Making business sense of climate change

DRAFT

Devon County Council's Carbon Management Programme

The Strategy and Implementation Plan

"Becoming a Low Carbon Authority"

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CONTENTS

EXECUTIVE SUMMARY

Background

Following approval of the DCC Climate Change Strategy in November 2005, the Executive endorsed a climate change action plan for 2006/7 in February 2006. The principal component of this plan was to participate in Phase IV of Carbon Trust's Local Authority Carbon Management Programme (LACMP), the main objectives of which are:

- To take a whole-organisation approach to carbon management so that it is adopted as a key objective for the Authority;
- To adopt targets for the measurable reduction of carbon emissions, and to deliver these reductions.

Purpose

The purpose of this document is to provide a formal and practical basis for communicating, seeking approval of, and implementing a Strategy and Implementation Plan (SIP) for carbon management within the Authority. It is the principal deliverable of the Authority's participation in the LACMP and summarises the position the Council has reached at this stage in the carbon management process.

Context

At a global scale there is widespread acknowledgement that the *"science is done"* – climate change is happening. Moreover, recent evidence from the Intergovernmental Panel on Climate Change (IPCC) is beginning to suggest that it is happening much faster than expected and that the time has come to make urgent and significant cuts in greenhouse gas emissions.

Drivers for Change

In a DCC context this direction is evident through the "Making Devon Greener" theme of the strategic plan in which the Council has committed itself to being an exemplar Authority by using energy and water more efficiently, reducing its waste, pursuing a strategy to promote renewable energy generation and reducing its carbon footprint. Coupled with this is the need to make efficiency savings of 2.5% per annum through the Gershon and Value for Money initiatives and to prepare the Authority for mandatory participation in the Energy Performance Commitment (a carbon trading scheme for Local Authorities) from 2009. Combined these environmental and efficiency objectives provide powerful drivers for change.

Baseline

The baseline carbon footprint for the Authority's operations for 2005/6 has been estimated at 42,260 tonnes of CO_2 (11,525 tonnes of carbon) per annum. This estimate includes emissions from grid electricity for street lighting, utilities used in corporate buildings, staff commuting and business miles, fuel for the vehicle fleet and office waste. It does not include emissions from DCC-owned landfill sites, contracted out services, procurement or the County Farms Estate. Moreover emissions from schools and travel by school staff, and the municipal waste stream have been deemed out of scope. The costs associated with producing this carbon footprint are £8.3 million.

Target

Whilst the Executive has agreed a minimum carbon reduction target of 2.1% per annum, the Authority will be expected to make a 3.3% annual reduction in emissions from 2009 through carbon trading. By combining these two requirements the cumulative emissions reduction target over the 5 year programme is 13.3% which represents an absolute reduction of 5,620 tonnes of CO_2 (1,533 tonnes of carbon) by 2011/12. The operational cost savings to be made by following a carbon reduction programme over a business-as-usual approach are estimated at £6.5 million based on the Carbon Trust's methodology.

Methodology

Having developed the vision of being recognised as a leading carbon-conscious council through *"becoming a low carbon authority"*, potential carbon reduction projects have been identified using a framework based on *"our carbon journey".* This framework is an enhancement of the LGA's sustainable energy hierarchy and is aimed at taking the organisation from a position of *"carbon unknown"* to *"carbon managed"* in a logical progression. In selecting projects, cost-effectiveness is an important consideration. The Carbon Trust's discounting methodology known as the Marginal Abatement Cost Curve has been used to ensure that project proposals do not exceed the £8 per tonne of CO_2 saved threshold set by Government for emissions trading purposes.

Opportunities and Funding

Whilst over 25 potential emissions reduction projects have been identified, it has proved impossible to fully cost and integrate them all into a 5 year carbon management plan. Instead, it has been decided to follow the Authority's agreed approach to climate change and develop a second annual action plan. Therefore the project selection task has been limited to opportunities capable of saving a minimum of 887 tonnes of CO_2 in 2007/8.

Funding has been agreed for key energy reduction/efficiency initiatives in the following areas:

- Street lighting – the installation of energy efficient lanterns and power reduction measures.
- Audio conferencing – the roll out of audio conferencing to reduce business miles.
- Energy audits – the purchase of energy management software to support routine energy audits.
- Voltage optimisation – the provision of a voltage reduction solution for County Hall.
- Energy awareness raising – the development and delivery of an Energy@Work campaign.

In addition, funding for a biomass boiler for County Hall and for the implementation of a Travel@work campaign in support of the County Hall Travel Plan has been agreed.

However, there is no provision for the implementation of energy efficiency measures as a consequence of the energy audits. The EU Directive on the Energy Performance of Buildings requires Energy Performance Certificates to be displayed in all the Authority's larger buildings by January 2009. The size of this task is being assessed and additional funding will be required to ensure that the acceptable minimum standard is achieved. Consideration should be given to setting up a ring-fenced revolving energy efficiency fund using a grant from Salix Finance. Matched funding from the Authority would be required up to a value of £200k.

Communications

Throughout the programme the right balance between emissions reductions projects and the complementary actions required to embed carbon management effectively into the Authority needs to be struck. There can be little doubt that all DCC members, officers and staff are potential stakeholders in this carbon management process and need to be engaged through a continually refreshed corporate communications activity that is as yet unresourced.

Governance

Finally, the ownership and governance of the plan needs to be agreed so that the roles and responsibilities of individuals at all levels are identified to ensure that the plan is delivered and reviewed, and the benefits measured. Given the nature of the task, it is proposed that the Executive Member for the Environment is appointed as member sponsor and the Director of Environment, Economy and Culture is appointed as the senior manager sponsor for the programme. This proposal uses the "Devon Way" methodology to embed carbon management in the Corporate Programme as a key part of the "making Devon greener" work stream. The "making Devon greener" Programme Board will set the strategic direction for carbon management and own the SIP. The Carbon Manager will be responsible for reflecting that strategic direction in an evolving plan. The principal governance structure will be a Carbon Management Steering Group

staffed by 3rd tier managers from each directorate. The Steering Group will progress the agreed emissions reduction opportunities identified in corporate strategies, as directorate projects or as directorate obligations from endorsed Energy, Travel and Waste@Work initiatives. The Steering Group will be supported by the Carbon Management Core Team which will continue to measure the carbon footprint and identify and cost new opportunities for inclusion in future annual action plans. Progress reports will be made to the Executive twice a year with detailed action plans being considered by CMB as appropriate.

1. INTRODUCTION

1.1 Background

In July 2004 Devon County Council (DCC) signed the Nottingham Declaration on Climate Change recognising that climate change is likely to be one of the key drivers of change within Devon during the 21st century. By signing the declaration the Council Leader and Chief Executive made a number of far reaching commitments on behalf of the Council including an obligation to achieve a significant reduction in greenhouse gas emissions from the Authority's operation especially energy sourcing and use, travel and transport, waste production and disposal, and the purchasing of goods and services.

Subsequently, the Council's Strategic Plan outlining the priorities for action over the period 2006-2011 has been refreshed. The approach is to respond to challenges which threaten the positive aspects of life in Devon and to seize the opportunities that will make Devon an even better place to live. As climate change has the potential to operate in both of these dimensions, the Council is committed to being an exemplar Authority by using energy and water more efficiently, reducing its waste, pursuing a strategy to promote renewable energy generation and reducing its carbon footprint. This agenda is core to the "making Devon greener" theme of the Corporate Plan which has at its heart the aspiration "to make Devon the greenest county in England".

1.2 Purpose

Following approval of the DCC Climate Change Strategy in November 2005, the Executive endorsed its first annual climate change action plan for 2006/7 at its meeting of 28th February 2006 (ED/06/38/HQ refers). A key component of this plan was for DCC to participate in Phase IV of the Carbon Trust's Local Authority Carbon Management Programme (LACMP) commencing in May 2006.

The primary deliverable of the first year of the LACMP is to produce a carbon management Strategy and Implementation Plan (SIP). This document meets that requirement. The purpose of the SIP is to outline the strategy for carbon management within the Authority in terms of a vision, emissions reduction target and high level objectives. It is supported by an implementation plan consisting of a programme of practical actions and associated delivery mechanisms covering financing, communications and governance.

1.3 Timescale

The SIP will operate over a 5 year period (i.e. 2007/8 to 2012/13) and will form the major part of the next and subsequent annual climate change action plans.

1.4 Approval

It is proposed that the SIP is endorsed by the Corporate Management Board (CMB) who in turn will make recommendations on implementation to the Executive.

2. CARBON MANAGEMENT STRATEGY

2.1 Context and Drivers

Climate change is an issue whose time has come. On 10th March 2004 in a reply to a House of Lords committee considering climate change policy in an EU context, the Government's Chief Scientist Sir David King stated that *"the science is done, it is complete".* Despite continuing doubt in the media, there is an overwhelming consensus amongst the global scientific community that climate change is happening and that meaningful action on emissions reduction is already long overdue. More recently in February 2007 this position was strongly reinforced by the Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) which stated that there is now more than a 90% probability that *"most of the observed increase in globally averaged temperatures since the mid-20th century is due to the observed increase in anthropogenic greenhouse gas concentrations".* Although UK plc is expected to meet its Kyoto Protocol commitment of a 12.5% reduction in a basket of greenhouse gas emissions, the 2006 review of the UK Climate Change Programme identified that it will fail to meet the modest 20% reduction in CO_2 over 1990 levels by 2010 by as much as 5%.

Moving forward the Government's aspiration for a low carbon economy requires continuing 1% per annum reductions in CO_2 emissions through to 2050 from the 1990 level. For organisations starting today this represents a minimum 2.1% per annum reduction – a target accepted by the Executive at its meeting of 26th September 2006 (EEC/06/140/HQ refers). However, a recent report by the Tyndall Centre for Climate Change Research entitled "Living with a Carbon Budget" suggests that 60% by 2050 should be reinterpreted as 70% by 2030. The following postscript from the report provides a clear statement of how carbon management should be repositioned in the UK.

> *"Finally, if there is one important message we want to re-iterate from the research, it is the absolute urgency with which we must act to curb dramatically our carbon emissions. It is an act either of negligence or irresponsibility for policymakers to continually refer to a 2050 target as the key driver in addressing climate change. The real challenge we face is in directing society towards a low-carbon pathway by 2010-12, and thereafter driving down carbon intensity at an unprecedented 9% per annum (around 6% per annum in terms of absolute carbon emissions), for the following two decades."*
>
> *Tyndall Centre, July 2006.*

Our carbon management programme is operating in that 5-year window for putting ourselves on the low-carbon trajectory.

