Neil Jefferson
Zero Carbon Hub

Sponsored by

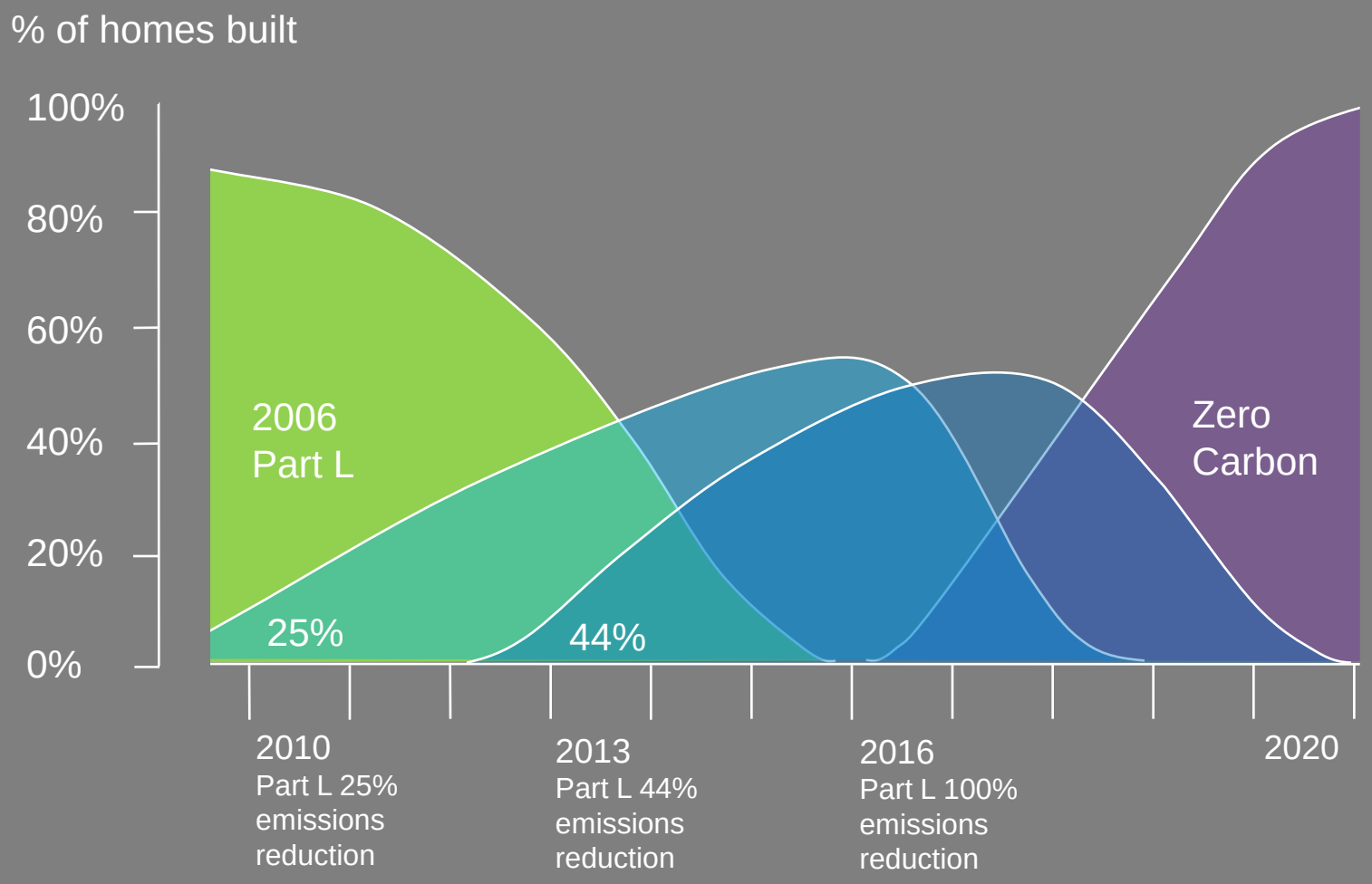
ZERO CARBON DEFINITION

NEIL JEFFERSON

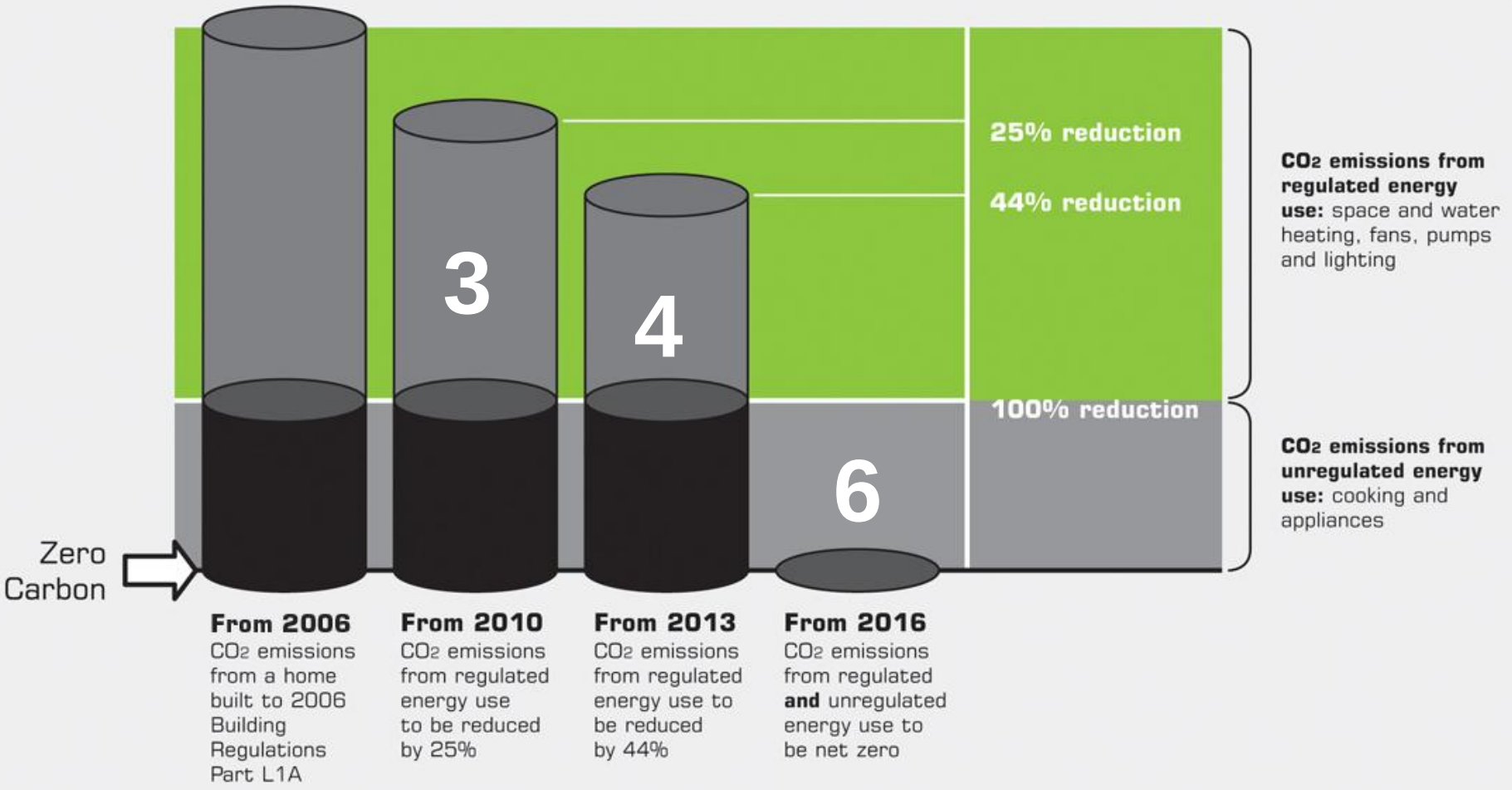
AGENDA

- Zero Carbon Definition
  - Fabric Energy Efficiency Standard
  - Carbon Compliance Standard
  - Allowable Solutions
- Cost modelling and site viability
- What next for Zero Carbon Hub?

