Wales Building Regulations 2013 Part L

Existing homes

September 2012

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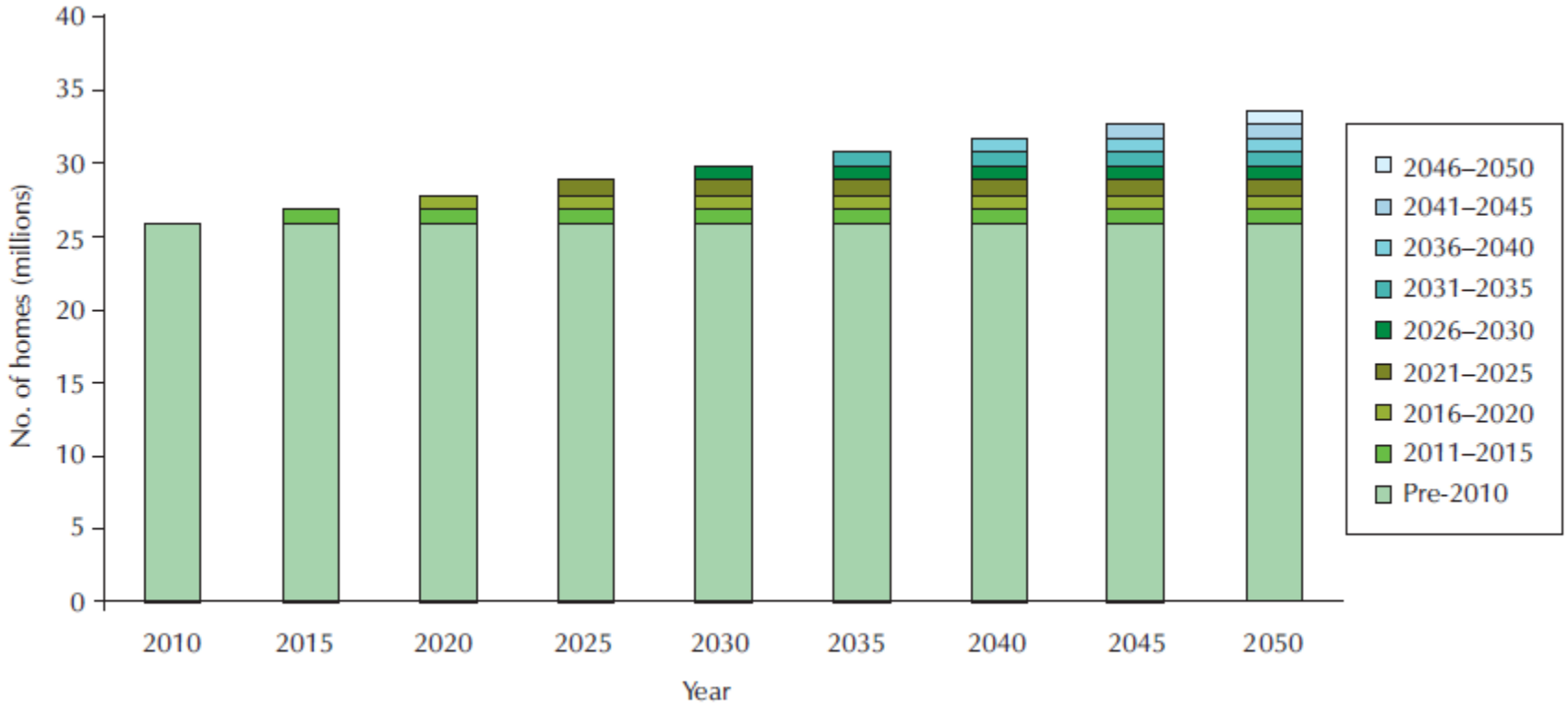
Introduction

- Most attention is usually given to the energy performance standards of new buildings.
- The real opportunity for reducing national CO_2 emissions from the built environment is to improve the existing stock.
- To put it into context:
  - 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_2 savings“, BRE Trust