The Stern Review on the Economics of Climate Change published on 30th October 2006 supports this view and concludes that *"the benefits of strong, early action on climate change outweigh the*

costs". The Government's view is that emissions trading is the key policy instrument for achieving cost-effective reduction in greenhouse gas emissions. The UK Emissions Trading Scheme (ETS) has now been superseded by the EU ETS for energy intensive industries. There is now a proposal to implement a similar scheme in the UK for large non-energy intensive business and public sector organisations. The scheme known as the Energy Performance Commitment proposes to reduce emissions by 3.3% per annum during the period 2009 - 2015 increasing to 8.0% thereafter. Based on the proposed annual electricity consumption threshold DCC would be a mandatory participant. Initially the price of carbon will be set at £8 per tonne of CO_2 saved using a discounting methodology. These proposed targets and costs should be important considerations in selecting carbon reduction projects.

The leadership associated with *"directing society towards a low-carbon pathway"* through *"strong, early action"* is the principal driver for change. In a DCC context this direction is evident through the "making Devon greener" theme of the strategic plan and the need to make efficiency savings of 2.5% per annum initially through the Gershon process (to 2007/8) and then through the Value for Money (VfM) initiative (2008/9 to 2010/11). The efficiency savings required total £63 million of which 50% is cashable. Carbon management at an appropriate level of implementation can both contribute to these savings and be seen as strong, early action.

2.2 Vision – Where do we want to be?

To be recognised by our community, our staff, our partners and our peers as a leading carbon-conscious council through *"becoming a low carbon authority".*

2.3 Strategy – How do we get there?

By establishing an integrated, funded and enduring Authority-wide carbon management programme to reduce carbon emissions by at least 2.1% year-on-year which will contribute to on-going efficiency savings and to prepare the Authority for participation in the proposed emissions trading regime where a 3.3% target will be required.

2.4 Strategic Objectives – What do we need to do?

2.4.1 Policy

- To create a carbon management policy with targets that is formally adopted by the Executive and CMB.

  Output: Adopted carbon management policy.

- To create annual action plans with clear goals as the delivery mechanism for policy targets.

Output: Endorsed annual action plans.

2.4.2 Organisation

- To integrate carbon management into the responsibilities of CMB members and their staff, and to ensure that the achievement of targets forms part of directorate business plans across the authority and, where possible, in contracted-out services.

  Output: Carbon management targets on CMB and Directorate Management Boards (DMB) agendas.

2.4.3 Information & Data

- To establish effective and robust measurement systems for the collection of data (or their appropriate proxies) for all the principal emissions sources and to produce an annual emissions inventory.

  Outputs: Formal measurement systems in place.
  Annual emissions inventory.

2.4.4 Communications & Training

- To establish a formal communication and training plan for all staff on carbon/energy-related environmental management integrating it into existing induction and continuation programmes where possible.

  Output: Carbon management/energy awareness communications and training plan.

2.4.5 Finance & Monitoring

- To develop a well-defined and effective internal financing mechanism for carbon management/energy saving projects making use of external financing where appropriate.

  Output: An appropriate funding mechanism/self-sustaining invest-to-save fund.
  A review of external funding opportunities.

2.4.6 Evaluation

- To provide both Executive and CMB with a six monthly review of progress against targets.

  Output: A bi-annual progress report aligned with the budget process.
  A formal report to support the annual Financial Statement.

2.5 Target

Accepting the 2.1% minimum reduction target already agreed by the Executive enhanced in FY 2009/10 by the EPC proposed target of 3.3% would produce a 13.3% reduction in emissions over the 5 year implementation period. Based on this premise our target is to make an absolute reduction of 5,620 tonnes of CO_2 (1,533 tonnes of carbon) by 2011/12.

3. EMISSIONS BASELINE AND PROJECTIONS

3.1 Past Actions and Achievements

3.1.1 Climate Change Policy

Following the appointment of a Climate Change Officer in Dec 2003, DCC signed the Nottingham Declaration on Climate Change in July 2004. In March 2005 the Authority also signed up to a Devon-wide Declaration on Climate Change and Fuel Poverty. The climate change strategy entitled "A Warm Response – Our Climate Change Challenge" was endorsed by public consultation in November 2005. It was reviewed by the Audit Commission during the Comprehensive Performance Assessment in 2006 where it was noted that "priorities have been translated well into strategies and action plans".

3.1.2 Energy Efficiency in DCC Estate

The Authority owns/leases nearly 4,000 buildings with a total floor area of just over 1 million m^2. Over the past 5 years the school estate has grown by 16% and the non-school estate by 30%. In the same period energy consumption has decreased by 13% and efficiency increased by 16%, saving 4,894 tonnes of CO_2 and £950,000. These savings have been achieved by monitoring and targeting poor performing buildings, promoting best practice and providing an energy and water efficiency loan fund to schools. The rising energy market has increased costs by 35%.

3.1.3 Street Lighting

From 2006 all new lighting columns in new developments have been fitted with electronic control gear producing modest savings in cost and CO_2 emissions to date. There is also an increasing use of energy efficient bulbs and trials of part-night switch off of lamps.

3.1.4 Commuting and Business Travel

The Authority has had a travel awareness campaign operating since 1999 which has resulted in the following initiatives;

- Support & promotion of car sharing to all staff.
- 10% discount for annual bus pass & 5% discount for train travel.
- Home working policy.
- Car free day at County Hall since Sept 2004.
- Facilities & support for cyclists at County Hall as well as pool cycles for County Hall staff.
- Bus pass for staff business travel in the Environment, Economy & Culture Directorate.

3.1.5 DCC Vehicle Fleet Procurement

Over the last five years the procurement policy for vehicles has been to procure diesel vehicles only. The impact on emissions has not been calculated. More recently all new vehicle tender documents include mpg and CO_2 emissions requirements further improving the objective of procuring the least polluting vehicles.

3.1.6 Corporate Sustainable Procurement Policy

The Procurement Policy and process have included sustainability criteria for several years. One notable success has been that food miles have been reduced by adopting a "local sourcing" policy within corporate food contracts. The Procurement Policy is being reviewed with renewed commitment to delivering more sustainable procurement.

3.2 Project Scope

For the purpose of reporting, greenhouse gas emissions are often classified as either direct or indirect. Direct emissions are those emanating from sources owned or controlled by the Council. Indirect emissions occur as a consequence of the Council's activities but are emitted from sources owned or controlled by others. Using this categorisation the following emissions have been included within the scope of the programme;

- Direct emissions.
    - Consumption of natural gas and oil in properties.
    - Vehicle fleet emissions.

- Indirect emissions.
    - Consumption of grid electricity for properties.
    - Consumption of grid electricity for street lighting.
    - Business miles by car, bus, rail and air including vehicle hire.
    - Staff commuting miles.
    - Office waste.
    - Water consumption.

There are some significant emissions associated with other areas of business that are within the scope of the programme but have not been quantified for the initial stage of the project. These are as follows;

- Landfill gas from DCC-owned landfill sites - the Authority retains a degree of responsibility for 55 closed landfill sites. Of these sites 12 are known to contain methane but only 3 produce landfill gas in sufficient quantities to be flared. The total annual CO_2 emissions from these 3 sites may amount to about 3,850 tonnes. For the purpose of the carbon management programme the remediation process and associated landfill gas monitoring programme represents a long-standing and ongoing emissions reduction project. No further benefit will be gained from a detailed assessment of the emissions liability.

- Contracted out services and procurement – the emissions associated with these aspects of the Council's operation are impossible to quantify at this stage.

- County Farms Estate – the emissions resulting from the operation of farms by tenants and from enteric fermentation and manure emissions from their livestock are within scope as they may be influenced by revisions to tenancy agreements in the longer term. A pilot project on 15 farms has been initiated to quantify the emissions liability.

Emissions from schools and the municipal waste stream have been deemed out of scope.

3.3 Baseline Year

Financial year 2005/6 has been selected as the baseline year.

3.4 Baseline Carbon Footprint

The baseline carbon footprint has been estimated at 42,260 tonnes of CO_2 per annum. This is equivalent to the total carbon footprint of all the residents of a town of about 4,000 people e.g. Kingsbridge. The costs associated with producing this footprint are £8.3 million. The breakdown of this footprint by emissions source and cost are shown at Figures 1 and 2 respectively.

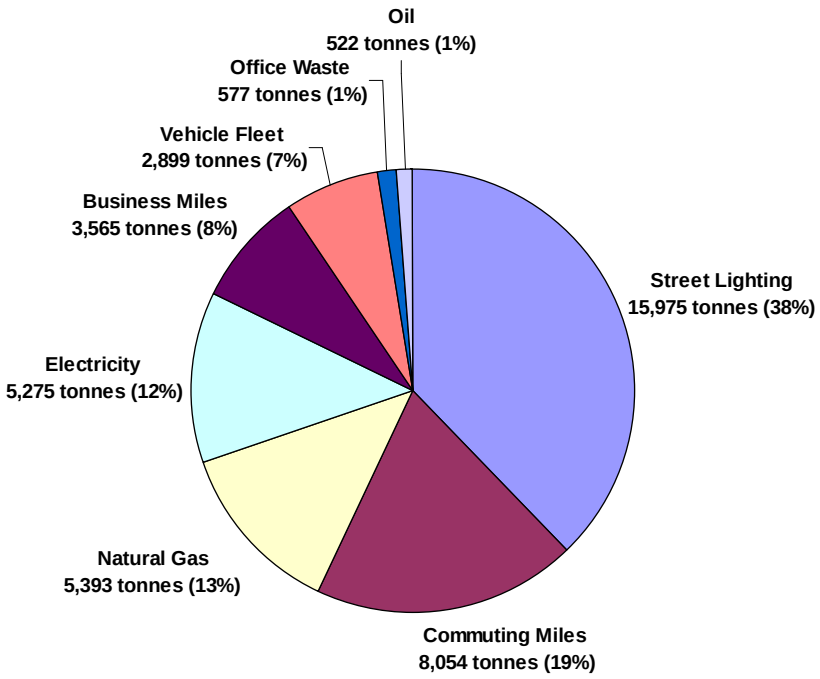

Figure 1. DCC carbon footprint for 2005/6 by emissions source – total emissions = 42,260 tCO_2.

