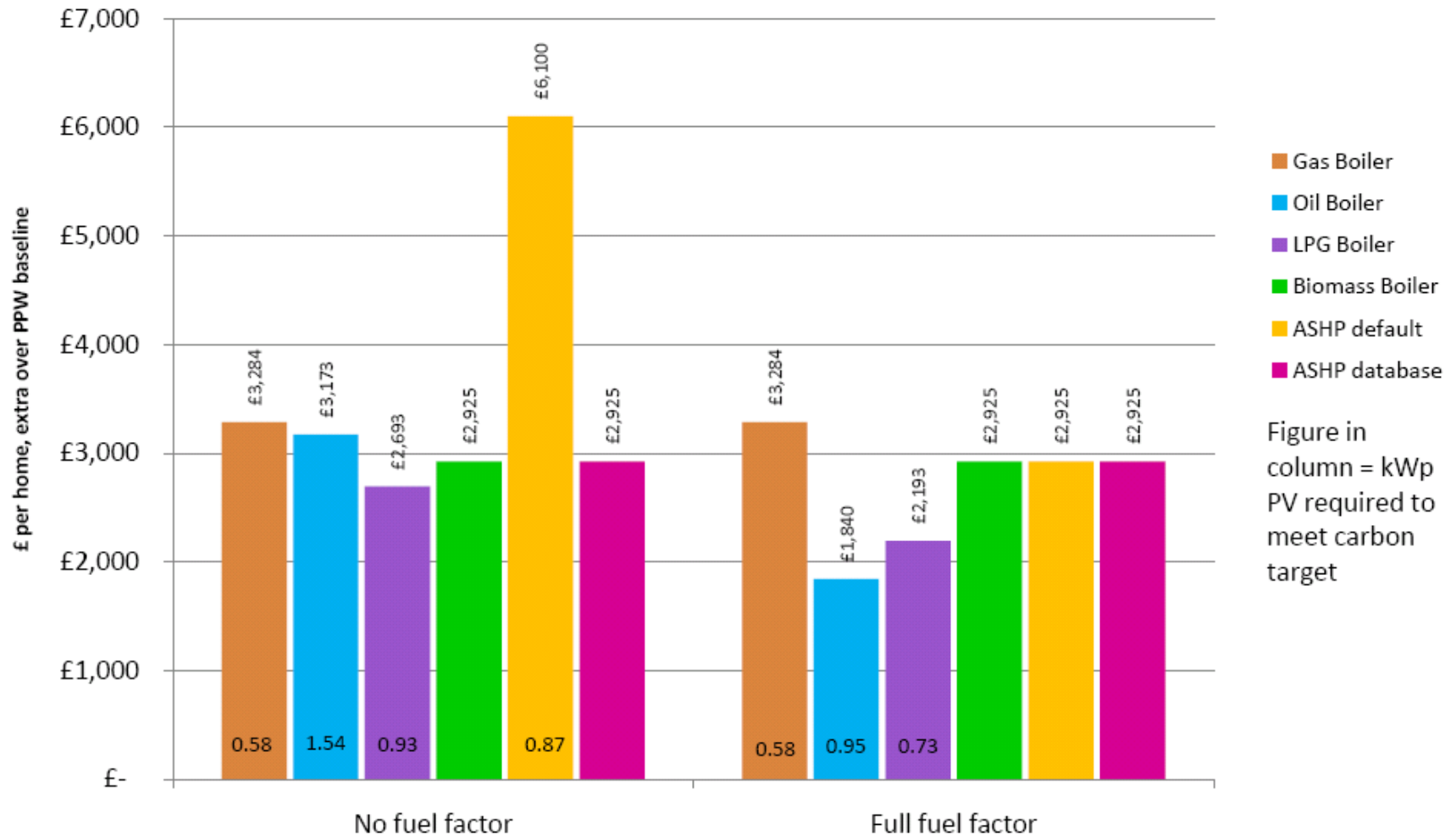


## Lifecycle Cost: End Terrace House – Gas Boiler (+PV)



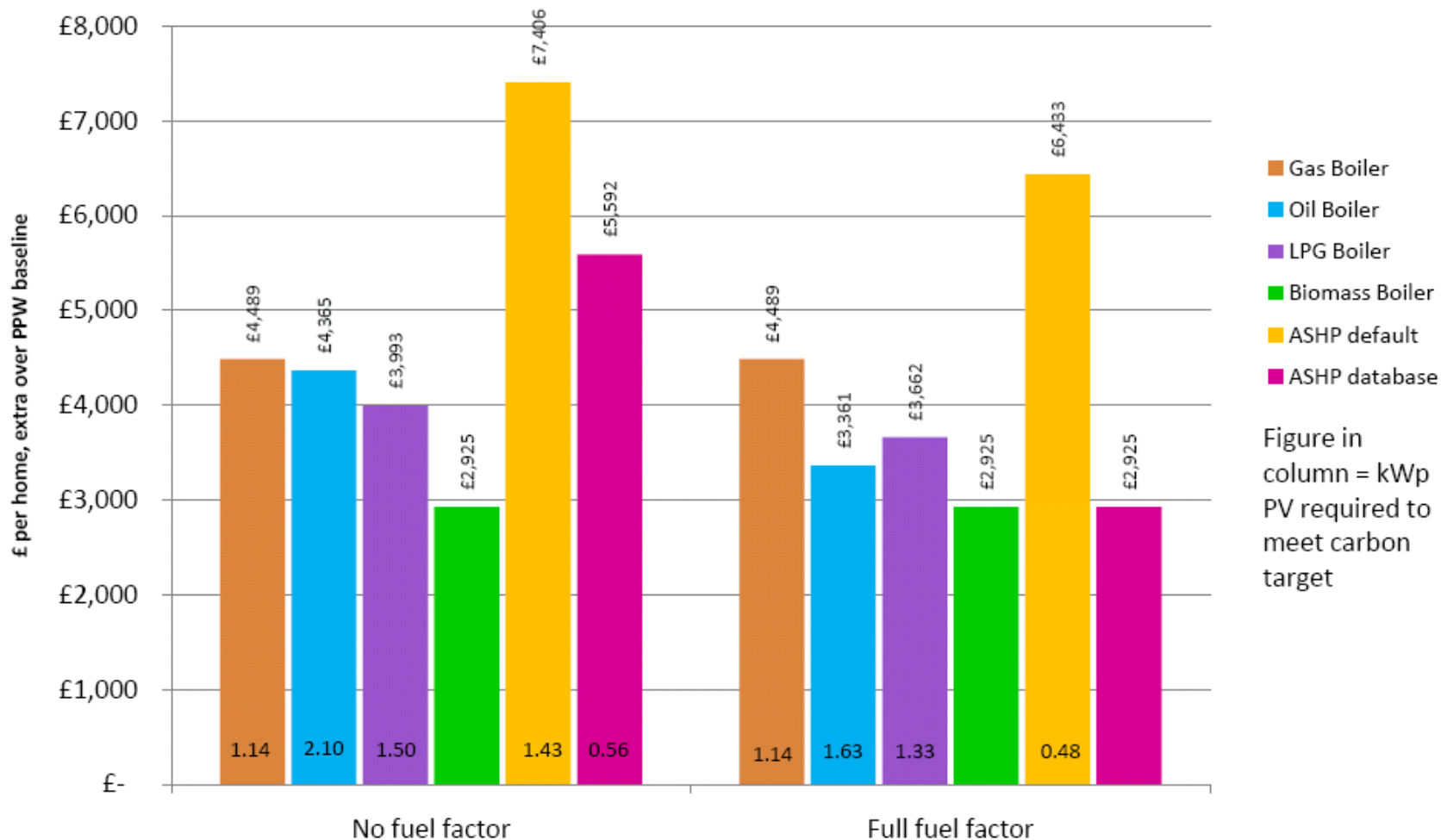
# Fuel Factors:

End Terrace House; 25% Reduction over 2010, Capital Cost extra over PPW baseline, FEES+



## Fuel Factors:

End Terrace House; 40% Reduction over 2010, Capital Cost extra over PPW baseline, FEES+





**Any Questions?**

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# Energy efficiency standards for existing dwellings