Introduction – Part L for existing dwellings

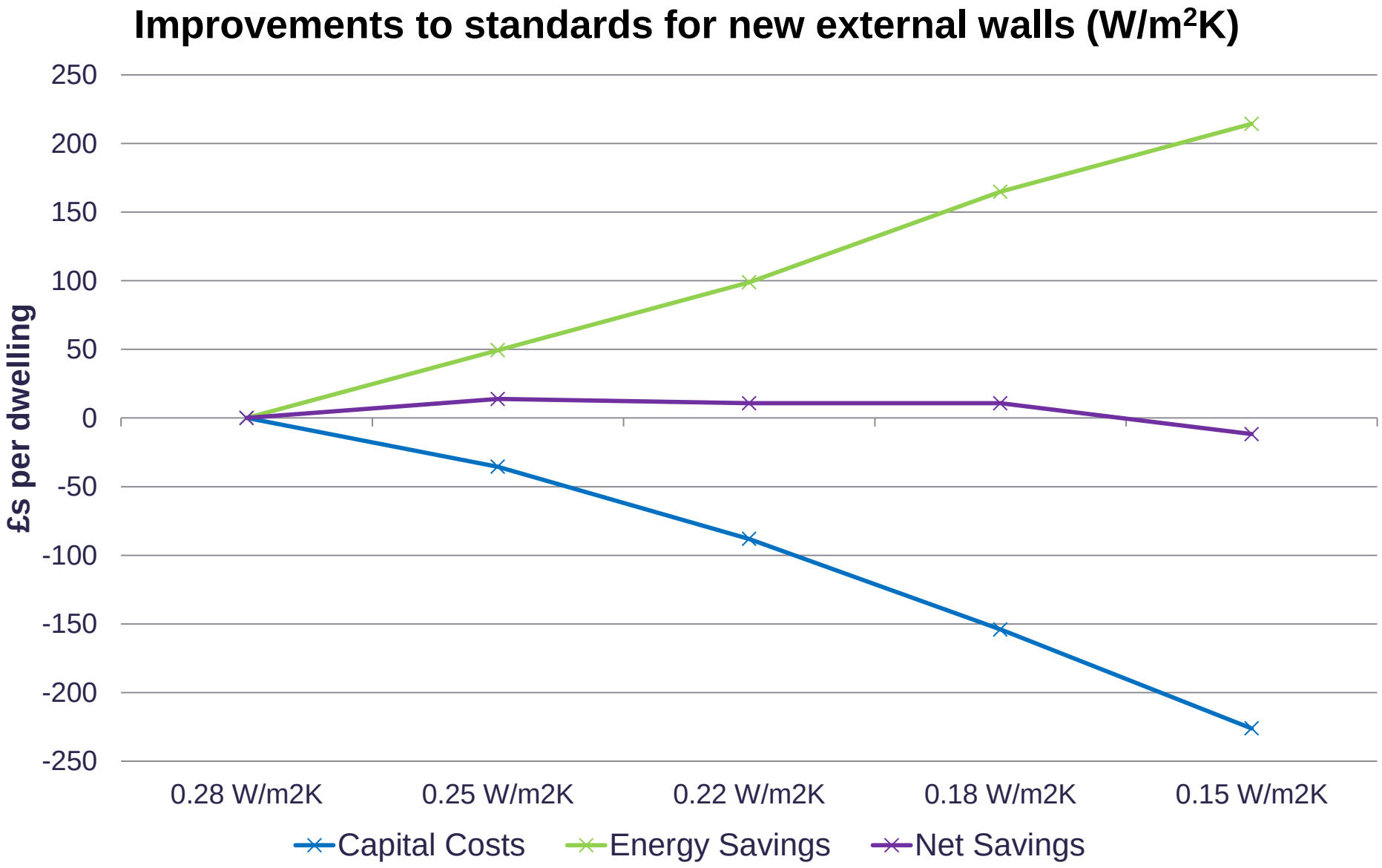
- There are three main but related questions to achieving greater energy efficiency via Part L.
  - Can we improve the standards of energy efficiency required by Part L?
  - Can we improve levels of compliance?
  - Can we bring more building work into scope?
- In particular the first two issues can be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