THE JOURNEY TO ZERO CARBON

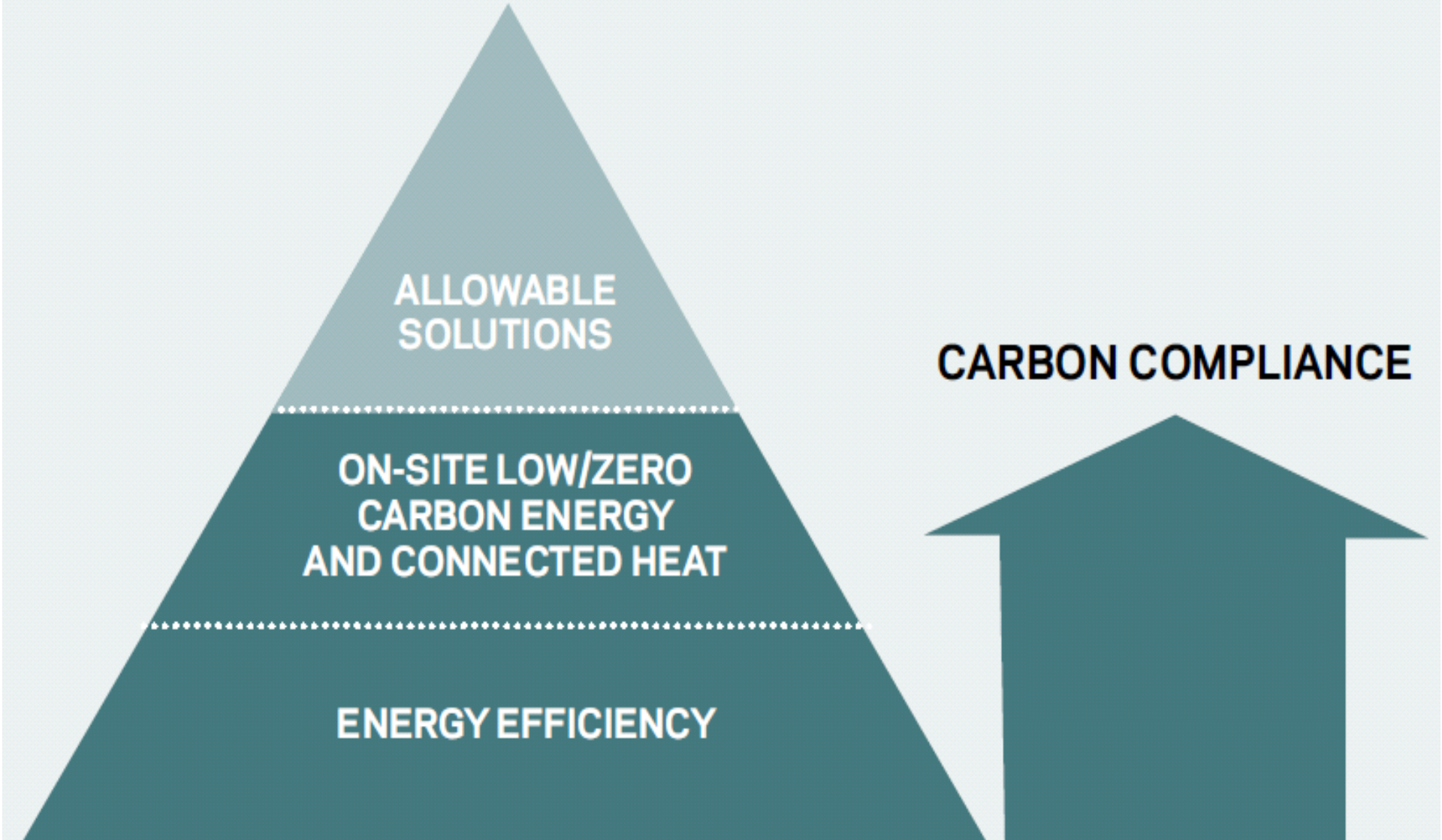


JOURNEY TO ZERO CARBON

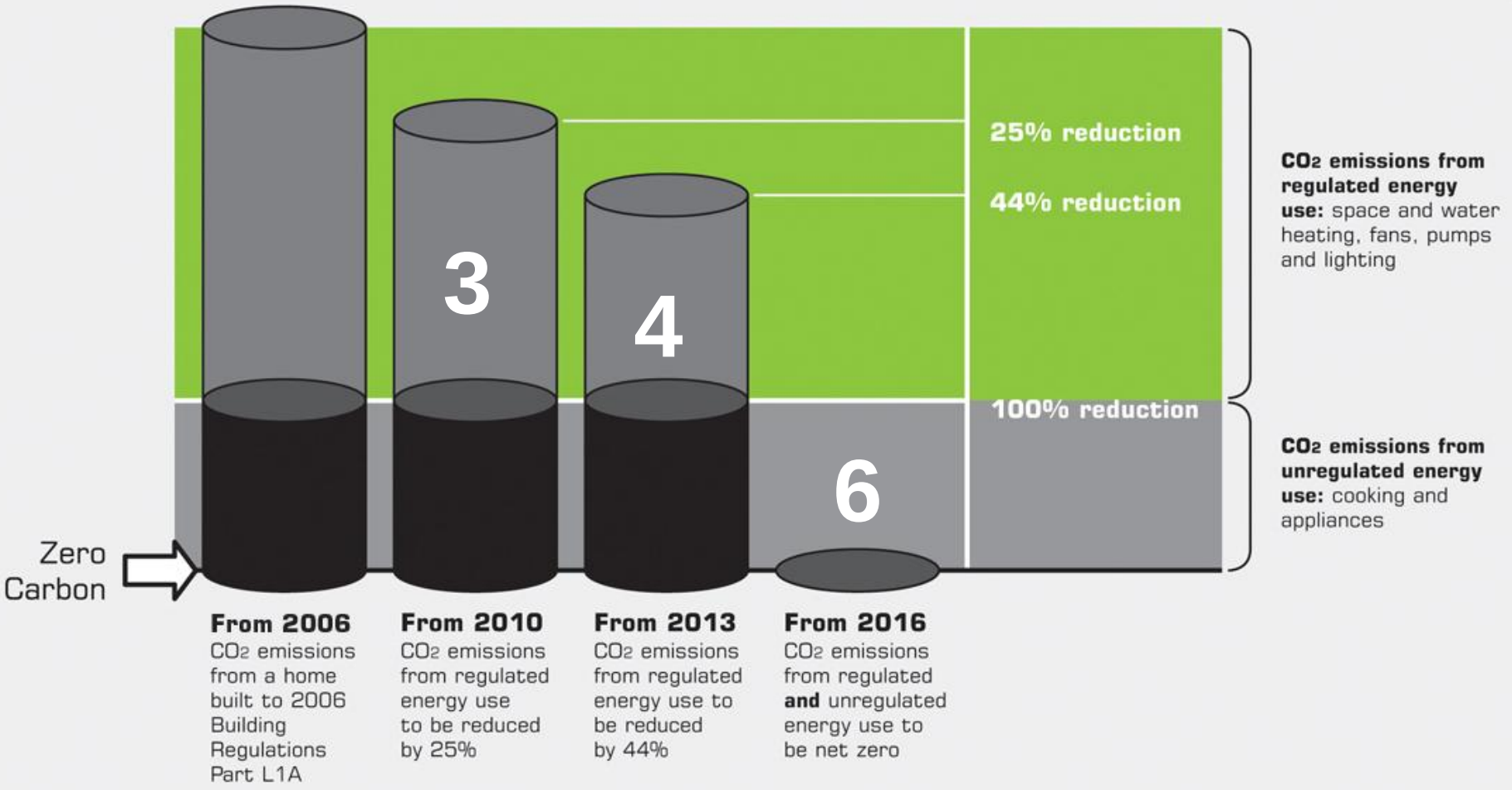


JOURNEY TO ZERO CARBON

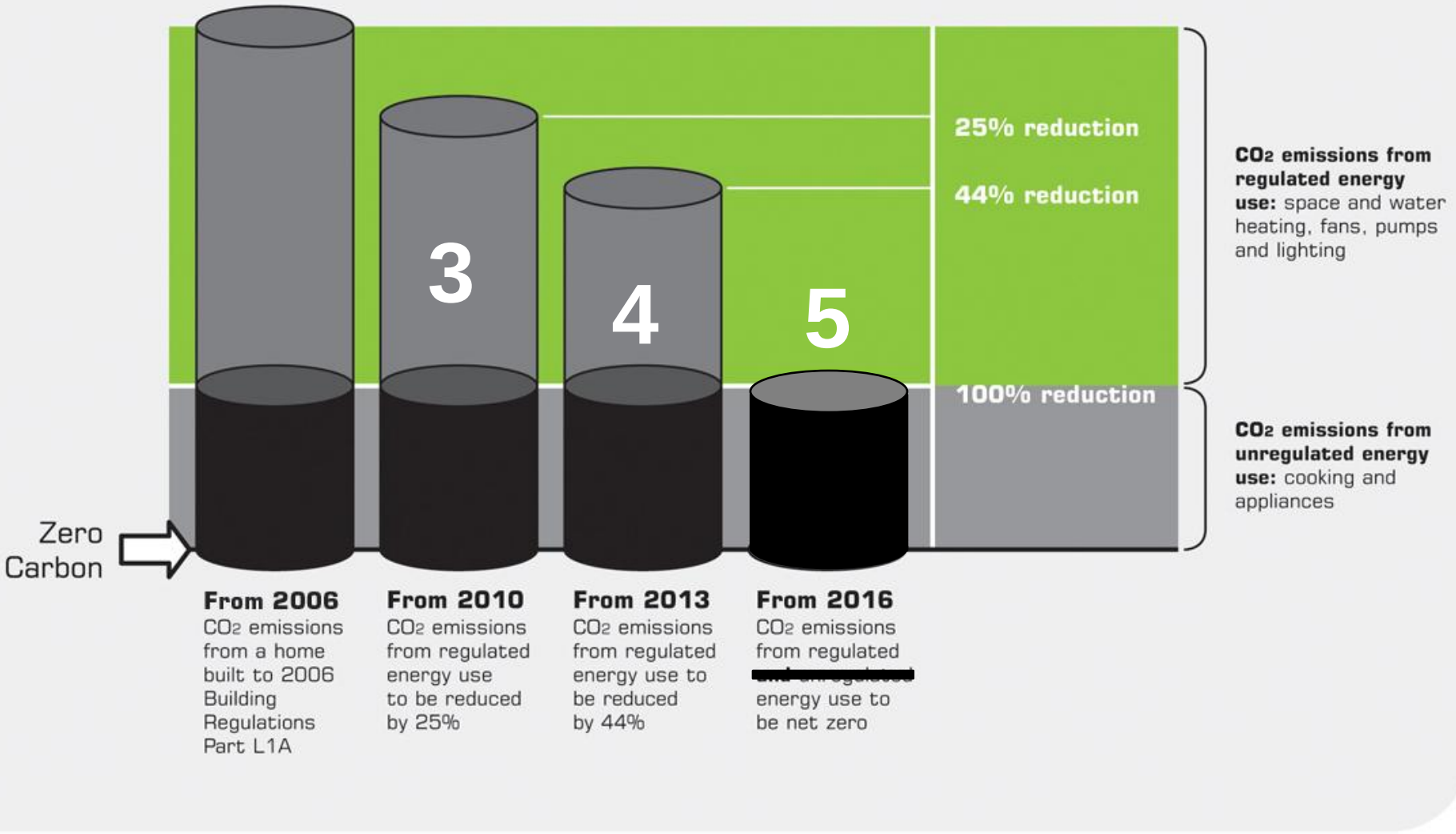
ZERO CARBON DEFINITION



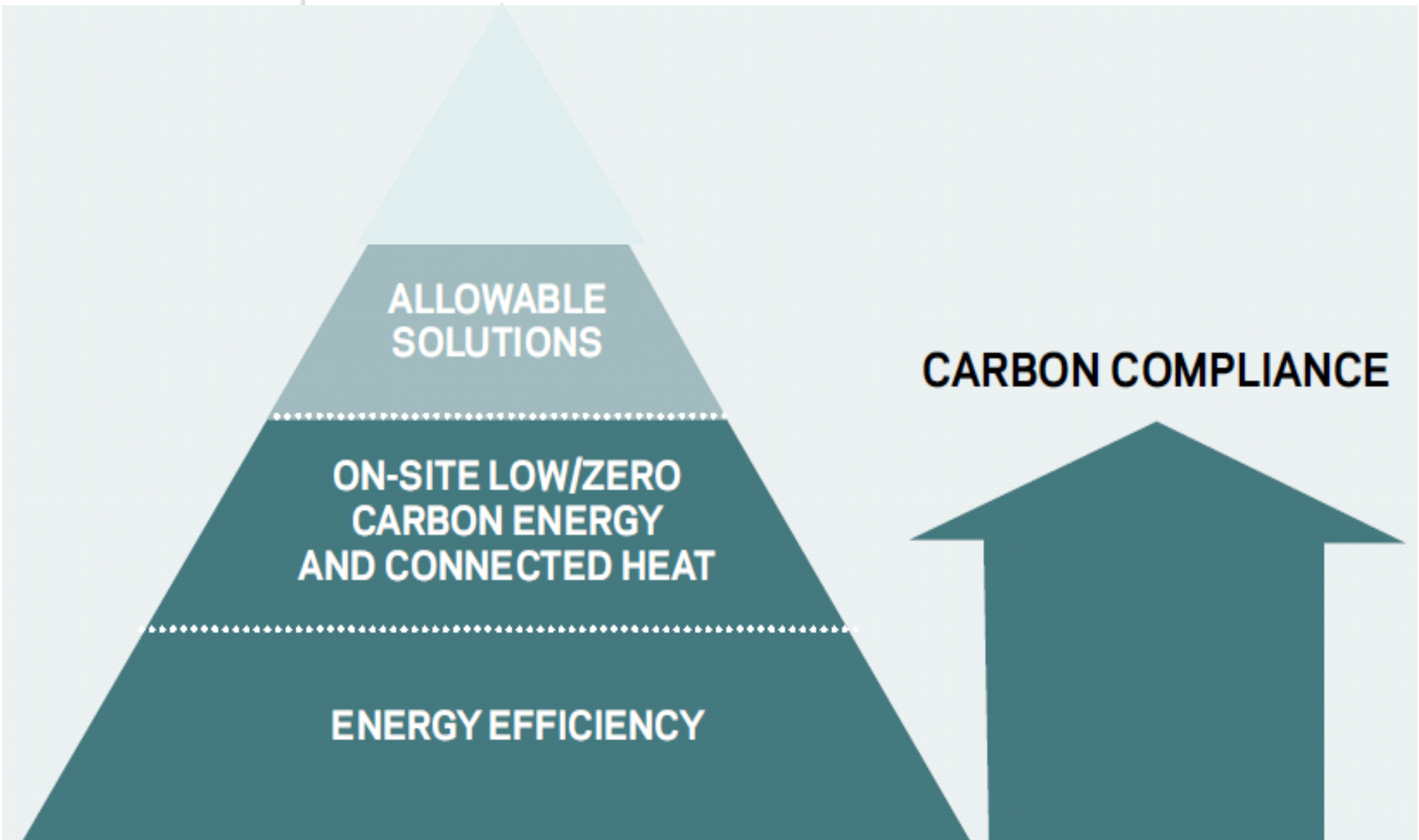