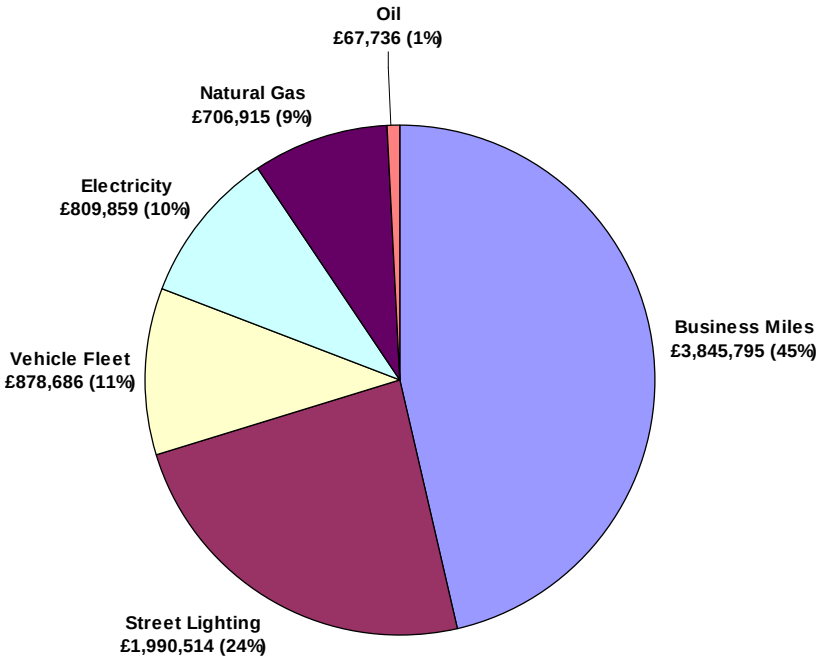

Figure 2. DCC carbon footprint for 2005/6 by cost – total cost = £8.3m.

3.5 Emissions Projection

3.5.1 Business as Usual Scenario

Based on the DCC carbon footprint for 2005/6, future energy consumption has been projected forward over the period 2007/8 to 2011/12 using the Carbon Trust's recommended assumptions for growth in energy consumption i.e. 1.9% for transport emissions and 0.7% for utilities. The baseline carbon footprint is increased to 45,160 tonnes of CO_2; an increase of 6.8%.

3.5.2 Carbon Reduction Scenario

Assuming the carbon reduction target outline above, the baseline carbon footprint is potentially reduced to 36,640 tonnes of CO_2 by 2011/12. The carbon reduction achieved over the business-as-usual scenario amounts to 8,520 tonnes of CO_2 in year 5 - a 20.2% difference.

3.6 Cost Projection and Value-at-Stake

The value-at-stake is the cumulative cost difference over the CMP period of pursuing an emissions reduction scenario. The key assumption is that energy prices rise throughout the period by 3.5% per annum. The cumulative value-at-stake using the recommended methodology is £6.5 million. This profile is shown at Table 1 and Figure 3.

Source	2005/6 Baseline Yr	2006/7 Planning Yr	2007/8 Year 1	2008/9 Year 2	2009/10 Year 3	2010/11 Year 4	2011/12 Year 5
In-Year VAS	£0	£118,808	£434,651	£770,521	£1,237,031	£1,727,320	£2,242,599
Cumulative VAS							£6,530,930

Table 1. The value-at-stake using the LACMP methodology.

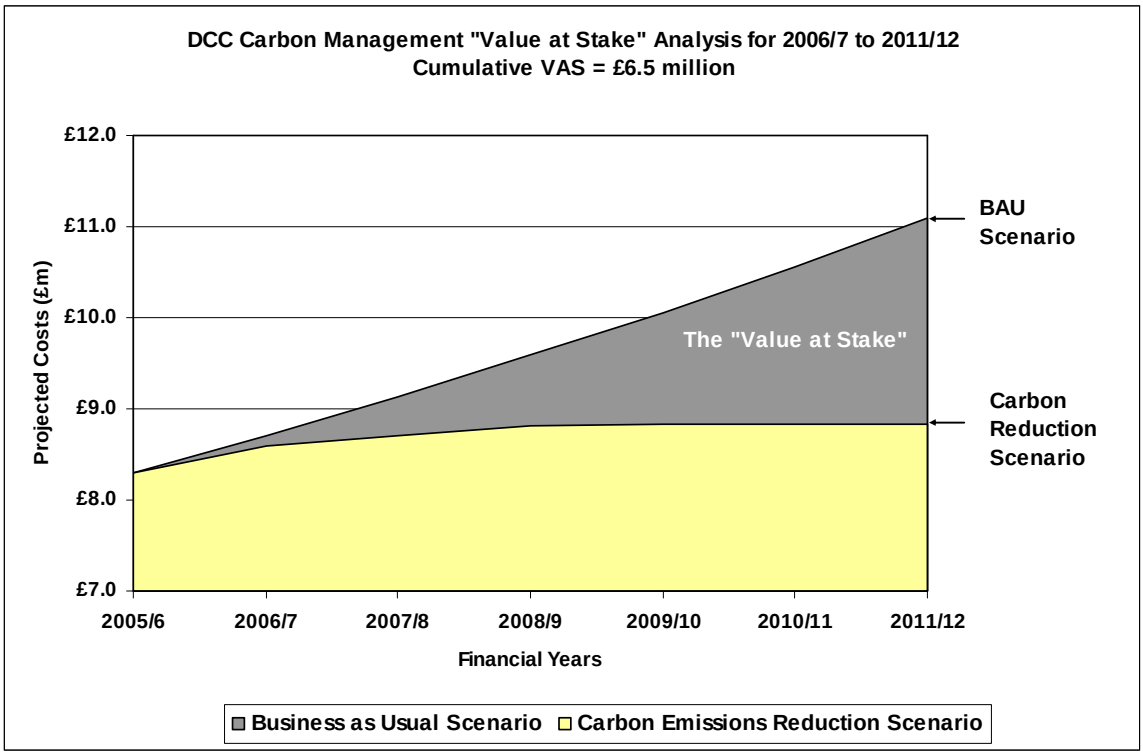

Figure 3. The value-at-stake profile using the LACMP methodology.

The value-at-stake calculation is a relatively simple tool to demonstrate the scale of potential savings in operational costs over the 5 year forward period. The £6.5m value-at-stake is effectively the value of lost opportunities by not investing in carbon management. In an energy market characterised by long term prices rises, it is likely that this forecast is a conservative estimate despite the fact that domestic energy prices are now being reduced. Unfortunately this assessment contributes nothing to the cashable efficiency savings as operational costs continue to rise even though carbon emissions reduce. To keep costs relatively constant in the model, the emissions reduction target would have to be set at 4% per annum.

4. CARBON MANAGEMENT IMPLEMENTATION PLAN

4.1 Our Approach – A Carbon Journey

The proposed carbon management implementation plan is based on the sustainable energy hierarchy outlined in the Local Government Association (LGA) document "Leading the way: how local authorities can meet the challenge of climate change" (June 2005). The LGA energy hierarchy consists of three elements;

- Avoidance – do less to reduce the demand and/or avoid the need for energy.
- Efficiency – use less through implementing energy efficiency measures.
- Renewables - switch to less damaging sources of energy, especially renewables.

Before this framework could be used for identifying projects for the carbon management programme it required a number of additional measures. Policy Making, Communicating & Awareness Raising and Measuring & Monitoring were added at the base of the hierarchy, and the potential for meaningful Carbon Offsetting was included at the top. These components were combined into a concept called "Our Carbon Journey" which was adopted by the Executive Energy Task Group (EEC/06/140/HQ dated 26 Sep 06) as the basis for the Authority's Sustainable Energy Strategy. The full hierarchy is shown at Figure 4 and contains the following sequence of actions;

- Policy Making.
- Communicating & Raising Awareness.
- Measuring & Monitoring.
- Reducing Demand.
- Implementing Energy Efficiency.
- Using Clean/Renewable Energy.
- Offsetting Remaining Emissions.
- [Reducing the emissions of others].

Within this project framework our aim is to push policy and solutions up the hierarchy in the knowledge that not creating the problem in the first place is better than needing to rely on technical solutions.

