



# Carbon Management-*lite*

## EAUC

Climate Change Action Plans – Planning & Implementation

Signatories of the Universities and Colleges Climate Commitment for Scotland have committed to  
“...produce a 5-year Climate Change Action Plan by February 2010”



DUNDEE COLLEGE, KINGSWAY CAMPUS  
11 May 2009

Allan Crooks

John Dowell

# Carbon Management-*lite*



## ➤ Agenda

- Carbon Trust
- Carbon Management in the Public Sector
- A five year plan
  - Carbon Management Plan vs Climate Change Action Plan
- The five step process
- Carbon Management-*lite*





# Carbon Trust



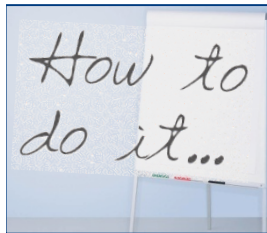
# The Carbon Trust



The Carbon Trust was set up by Government in 2001 as an independent company.

“Our mission is to accelerate the move to a low carbon economy by working with organisations to reduce carbon emissions and develop commercial low carbon technologies.”

We do this by being a catalyst for low carbon enterprise:



## Insights

Explaining the low-carbon economy



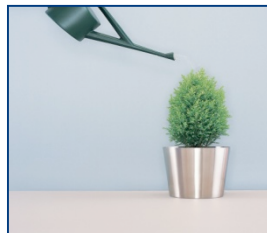
## Enterprises

Creating new low-carbon businesses



## Investments

Financing low-carbon businesses



## Innovations

Developing new low-carbon technologies



