

# Zero Carbon Schools Taskforce The Road Map

Simon Burton

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# Why do we need a Roadmap to get zero carbon buildings? Are schools different?

- Public funding and public scrutiny
- Energy control may be difficult
- Educational importance on climate change

# Issues raise by the Task Force

- Raise awareness throughout all schools
- Defining what we mean
- Actual energy use information and POE
- Cost information and who pays
- BSF standards review
  
- ICT for the future
- New products and technologies inc suitable renewables
- Design skills and process
- Workforce skills
  
- Local Authority infrastructure support
- Exemplars and trials, Eco towns
  
- Existing schools refurbishment

# Timescales

- Objective is 2016 new schools zero carbon, 6 years!
- Currently schools have high energy use and small renewables
- Process of designing and building a school is 4 years?
- Behavioural changes needed

Where do we start?

# Raise awareness throughout all schools



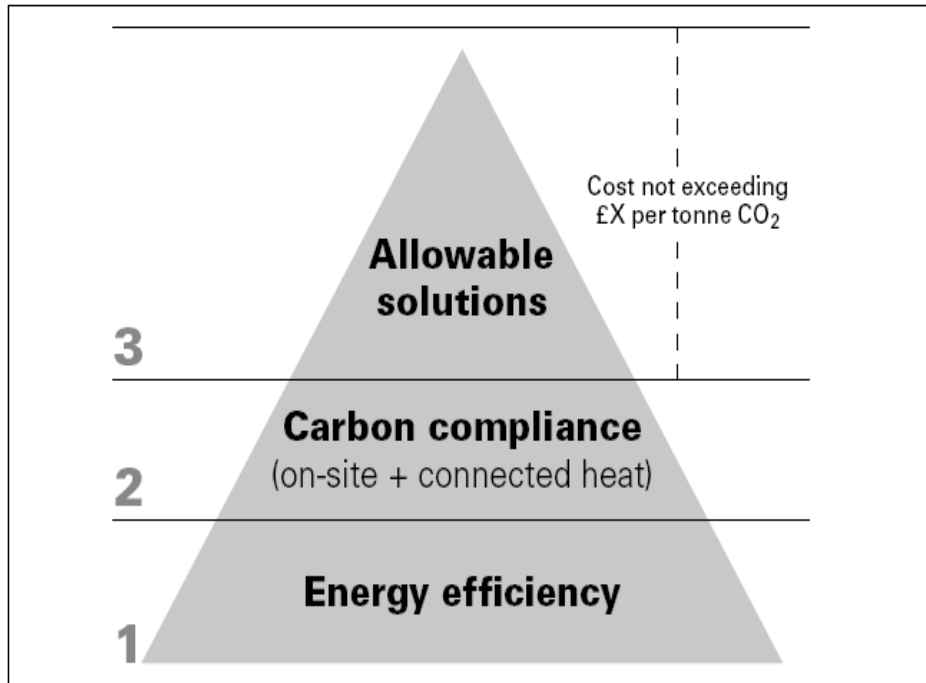
- Increase awareness of the measures schools can adopt to help them become more sustainable and reduce their energy use and carbon emissions
- Engage schools in energy/carbon management as the Carbon Reduction Commitment is rolled out and carbon budgets are introduced.

## Example: Bowbridge Primary School, Newark

When a new building was planned for the school, the intention was that it should be “as near carbon neutral as possible”. Pupils were involved in developing the brief for the project, and visited the new building weekly while it was being constructed. The building was occupied in September 2008, and pupils have responsibilities, through the school’s 'E-Team', to ensure that it is run in an energy efficiency manner.

# Definitions

Fig 1: Government's preferred hierarchy



- All energy use on the site
- Annual net zero emissions
- CLG definition
- Special Allowable Solutions for Schools?
- Compliance within BSF funding

# Modelled and real energy use



- Consider energy performance of recently constructed schools, revise carbon targets for new schools
- More real energy use needs to be collected
- POE must be set up, in-depth studies needed
- Modelling must take into account experience
- Designers need to design for occupants to become low carbon users

# Cost information and who pays

££££

- Current low carbon design cost data needed
- Costs to reach zero carbon must be better known
- Identify funding for low carbon measures within DCSF spending review

# BSF standards review



- Revise funding agreements for BSF schools.
- Review design standards which impact on energy/carbon (lighting, acoustics, overheating limits, DHW, etc.)
- Revise carbon targets for new school projects
- Ensure that low carbon issues are addressed during CABE reviews and throughout all stages of the BSF process

# ICT for the future



- Review functional requirements and technical principles for ICT taking account of anticipated energy use/carbon emissions
- Develop agreed metrics around ICT energy conservation and support capacity
- Highlight needs for legislation and regulation
- Adopt a new Energy Conservation process within Becta's Framework for ICT Technical Support
- Develop methods for comparing energy use and estimating savings, disseminate advice/guidance to schools

## Example: Ashley Church of England School, Walton on Thames

Ashley school's original computers used to consume 300 watts when in use, whereas the replacements, selected after thorough research by the Headteacher, consume just 15watts. The school has 15 laptops, so if they are used for 6 hours during a school day, they would consume 1.35kWh. This compares with 27kWh for the original computers.