David Ross, AECOM



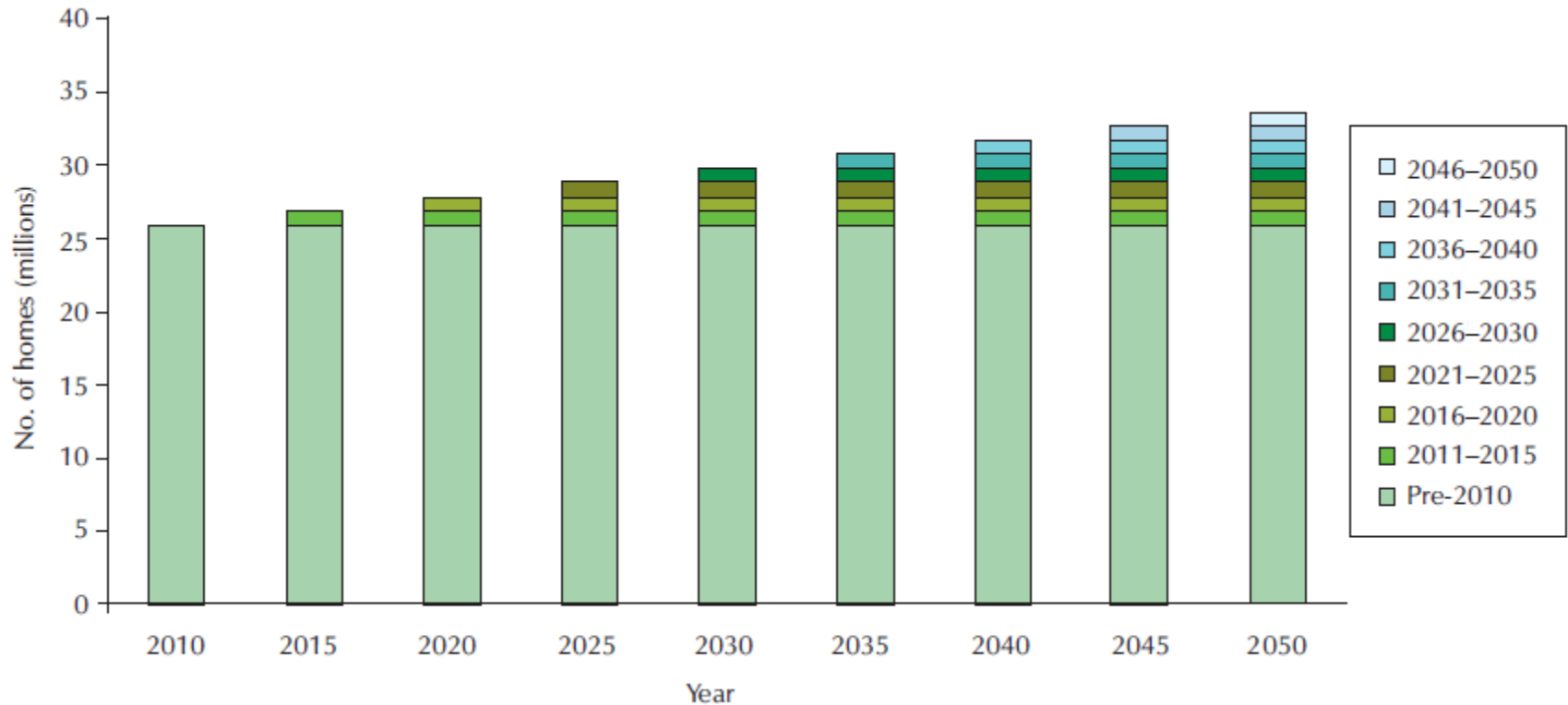
### Content

- Introduction
- Improving Energy Efficiency Standards
- Conservatories
- Consequential Improvements and the Green Deal

### Introduction

- Most attention is usually given to the energy performance standards of new buildings
- The real opportunity for reducing national CO<sub>2</sub> emissions from the built environment is to improve the existing stock
  - there are around 1.3 million existing homes in Wales
  - the new build rate has historically been 5,000 - 10,000 per annum.