## Solutions

Delivering carbon savings for organisations

# Public Sector Services



## Carbon Trust

### Carbon Surveys

Identifying opportunities

### Bespoke

Tailored support

### LA, HE & NHS Carbon Management

Strategic support to large PSBs

### Central Government Carbon Management

Strategic support to Gov Depts

### Carbon Management Revisited

Review, refresh & raise the bar

### Carbon Management Leadership

Area-wide carbon reduction

### **Carbon Management-lite**

Strategic support to smaller PSBs

### Public Sector Network

Online issues exchange forum

### Design Advice

New build and refurb

### Energy Tech List

Procurement guidance

## Carbon Trust Enterprises

### Partnership for Renewables

Commercial onsite renewables

### Carbon Trust Standard

Recognising real carbon reduction

### Carbon Reduction Label

Encouraging a low-carbon supply chain

## Salix Finance

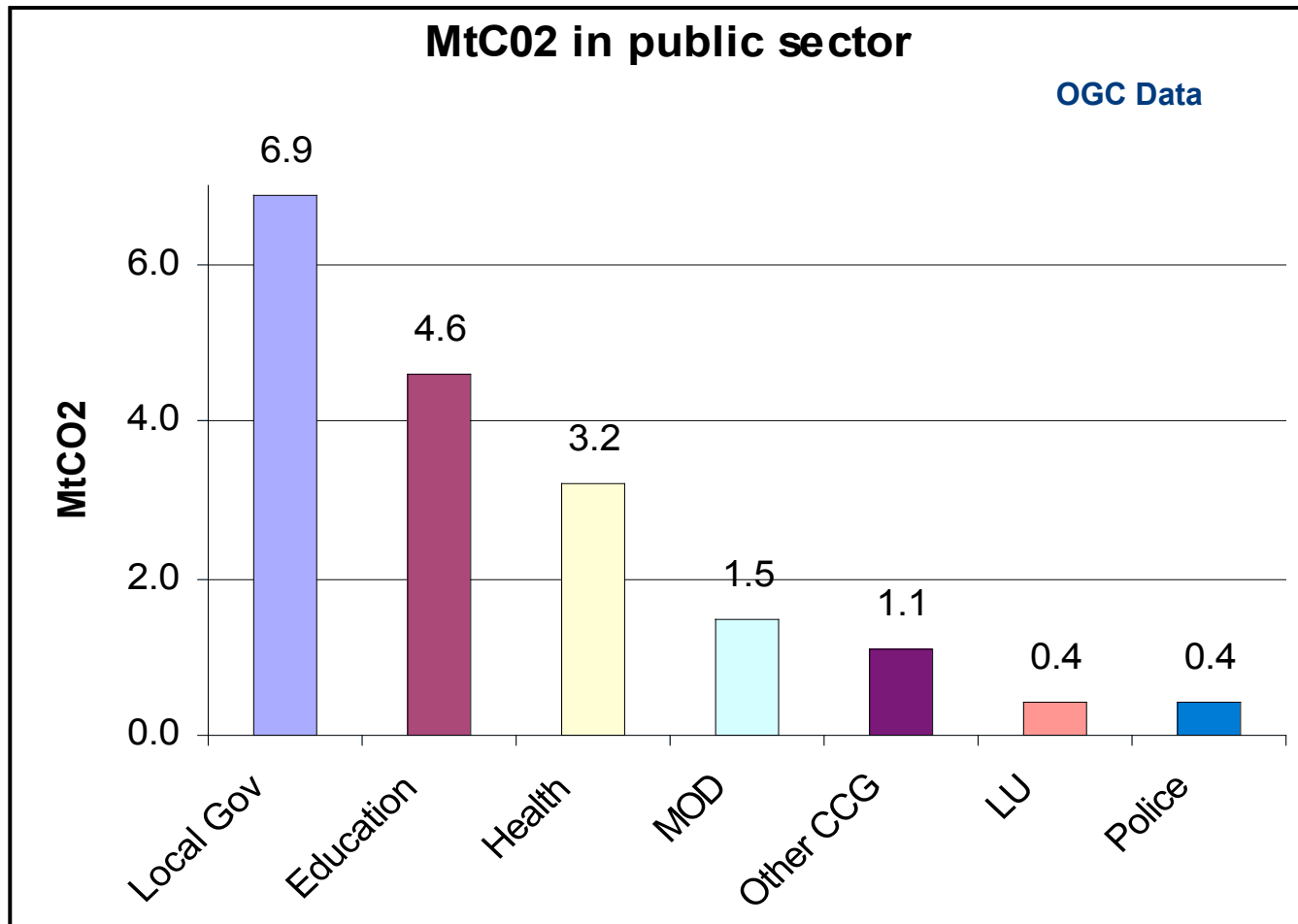
Invest to save



# **Carbon Management in the Public Sector**



# Public Sector – 8% of UK CO<sub>2</sub> (18mt CO<sub>2</sub> in buildings alone)



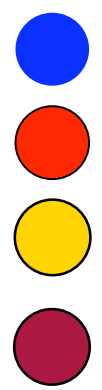
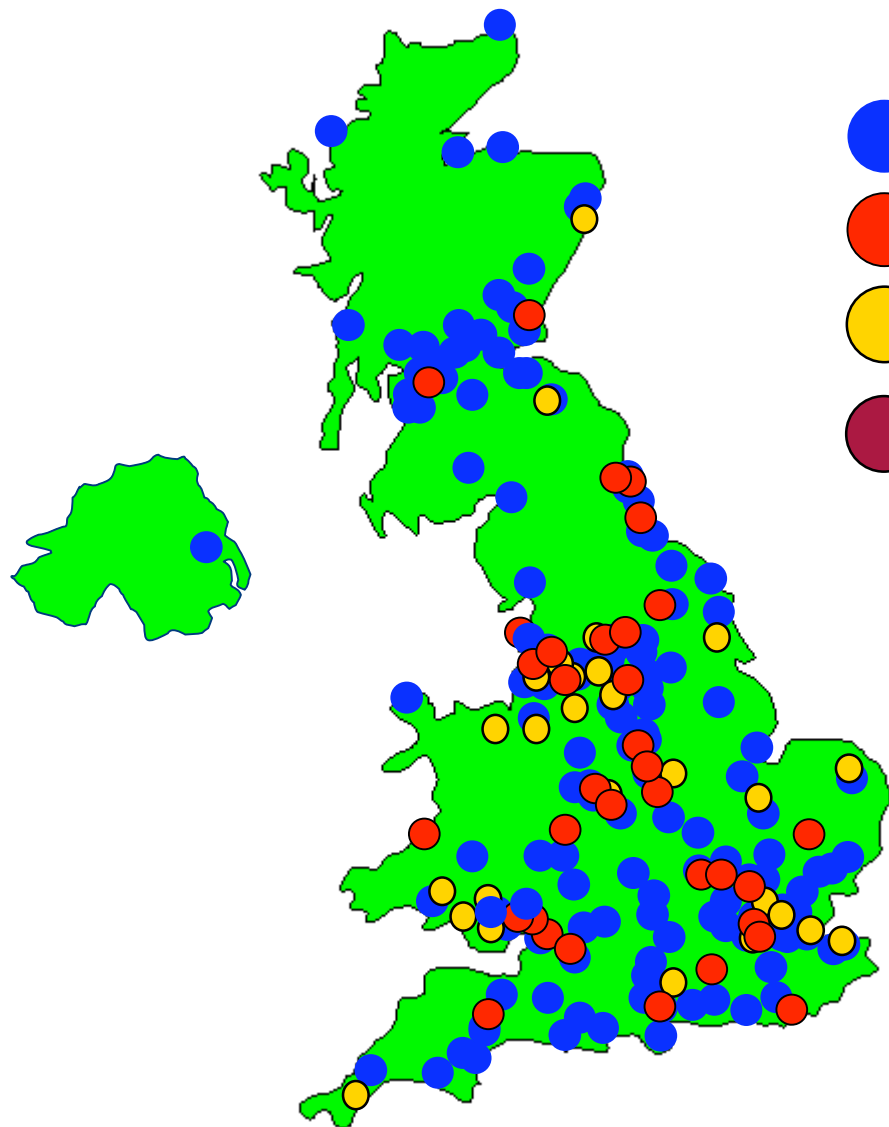
## DIRECT IMPACT