# New products and technologies, suitable renewables



- Explore options for improving efficiency and reducing costs of energy efficiency products
- Identify the outcomes of research into new low and zero carbon energy sources for buildings
- Determine technologies most suitable for each type of school, explore potential barriers (e.g. planning) and how to overcome them
- Give guidance on LZCs - covering design, maintenance, capital & life cycle costs, operation, carbon intensity of various supplies, planning etc.

# Design skills and process

- 1. Use less energy**  
'Be Lean'  
eg →
  - Reduce consumption through behaviour change
  - Improve insulation
  - Incorporate passive heating and cooling
  - Install energy efficient lighting and appliances
- 2. Supply energy efficiently**  
'Be Clean'  
eg →
  - Use combined heat and power, and community heating
  - Cut transmission losses through local generation
- 3. Use renewable energy**  
'Be Green'  
eg →
  - On site: install renewable energy technologies, such as solar water heating, photovoltaics, biomass, wind turbines
  - Off site: Import renewable energy generated elsewhere

- Agree the hierarchy of energy design
- Develop low carbon expertise in university courses, mid-career courses and in professional bodies
- Develop the role of the Client Design Adviser to ensure that low carbon is satisfactorily addressed at the earliest stages of school building projects
- Safeguard low carbon design throughout the design and construction process and into the operation of buildings.

# Workforce skills



- Ensure construction industry has skills to deliver zero carbon schools
- The Government’s “Strategy for Sustainable Construction” has set a number of targets to improve the skills and knowledge

# Examples

- Department for Business, Innovation and Skills (BIS) identified that the UK Green Building Council is working with stakeholders to address the continuing need for information, advice and guidance
- The DCSF has worked with London Metropolitan University to develop a mid-career Schools Design CPD Course for all those involved in the design and procurement of school buildings
- The Royal Institute of British Architect (RIBA) “School Client Forum” enables discussions between procurers in the education sector and the architectural profession
- The Chartered Institute of Building Services Engineers (CIBSE) operates a School Design Group – amongst its terms of reference is the aim to develop a strategy for healthy and sustainable schools.

# Local Authority infrastructure support

Local authorities are to play a large part in supporting zero carbon developments:



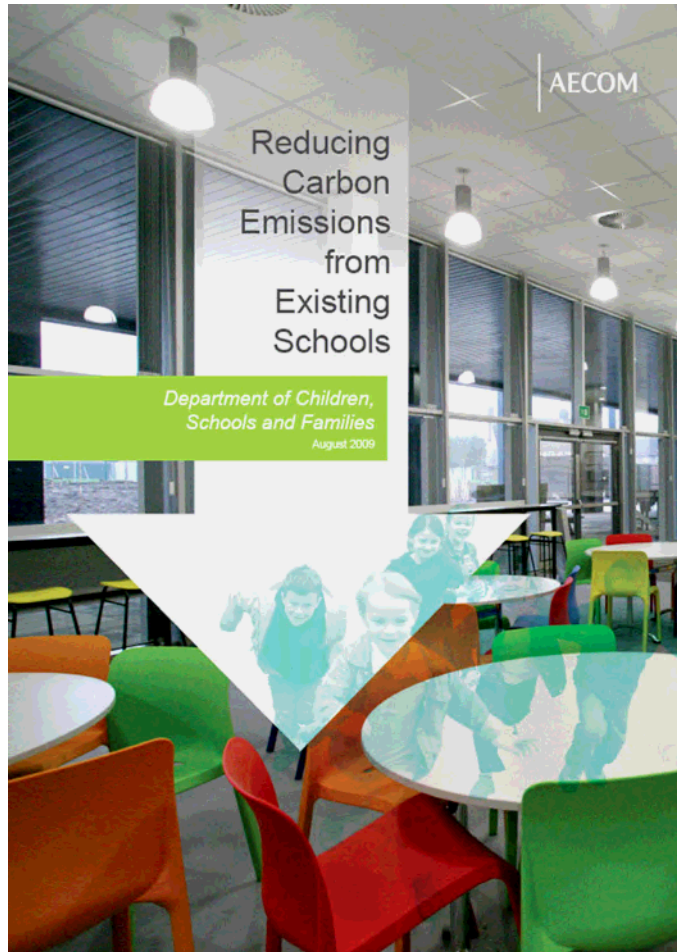
- Urgent development of local heat mains and ESCOs to run them
- Identification of local areas suitable for renewables
- Possible development of Community Infrastructure Levy will enable easier “Allowable Solutions”

# Exemplars and trials, Eco towns



- Identify funding and target school projects so that by 2015 there are at least four schools in operation in each of the nine government office regions
- The Ecotowns announced by CLG in July 2009 provide test beds for zero carbon school buildings
- Timescales for the completion of Ecotowns are such that useful lessons learned are unlikely to emerge before 2016.

# Existing schools refurbishment



- A package of refurbishment measures could be delivered at a cost of between £1,200 and £3,000 per tonne of CO<sub>2</sub> saved per year
- This may represent better use of capital than investment in low or zero carbon technologies.

## Quick wins

- Replace inefficient boilers with more efficient models and appropriate controls
- Insulate roofs or ceilings
- Insulate floors.

# Teaching, learning and engaging the young in the issues of energy and climate change

Thank You

Simon.burton@aecom.com