JOURNEY TO ZERO CARBON



POST-BUDGET JOURNEY TO ZERO CARBON



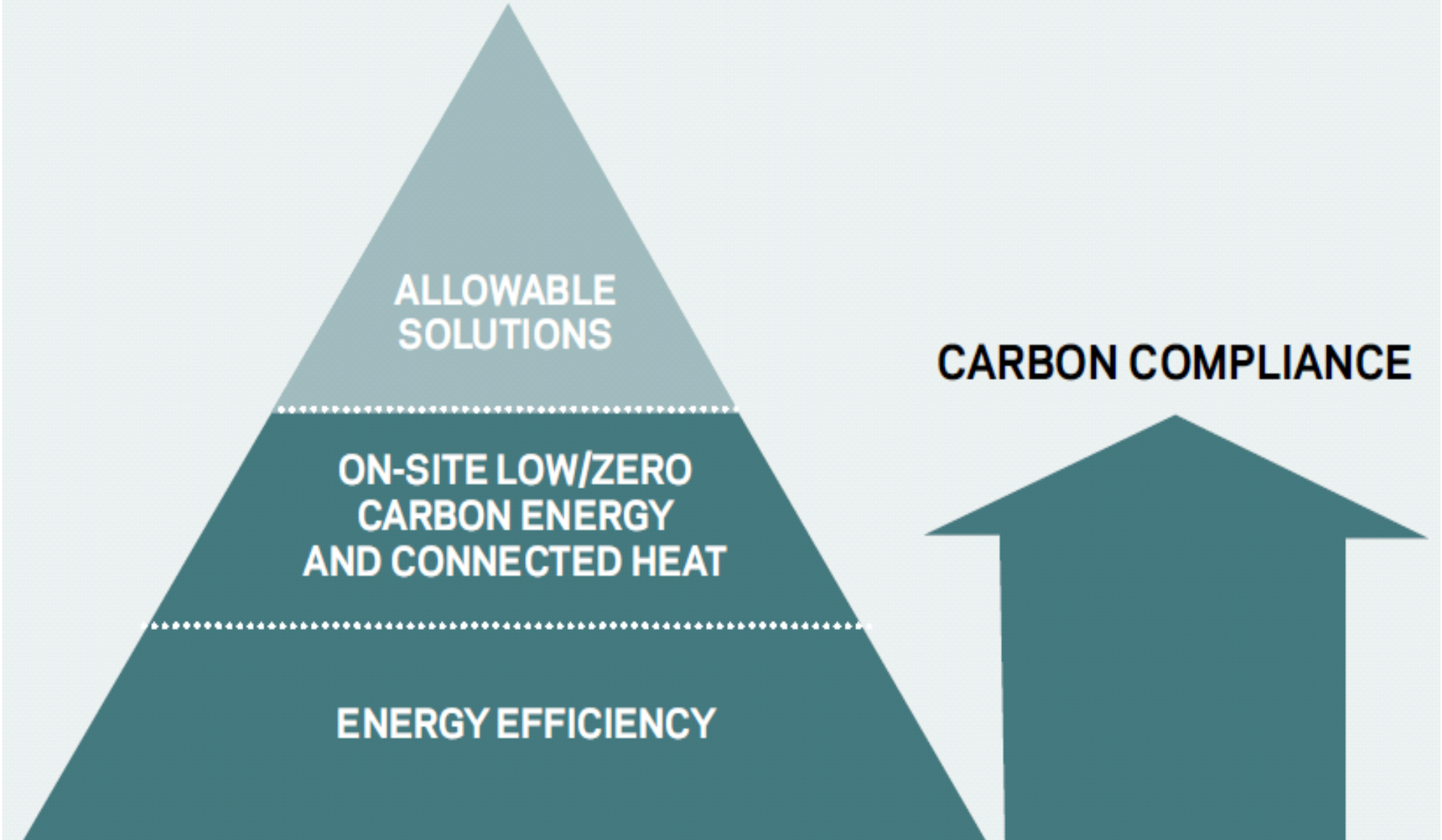
ZERO CARBON DEFINITION



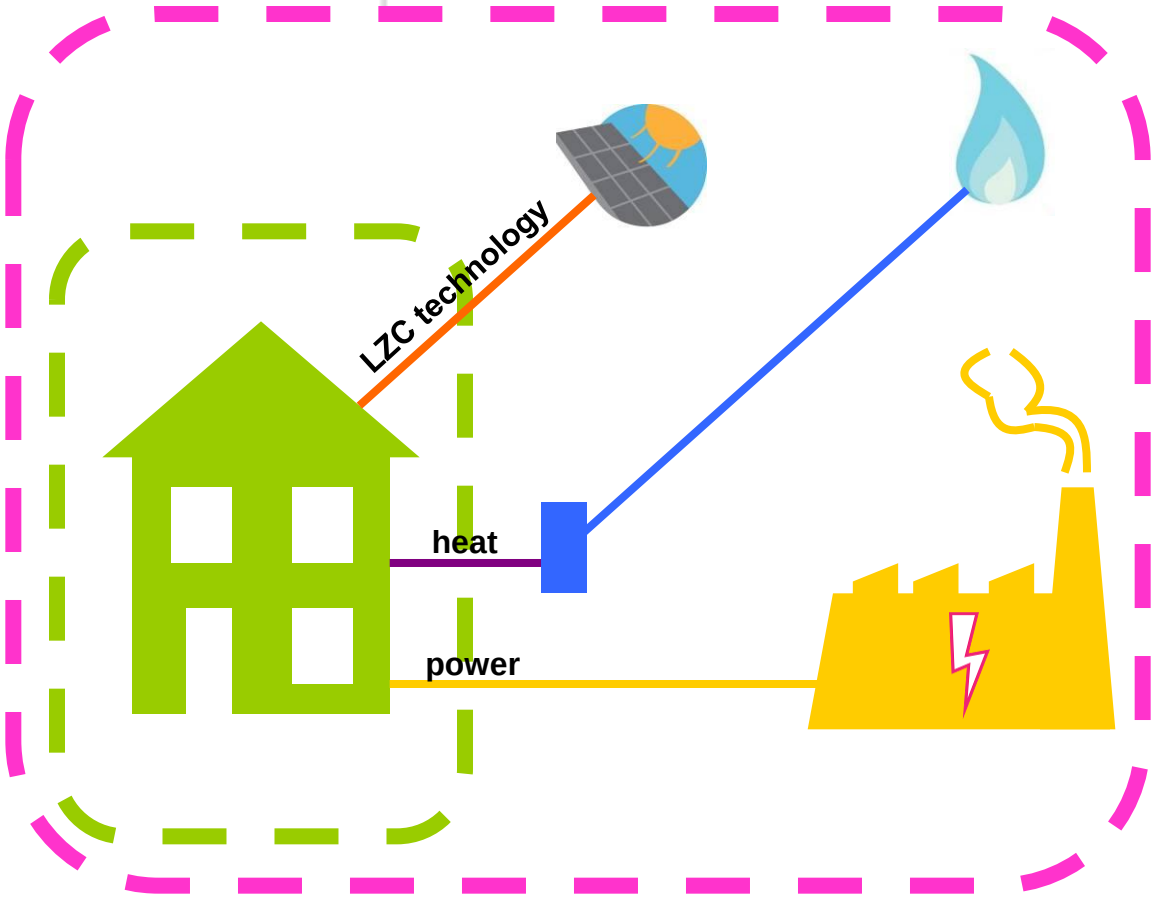
FABRIC ENERGY EFFICIENCY STANDARD

CARBON COMPLIANCE STANDARD

ZERO CARBON DEFINITION



SCOPE OF ‘CARBON COMPLIANCE’