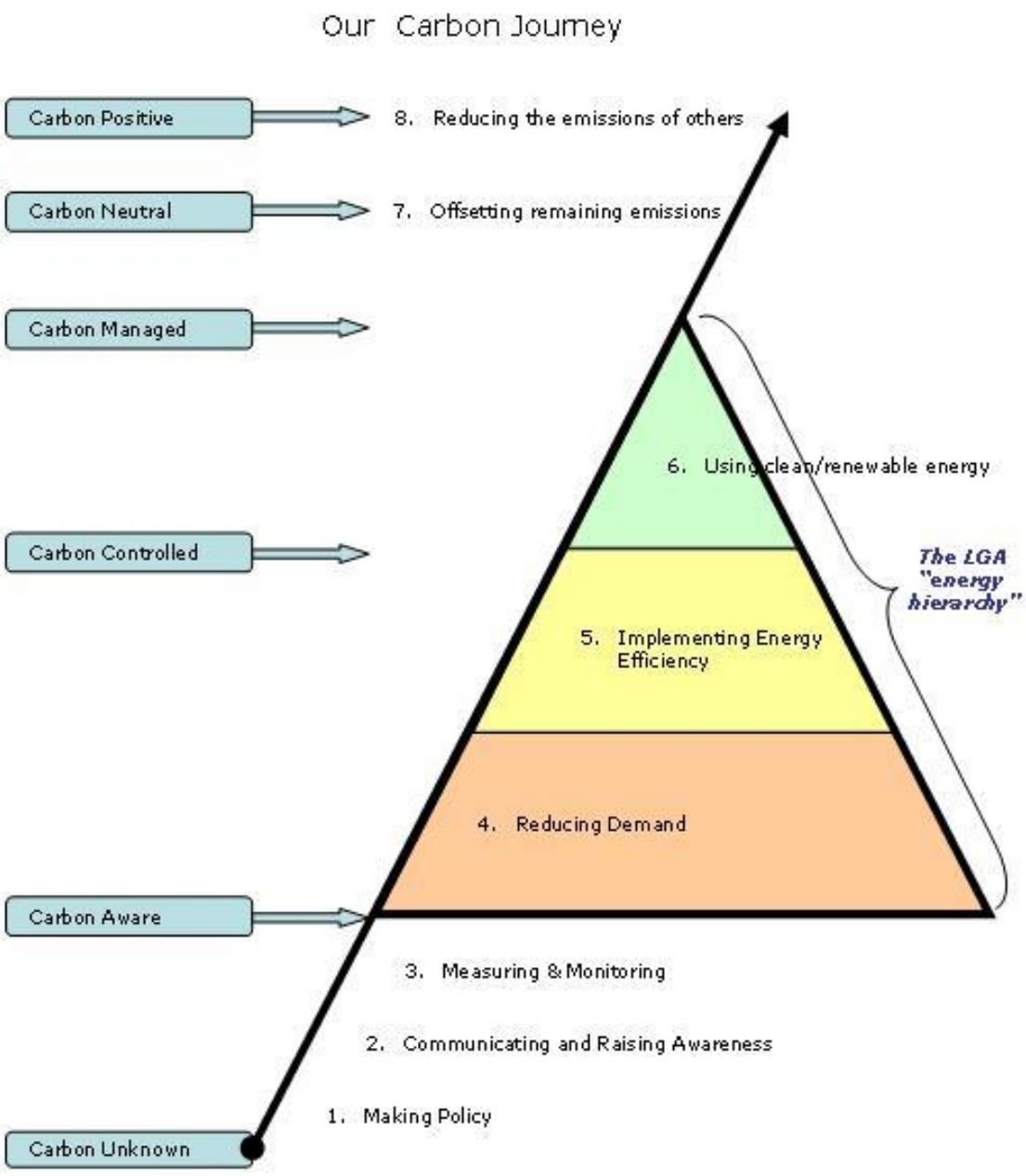

Figure 4. "Our Carbon Journey" Framework for Project Selection

4.2 Cost Effectiveness – the "low energy light bulb" test

In order to determine which projects should be selected for implementation, it is necessary to cost each proposal on a relative rather than absolute basis – whilst inexpensive projects may appear financially attractive they may not always be the most cost effective mechanism for carbon reduction. The Carbon Trust's methodology uses a Marginal Abatement Cost Curve (MACC) to

determine the most cost effective projects. This process is based on a comparison of the marginal investment cost with the net present value of discounted cost and carbon savings. A discount rate of 10% is recommended. The threshold for a cost effective project is £8 per tonne of CO_2 saved as per the Defra Energy Performance Commitment proposal outlined earlier.

Whilst this is not a simple mechanism to understand, by using the MACC methodology to cost the installation of a single 11 watt low energy light bulb an indication of the cost effectiveness of our project proposals can be obtained. It is well known that installing an 11 watt compact fluorescent light (CFL) at a purchase price of £5 has a payback of less than a year. It is a very cost effective way of saving energy. However, the real test is how much could one pay for the same bulb and still have a cost effective project. Using the MACC methodology the answer is just over £31 giving a payback of about 6½ years! Therefore, any abatement project that has a MAC in excess of £8 per tonne of CO_2 saved is going to be worse than paying £31 for a low energy light bulb! Clearly, projects with a MAC over the £8 threshold should not be done for purely carbon saving reasons.

This approach can be used to identify the level of a cost effective investment in each of the principal areas of our carbon footprint. Based on the 2005/6 energy prices that were used to cost the carbon footprint, the value of cost effective investments for a tonne of CO_2 saved is shown at Table 2. The simple payback period is between 6 and 6½ years regardless of cost or benefit. This figure could be used as a simple "rule of thumb" in future project assessments.

Project Group	Project Name	Capital Cost	Annual Benefit/Cost	Simple Payback (Years)
Street Lighting	Street lighting	£815	£125	6.5
Utilities/Property	Oil	£846	£130	6.5
	Natural Gas	£855	£131	6.5
	Electricity	£993	£154	6.5
Travel/Transport	Vehicle Fleet	£1,895	£300	6.3
	Commuting	£2,297	£366	6.3
	Business Miles	£6,678	£1,079	6.2

Table 2. Cost-effective investment cost, benefits and payback period for saving a tonne of CO_2 for each carbon footprint component.

Taking this approach a step further it is possible to work out the maximum cost effective investment require to meet the minimum carbon reduction target for Year 1. The results are shown at Tables 3 and 4. For Scenario A - a reduction in each element of the carbon footprint by 2.1% - the maximum cost-effective investment would be £1.5M. In this assessment two thirds of the investment would be in travel and transport for just one third of the carbon savings required. For Scenario B all the investment expenditure has been applied to street lighting and utilities

according to their relative contribution to the proposed annual carbon saving. The maximum cost-effective investment (£750k) would be half that of Scenario A for the same return. The maximum investment sums calculated are only indicative of a cost-effective carbon management budget. Clearly they may be exceeded where projects deliver benefits in addition to the carbon savings or much reduced where "no cost" management action delivers carbon reductions.

				Scenario A			
Project Group	**Project Name**	**Total Emissions (tCO_2)**	**% of Carbon Footprint**	**2.1% Emissions Reduction**	**%**	**Cost Effective Investment**	**%**
Street Lighting	Street lighting	15,975	38%	335	38%	£273k	18%
Utilities/Property	Oil	522	1%	11		£9k	
	Natural Gas	5,393	13%	113	27%	£97k	14%
	Electricity	5,275	12%	111		£110k	
Travel/Transport	Diesel	2,899	7%	61		£115k	
	Commuting	8,054	19%	169	35%	£389k	67%
	Business Miles	3,565	8%	75		£500k	
		Total	**99%**	**875**		**£1,493k**	

Table 3. Scenario A - the maximum cost-effective investment required to reduce each element of the carbon footprint by 2.1%.

				Scenario B			
Project Group	**Project Name**	**Total Emissions (tCO_2)**	**% of Carbon Footprint**	**2.1% Emissions Reduction**	**%**	**Cost Effective Investment**	**%**
Street Lighting	Street lighting	15,975	38%	515	59%	£419k	56%
Utilities/Property	Oil	522	1%	17		£14k	
	Natural Gas	5,393	13%	174	41%	£149k	44%
	Electricity	5,275	12%	170		£169k	
Travel/Transport	Diesel	2,899	7%				
	Commuting	8,054	19%				
	Business Miles	3,565	8%				
		Total	**99%**	**875**		**£751k**	

Table 4. Scenario B - the maximum cost-effective investment required to reduce the carbon footprint by 2.1% from street lighting and utilities.

From the above analysis it is concluded that investment funding should be allocated in the following order of priority:

1st Street lighting.

2nd Utilities.

3rd Travel & Transport.

This order also provides the priority for project selection.

4.3 Short Listed Actions and Emissions Reduction Opportunities

The Carbon Trust's preferred approach of identifying investment costs, carbon savings, cost savings and timescales to create a MACC for over 25 potential emissions reduction projects for a full five year carbon management programme proved to be an impossible task. Instead, it was decided to follow the Authority's agreed approach laid out in the climate change strategy and limit the task to developing its second annual action plan for climate change. Given the agreed target, it was necessary to identify projects capable of delivering a saving of 887 tonnes of CO_2 in 2007/8. The following is a summary of short listed emission reduction projects required to achieve this goal. More detail on each project is at the Appendix.

4.3.1 Street Lighting

On 9th January 2007 the Environment, Economy and Culture Overview and Scrutiny Committee considered a report entitled "Improving Devon's Environment – Sustainability in Street Lighting Equipment" (EEC/07/2/HQ refers) on the use of solar power for street lighting and illuminated signs and also the wider sustainability issues in relation to street lighting and road sign illumination. It was decided that a Task Group of members and officers would develop the Street Lighting Policy to reduce energy consumption in line with the strategic objectives of the County Council under the "making Devon greener" initiative. This precursor enablement action must be completed before the detail of carbon reduction measures to be adopted can be determined. The policy review is scheduled for completion during 2Q07.

In addition to this policy review (and the potential need to undertake public consultation on the resultant proposals), the analysis phase of the CMP identified the 14 potential carbon reduction opportunities shown in Table 5.

Measure	Task
Policy Making	To carry out a Street Lighting Policy Review by Task Group.
Communicating & Raising Awareness	To undertake a public consultation on the proposals of the Task Group if required.
Measuring & Monitoring	[Unmetered supply – no plans to change these traditional arrangements]
Reducing Demand	Removal of unnecessary street lights and lit bollards and signage.
	To use highly reflective material to remove unnecessary lit bollards/signage.
	To reduce Traffic Route lighting by introducing variable lighting levels – dimming proposal.
	To apply the wider choice of lighting class to traffic routes and residential roads.
	New technology – to introduce remote monitoring.
	To convert night lighting schemes to part night lighting schemes.
	To fit photo electric cells to switch 24 hour illuminated signs and bollards to night-lit only.
	To fit photo electric cells to change the street light switching regime to 35 lux on 16 lux off.
Implementing Energy Efficiency	To fit electronic ballast/switch gear.

	To convert street lights to modern luminaries and lamps – replace SOX with SON.
	To reduce lighting level on specific routes by replacing 250W bulbs with 150W bulbs for 2800 lamps.
	New Technology - To fit energy efficient white lights to reduce wattage from 75W sodium to 35W white.
Using Clean/ Renewable Energy	New Technology –To trial a solar/wind powered street lighting scheme.
	To purchase green electricity.

Table 5. Potential carbon reduction opportunities for street lighting.

During the 2007/8 budget round £200k was added to the base budget to deliver energy savings from street lighting. Whilst the CMP toolkit proposes a project approach, this is not the way in which these savings will be delivered in a street lighting context. Whilst it is likely that there will be a commitment to lower wattage luminaries (i.e. 250 to 150w conversions) on main routes between communities and on key routes in communities, it is likely that the savings will be delivered on an area/location basis using a package of the measures identified above.