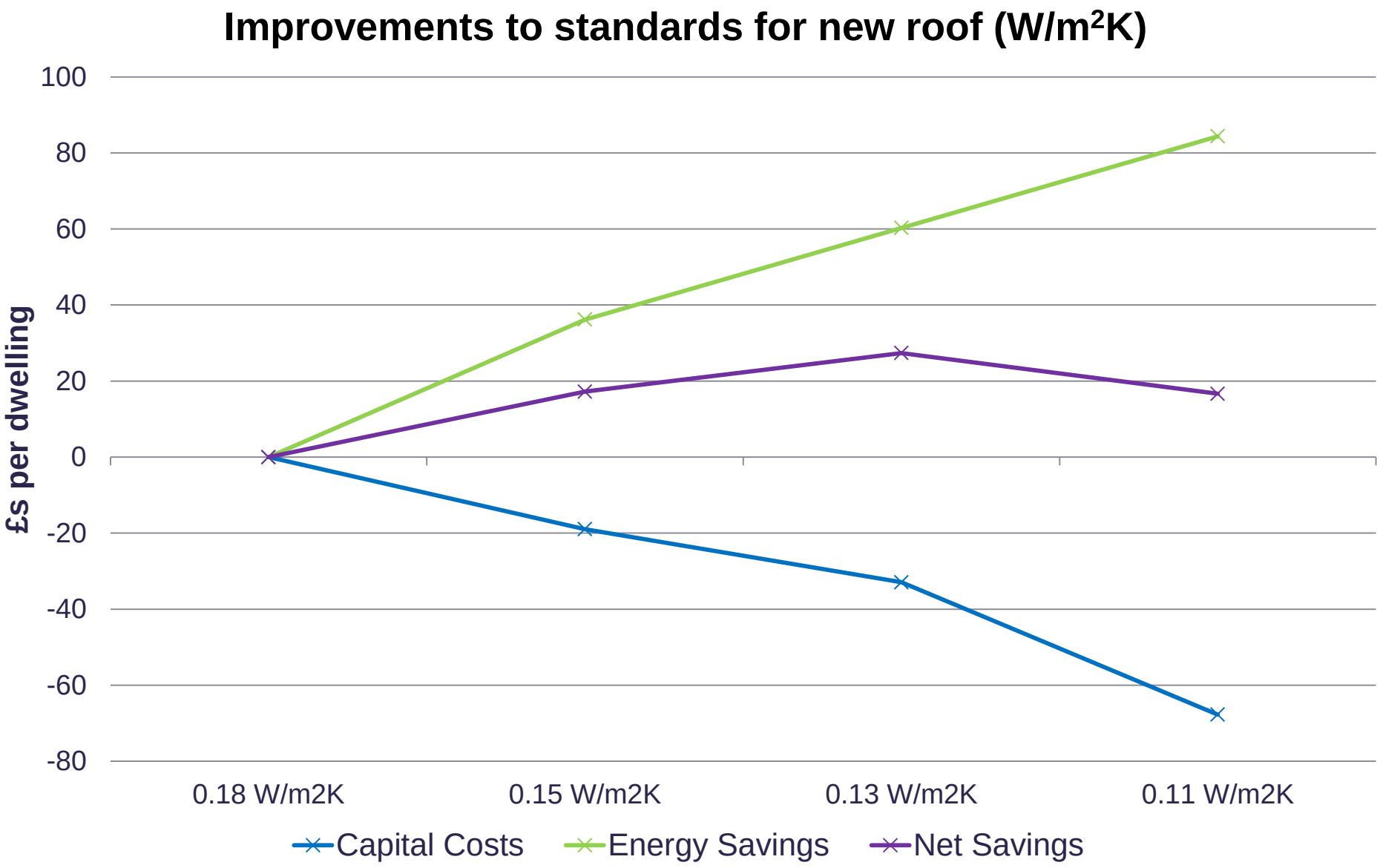
Improvements to current energy efficiency standards

