Achieve additional allowed appendix approach available below buildings carbon case changes csh code community conclusions considered consultation cost current definition deliver demand developments different discussions dwellings efficiency electricity emissions energy ensure existing fabric first further future generation government group heat homes industry installations key level list mechanism meet minimum mitigation model near-site needs non-domestic number off-site on-site options order outlined paying performance planning policy possible potential predicted principles projects provide rate recommended reduction renewable report required results review sap savings scenario scheme solutions studies sustainable task therefore technologies terms uk used work zero

Developing a low carbon strategy

an architect's view

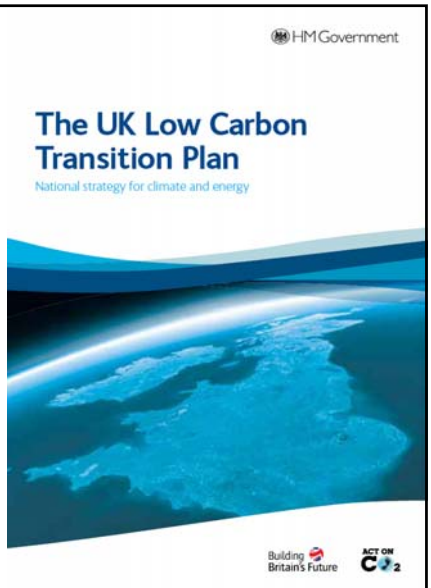
3D REID

What do we mean?:

low carbon

zero carbon

carbon neutral



3D REID

What do we mean?:

low carbon

zero carbon

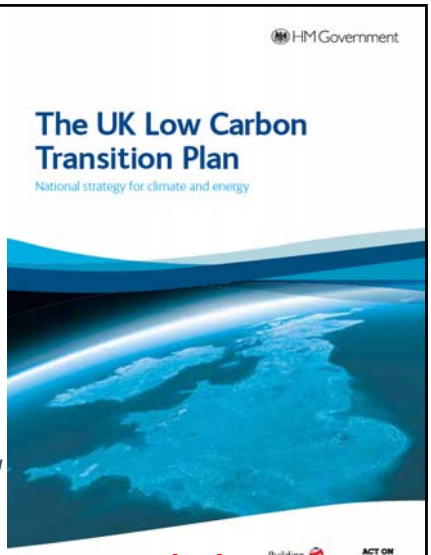
carbon neutral

"A zero carbon home is one whose net carbon dioxide emissions, taking account of emissions associated with all energy use in the home, is equal to zero or negative across the year"

Rt Hon John Healy: Minister for Housing & Planning

"The net emissions of the home, taking account of its energy efficiency and on-site energy supply … will meet a minimum 'carbon compliance' standard …."
"…. 70 per cent of regulated energy use, "

Rt Hon John Healy: Minister for Housing & Planning



zero carbon = low carbon = low energy design

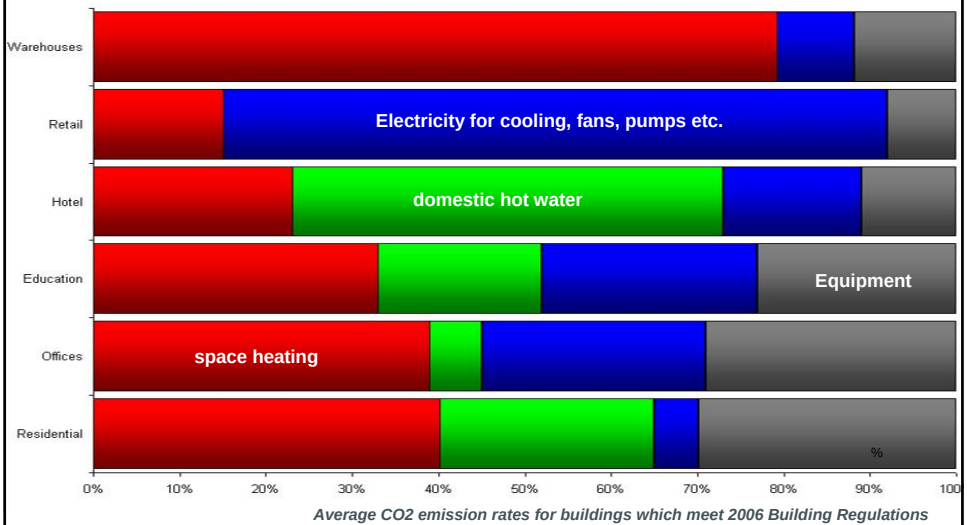
Building Britain's Future

ACT ON CO2

Developing a low carbon strategy

3D REID

Low carbon design strategies respond to energy profiles:

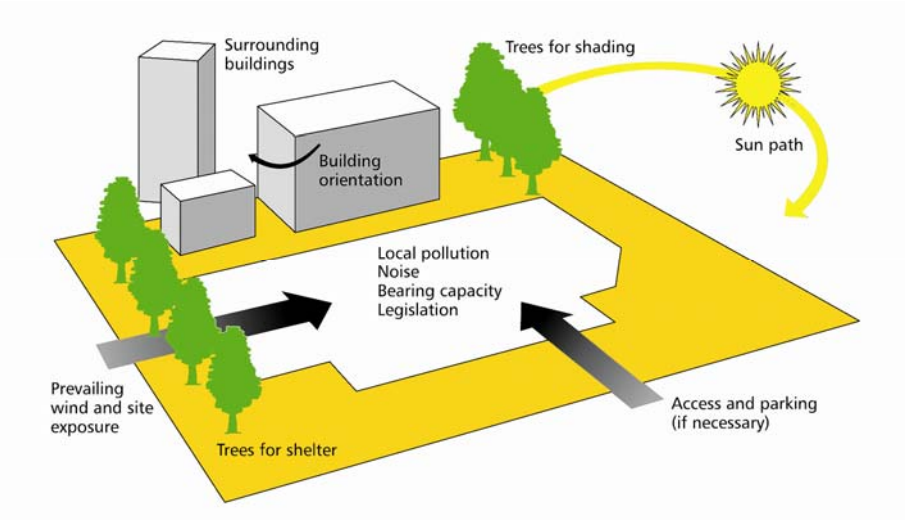


Average CO2 emission rates for buildings which meet 2006 Building Regulations

Developing a low carbon strategy

3D REID

Low carbon design strategies start with energy implications of site:



Developing a low carbon strategy

Low carbon design strategies need to reduce energy demand through architectural passive measures that:

- Minimises heating loads - reduce fabric thermal losses & uncontrolled air leakage + passive solar gains
- Minimises cooling loads - reduce thermal/ solar gains
- Maximises passive cooling – exposed thermal mass & night time ventilation + free cooling from natural ventilation
- Maximises use of natural daylight - reduce use of artificial lighting


Marks & Spencer: Silverburn


Marks & Spencer: Bournemouth


Glasgow HA: Curle Street, Glasgow


Stofold Developments:
Staffordshire County Council HQ

Developing a low carbon strategy

Low carbon design strategies need to reduce energy demand through choice of equipment & plant that:

- Maximises equipment efficiencies - reduce amount of delivered energy
- Provides automatic controls – turn off equipment & fittings when not required to reduce delivered energy
- Provides adaptive opportunities - extend occupants' thermal neutral zone to reduce delivered energy


Marks & Spencer: Silverburn


3DReid London Office

Developing a low carbon strategy

3D REID

Low carbon design strategies need to consider decentralised energy and low carbon & zero energy generation after reducing energy demand:


Woking CHP Network


Biomass boilers in Schools


Sainsbury's Distribution Centre: East Kilbride

Developing a low carbon strategy

3D REID

Low carbon design strategies require an energy hierarchy approach to set targets:

Reduce demand through passive measures

Reduce demand through energy efficiency measures

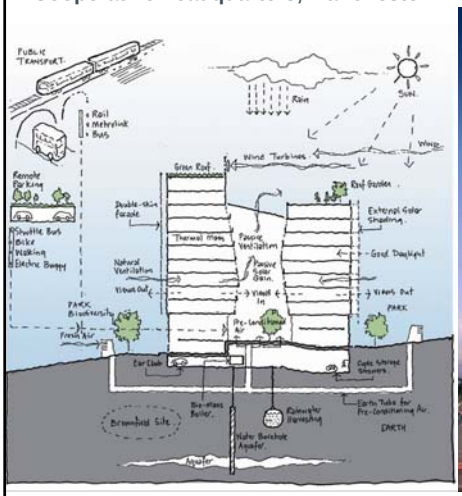
Low & zero carbon technologies

Developing a low carbon strategy

3D REID

Low carbon design strategies start early:

Cooperative headquarters, Manchester – Target BREEAM Outstanding Rating



Developing a low carbon strategy

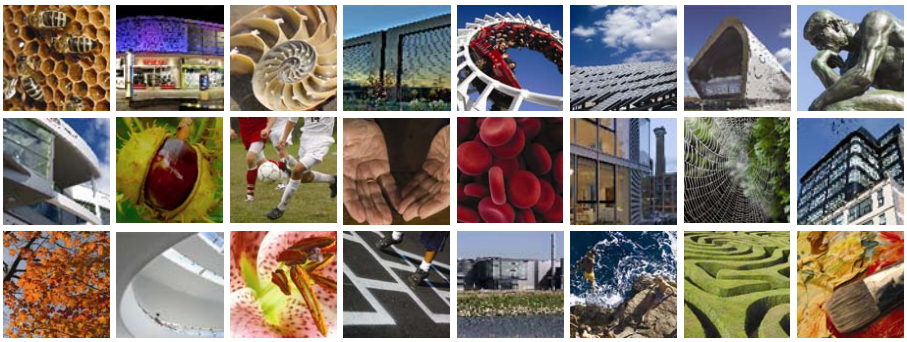
3D REID

Low carbon strategies are required for existing as well as new buildings – to add value:

80% of buildings in 2050 already built

Developing a low carbon strategy

thinking...



..... towards a low carbon strategies for all buildi