A STRATEGIC APPROACH TO ASSET MANAGEMENT AND ITS POTENTIAL CONTRIBUTION TO THE ACHIEVEMENT OF LONG TERM CARBON REDUCTION TARGETS

Report By: HEAD OF ASSET MANAGEMENT & PROPERTY SERVICES

Wards Affected

County-wide

Purpose

1. To advise members of the Environment Scrutiny Committee of the potential contribution that a strategic approach to asset management might make to the achievement of long term carbon reduction targets.

Financial Implications

2. Potential savings are considerable and can be implemented in relatively short to medium term timescales. These savings however will require sustained investment over the long term and a whole organisation commitment to ensure delivery.

   Examples of such savings:

North Yorkshire	20,000tCO^2 and £5m over five years.
Cornwall	14,000tCO^2 and £5m over eight years.
Bradford	24,000tCO^2 and £6.4m over five years.
Essex	21,000tCO^2 and £6.5m over five years.

3. There is currently no dedicated resource in council budgets other than those monies provided by Salix loans via the Carbon Trust available to meet the council's target for CO^2 reduction from local authority operations. Any improvements are met from diverting mainstream budgets to schemes that are identified through cyclical maintenance planning. Some schemes however are financed by devolved capital allocations to schools.

Background

4. The pressures upon asset managers to critically evaluate their policies and practices in respect of carbon management have been progressively growing over the period of the last two Government administrations.

   - Kyoto/Burden Sharing Agreement requirement to cut greenhouse gas emissions by 12.5% by 2008-12 vs. 1990 base year.

- National Goal of a 20% CO^2 emission reduction by 2020 vs. 1990 as agreed under the Nottingham Declaration.

- Energy White Paper ambition for a 60% cut in carbon emissions by 2050, with real progress on this target by 2020.

- Budget 2008 announced Government's aspiration for all new non domestic buildings to be zero carbon or carbon neutral by 2019.

- The Chancellor has also announced his ambition for all new public service buildings to be zero carbon from 2018.

- 16 October 2008 the Energy and Climate Change Secretary committed the UK to cutting greenhouse gas emissions by 80% on 1990 levels by 2050 as a major contribution to a global deal on climate change.

5. These ambitions and commitments have been translated into a number of Government measures which impact upon how local Authorities conduct their business in respect of the management of their property assets. These include:

    - Energy Performance of Buildings Directive 2002/91/EC which came into force on 4 January 2003. This introduced the legal requirement to produce Display Energy Certificates (DECs) and Energy Performance Certificates (EPCs).

    - Building Regulations – as part of an increasing focus on ensuring sustainable developments, energy efficiency requirements were introduced in 2005. In April 2006, Part L (fuel and power regulations) was amended to raise performance. There is anticipation that these will be reviewed every five years and incrementally updated.

    - Planning – PPS 22 was issued in 2004 allowing Authorities to mandate on site renewable energy production (typically 10%) as a condition of development.

    - National Indicators 2008 – NI 185: CO^2 reduction from Local Authority Operations and NI 186: per capita reduction in CO^2 emissions in the Local Authority area.

    - As part of the new Comprehensive Area Assessment framework (2008) the Key Lines of Enquiry (KLOEs), for the Management of Other Resources (natural resources), new criteria were introduced in the Organisational Use of Resources at levels 2 and 3. Level 2 criteria states – "The organisation is developing a strategic approach to reducing the organisation's impact on the environment including energy, fuel, water and raw materials; reducing waste, recycling etc.; reducing its greenhouse gas emissions; and increasing biodiversity. The organisation is identifying the significant environmental risks it faces, such as potential future changes in climate, and developing plans with key partners to mitigate and manage them." Level 3 criteria states – "The organisation is improving the performance of its assets to provide buildings that mitigate adverse impacts on the environment and prepare for climate change".

    - Carbon Reduction Commitment (CRC) – CRC is a cap and trade scheme, which will incentivise significant carbon abatement in non energy intensive sectors, delivering bottom line financial benefits. The council is likely to be entering this scheme, which provides another financial driver for carbon efficiencies as those performing below average will have to buy carbon credits.

Appendix 1 provides a list of some of the schemes we have managed which demonstrate our commitment to meeting these targets.

6. As an organisation there are six areas where local authorities can take action to reduce carbon emissions, namely new buildings, energy, procurement, water, waste and travel.