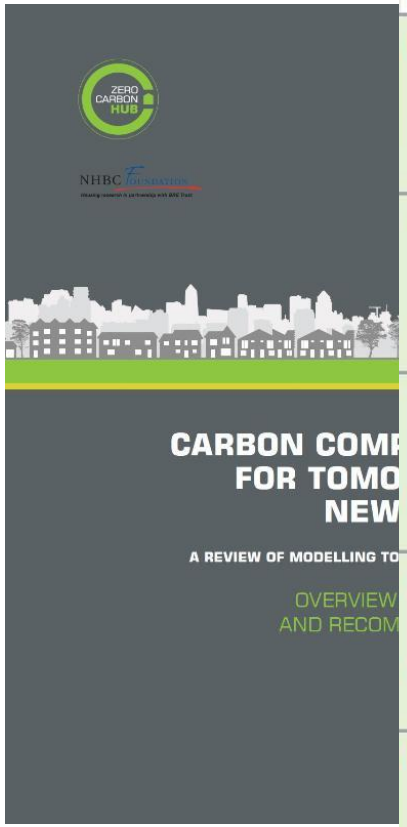
Energy Efficiency Standard

- Building fabric U-values
- Thermal bridging
- Air permeability
- Thermal mass
- Solar, metabolic, lighting & appliance gains

Carbon Compliance Standard

- Heating / cooling appliances (boilers, etc)
- Mechanical ventilation
- Hot water
- Active controls
- Fixed lighting
- All LZC technologies

CARBON COMPLIANCE ASSUMPTIONS



OVERVIEW

Overview of findings and recommendations

The Task Group's summary of the Topic Work Group reports

TOPIC 1

Carbon compliance tools considerations

Looking at modelling tools currently available both here and abroad and considering key characteristics, what they assess and the trade off between accuracy and ease of use.

TOPIC 2

Carbon intensity of fuels

Considering the implications of, and an appropriate response to, the changing carbon intensity of electricity and other fuels.

TOPIC 3

Future climate change

Setting out how projected national and local climate changes could affect energy demand. Exploring for example how the compliance tool should embrace overheating risk.

TOPIC 4

Closing the gap between designed and built performance

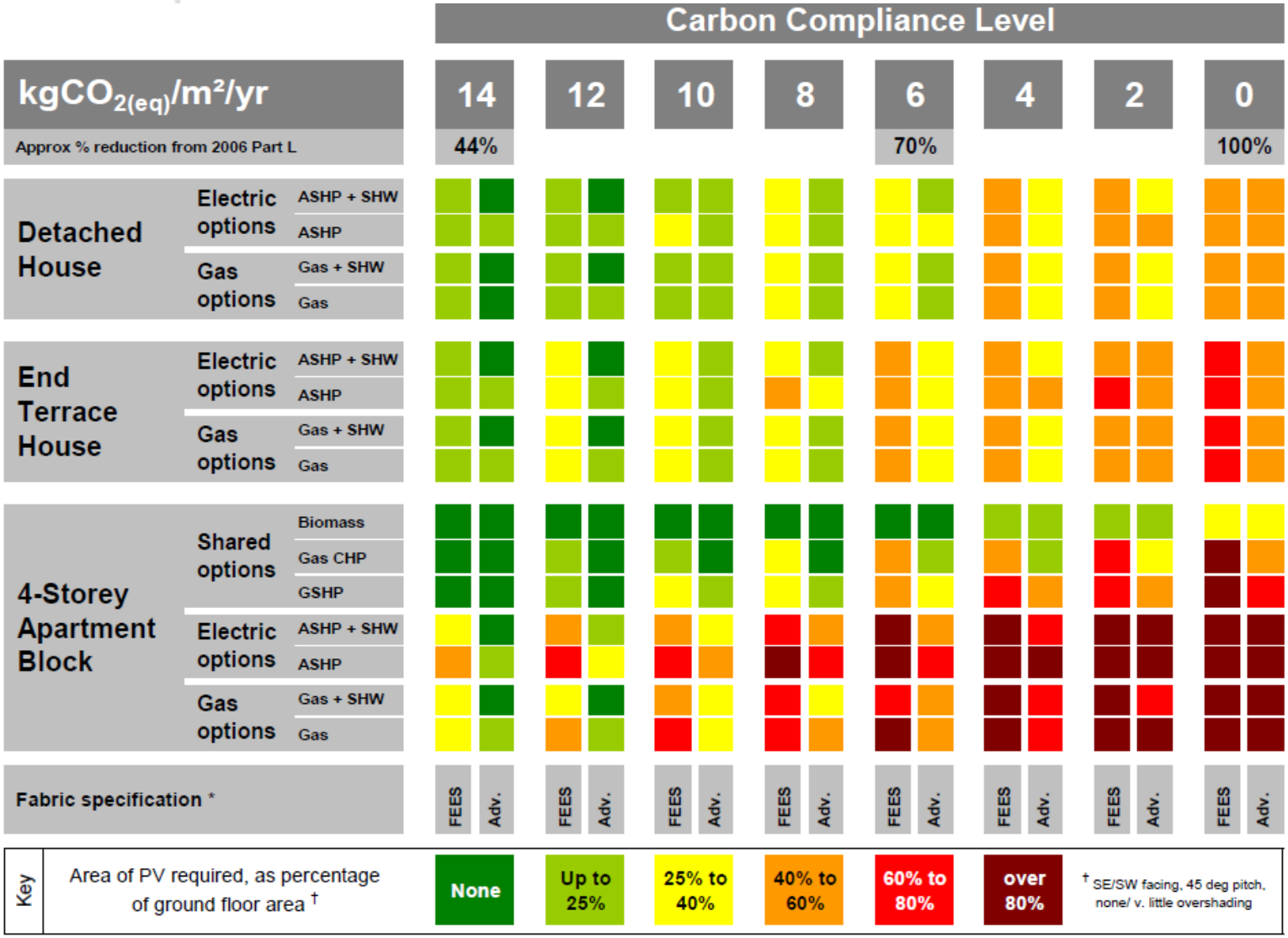
How the compliance tool should accommodate (and help reduce) any performance gap between design performance and what is achieved on site.

TOPIC 5

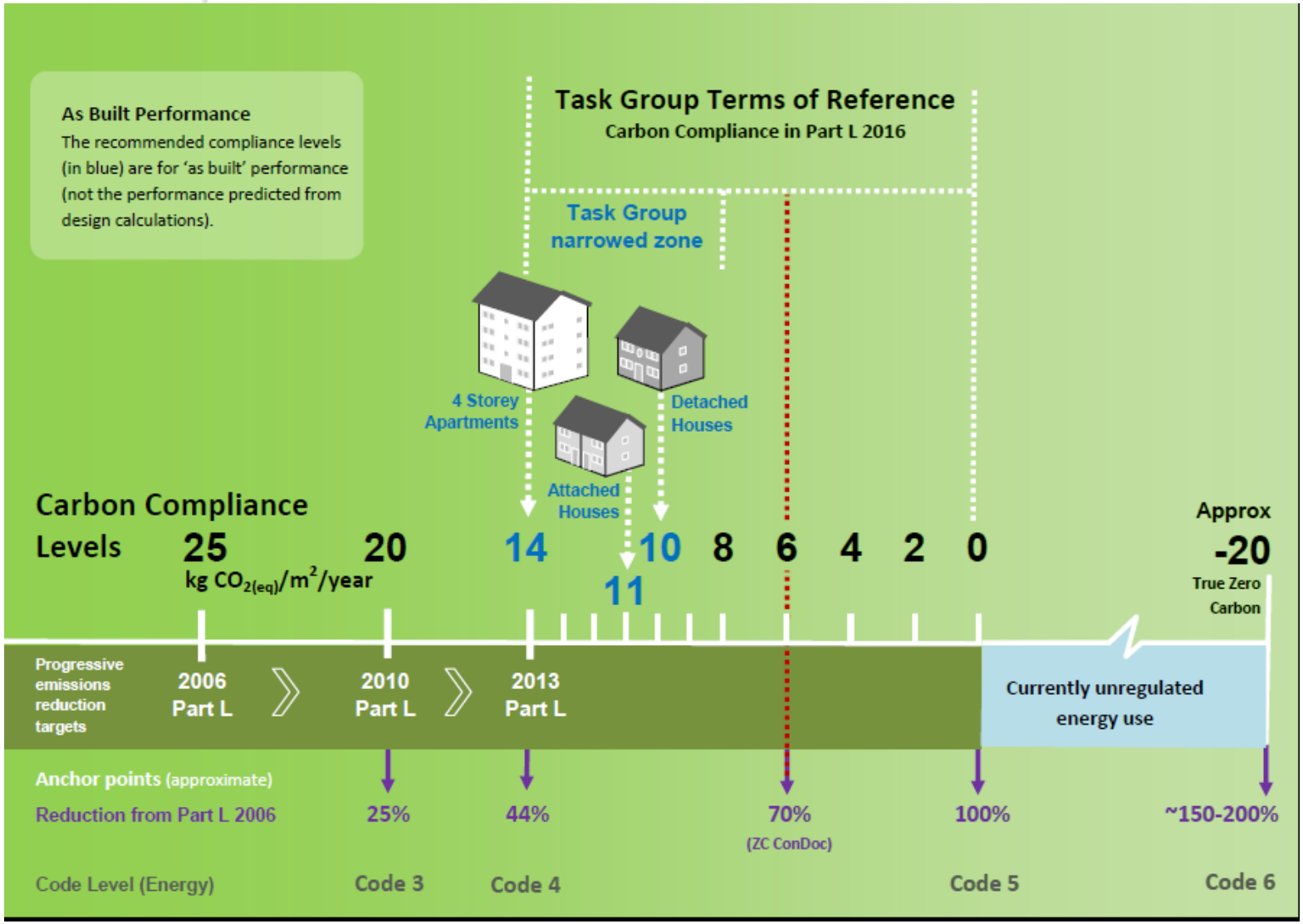
How the performance standard should be expressed