For the purpose of this plan, and based on the current electricity price, it is estimated that the amount of CO_2 that a cost effective investment of £200k could deliver is 245 tonnes. Any increase in electricity price at the autumn contract review point would reduce the amount of CO_2 that could be saved by such a programme. Whilst the scope and details of the programme have yet to be determined, a realistic target for carbon reductions from this source is 150 tonnes of CO_2 representing 350MWh or a cost saving of about £22k.

4.3.2 Utilities - Property

The DCC Property portfolio consists of 3,975 buildings and possesses considerable scope for achieving a significant reduction in CO_2 emissions from the consumption of electricity, gas and oil. From the beginning of FY 2007/8 the Property Department is moving into a joint venture company as Norfolk Property Services (NPS) South West Ltd. This new arrangement will have an important role in the proposed estate rationalisation which, within the 5 year time frame of this plan, could produce a significant reduction in the baseline emissions profile. Whilst the buildings disposed of will still exist, the DCC emissions liability will be reduced and the energy efficiency of the estate will have changed most likely for the better. With this new arrangement it is important to outline the emissions reduction requirement from a client perspective. In addition to this key policy issue, the principal emissions reduction opportunities for the property portfolio are listed at Table 6.

Measure	Task
Policy	[To determine and document the energy policy aspects of the client relationship with NPS.]
Communications & Awareness Raising	To design and deliver an Energy @ Work campaign.
Measurement & Monitoring	To procure energy management software and commence the monthly read of all meters.
	To carry out an energy audit of leasehold properties and assess future energy management requirements.
Reducing Demand	To optimise the voltage used at County Hall by installing PowerPerfector or similar product.
Implementing Energy Efficiency	To carry out energy audits in corporate building stock and recommend energy efficiency improvements.
Using Clean/ Renewable Energy	To install biomass boiler at County Hall.

Table 6. Potential carbon reduction opportunities for utilities in Year 1.

The proposed biomass boiler project has the potential to deliver half of the outstanding CO_2 reduction figure (i.e. 348 tonnes). It has been costed both as a DCC-owned facility (i.e. £150k including remedial work) and on an ESCO basis (i.e. a long-term £50k p.a. Energy Supply Company contract for heat) with the former arrangement being the preferred option. The formal procurement route will take at least 6 months and the major carbon savings from heat through biomass will not be realised until winter 08/09. Therefore, whilst this project does not form part of the Year 1 proposal, funding during 2007/8 will be required to realise carbon savings in Year 2.

The voltage optimisation for the County Hall campus using PowerPerfector is possible. This technology could provide 145 tonnes of the first year savings at an investment cost of £40k. In addition, an energy saving campaign across DCC could also deliver a 2.5% reduction in energy usage which amounts to 280 tonnes. The Carbon Trust's recommended investment for such a programme is between 1% and 2% of the utilities budget. Based on 2005/6 expenditure for the corporate (non-schools) utilities (excluding water) a campaign budget of £32k has been agreed although the manpower resources required to optimise its effectiveness and continually refresh its content are not included in this total. The proposed reduction is half that of the Carbon Trust's benchmark for such activity (5%) however, given the fragmentation of the estate the 2.5% aspiration is likely to be a challenge. In addition, through continuing energy audits supplemented by new energy management software (at an agreed cost of £25k) to ensure timely and accurate meter reads, a further 450 tonnes may be achieved in year. These savings represent an historic 4% year-on-year achievement and accrue from improving the management of audited facilities i.e. energy demand reduction through better practice. Together, these 3 measures could deliver 875 tonnes in a full year or about 650 tonnes from Jul 07.

Traditionally, the audit process also identifies energy efficiency measures that could increase both cost and carbon savings. However, as there is no funding stream for energy efficiency the Authority has been unable to capitalise on these opportunities. Today, this is an important

oversight given that the EU Directive on the Energy Performance of Buildings, which came into force in 2006, requires Energy Performance Certificates to be displayed in all the Authority's larger buildings (i.e. with a floor area of +1000 m^2) by January 2009. The size of this task is being assessed and additional funding will be required to ensure that all the appropriate buildings attain the acceptable minimum standard. This potential could be harnessed by generating a DCC energy efficiency funding line and/or creating a ring-fenced, revolving fund through partnership with Salix Finance as outlined in Section 5.

4.3.4 Travel & Transport - Staff Commuting

Under the "Making Devon Greener" corporate programme, emissions from staff commuting are to be addressed as part of the staff travel plan being developed for County Hall. The intention is that this plan will set the standard for DCC travel planning and provide the best practice template for other sites to develop and implement travel plans. The County Hall plan will cover both staff commuting and business travel. As far as commuting is concerned it is estimated that 1,747 tonnes of CO_2 is produced each year from the 6.2 million miles done by County Hall staff commuting to work. If this model is applied to all non-teaching DCC staff the figures increase to an estimated 8,054 tonnes of CO_2 from 29 million commuting miles annually. Whilst the County Hall Travel Plan project is not due for completion until 4Q07 (and therefore will not deliver significant carbon savings in Year 1), an early start to travel awareness raising has been made possible by the allocation of £32k to a Travel@work campaign.

4.3.5 Travel & Transport – Business Miles

Reducing emissions from business miles is to be considered as part of the County Hall Travel Plan project; hence it is Year 2 activity. That said, there is an existing initiative to introduce audio conferencing within the Authority as an efficiency measure to reduce the need to travel. Based on a six fold return on an investment of £50k, BT expect the Authority to reduce its business travel on internal DCC meetings by 625,000 miles which is equivalent to 175 tonnes of CO_2. The project is fully funded on a pay-as-you-go basis and implementation is underway. The full saving is taken in Year 1 although only half of it is required to meet the initial target.

Year 1 Carbon Target	=	887 tonnes of CO_2
Year 1 Carbon Savings from Street Lighting	=	150 tonnes of CO_2
Year 1 Carbon Savings from Property	=	650 tonnes of CO_2
Year 1 Carbon Savings from Business Miles	=	175 tonnes of CO_2
Year 1 Balance of Carbon Target	=	-88 tonnes of CO_2

4.4 Future Actions and Emissions Reduction Opportunities

For Year 2 and beyond the carbon reduction targets are of the magnitude shown in Table 7.

Financial Year	Reduction over previous year (%)	Proposed emissions reduction (tCO_2)
08/09 (Year 2)	2.1%	870
09/10 (Year 3)	3.3%	1330
10/11 (Year 4)	3.3%	1290
11/12 (Year 5)	3.3%	1250

Table 7. Indicative carbon reduction targets for FYs 08/09 to 11/12

There are some key initiatives already identified that will deliver the bulk of these targets:

- Street Lighting – the increase of £200k per annum in the base budget could be expected to save an additional 245 tonnes of CO_2 each year.
- Energy Audits – continuing the trend that has already been established over the past 5 years, ongoing demand reduction could be expected to save 4% per annum on emissions from utilities. This would amount to further emissions reductions of 450 tonnes of CO_2 per annum.
- Asset Management Review – following a pilot project in North Devon a full review of the DCC estate is proposed. This is likely to result in a significant asset disposal programme as efficiency gains from both ownership and travel are sought. The scale of the reduction may be in the region of 25% which could be expected to have an impact of a similar magnitude on the carbon footprint for both utilities and travel.

In addition to these incremental savings, there are in-year reductions to be made from two projects outlined earlier:

- County Hall Biomass Boiler. This project is expected to produce a one-off saving of 348 tonnes of CO_2 in Year 2. These carbon savings include the extension of the heat main to the Matford Offices replacing the emissions from electricity consumption.
- County Hall Travel Plan. This project has the target of restructuring the County Hall staff commute to $^1/_3$ car, $^1/_3$ car share and $^1/_3$ sustainable transport. Achieving this profile would save 264 tonnes of CO_2 once fully implemented. The implementation is expected to be carried out over 2 years so the carbon saving is taken proportionately in Years 2 and 3. Once the experience of this implementation has been examined the model will be applied to all DCC staff commuting from Year

4. This could potentially make savings of 1215 tonnes of CO_2 in Years 4 and 5. The implementation of this extension to the Travel Plan necessarily remains unfunded. However, based on the premise that cost effective carbon reduction projects should be carried out where the cost per tonne of CO_2 saved is £8 or less, even without any financial benefit accruing to the Authority, the extension project would remain cost effective at an investment cost of £97K. This means that in carbon savings terms more benefit would be gained by the Authority by investing in this project than investing in schemes that deliver CO_2 savings at more than £8 per tonne of CO_2 saved.

These future proposals and other identified opportunities are presented at Table 8.

Measure	Service	Section	Task
Policy Making	Street Lighting	Street Lighting	To implement the agreed Street Lighting Policy measures.
	Travel & Transport	Commuting & Business Miles	To develop and seek approval for a County Hall Travel Plan.
	Travel & Transport	Vehicle Fleet	To develop a policy statement on reducing the environmental impact of the DCC Vehicle Fleet that includes an agreed approach to environmentally-aware vehicle procurement.
	Utilities	Energy Management	To prepare for and implement the proposed Energy Performance Commitment programme – carbon trading for LAs.
	Utilities	Energy Management	To review and adopt the draft Energy & Water Strategy.
	Utilities	Energy Management	To undertake the DCC asset management review and disposal programme.
Communicating & Awareness Raising	Travel & Transport	Commuting & Business Miles	To design and deliver a corporate Energy, Travel and Waste @ Work campaign.
	Utilities	Energy Management	
	Waste Management	Waste Management	
	Utilities	Energy Management	To introduce the real time monitoring and display of energy consumption in principle buildings.
Measurement & Monitoring	Travel & Transport	Business Miles	To improve the CarPlan system to provide accurate monthly business mileage data by directorate, group and/or cost centre.
	Travel & Transport	Commuting	To carry out a staff travel survey to provide baseline data on commuting.
	Travel & Transport	Vehicle Fleet	To develop a system for providing monthly fuel usage by section, driver and vehicle.
	Travel & Transport	Vehicle Fleet	To implement a system for recording fuel uplift, vehicle registration and vehicle mileage when using Agency Fuel Cards.
	Utilities	Energy Management	To carry out an energy audit of leasehold properties and assess future energy management requirements.
	Utilities	Energy Management	To implement the Energy Performance of Buildings Directive by providing Energy Performance Certificates for all buildings from January 2009.
	Travel & Transport	Business Miles	To use CarPlan data to manage business miles at a directorate, group and/or cost centre level.
	Travel & Transport	Commuting	To roll out modal shift measures to the full non teaching DCC commute.
	Travel & Transport	Commuting & Business Miles	To implement measures to promote modal shift to $^1/_3$ by car, $^1/_3$ by car share and $^1/_3$ by sustainable transport for County Hall commute.
	Travel &	ICT	To implement a mobile working capability.