7. The above areas translate into a number of key themes:

   - Property and Asset Management playing a major part.
   - Measuring and monitoring – at the outset to provide a baseline and throughout a planned programme.
   - Whole life appraisal approach to include building specifications which use the Building Research Establishment Environmental Assessment Method (BREEAM) to set standards for new build and large scale adaptations e.g. the integrated back office solution.
   - Awareness/behaviour change. Good house-keeping education/training.
   - Other areas for property to have an impact – rationalisation/relocation/co-location can reduce reliance on transport.
   - Collaborative working.

8. Buildings have a major environmental impact:

   - Design of building.
   - Building systems.
   - Building users.
   - Nature of what takes place in the building or what it is used for.

9. New developments need a strategic whole life approach.

   - Construction.
   - Operation.
   - Re-use.
   - Demolition.

   This presents a challenge to traditional financial thinking as it inevitably requires integrating capital and revenue budgets. The Carbon Trust have estimated that the approximate cost implications of low carbon buildings mean a marginally higher capital cost of approximately 3% but this cost can be significantly offset many times if a whole life approach is adopted.

10. The challenges of existing properties include:

    - Refurbishment and adaptation for new uses.

- Retrofitting of new technologies – e.g. swimming pools and sports halls.

- Ownership and control – who's CO^2 is it? Currently energy costs are largely picked up by the Resources Directorate for corporate buildings. There are no financial incentives for occupying services to manage carbon emissions/energy use

11. The main consumers of energy in local authority buildings are –

    - Motors and drives i.e. pumps on the boiler systems
    - Ventilation.
    - Boilers.
    - Space heating.
    - Lighting.
    - Hot water.
    - Air conditioning.
    - Office equipment including ICT.

12. Many of these major infrastructure asset consumers may have their impact mitigated by various types of renewable energy which include:

    - Biomass.
    - Ground source heat pumps.
    - Air and water source heat pumps.
    - Wind turbines.
    - Solar photovoltaic cells (solar panels).
    - Voltage power optimisation.
    - Ventilation strategies.

13. In conclusion there are a number of messages that need to be endorsed and embedded within the whole organisation

    - Properties do matter.
    - Significant savings and benefits can be achieved but only if sufficient and sustained investment is programmed over a long period of at least a decade.
    - Need to commit to mitigation and adaptation of assets.
    - Secure integration of technical and behavioural elements.
    - Needs to be led from the top

- Don't wait for the big solution – small things add up.

- Think strategic.

14. Managing reductions over the next decade

    In order to meet the council's current carbon reduction targets (which are may well be raised) the Council need to reduce energy emissions by 1.25% per year for the next 11 years.

    This means saving 180 tonnes per year across the Council's operations.

15. In order to promote the use of sustainable materials and procedures the council and its partners work to the following standards:

    .Building Construction/Maintenance

    - Use of reclaimed bricks, aggregate and concrete wherever possible.
    - Use of FSC woods
    - Use of Permeable paving
    - Actively encourage the use of water based paints
    - Use of insulating materials of low thermal conductivity

    Mechanical/Electrical Equipment

    - Installation of modular boilers
    - Installation of low energy lighting (compact fluorescent units)
    - Use of variable speed drives on all rotating equipment wherever appropriate

    Energy Efficiency

    - Selection of low carbon fuels as appropriate considering location of site etc.
    - Use of time switches and PIR controls for lighting wherever appropriate.
    - Installation of plant monitoring systems (BMS) where possible to enable central active management of energy use.
    - Installation of PowerPerfectors on larger sites- can reduce use by up to 10% where continuous running times are a feature.

RECOMMENDATION

THAT;

(a) The report be noted.

(b) Members consider the content and messages from the report in relation to future policy around asset management, Building Schools for the Future, accommodation and service planning, capital allocation policy, service co-location opportunities and collaborative working across the public sector.

BACKGROUND PAPERS

Further information on the subject of this report is available from
Malcolm MacAskill, Head of Asset Management & Property Services on 01432 260227

- All things carbon – CIPFA Property 2008.
- Local Authority Carbon Management Programmes – Carbon Trust 2008.

APPENDIX A

ESTIMATED CO2 EMISSIONS FROM COUNCIL BUILDINGS

DATA

The emissions calculations in this report are based on the data obtained from Accounts of the cost of services charged to the various cost centres for the financial year 2007/2008. The data for the Halo sites was obtained from the information gathered for the preparation of the DEC requirements for a 12 month period from October 2007 to September 2008.