## Introduction



Source: "energy efficiency in new and existing buildings: comparative costs and CO<sub>2</sub> savings", BRE Trust

### Introduction – Part L for existing dwellings

- At the strategic level, there are three main questions to achieving greater energy efficiency via Part L.
  - Can we improve the standards of energy efficiency required by Part L?
  - Can we improve levels of compliance?
  - Can we bring more building work into scope?
- In particular the first two issues are related
  - If the standards are set too high, building owners might seek to evade the regulations in order to avoid the “perceived” costs of compliance

## Improvements to current energy efficiency standards

- **Replacement of controlled fittings and services**
  - For dwellings this typically comprises window and boiler replacement
  - ADL1B recommends minimum energy efficiency for replacements
  - In particular, improved standards may be possible for windows
  - May be sensible to achieve similar to new-build standards
    - Efficiency gain is locked into the product
    - No/little additional hassle for installer
    - Will undertake cost-benefit analysis of potential improvements

## Improvements to current energy efficiency standards

### ■ Construction of extension

- ADL1B recommends minimum energy efficiencies for thermal elements, glazing and additional fixed building services
- Again, it may be reasonable to achieve close to new-build standards
  - Constructing an extension involves few constraints on design or specification of the thermal envelope
  - To undertake cost-benefit analysis of incrementally improving standards

### Improvements to current energy efficiency standards

#### ■ Renovation of a thermal element

- ADL1B recommends minimum energy efficiencies where there is a significant renovation of a thermal element
  - 50% surface of element (or 25% of building envelope)
  - e.g. cladding/rendering external surface or dry-lining existing surface
- In these cases, greater argument for not setting the bar too high
  - Anecdotally, this is an area of poorer compliance
  - Greater expertise needed on part of the installer
  - Practical guidance may achieve greater carbon savings
  - However, usually only one opportunity to install additional insulation
  - Next step is to consider the costs and benefits of different approaches

### Conservatories

- Currently, conservatories below 30m<sup>2</sup> are exempt from Part L
- However, why should conservatories be excluded but extensions included?
  - 60% of consumers regard conservatories as adding space to their home
  - 90% of consumers use their conservatories all year, with 75% heating on a daily basis
  - At least a third have no door between the conservatory and the rest of the home and, anecdotally, any connecting doorway is often left open
  - Adding a 18m<sup>2</sup> conservatory to a Part L 2002 dwelling can double CO<sub>2</sub> emissions
- The intention is to consider options e.g.
  - Setting minimum energy efficiency standards for glazing
  - Requirements for additional ventilation to avoid tendency to install portable air conditioning

### Consequential Improvements and the Green Deal

- For buildings > 1000m<sup>2</sup>, increasing the carbon footprint of the building requires consequential energy efficiency improvements
- Triggers are
  - An extension
  - Initial provision of a fixed building service
  - An increase in the installed capacity of any fixed building service
- Consequential measures are
  - Extensions: Select from measures in a table, capped at 10% of principal works. Measures selected to achieve payback in 15 years.
  - Services: Improve fabric in serviced areas and included additional measures as per extensions.

## Consequential Improvements and the Green Deal

- Green Deal is to be introduced in October 2012
- Private firms to offer consumers energy efficiency improvements to their homes (and community space and businesses) at no upfront cost.
- Payments recouped through a charge in installments via energy bills

## Consequential Improvements and the Green Deal

- Given the introduction of Green Deal, we are investigating the extension of Consequential Improvements to dwellings
- In all cases, the Consequential Improvements would be ‘Green Dealable’
- What would be the trigger(s) for improvement?
  - Increasing the carbon footprint of the dwelling?
  - Extending to include other building works?
- What Consequential Improvement measures should be included?
  - Should they be capped at 10% of principal works?
  - Should they be linked to the same tradesman as carries out the principal works?
  - In at least some cases, would it be better to simply require a Green Deal assessment?