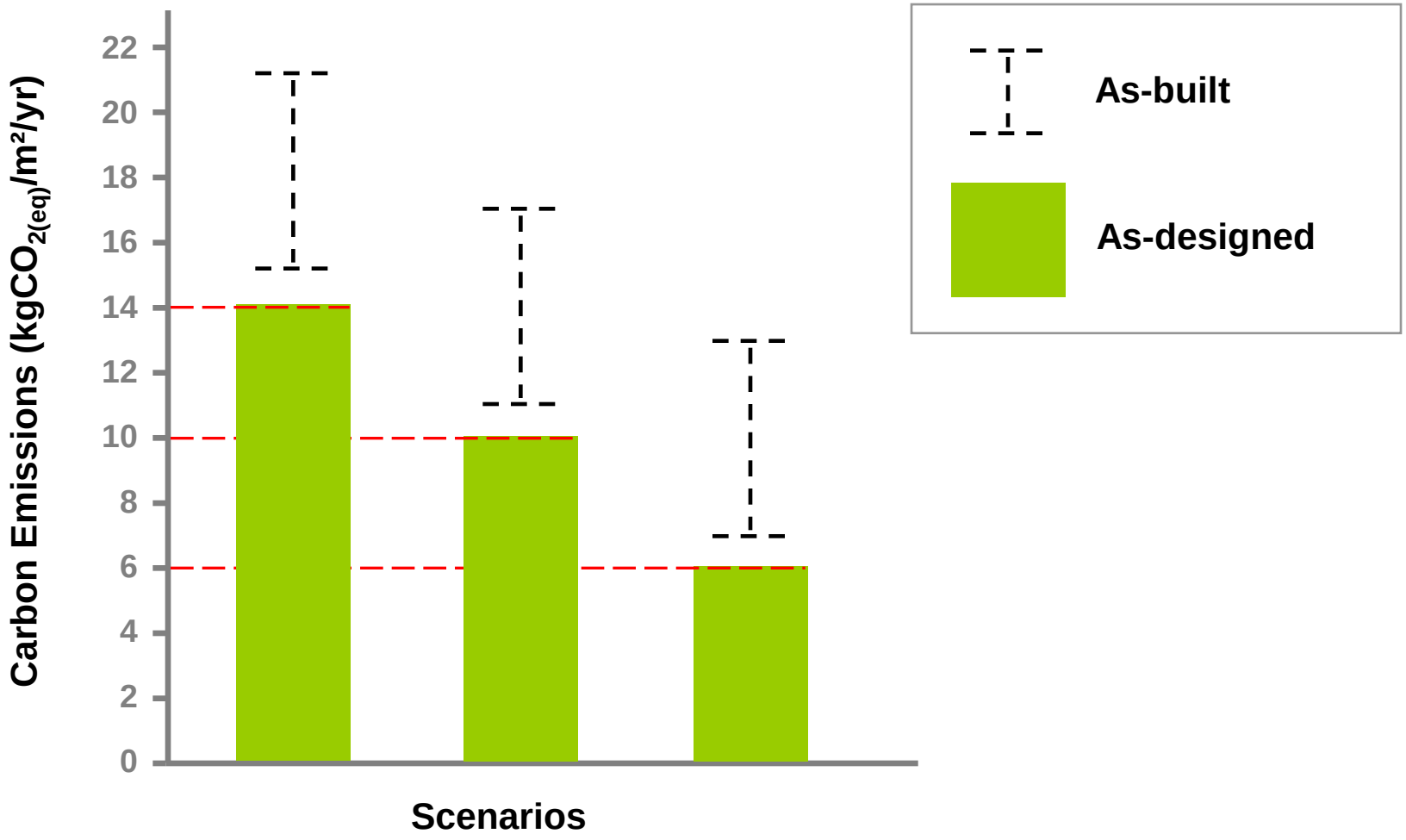
This looks at whether carbon compliance should be expressed as an improvement versus a notional building (as now) or in absolute terms (kg CO_2 emissions per unit area).

ANALYSING TECHNICAL FEASIBILITY

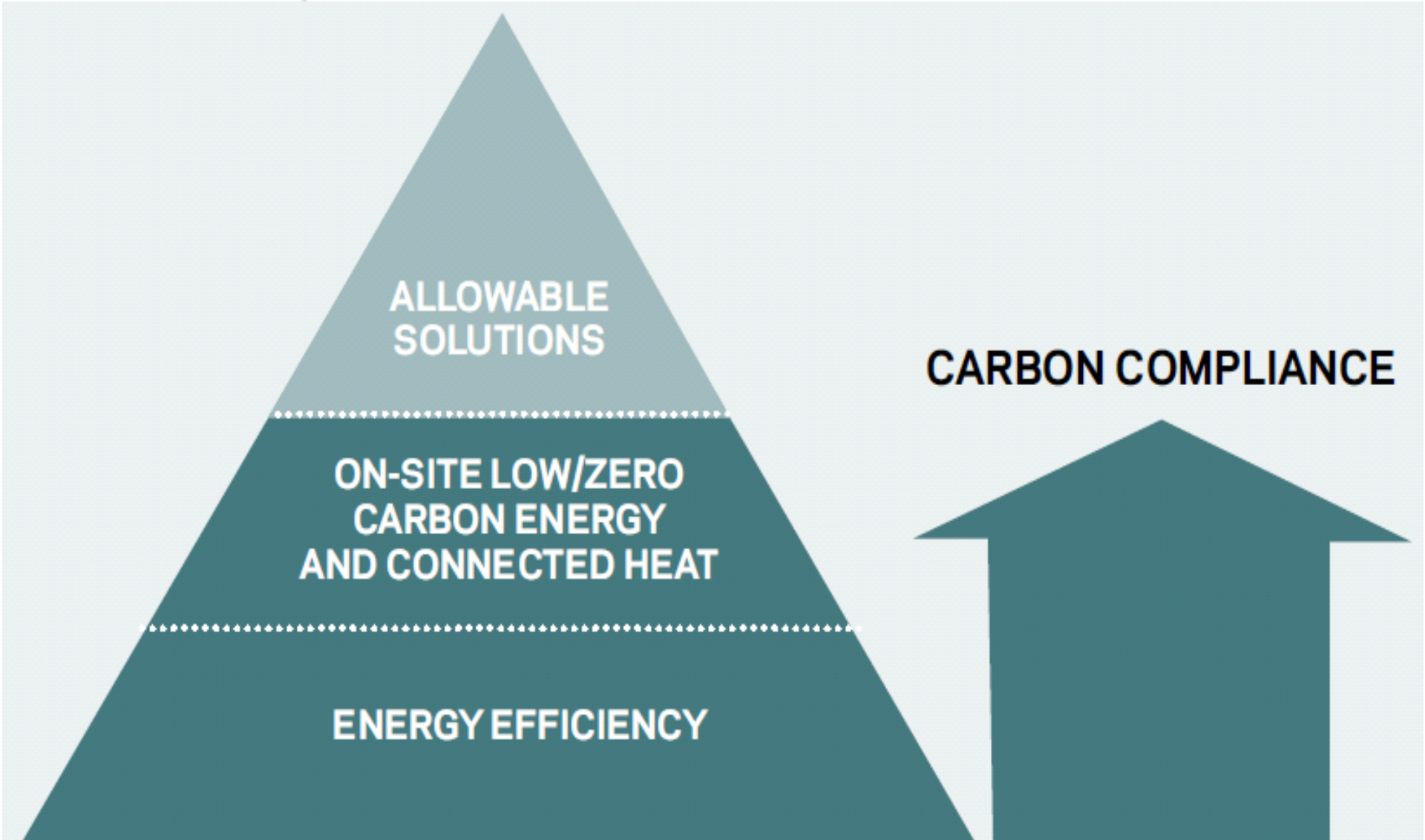


CARBON COMPLIANCE STANDARD




Carbon Emissions (kgCO2(eq)/m²/yr)
22
20
18
16
14
12
10
8
6
4
2
0
Scenarios
As-built
As-designed