EXCLUSIONS

This set excluded emissions from those properties that were owned/operational in 2007/008 but are not owned/operational now.(e.g. Brilley Primary School, LEA Pool etc). The energy used by, Countryside sites, Public Toilets, Landfill gas burning, Street Lighting, Car Parks and Travellers sites has also been omitted from this calculation.

BASIS OF CALCULATION

The energy consumption for each cost centre was calculated by taking the costs for each utility for that centre and dividing by the average cost of the utility during the period. Since the cost of each utility includes a fixed meter charge and may include a climate change levy charge this simple approach will tend to overstate our energy consumption and hence our carbon emissions.

Utility unit costs are based on the load taken by the site in question and there can be up to six differing charges per utility. The average cost of each utility is based on a view taken on the WMS charges. Again this will tend to overstate the consumption as sites purchasing energy outside WMS will usually be paying a higher unit cost.

Standard energy to co2 conversion factors have been used.

In order to provide a meaningful comparison across years the co2 emissions calculations should take into account the variation in energy usage due to changes in ambient temperature. This is accomplished by the use of Degree days, a measure of how many days the ambient temperature was below the standard temperature. Thus the number of Degree days in 2007/2008 was 2077 against the standard of 2462. Thus the actual co2 emissions from heating fuels will be increased by the factor 2462/2077, an increase of 18.5%.

RESULTS

The estimated actual CO2 emissions from council property amount to 13,300 tonnes and when corrected to a standard degree day year the figure rises to **14,500** tonnes per annum.

SCHEMES

Below are is a list of some of the schemes we have managed which demonstrate our commitment to meeting carbon reduction targets:

- Specification of building materials from renewable sources for minor and major building works.
- Installation of grey water systems in new build establishments to store and re-use rainwater.
- Support to the community buildings programme to ensure that design and procurement are of a sustainable nature.
- Supporting the Eco-Schools initiative by providing advice and effecting improvements through devolved and other capital schemes.
- Advisory support to the community commons project.
- In house design and project management of eco-classroom for Lady Hawkins High School, Kington.
- Procuring local produce for school meals thereby reducing “food miles”.
- Encouraging tenants of council owned farms to adopt biodiversity practices and engage in environmental stewardship initiatives.
- Supporting Halo to invest in energy saving initiatives via Salix fund investment.
- Reducing waste by supporting the GEM programme and offering training via the officer in charge network.
- The installation of a Trend Boiler Management system to 68 council properties.
- Installing power perfectors to the electrical mains on the larger sites which potentially reduces electricity consumption by up to 10%.
- The installation of more energy efficient light fittings and controls.
- Flat re-roofing schemes including considerably improved levels of insulation.
- Replacement of curtain walling systems with double glazed units, reduced areas of glazing and insulated panels.
- The use of bio-mass heating installations at a county High and Primary school sites. Also the considerable use of bio-mass on a number of major schemes for which feasibility work is being undertaken at present.
- The installation of more efficient flaming systems at a disused waste pipe that converts methane to CO^2 and water.
- The more efficient use of school transport planning resulting in the reduction of bus miles.

- Better controls on ventilation systems including variable speed controls and better zoning.

- The installation of a CHP plant at a leisure centre and the undertaking of a feasibility study to install one at a major building complex consisting of a school, leisure centre, swimming pool and hospital at Leominster.