**Any Questions?**

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## Compliance, transition and enforcement

Alison Crompton, AECOM



### Content

- Compliance - Building Control issues common to England and Wales
- Compliance - Issues relating to Part L 2013 in Wales
- Transition arrangements
- Enforcement

## Building Control issues common to England and Wales

- There are concerns about levels of compliance with the requirements of Part L 2010?
- How do these vary – dwellings/non-domestic sector, new build vs existing buildings?
- What are the reasons for this:
  - Lack of understanding of the requirements?
  - Complexity?
  - Insufficient guidance?
  - Amount of resources available to check compliance?
- Has commercialisation of the Building Control service driven down cost but not driven up compliance?



## Building Control issues common to England and Wales

- Any lack of compliance is unlikely to be wilful, instead it is due to:
  - a lack of knowledge of requirements
  - A lack of on site guidance

Is there:

- a focus on life safety aspects of the Building Regulations?
- a limit of resources for on-site checks?
- Welsh Government is looking at improving compliance with all aspects of Part L only, rather than seeking any changes to the Building Control service



### Issues relating to Part L 2013 in Wales

- For the first time there are likely to be different targets for new build housing in Wales and in England from 2013
  - Some developers/house-builders, design teams and BCBs will work in both countries and will need to understand both
  - Any training supported by professional bodies will need to be tailored by country – as it does already for England and Scotland
- Targets for other building sectors are still being developed
- Bespoke Wales versions of SAP and SBEM will be created for use by design teams
- It is unlikely that the 2013 update will create many further technical compliance issues than Part L 2010



## Issues relating to Part L 2013 in Wales

- Welsh Government will be carrying out interviews with:
  - Developers & House-builders and SME representatives
  - Warranty providers
  - LA Building Control Bodies
  - Approved Inspectors

to identify any current issues and what they believe could be done to support greater compliance

- A separate event is being held with suppliers to understand their role in delivering low carbon buildings
- Asset skills are looking at skills availability for low carbon buildings – includes a focus on Wales



### Issues relating to Part L 2013 in Wales

- There is also an issue regarding a gap between designed and as built performance. This can be caused by:
  - Lack of understanding of the actual construction to deliver a particular U-value (who specifies the brick/insulation/block/plaster)
  - Choice of alternative/cheaper materials without understanding any changes in performance
  - Lack of attention to detailing
  - Impact of weather e.g. rain-soaked insulation clearly won't perform as well
  - How the building is occupied



### Transition arrangements

- In England, there was a rush to get building registrations so they could be built under 2006 Part L
- In Wales, the position is different in that national planning policy dictates a standard better than Part L 2010 anyway
- Welsh Government is keen to look to other transition models to establish the best way to ensure later phases of a development are constructed to the updated Regulations



### Enforcement

- The emphasis will be on ensuring:
  - Design teams, developers and house-builders know what they should be constructing
  - Tests are carried out by contractors and appropriate commissioning takes place to ensure these standards are delivered
- Enforcement is the last resort



**Any Questions?**

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## Group Session





## Key questions

- To what extent will location/scale/density of development affect achievement of BR targets?
- Comments with the approach taken for energy and cost modelling e.g.
  - Choice of dwelling types and sensitivities
  - Flat vs aggregate approach to target setting
  - Cost data used
- What do you think are the main barriers to delivering the improvement over Planning Policy Wales (approx 35%) and possible ways of overcoming them?
- What are the key compliance challenges (current and future) and proposed solutions?
- What are the main barriers to further improving standards for works on existing dwellings and possible solutions?



## Engagement

- If you have any feedback you could contribute, please send it to:

Colin Blick at :

Construction Unit, Welsh Government, Rhydycar, Merthyr Tydfil, CF48 1UZ  
or e mail :

[Colin.Blick@wales.gsi.gov.uk](mailto:Colin.Blick@wales.gsi.gov.uk)

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## Current Programme

Simon Hartley, AECOM



- **Timetable**

**Nov 2011**

Part L stakeholder groups (housing)

**Dec 2011**

BRACW appointed

**Spring 2012**

Technical analysis, policy development and review

**March/April 2012**

Public consultation

**Summer/Autumn 2012**

Analysis of responses and final Ministerial decisions

**Winter 2012**

New guidance and software for 2013 changes

**Mid 2013**

Changes come into force

- Green Deal works to a slightly different timetable – due to launch from **October 2012**