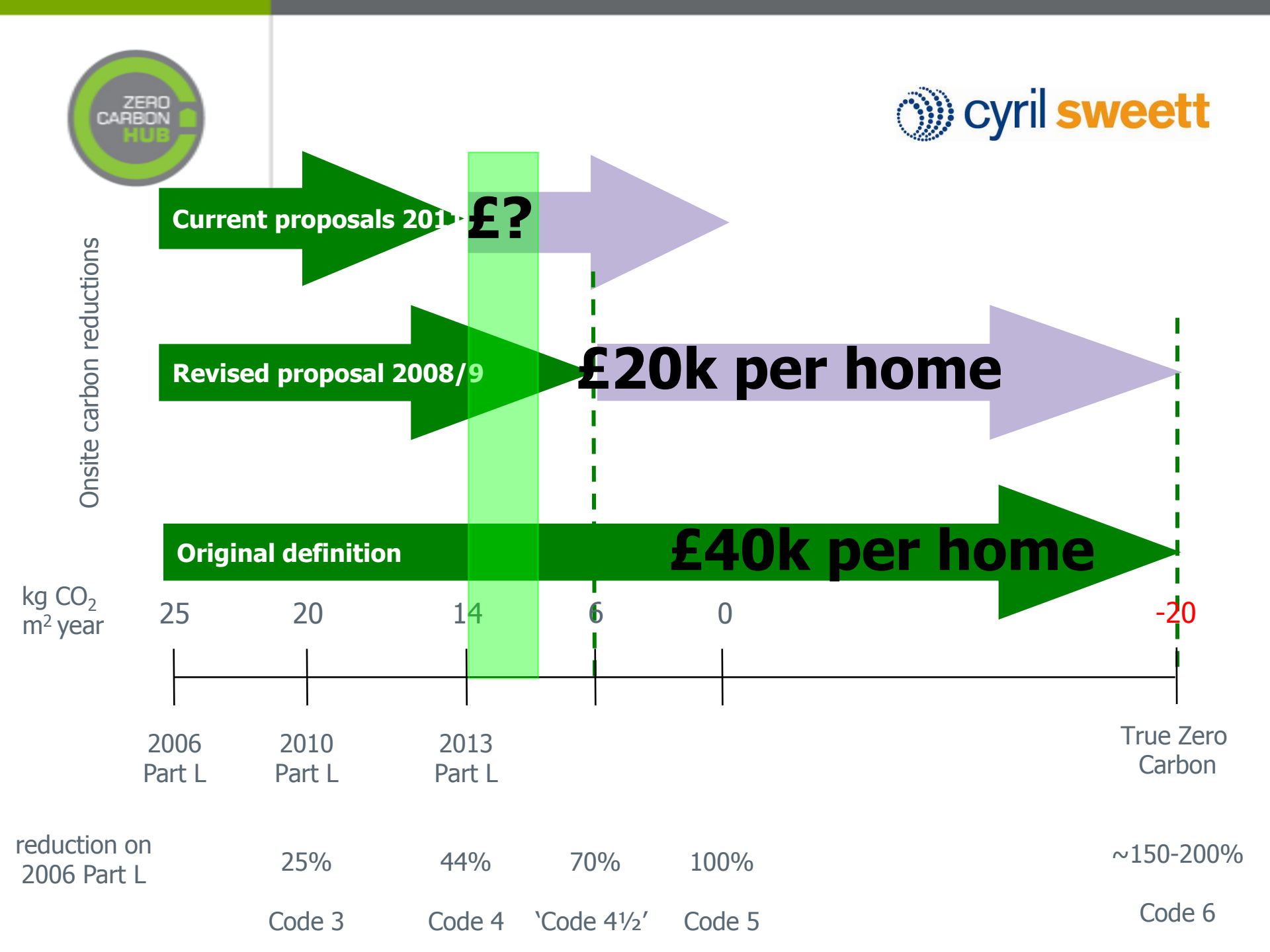
ALLOWABLE SOLUTIONS



COST MODELLING AND SITE VIABILITY

OVERVIEW

- Cost implications of zero carbon homes
- Implications for site viability
- Developing a competitive strategy


ZERO CARBON HUB
cyril sweett
Current proposals 201
£?
Revised proposal 2008/9
£20k per home
Original definition
£40k per home
Onsite carbon reductions
kg CO2 m2 year
25
20
14
6
0
-20
2006 Part L
2010 Part L
2013 Part L
True Zero Carbon
reduction on 2006 Part L
25%
44%
70%
100%
~150-200%
Code 3
Code 4
'Code 4½'
Code 5
Code 6