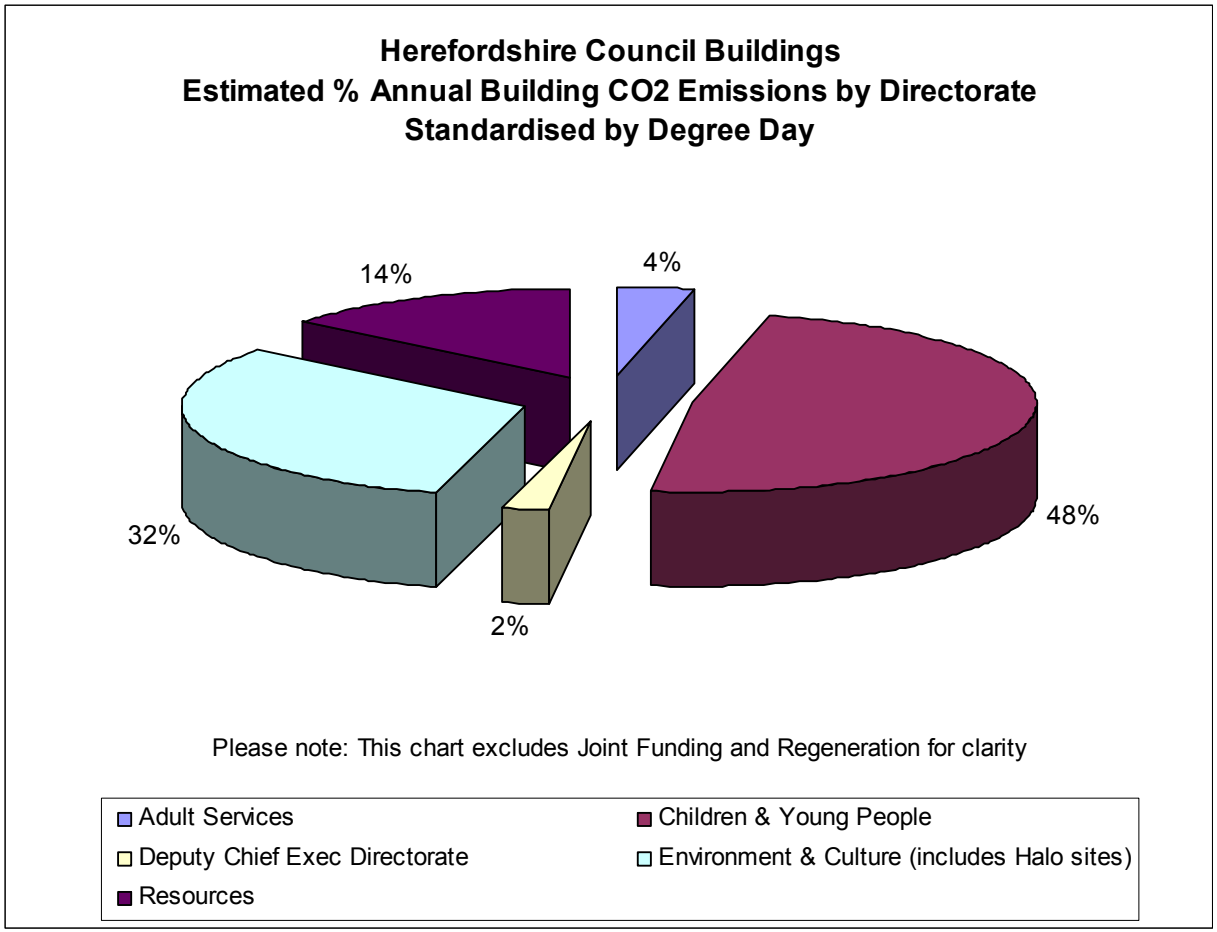
- The installation of solar and photo-voltaic cells at a high school and primary school.

- The erection of wind turbines at a high school and four primary schools.

Herefordshire Council

Annual Building CO2 Emissions - tonnes

	Oil	Gas	Electricity	Solid Fuel	Lpg Bottled	Total by Directorate	% by Directorate	Degree Day Standardised	% by Directorate
CO2 kg per kWh	0.25	0.19	0.52	0.00	0.19				
Adult Services	0.09	225.72	267.81	0.00	0.64	494.26	3.72%	536	3.7%
Children & Young People (includes schools)	675.85	2,067.54	3,725.84	0.00	0.64	6,469.87	48.66%	6979	48.1%
Deputy Chief Exec Directorate	0.00	30.69	303.88	0.00	0.00	334.57	2.52%	340	2.3%
Environment & Culture (includes Halo sites)	0.00	3,139.90	875.90	0.00	0.00	4,015.80	30.20%	4598	31.7%
Joint Funding - Revenue	3.09	0.00	17.31	0.00	0.00	20.40	0.15%	21	0.1%
Regeneration	0.00	0.88	-1.64	0.00	0.00	-0.76	-0.01%	-1	0.0%
Resources (includes most corporate buildings)	0.00	385.89	1,576.15	0.00	0.00	1,962.05	14.76%	2034	14.0%
Total	679.04	5,850.61	6,765.27	0.00	1.28	13,296.19	100.00%	14507	