- Significant direct CO<sub>2</sub> impact at ~18mt CO<sub>2</sub>
- Energy bill in excess of £3B
- PSBs own 10% of all land in the UK at ~ 1m hectares
- PSBs own tens of thousands of buildings

## INDIRECT IMPACT

- Wide range of public services
- Leadership and example
- Influence across private, public and domestic sectors
- Procurement
- Planning

# 443 Public Sector Carbon Management partners (by 2008)



**277 Local Authorities**

**84 Universities**

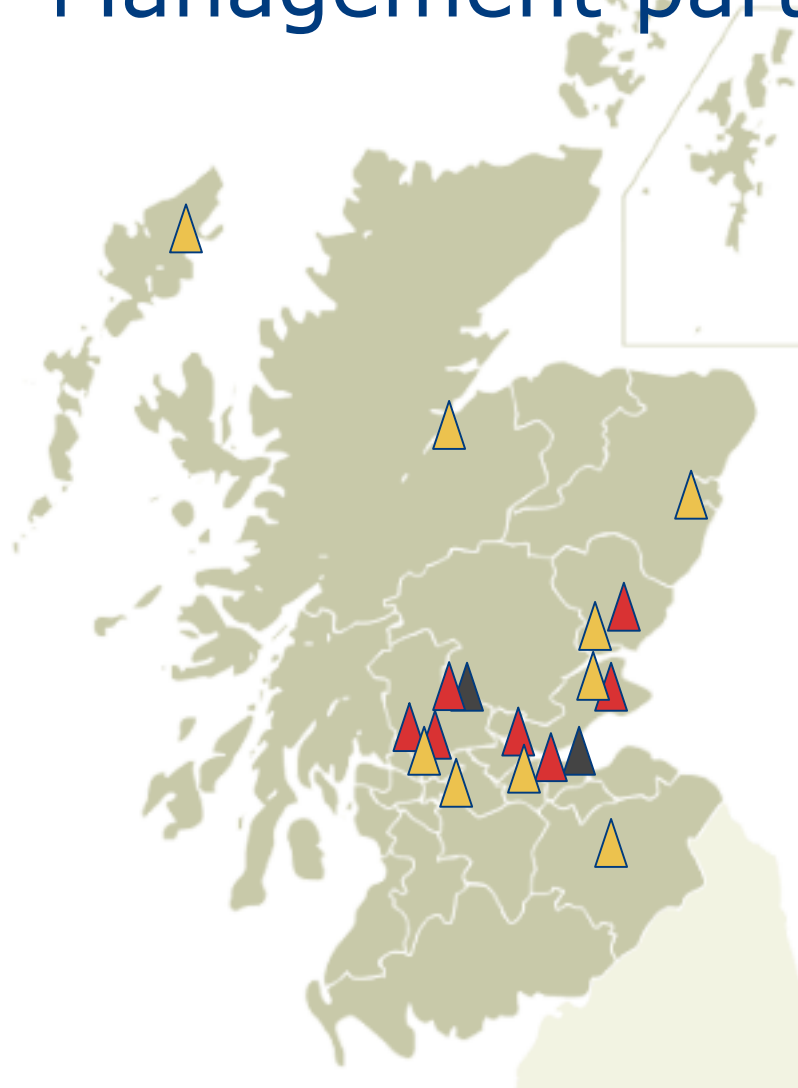
**70 NHS orgs**

**12 Gov Depts & Agencies**





# 48 Public Sector Carbon Management partners - Scotland



31(?) Councils

- NHS Grampian
- NHS Fife
- NHS Borders
- NHS Lothian
- NHS Tayside
- NHS Highland
- NHS Lanarkshire
- NHS Greater Glasgow and Clyde
- NHS Western Isles
- St Andrew's University
- Strathclyde University
- Napier University
- University of Abertay
- University of Glasgow
- Heriot Watt University
- University of Stirling

SEPA  
Scottish Government



# Current position

## - market penetration



- 61 Scottish public bodies/HEI of appropriate size for Carbon Management;
  - 49 have completed CM
  - 11 are committed for 2009/10 (inc 2 repeats)
  - 3 not yet committed
  
- c30 smaller public bodies & c30 colleges of further education suitable for CM lite;
  - First cohort of 10 ready to kick-off
  - Further 2/3 cohorts this year