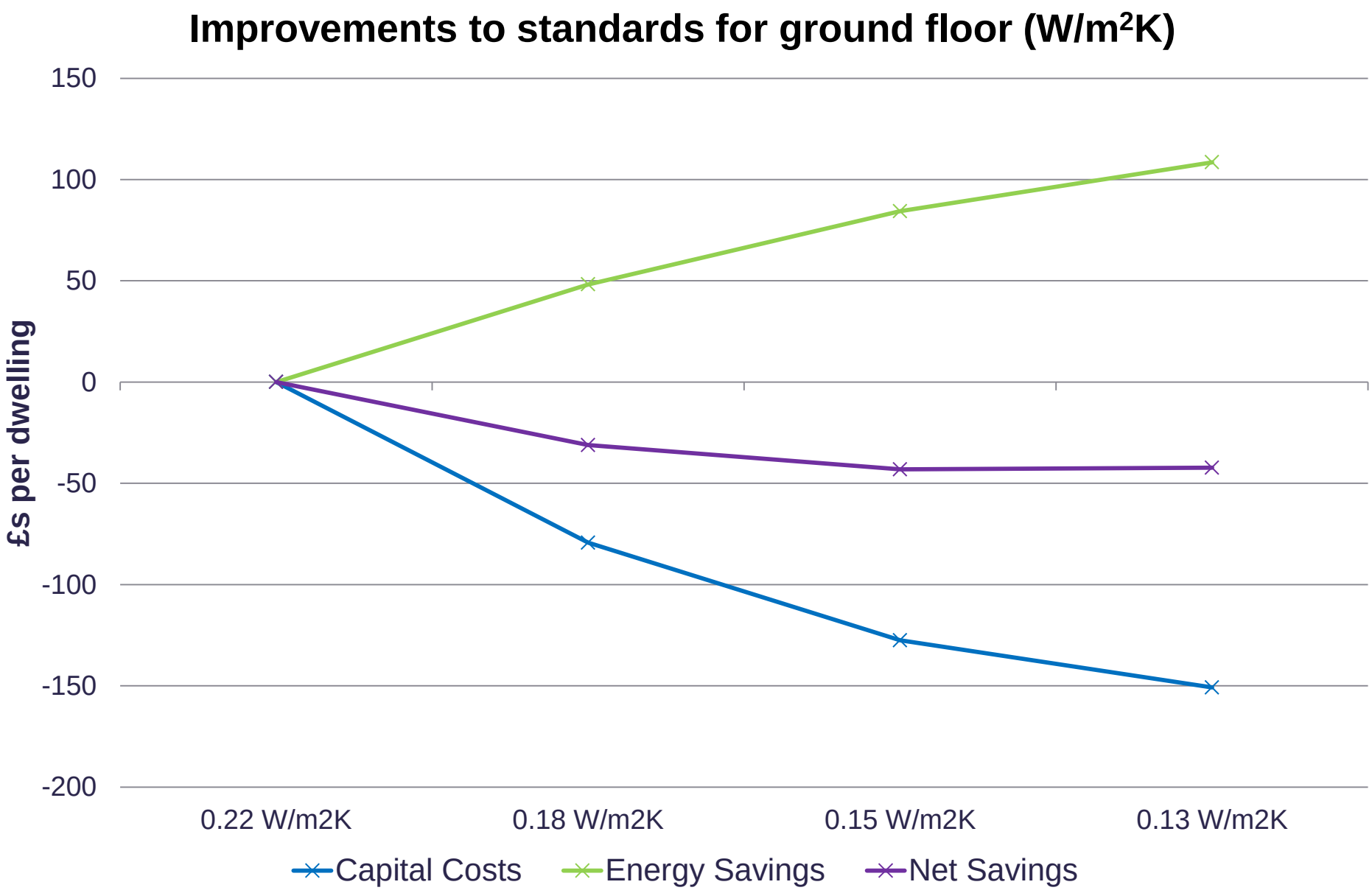
- **Replacement of controlled fittings and services**
  - For dwellings this typically comprises window and boiler replacement
  - ADL1B recommends minimum energy efficiency for replacements
  - May be sensible to achieve similar to new-build standards
    - Efficiency gain is locked into the product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