Reducing Demand	Transport		
	Travel & Transport	ICT	To implement video conferencing facilities at County Hall to reduce the need to travel to meetings.
	Travel & Transport	Vehicle Fleet	To encourage/require fleet drivers to complete an ecodriving course.
	Utilities	ICT	To implement the corporate printer strategy.
	Utilities	ICT	To implement the mainframe replacement programme.
	Utilities	ICT	To implement virtual servers in ICT suite.
	Utilities	ICT	To install Nightwatchman or similar software to automatically switch of PCs.
	Utilities	Energy Management	To replace the Matford Offices heating system.
Implementing Energy Efficiency	Utilities	Energy Management	To progress the boiler and heating system replacement programme with the aim of installing energy efficient/renewable technologies.
	Utilities	ICT	To tender for energy efficient products in PC and Server Replacement Programme procurement.
Using Clean/ Renewable Energy	Travel & Transport	Vehicle Fleet	To investigate the potential use of biodiesel once it becomes commercially available.
	Utilities	Energy Management	To install biomass boiler at County Hall.
	Utilities	Energy Management	To investigate the installation of wind turbines on the County Farm Estate to generate grid electricity.

Table 8. Future projects and emissions reduction opportunities

4.5 Implementation Plan Summary

The high level implementation plan is shown at Figure 5.

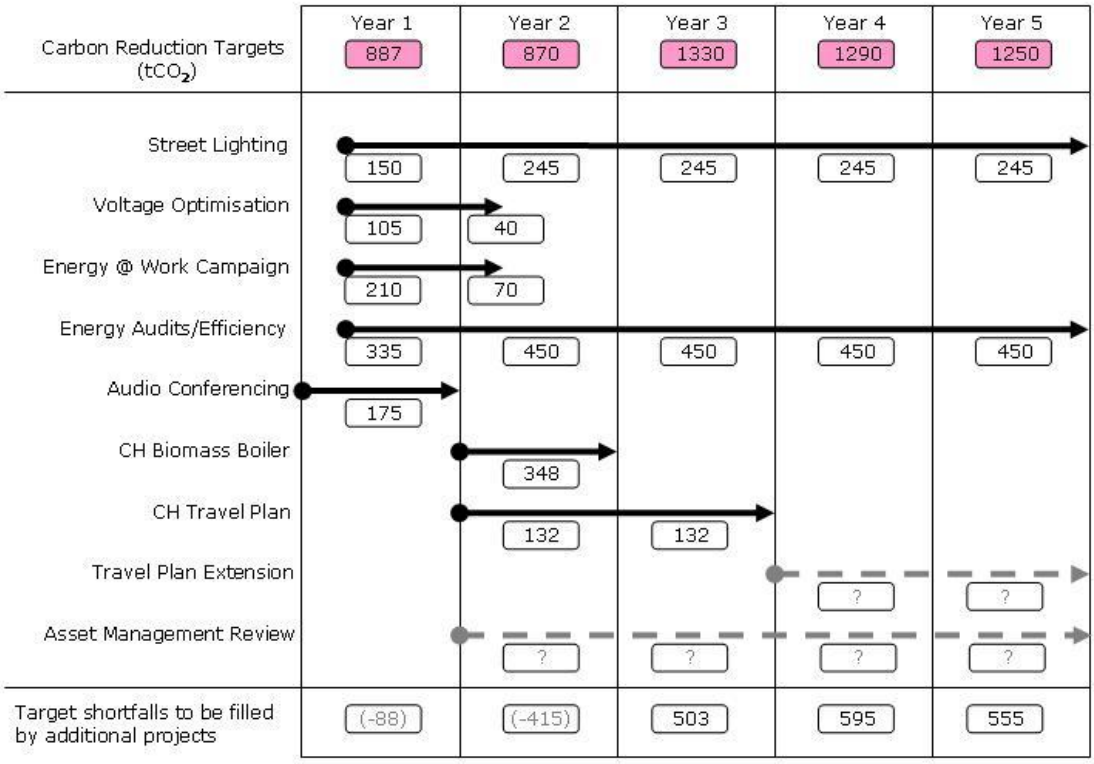

Figure 5. High level Implementation Plan

5. IMPLEMENTATION PLAN FINANCING

5.1 Internal Funding

The timing of the LACMP planning year is based on the Carbon Trust's annual funding cycle rather than the Local Authority budget cycle. Hence at the point of seeking approval for the SIP there is potentially a mismatch between the carbon reduction projects proposed and the availability of appropriate financial cover to achieve implementation. Indeed, it is likely that only "no (additional) cost" projects or projects already in the pipeline will represent realistic carbon reduction opportunities in Year 1.

Of the projects identified for early implementation, budgetary provision totalling £347k has been made as follows:

- Street lighting – £200K.
- Voltage optimisation - £40k.
- Energy@Work campaign - £32k.
- Energy Management Software - £25k.
- Audio conferencing - £50k.

This sum assumes that the implementation of demand reduction measures as the outcome of the routine energy audit process is largely a "no cost" activity.

Moreover, in order that timely implementation can proceed in Year 2, funding of £150k for the County Hall biomass boiler installation and £32k for the County Hall Travel Plan Travel@Work campaign have also been agreed.

Therefore, the only outstanding funding requirement is a sum to implement the energy efficiency measures identified by audit and required to bring buildings up to the standard required by the EU Directive on Energy Performance in Buildings. Based on saving the minimum annual target amount of the carbon footprint for grid electricity (approximately 100 tonnes of CO_2), an estimated budget of £100k would be appropriate for this activity.

Finally, the planning phase of the programme has demonstrated the need to adequately represent the proposed costings for Year 2 projects in the FY08/09 budget round. These projects must be costed in detail by September 07.

5.2 Potential for Partnership Funding

As a participant in the Carbon Trust's LACMP, the Authority is likely to be eligible to apply for partnership funding through Salix Finance. Salix is an independent company funded by the Carbon Trust to work with the public sector to reduce carbon emissions through investment in energy efficiency measures and technologies. Following a successful pilot programme with 19 LAs (the Local Authority Energy Finance Scheme), Salix has extended its operations by increasing the number of Authorities that it currently works with as well as opening the scheme to a larger number of qualifying public sector bodies.

Salix will provide a grant of typically £200k to kick-start an energy efficiency drive affecting all components of the partner's estate. The partner organisation will be required to supplement this grant to make up the total "invest to save" ring-fenced fund. Monies dedicated to implementing energy saving projects will be provided by this fund through interest free internal "loans". Loans are repaid using a minimum of 75% of annual savings. Once the project loan has been repaid to the fund the project recipient will continue to benefit from the ongoing energy savings. As repayments are recycled back into the fund they become available for re-investment, hence creating a self-sustaining fund. Each individual fund is managed entirely by the partner organisation through a web-accessed management tool.

Given the forecast continuation of inadequate budget settlements, it may be opportune to consider the establishment of a ring-fenced revolving fund using grant funding from Salix. This would allow the Authority to implement some of those the energy efficiency opportunities identified at audit but not taken due to lack of funding regardless of the annual settlement. The maximum matched funding requirement for such a fund would be £200k.

6. STAKEHOLDER MANAGEMENT AND COMMUNICATIONS

The management of key stakeholders and effective communications are fundamental to securing approval, endorsement and delivery of the CMP and for embedding carbon management in DCC's culture and day-to-day business.

6.1 Stakeholder Management

During the planning phase the process of organizational engagement has reached out beyond the CMP Core Team to many other stakeholders. Given that the aspiration is to make carbon management as central to the organization as financial management, all DCC members, officers and staff are potential stakeholders. The key stakeholders and proposed formal methods of engagement are identified in Table 9.

Stakeholder Group	Nominated Individual	Method of Engagement
Elected Members	Leader of the Council – Cllr Brian Greenslade Executive Member for the Environment – Cllr Mrs Margaret Rogers Executive Support Member for the Environment – Cllr Phil Cook Other members of the Executive Members of the E & E Overview and Scrutiny Cttee Members of the Energy Task Group Members of the Climate Change Task Group. Member Energy Champion – Cllr Roger Giles Member Climate Change Champion – Cllr Gordon Hook	The Annual Report to the Executive. Quarterly Climate Change Meeting with Dir EEC and Exec Member for the Environment.
Corporate Management Board	Chief Executive - Phil Norrey Deputy CEx and Director Environment, Economy & Culture - Edward Chorlton Director Finance, IT and Trading - John Mills County Solicitor - Roger Gash Director Adult & Community Services - David Johnstone Director Children & Young People's Services - Anne Whitely Director Personnel & Performance - Heather Barnes	The Annual Report to the Executive. Input to the CSR aspects of Annual Statement of Accounts.
Making Devon Greener Programme Board	Director EEC Deputy Director EEC Tom Pike	Six Monthly Review of work of Carbon Management Steering Group.
Directorate Management Boards (DMBs)	As detailed by Directors CEx, EEC, FIT, ACS, CYPS and P&P.	Quarterly Updates by Directorate representative of the Carbon Management Steering Group.
Carbon Management Steering Group	Chair – Director/Deputy Director EEC EEC - David Whitton CEx - James Stubbs P&P - Judith Sharples, John Cooke FIT - Annette Williams, Rob Parkhouse ACS - Tim Golby CYPS - Ingrid Fisher, Colin Mackenzie, Debbie Pritchard Ian Bateman – Climate Change Officer Jenny Caldwell – Carbon@Work Communications	Quarterly Meeting of the Carbon Management Steering Group based on a report from the Core Team.
Carbon Management Core Team	Ian Bateman – Climate Change Officer Andy Seaman – Sustainability & Energy Manager David Harvey – Senior Transport Co-ordination Officer Gina Small – Employers Travel Plan Officer Mark Johnson – Senior Lighting Engineer Kevin Balding – Procurement Officer	Quarterly Meeting in preparation for the Carbon Management Steering Group.