E/O COSTS 2010 – END OF TERRACE

Fabric

Minimum fabric - £2k

Advanced fabric - £7k

+

Core Heating

Gas boiler - £0

ASHP - £6k

GSHP - £14k

Gas + SWH - £3.5k

ASHP + SWH - £9k

Biomass - £7-9k

Gas CHP – £7-10k

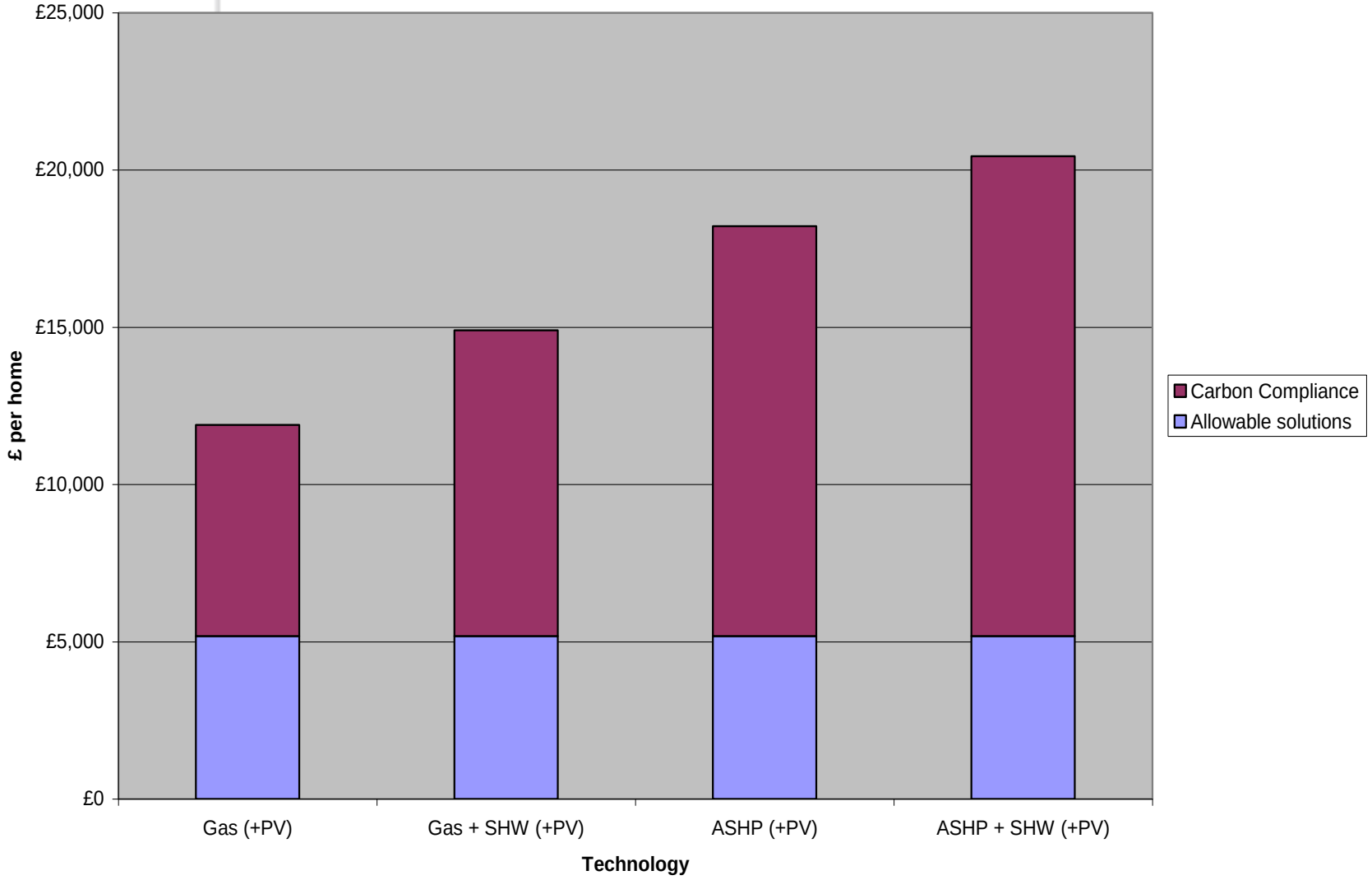
+

Electricity

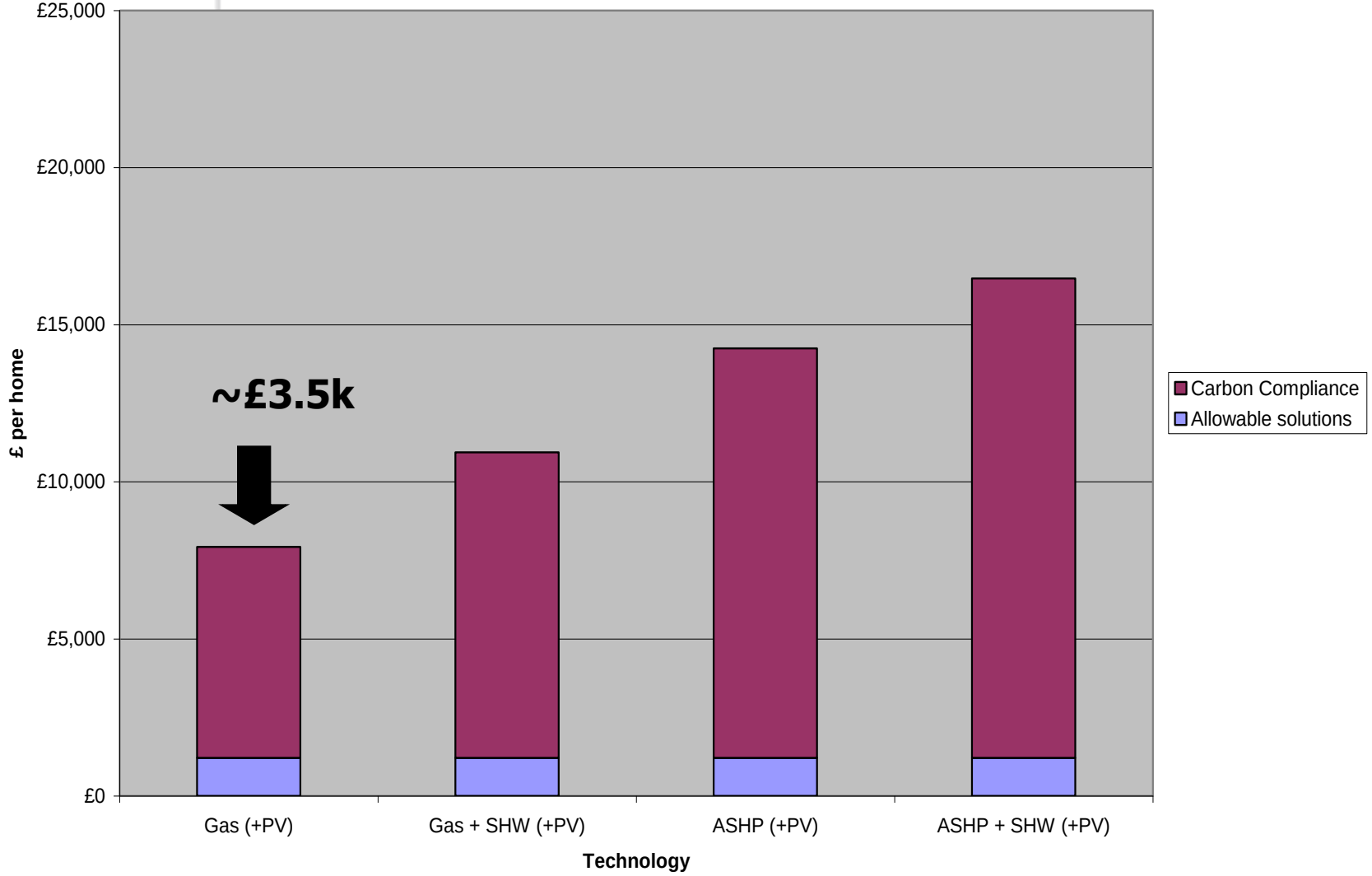
Photovoltaics (per kWp)
<1kWp – £5k

1-3kWp – £3.5k

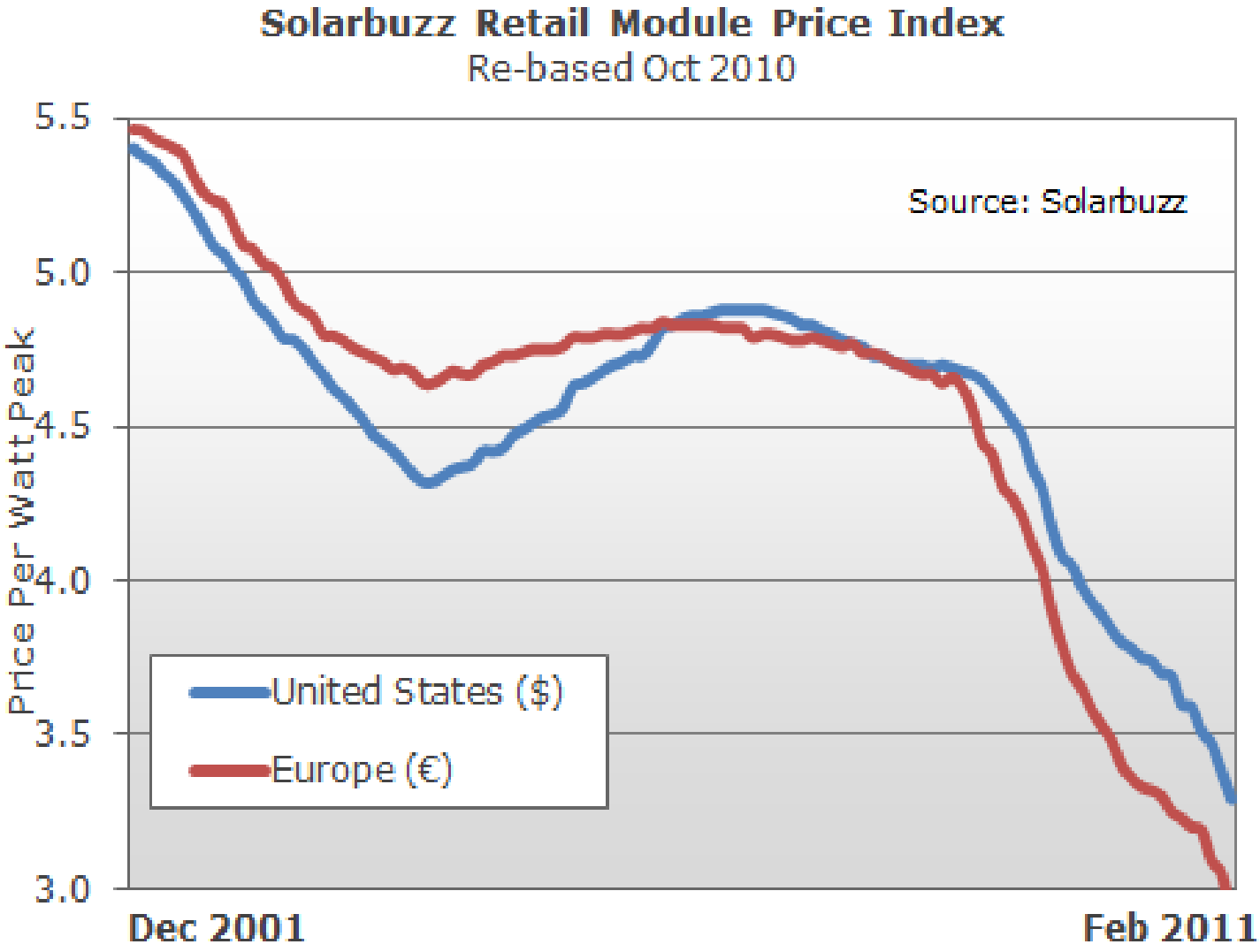
COST IMPLICATIONS 2010 - END TERRACE



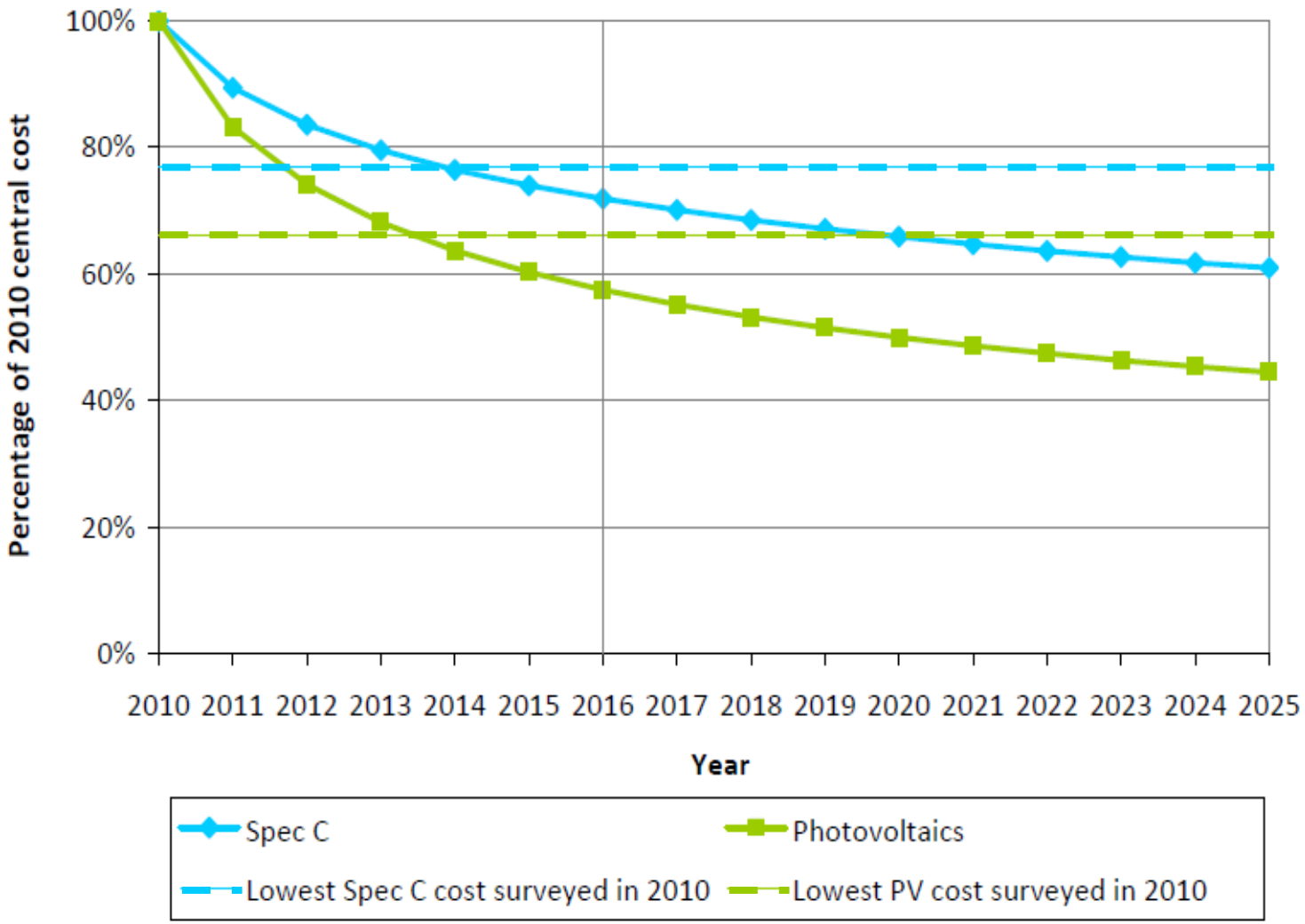
COST IMPLICATIONS 2010 - END TERRACE



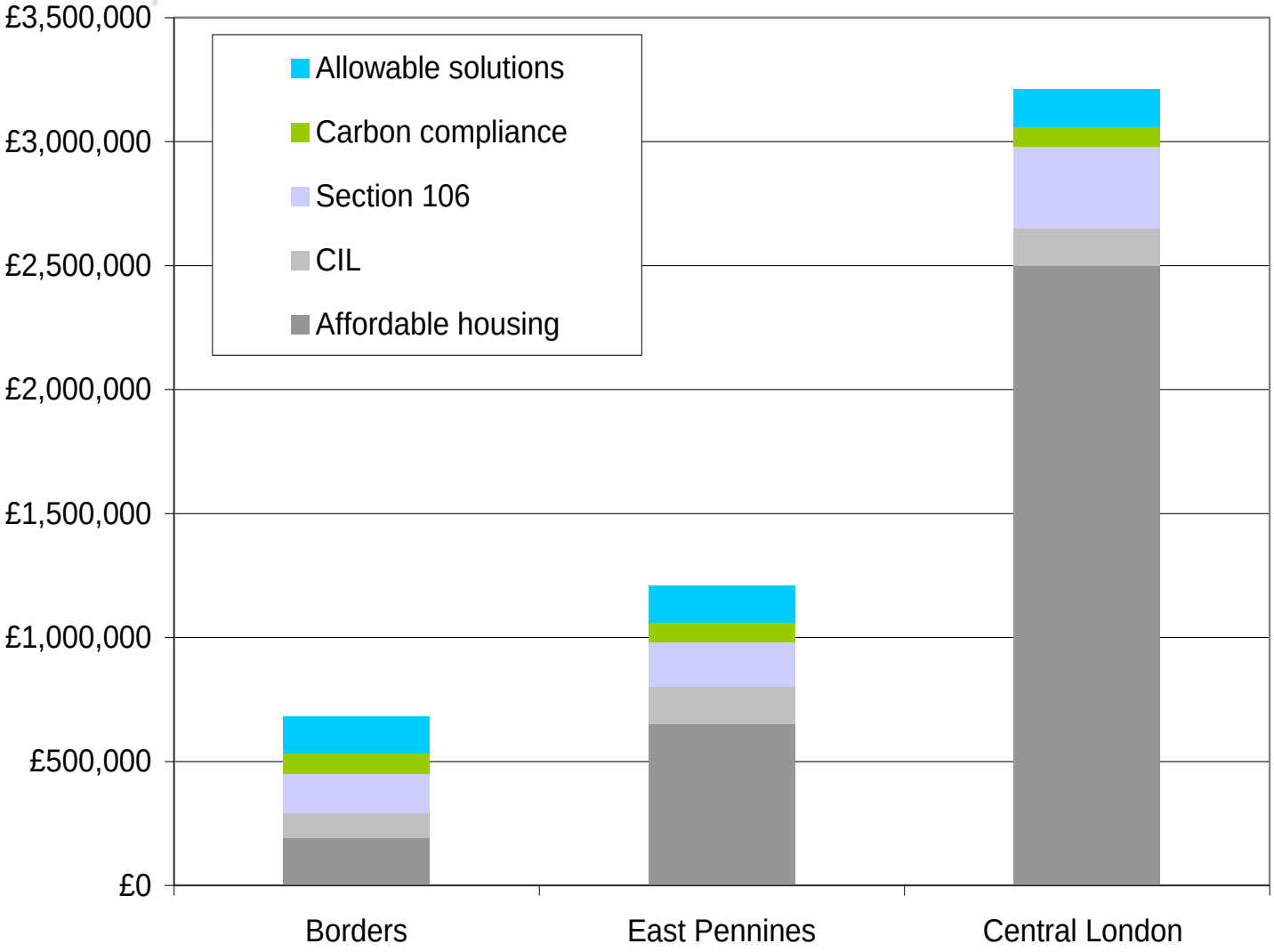
POSSIBLE COSTS IN 2016?


Solarbuzz Retail Module Price Index
Re-based Oct 2010
Source: Solarbuzz
Price Per Watt Peak
5.5
5.0
4.5
4.0
3.5
3.0
United States ($)