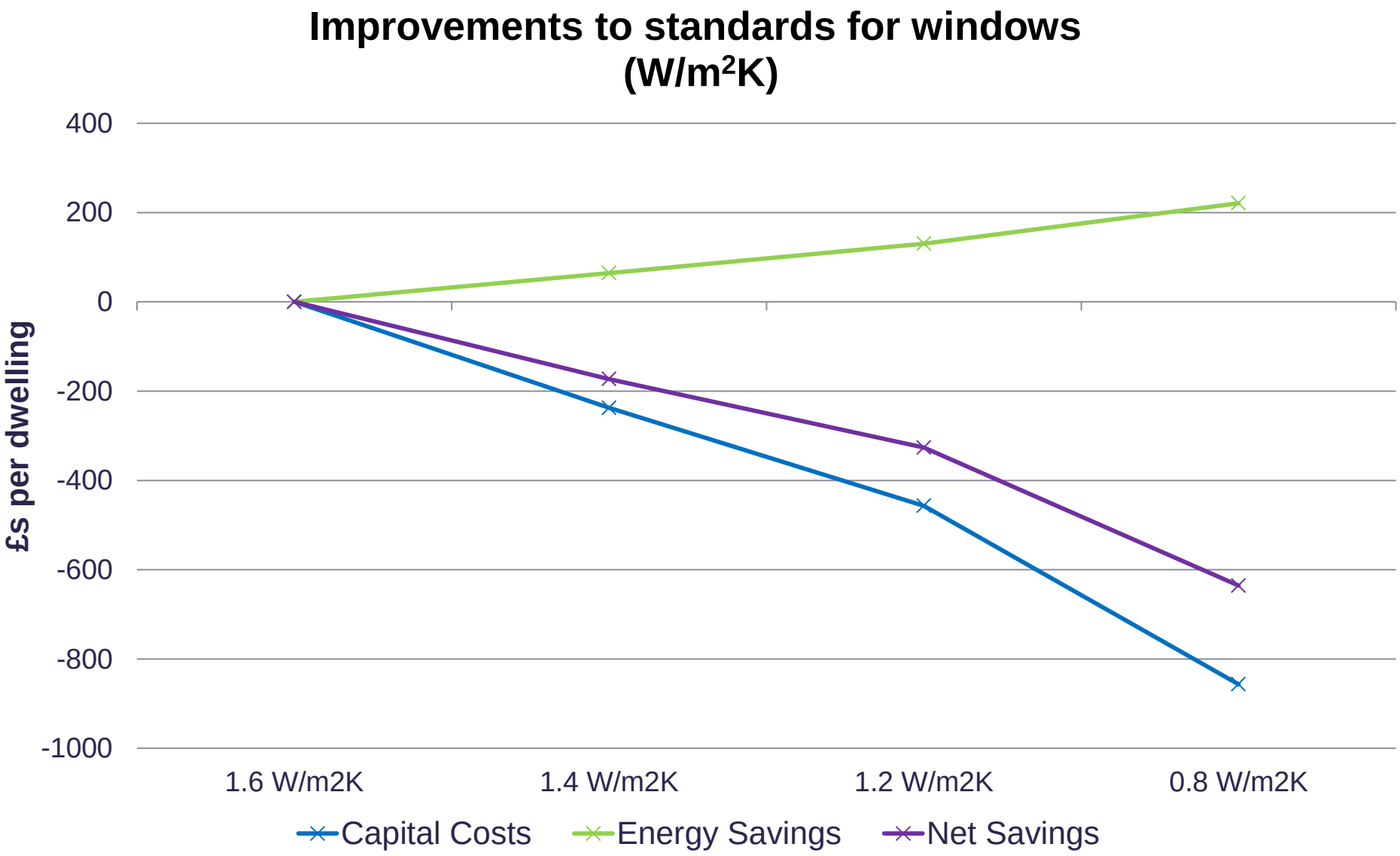
Improvements to current energy efficiency standards

- **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
  - Cost benefit analysis undertaken of potential improvements


Improvements to standards for new external walls (W/m²K)
£s per dwelling
250
200
150
100
50
0
-50
-100
-150
-200
-250
0.28 W/m2K
0.25 W/m2K
0.22 W/m2K
0.18 W/m2K
0.15 W/m2K
Capital Costs
Energy Savings
Net Savings


Improvements to standards for new roof (W/m2K)
£s per dwelling
100
80
60
40
20
0
-20
-40
-60
-80
0.18 W/m2K
0.15 W/m2K
0.13 W/m2K
0.11 W/m2K
Capital Costs
Energy Savings
Net Savings


Improvements to standards for ground floor (W/m²K)
£s per dwelling
150
100
50
0
-50
-100
-150
-200
0.22 W/m2K
0.18 W/m2K
0.15 W/m2K
0.13 W/m2K
Capital Costs
Energy Savings
Net Savings


Improvements to standards for windows (W/m²K)
£s per dwelling
400
200
0
-200
-400
-600
-800
-1000
1.6 W/m2K
1.4 W/m2K
1.2 W/m2K
0.8 W/m2K
Capital Costs
Energy Savings
Net Savings

Improvements to current energy efficiency standards

	Existing fabric standard		
	2010	2013 (Wales)	2013 (England)
Wall (W/m^2K)	0.28	0.21	0.20
Roof (W/m^2K)	0.16/0.18	0.15	0.15
Floors (W/m^2K)	0.22	0.18	0.17
Windows (W/m^2K)	1.6	1.6	1.4

Questions

Q32: Please ignore

Q33: Do you agree with the proposal to raise performance standards for domestic extensions?