	Annette Dentith – Principal Waste Management Officer Adrian Middlewick- Waste Management Officer (Landfill) Julia Mullin – Communications Assistant Andy Rogers – Principal Finance Officer (EEC) Goy Roper - ICT	
Communication Managers	Peter Doyle, Tony Parker, Jo Clarke, Sam Hill, Clare Taylor, Jenny Caldwell, Liz Waugh.	Quarterly carbon management communications co-ordination meeting.
Service Heads/Managers	Richard Buzzacott – Property Bruce Thompson – Transport Co-ordination Service Ben Jennings – County Waste Management Officer Hd of Strategic Intelligence	Cascade through DMB/T process.
Data Owners	Nigel Middlewick - CarPlan Virginia Hill - Agency Fuel Cards Andy Rogers - Finance Systems Building Custodians	Annual Carbon Footprint calculation
All DCC staff	All employees but excluding schools until a later phase	Through all channels in the communications plan.
Contracted service staff	Those employed under contract to deliver a service, the majority not DCC employees.	Through all channels in the communications plan.

Table 9. Key stakeholders and formal methods of engagement.

6.2 Communications Plan

The communications plan for the carbon management programme is based on bringing together the Waste@Work, Energy@Work, and Travel@Work campaigns under a carbon management brand. The logo at Figure 6 uses the "Devon leaf" from the corporate branding to produce a green footprint with caption in the corporate colours. The logo will be used to badge all of the @work campaign material as a carbon management activity.

Figure 6. The carbon management logo for branding @work campaigns

6.2.1 Communication Objectives

- To raise corporate awareness of the work being undertaken to reduce the Authority's carbon footprint through changes in service delivery, efficiency measures and procurement practices.
- To encourage existing members and staff to make their own contribution to the demand reduction aspects of the work by reducing office waste, energy consumption, commuting miles and business travel.
- To inform new members and staff of the organisation's expectation in respect of their personal contribution to reducing emissions.
- To encourage members and staff to pursue additional carbon reduction opportunities by proposing and implementing changes to the way they work.

6.2.2 Communication Channels

- Face to Face: Staff induction, appraisal process, senior managers' events, team meetings, environment promoters meetings.
- Electronic Channels: e-mail, intranet/internet including pop-ups, staff notice board, electronic newsletters – directorate and corporate.
- Printed Channels: Press releases, printed newsletters, posters, stickers.

6.2.3 Key Messages

In developing a Householder's Guide to Climate Change Action for distribution to every house in Devon during April 07 (and for the supporting TV advertisement) the key message is *"Let's Do it for Devon and make a climate change for the better".* This strap line and its derivative *"Do it for Devon"* will also be used internally.

6.2.4 Measuring Progress

The individual @Work campaigns will have implicit targets that will be measured either through billing arrangements or questionnaires. In order to assess the level of staff awareness on the carbon management and @Work programmes, and the level of staff action being taken, questions will be included in the annual corporate staff e-questionnaire.

7. SIP GOVERNANCE, OWNERSHIP AND MANAGEMENT

During the initial planning phase the carbon management programme has been organised along functional lines. The key roles and individuals are identified in Table 10. One of the main challenges during this phase has been to identify entry points and engage with other directorates at an appropriate management level. The formalisation of effective corporate engagement is essential for successful implementation of the programme.

Role	Name	Position	Directorate
Project Sponsor (Senior Management)	Edward Chorlton	Deputy Chief Executive & Director of Environment, Economy & Culture	EEC
Project Sponsor (Member)	Margaret Rogers	Executive Member for the Environment	n/a
Deputy Project Sponsor	Ian Harrison	Deputy Director of Environment, Economy & Culture	EEC
Project Leader	Ian Bateman	Climate Change Officer	EEC
Deputy Project Leader & Core Team (Utilities)	Andrew Seaman	Energy & Sustainability Officer	CEx
Project Support Office	Clare Brewster	Carbon Management Programme Coordinator	EEC
Core Team (Vehicle Fleet)	David Harvey	Senior Transport Co-ordination Officer	EEC
Core Team (Landfill Sites)	Adrian Middlewick	Senior Waste Management Officer	EEC
Core Team (Street Lighting)	Mark Johnson	Senior Lighting Engineer	EEC
Core Team (Business Miles)	Norman Butlin	I & E Team	P&P
Core Team (Staff Commute)	Gina Small	Employers Travel Plan Officer	EEC
Core Team (Waste @ Work)	Annette Dentith	Principal Waste Management Officer (Policy)	EEC
Core Team (Green Procurement)	Kevin Balding	Procurement Officer	FIT
Core Team (Financial Advisor)	Andrew Rogers	Principal Finance Manager	EEC
Core Team (Internal Communications)	Julia Mullin	Communications Assistant	EEC

Table 10. The Planning Phase Programme Organisation

7.1 The Governance Mechanism

The proposed strategic objective on organisation is *"to integrate carbon management into the responsibilities of CMB members and their staff, and to ensure that the achievement of targets forms part of directorate business plans across the Authority".* The principal governance issue is whether the functional approach based on a multitude of discrete carbon reduction projects sitting within the corporate project management framework under the "making Devon greener" theme is appropriate.

In reviewing the list of carbon reduction opportunities, there are 3 types of activity proposed;

- **Strategies** - Extant corporate programmes and projects which have either an implicit or explicit carbon reduction component. Examples of these are the Asset Management

Programme, the ICT Strategy, the Corporate Printer Strategy, Corporate Procurement Strategy and the ways of working/mobile working strategy.

- **Ubiquitous Reduction Opportunities** - Carbon reduction opportunities that require a corporate response from directorates and therefore need to be owned and managed by the DMB/Ts. These areas cover the management of business miles, the compliance with the Staff Travel Plan to reduce commuting emissions, the management of vehicle fleet drivers to optimise fuel consumption, the reduction of utilities consumption by adopting better practice within office accommodation and recycling all office waste. As such these functions are the internal response to the Energy, Travel and Waste@Work communications initiatives.

- **Projects** – These may relate to internal or external service delivery and represent a function owned by a single directorate. These activities would include street lighting, vehicle fleet procurement, energy efficiency improvements to building stock, installation of renewables technology, upgrades to information systems to improve measurement and monitoring and ongoing waste management stewardship of closed landfill sites.

In setting up the governance structure there is a need to promote corporate ownership i.e. a *"we are doing this to ourselves"* approach rather than *"we are having this done to us".* There is also a need to avoid the activity being seen as an add-on to the day-to-day function as labelling carbon reduction as a discrete activity rather than as a core part of the day job will add costs. Furthermore, if *"carbon think"* is not mainstreamed into the organisation significant opportunities that have not been surfaced by the functional specialists may be missed.

Clearly a corporate approach required. As carbon management is core to the "making Devon greener" initiative, the SIP should be owned by the "making Devon greener" Programme Board. The implementation plan will be progressed and monitored through a Carbon Management Steering Group made up of key 3rd tier DMB representatives. The detailed work will be progressed by a Carbon Manager who will be supported by the functional specialists that make up the Core Team. Additional members will be co-opted as required. This structure with example projects is shown at Figure 7.

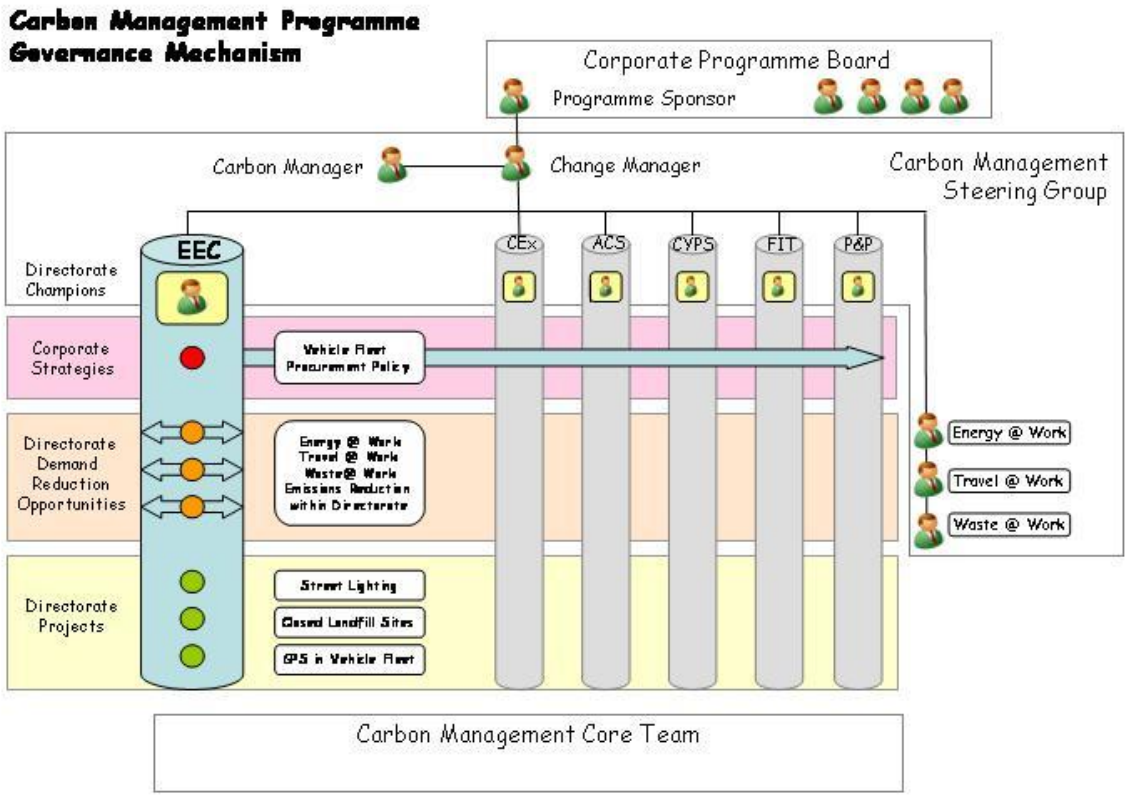

Figure 7. Carbon Management Programme Governance Mechanism

7.2 Main Roles and Responsibilities

Within the governance framework outlined above it is proposed that management accountability is allocated as follows;

- **Programme Sponsors -** The persons responsible for setting the strategic direction for carbon management, agreeing the resources to be devoted to the Implementation Plan and reviewing the progress against the objectives outlined in the Plan.