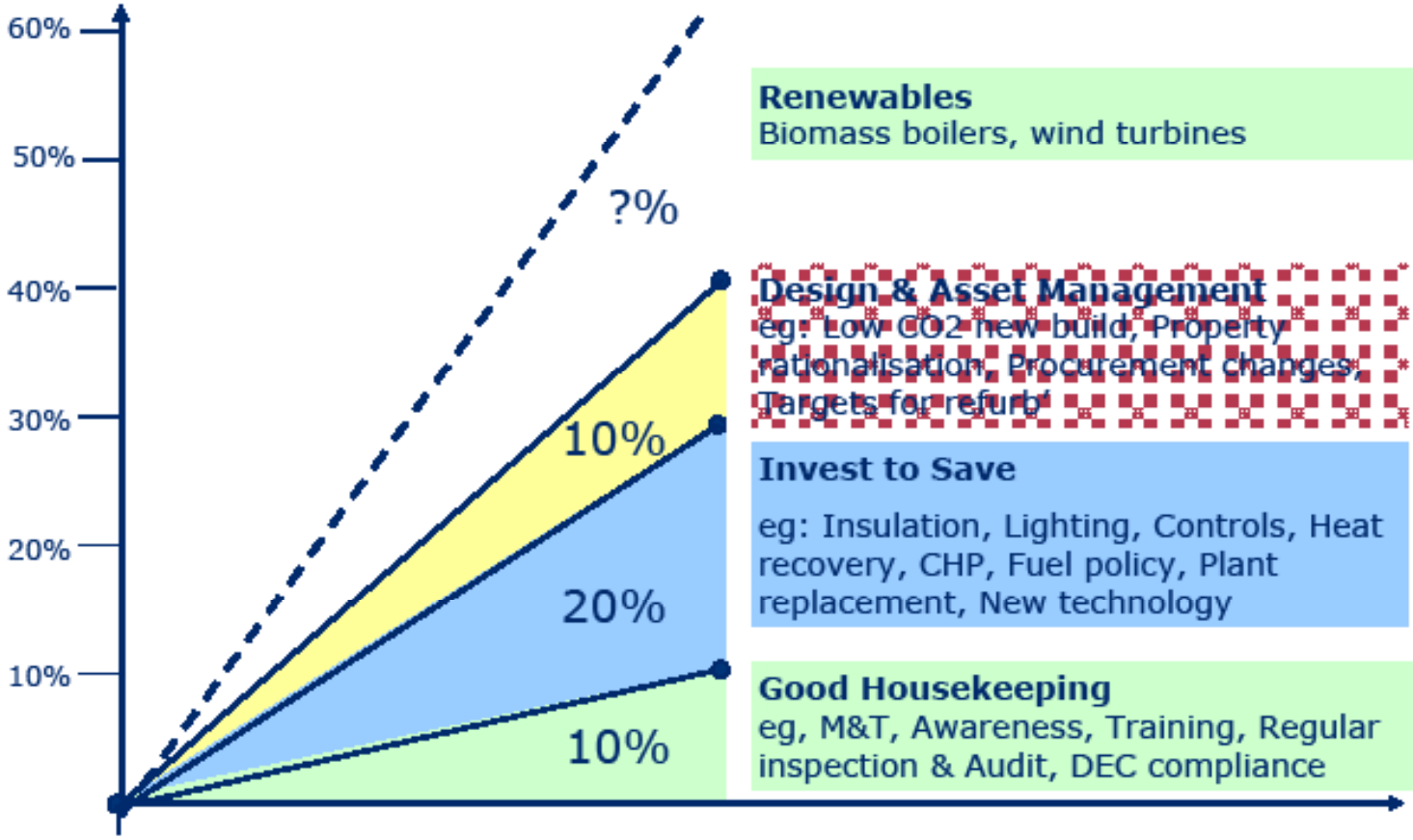

Herefordshire Council Buildings
Estimated % Annual Building CO2 Emissions by Directorate
Standardised by Degree Day
14%
4%
32%
48%
2%
Please note: This chart excludes Joint Funding and Regeneration for clarity
Adult Services
Children & Young People
Deputy Chief Exec Directorate
Environment & Culture (includes Halo sites)
Resources

Top 10 Projects – No surprises

1.) Heating controls & zoning
2.) Lighting upgrade & controls
3.) Voltage optimisation
4.) Server virtualisation / rationalisation
5.) Printer rationalisation
6.) Variable speed drives
7.) Cavity & loft insulation
8.) Waste management & recycling
9.) Fleet management & alternative fuel cars
10.) Procurement policy; equipment & new build

Staff engagement campaigns / monitoring

How can targets be met?



Renewables
Biomass boilers, wind turbines

Design & Asset Management
eg: Low CO2 new build, Property rationalisation, Procurement changes, Targets for refurb

Invest to Save
eg: Insulation, Lighting, Controls, Heat recovery, CHP, Fuel policy, Plant replacement, New technology

Good Housekeeping
eg, M&T, Awareness, Training, Regular inspection & Audit, DEC compliance