Europe (€)
Dec 2001
Feb 2011

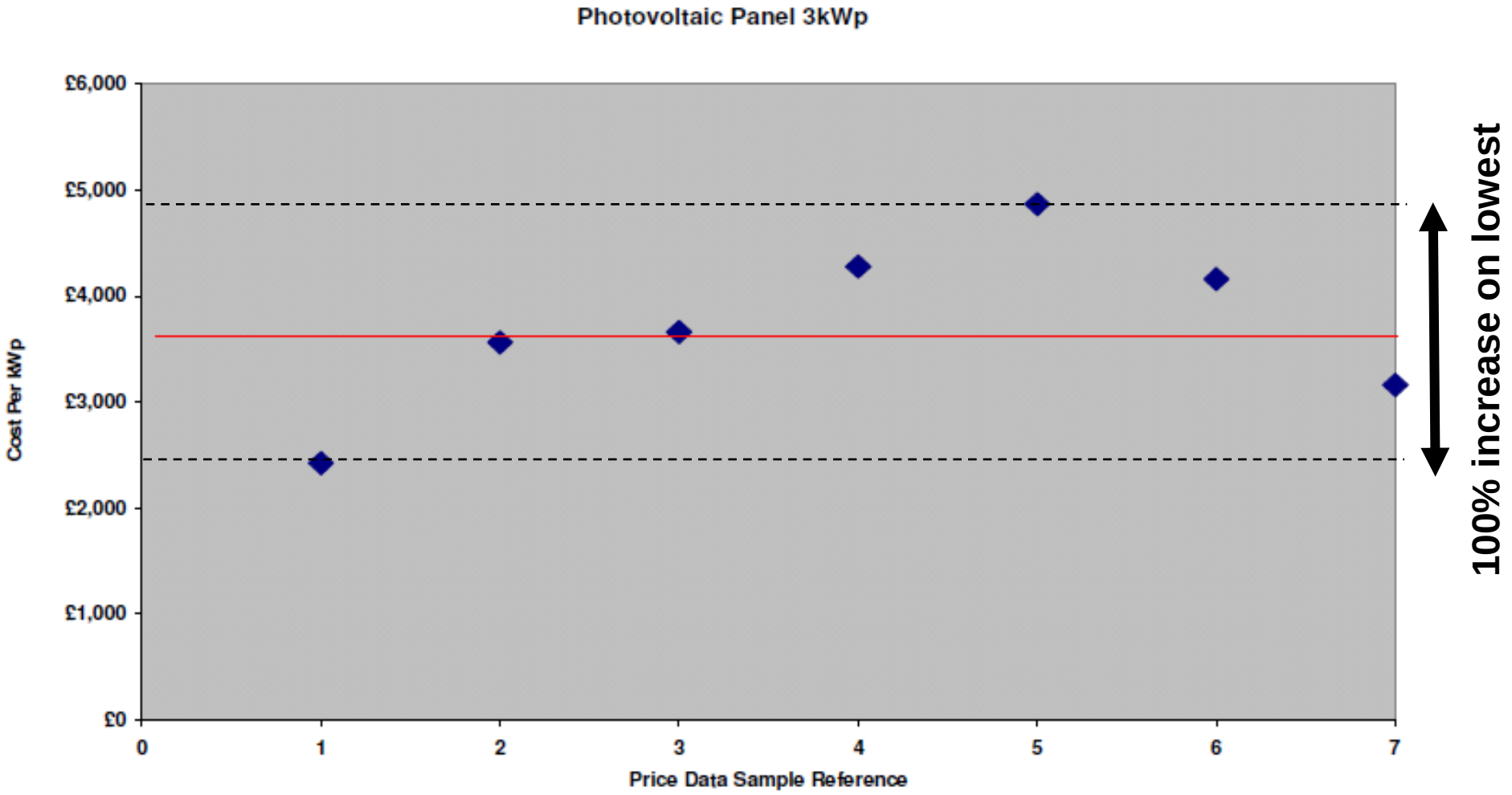
COSTS IN 2016 – LEARNING RATES



IMPACT ON DEVELOPMENT COSTS



DEVELOPING A COMPETITIVE STRATEGY

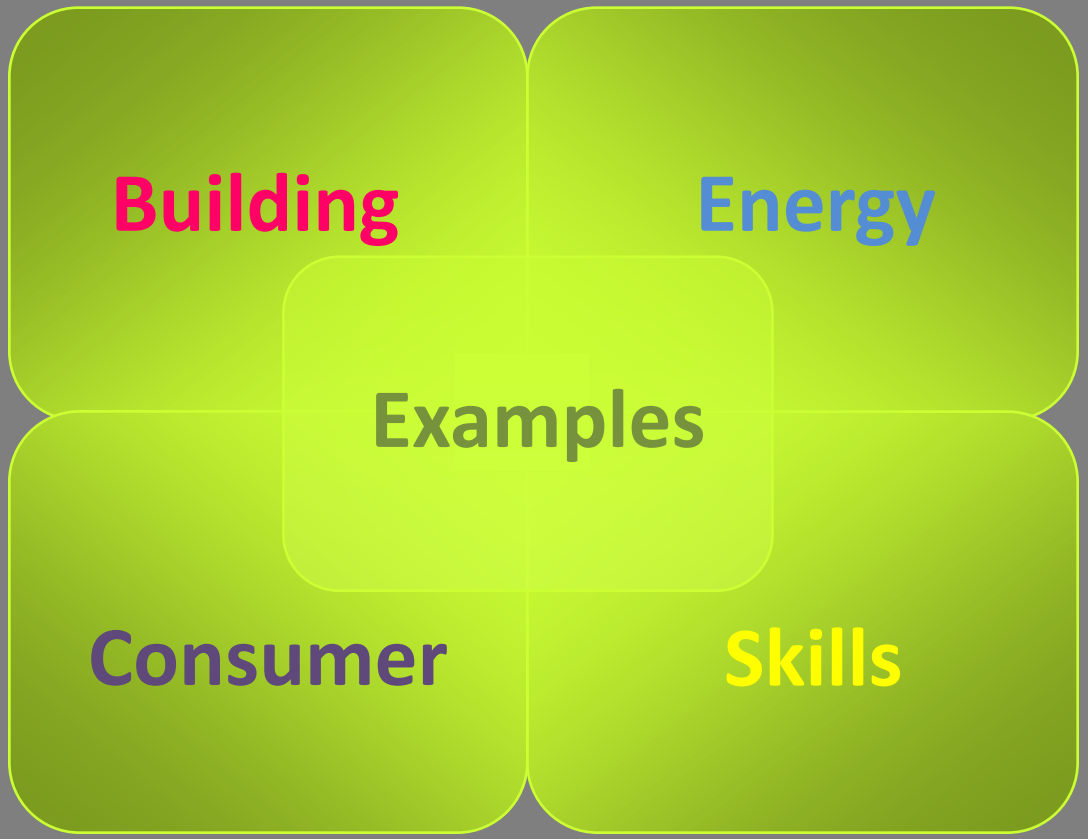


SUMMARY

- Zero carbon standard is more achievable than before (really!)
- Standard still a significant additional cost for development in some areas
- Back stop option of gas + PV should work in most instances
- Potential for competitive advantage by:
  - efficient supply chain
  - optimising effectively for the site in question


2011

FIVE WORKSTREAMS



WHAT NEXT?


ZERO CARBON HUB
MARKETING TOMORROW'S NEW HOMES
RAISING CONSUMER DEMAND FOR LOW & ZERO CARBON LIVING

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