Q44: Do you think that the Impact Assessment is a fair and reasonable assessment of the potential costs and benefits of raising performance standards for domestic extensions?

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 internal surface
  - Proposal not to raise standards
    - Anecdotally, this is an area of poorer compliance
    - Practical guidance may achieve greater carbon savings
  - However, usually only one opportunity to install additional insulation

Improvements to current energy efficiency standards

- **Retained thermal element**
  - ADL1B recommends minimum energy efficiencies where there is a retained thermal element:
    - Material change of use (e.g. warehouse to flats)
    - Existing element becomes part of the thermal envelope e.g. through loft or garage conversion
  - Previously needed to meet same standards as for renovation but only if the current u-value is poorer than a defined threshold
  - Proposed change to remove the threshold limit
    - Wish to improve the efficiency of existing buildings
    - Material change of use effectively produces a new building
    - Anecdotally, the threshold is often not applied for conversions etc
    - Only need to undertake work if technically, functionally and economically feasible.

Consequential Improvements

- For buildings > 1000m^2, increasing the carbon footprint of the building requires consequential energy efficiency improvements
- Triggers are
  - An extension (or increase in habitable space)
  - 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, to be 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

- For all dwellings < 1000m^2 propose a simple and low cost approach
- Only triggered by extensions or increases in habitable space (e.g. loft or garage conversion) and not through building services
- For dwellings
  - A minimum standard of loft insulation (where < 200mm, install 250mm)
  - The inclusion of cavity wall insulation where appropriate
  - A minimum standard of hot water cylinder insulation
- The measures are appropriate and proportionate to the building works
  - Where works increase floor area < 10m^2, upgrade loft insulation only
- Undertaking these works at the same time as other work, should reduce hassle and help future proof the building
- Only required where technically, functionally and economically feasible

Questions

Q36: Do you agree with the proposal to require consequential improvements upon extensions or other increases in habitable space in existing homes below 1000m^2?

Q37: Do you agree with the list of measures proposes (loft insulation, hot water cylinder insulation, cavity wall insulation)? Should the list be different? Should an alternative approach be taken?

Q38: What effect will the requirements for consequential improvement have on the demand for repair, maintenance and improvement activity? (increase/reduce/no impact on demand)

Q41: Do you agree that there should not be a major problem in extending the requirement for consequential improvements for the building control process? If you foresee issues, what are they and how might they be addressed?

Q45: Do you think that the impact assessment is a fair and reasonable assessment of the potential costs and benefits of the proposed options for consequential improvements in existing homes?

Conservatories and porches

- Conservatories and porches are currently exempt:
  - Where the floor area is less than 30m^2
  - Thermal separation between the dwelling and conservatory or porch
  - Where the heating system of the dwelling is not extended into the conservatory or porch
- There are arguments to remove this exemption as often open to the rest of the dwelling and significant heat loss
- Not proposing to remove the exemption at this time
- Propose final bullet changed to “where there is no heating or cooling installed”
- However, would it be beneficial e.g. can subsequently install of portable heaters?

Questions

Q35: Do you agree that the exemption for conservatories should be removed when an individual room heat or air conditioning unit is installed? How effective would this change be in limiting energy use/emissions, or are there other ways by which energy performance may be improved when conservatories or porches are installed?

Optional approaches for greater design flexibility

- For extensions, it provides two optional approaches
  - Area-weighted u-value measurements
  - Equivalent carbon target calculation
- Inconsistent how it applied to other building works
- Extend optional approaches to other building works.
  - Conversions
  - Renovations
  - Material changes of use
  - Works to windows and doors
  - Non-exempt conservatories and porches

Questions

Q42: Do you have any other comments on the proposed changes to ADL1B?

ANY QUESTIONS?