  Senior Member – Executive Member for the Environment
  Senior Executive – Director for the Environment, Economy & Culture

- **The Carbon Manager -** The individual responsible for evolving and implementing the Carbon Management Plan and for achieving the LA's Carbon Management targets.

Carbon Manager – Climate Change Officer

- **The Carbon Management Steering Group -** A group of key internal stakeholders from each of the DMBs who support and challenge the carbon management team. The Steering Group has the following responsibilities:
    - Reviewing and updating of the Implementation Plan on an annual basis.
    - Monitoring and reporting progress against plan.
    - Monitoring and reporting emissions performance.
    - Maintenance of an opportunity database.
    - Internal and external communications.

- **The Carbon Management Core Team -** The key internal stakeholders who own, manage and progress the portfolio of agreed carbon reduction projects and identify future opportunities.

7.3 Risks and Issues Management

The Carbon Management Programme uses the 'Devon Way' project management process which incorporates regular logging, identification of mitigation actions and review of the known risks and issues. These are reported on through the agreed Progress Reporting mechanism.

7.4 Benefits Management

The benefits have been identified and are being managed and reviewed as part of the Corporate Programme Board's review of the "making Devon greener" theme of the Corporate Plan.

7.5 Reporting and Evaluation

The climate change strategy is locked in to an annual reporting cycle because of the need to produce an annual action plan for endorsement by the Executive. Future iterations will use the calculation of the carbon footprint as the basis for identifying the future work programme for carbon management. The annual report will also have to provide part of the supporting statement on corporate environmental responsibility for the Annual Statement of Accounts.

Project 1. Implementation of a Revised Street Lighting Policy

Purpose	**Policy Making** ■	Measuring/Monitoring		**Improving efficiency** ■
	Awareness Raising	**Reducing demand** ■		Renewables

Aims & Description	On 9th January 2007 the Environment, Economy and Culture Overview and Scrutiny Committee considered a report entitled "Improving Devon's Environment – Sustainability in Street Lighting Equipment" (EEC/07/2/HQ refers) on the use of solar power for street lighting and illuminated signs and also the wider sustainability issues in relation to street lighting and road sign illumination. It was decided that a Task Group of members and officers would develop the Street Lighting Policy to reduce energy consumption in line with the strategic objectives of the County Council under the "making Devon greener" initiative.	
Timing	Annually from FY 07/08 onwards	
Costs & Benefits	***Capital Investment (£)***	£200k per annum
	Revenue Costs (£pa)	Staff costs
	Financial savings (£pa)	£31k per annum
	Payback period	6.5 years
	Internal funding	£200k
	External funding	Nil
	Emissions reduction	245 tonnes per annum
	Cost per tonne of CO_2	£7
Timing of funding decisions	Funding decision made in FY07/08 Budget Round.	
Ownership & Accountability	David Whitton – Head of Waste, Engineering & Transport Services. Mark Johnson – Senior Lighting Engineer.	
Risks & Issues	***Key issues:*** Agreeing the revised street lighting policy. Agreeing the location for implementation. Determining the technology mix/solution for delivering the savings.	
	Principal risks: Energy price rise reduces the scale of a cost-effective investment. Unable to deliver a cost-effective programme in Year 1. ***Means of risk mitigation:*** Reduce carbon savings to 150 tonnes in Year 1 to take account of policy and planning timetable. Take into consideration the future contracted energy price as soon as possible.	
Measuring progress	***Monitoring required to establish emissions reduction and energy/cost savings:*** Annual review of electricity bill.	
	Key Milestones: Revised Street Lighting policy agreed. Implementation location, technology mix and timing agreed.	
Sources of information and guidance	EEC/07/2/HQ - "Improving Devon's Environment – Sustainability in Street Lighting Equipment" Institute of Lighting Engineers Interim Advice Note LB1 (2006) –"Street Lighting – Invest to Save"	

Project 2. Implementation of Voltage Optimisation using PowerPerfector

Purpose	Policy Making		Measuring/Monitoring		Improving efficiency	
	Awareness Raising		**Reducing demand**	■	Renewables	

Aims & Description	Any project that will reduce the voltage of a circuit within acceptable limits will also reduce the wattage by the same proportion (from the Power equation P = I x V). By installing PowerPerfector (or similar product) a power saving of between 12% and 20% could be achieved.	
Timing	During FY 07/08	
Costs & Benefits	***Capital Investment (£)***	£40k
	Revenue Costs (£pa)	Staff costs and potentially some minor electrical works.
	Financial savings (£pa)	£31k per annum
	Payback period	1.3 years
	Internal funding	£40k
	External funding	Nil
	Emissions reduction	150 tonnes per annum
	Cost per tonne of CO_2	-£182 (minus sign reflects a very quick payback on a 10 year project costing cycle)
Timing of funding decisions	Funding agreed.	
Ownership & Accountability	Andy Seaman – Energy and Sustainability Officer.	
Risks & Issues	***Key issues:*** Obtaining funding.	
	Principal risks: Disruption of services due to voltage drop. ***Means of risk mitigation:*** Ensure that the survey process takes into consideration the full variability of County Hall power requirements.	
Measuring progress	***Monitoring required to establish emissions reduction and energy/cost savings:*** Through the County Hall automatic meter reading system.	
	Key Milestones: Finalise Powerperfector surveys - TBA. Schedule installation -TBA.	
Sources of information and guidance	www.powerperfector.com	

Project 3. Energy@Work Campaign

Purpose	Policy Making		Measuring/Monitoring		Improving efficiency	
	Awareness Raising	■	**Reducing demand**	■	Renewables	

Aims & Description	An awareness raising campaign to promote energy demand reduction through staff saving energy in their work environments. This will also include the real time monitoring and display of energy consumption data in principal buildings.	
Timing	During FY 07/08	
Costs & Benefits	***Capital Investment (£)***	£32k
	Revenue Costs (£pa)	Staff costs and some minor works to purchase and install displays.
	Financial savings (£pa)	£31k per annum
	Payback period	0.6 years
	Internal funding	£32k
	External funding	Nil
	Emissions reduction	280 tonnes per annum
	Cost per tonne of CO_2	-£160 (minus sign reflects a very quick payback on a 10 year project costing cycle)
Timing of funding decisions	Funding agreed.	
Ownership & Accountability	Andy Seaman – Energy and Sustainability Officer. Richard Harper – Assistant Energy and Sustainability Officer.	
Risks & Issues	***Key issues:*** Obtaining funding. Identifying incentives for champions and workforce.	
	Principal risks: Poor take up. Recidivism. The DCC-wide target is too big for a first step. ***Means of risk mitigation:*** CMB policy champion required.	
Measuring progress	***Monitoring required to establish emissions reduction and energy/cost savings:*** Out of hours surveys of larger sites to establish "normal" behaviour. Baseload energy monitoring to identify savings.	
	Key Milestones: Determine campaign plan, schedule and material –TBA.	
Sources of information and guidance	Carbon Trust CTG001 Management Guide – "Creating an awareness campaign – Energy awareness in your business".	

Project 4. Energy Audits and Energy Management Software

Purpose	Policy Making		Measuring/Monitoring		Improving efficiency	
	Awareness Raising	■	**Reducing demand**	■	Renewables	

Aims & Description	Energy auditing is a routine activity aimed at identifying savings in the building stock through promoting best practice. Traditionally, this has delivered a 4% improvement in energy usage per m^2. New software presents an opportunity for enhancing the effectiveness of the audit process by obtaining accurate meter reads and facilitating analysis of consumption. E-billing is also supported.	
Timing	A 5 year programme from FY 07/08	
Costs & Benefits	***Capital Investment (£)***	£25k (Software)
	Revenue Costs (£pa)	Staff costs – 1 FTE is allocated to the task.
	Financial savings (£pa)	£91k per annum
	Payback period	0.3 years
	Internal funding	£25k
	External funding	Nil
	Emissions reduction	450 tonnes per annum
	Cost per tonne of CO_2	-£193 (minus sign reflects a very quick payback on a 10 year project costing cycle)
Timing of funding decisions	Funding agreed.	
Ownership & Accountability	Andy Seaman – Energy and Sustainability Officer. Richard Harper – Assistant Energy and Sustainability Officer.	
Risks & Issues	***Key issues:*** Obtaining funding. Access to all sites for audit. Installation of software and training.	
	Principal risks: Development of and adherence to a 5 year rolling programme. User acceptance and use of meter reading software. ***Means of risk mitigation:*** An agreed schedule of work. A policy for monthly meter reading across all sites.	
Measuring progress	***Monitoring required to establish emissions reduction and energy/cost savings:*** Meter reads will provide the monitoring.	
	Key Milestones: Determine audit plan and schedule –TBA. Determine software roll out plan and training requirement.	
Sources of information and guidance		

Project 5. Introducing Audio-conferencing Facility

Purpose	Policy Making		Measuring/Monitoring		Improving efficiency	
	Awareness Raising		**Reducing demand**	■	Renewables	

Aims & Description	To provide the technology, advice and guidance on when and how to use audio-conferencing so that the technology solution becomes the first choice when meetings are required for DCC staff which would otherwise result in travel.	
Timing	During FY 07/08	
Costs & Benefits	***Capital Investment (£)***	Nil
	Revenue Costs (£pa)	A "pay as you go service" with an estimated cost of £50k per annum.
	Financial savings (£pa)	£300k per annum (a six fold ROI equivalent to 625,000 miles saved)
	Payback period	0.2 years
	Internal funding	£50k
	External funding	Nil
	Emissions reduction	175 tonnes per annum
	Cost per tonne of CO_2	-£1668 (minus sign reflects a very quick payback on a 10 year project costing cycle)
Timing of funding decisions	Approved by CMB 4th December 2006. Implementation in progress.	
Ownership & Accountability	Rob Parkhouse – Acting Head of ICT Services	
Risks & Issues	***Key issues:*** *Awareness, marketing and training.*	
	Principal risks: Poor take up. ***Means of risk mitigation:*** CMB policy champion required. Effective marketing and training required.	
Measuring progress	***Monitoring required to establish emissions reduction and energy/cost savings:*** Management reports from BT on usage will be available although whether these can be used as a proxy for business miles reduction is doubtful. Expected business miles reduction is about 5%.	
	Key Milestones: Launch Service – Apr 2007.	
Sources of information and guidance		