# Current Position

## - State of Alumni CMP (>2yrs)



- So far they have reduced their carbon footprints by 73 ktCO<sub>2</sub>
- Their CMP's are pretty out of date;
  - Do not take cognisance of Climate Change Bill targets (34 or 42% cut by 2020), or Scot Gov determination that PS should show leadership.
  - Have a portfolio of practical projects that are complete, ongoing or impractical.
  - Do not reflect our much more demanding CMP criteria
  - Some have lost impetus & direction

# The prize



Year	05/06	06/07
Clients	5	7
Identified ktCO <sub>2</sub>	77	91
Implemented ktCO <sub>2</sub>	30	43
Spend £k	75	105
£/tCO <sub>2</sub> ann	£2.50	£2.44
£/tCO <sub>2</sub> life	55p	54p

## ➤ Carbon prize

- So far we have identified c450ktCO<sub>2</sub>.
- Scope 1 public sector emissions is 1,100ktCO<sub>2</sub>
- Plus electricity, streetlighting, travel & transport & waste
- Total footprint c3,000ktCO<sub>2</sub>

## ➤ Reputational prize

- All the key stakeholders are keen that we develop this activity



# A Five Year Plan



# Five Year Plan

*Describing the organisation's required end-state*

*Complementary to the baseline spreadsheet tool: describing the effect of the plan on Business as usual emissions and financial forecasts*

*Summarising the actions/projects planned to achieve the target state of the organisation including strategic, policy-based and technical projects across the agreed scope)*

*Describing how the management of the projects, opportunities will be funded and managed through to benefits realisation and how what organisational and process changes will be implemented to maintain a corporate control on the long term reduction in emissions*

*One one-page plan summary with financing, timescales, impact for each opportunity according to a defined template format*

## CONTENTS

Foreword from Chief Executive/Principal/Chief Officer

Foreword from the Carbon Trust

Executive Summary

### **1 Introduction and Context**

1.1 Context and drivers for Carbon Management

### **2 Carbon Management Strategy**

2.2 Our low carbon vision

2.3 Strategic themes

2.4 Targets and objectives

### **3 Emissions Baseline and Projections**

3.1 Scope

3.2 Baseline

3.3 Projections and Value at Stake

### **4 Carbon Management Projects**

4.1 Existing projects

4.2 Planned / funded projects

4.3 Near term projects

4.4 Medium to long term projects

4.5 Projected achievement towards target

### **5 Implementation**

5.1 Financing

5.2 Governance for Implementation

5.3 Resource Commitment

5.4 Implementation Plan

### **Appendix A: Definition of Projects**

CMP

# Five Year Plan

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### Appendix A: Definition of Projects

## Appendix B: Definition of Projects

This template should be used to define each of the projects within your programme. It should contain all the key information without being too long – one page would be a fair guide. The owner of the project, should, if at all possible, complete the Project Definition.

Please take this template as a basis and tailor it to your own requirements.

<b>Project:</b>	<b>A short name for the project</b>
<b>Reference:</b>	It would help the Carbon Trust if you also use the following reference: <b>ABC-[three letter abbreviation for your organisation]-[sequence number, e.g. 001]</b> but you may choose to use a unique reference of your own.
<b>Owner (person)</b>	Name of the person responsible for delivering the project
<b>Department</b>	Which part of the organisation the project sits within
<b>Description</b>	A short description of the project, no more than a paragraph
<b>Benefits</b>	Financial savings: £ [x] <ul style="list-style-type: none"> <li>• Payback period: [x] years</li> <li>• CO2 Emissions reduction: [x] tonnes of CO2</li> <li>• % of target – the percentage of your CO2 saving target will this project annually contribute</li> </ul>
<b>Funding</b>	Project cost, e.g. the initial cost of implementing the project Operational costs, e.g. annual maintenance or running costs Source of funding: internal, external, investment criteria to be met etc. Say how /when decision on funding will be made
<b>Resources</b>	Additional resource (e.g. people) requirements to enable delivery and where these will come from If this project will be delivered within current resources, say so
<b>Ensuring Success</b>	Key success factors, or things that will need to happen for this project to succeed Principal risks: technical, financial (eg what happens if the project is insufficiently resourced), etc.
<b>Measuring Success</b>	Metrics for displaying performance or achievement When success will be measured / evaluated
<b>Timing</b>	Milestones / key dates e.g. start date: dd/mm/yyyy completion date (when it will deliver savings): dd/mm/yyyy interim deliverable / decision points [you could also lay these out as a milestone chart for ease and clarity]
<b>Notes</b>	

# A Five Year Plan



University of Strathclyde

**Higher Education Carbon Management Programme Implementation Plan**

March 2006

Higher Education Carbon Management Programme Strategy & Implementation Plan

**Loughborough University Carbon Management Programme Strategy and Implementation Plan**

Date: 1 March 2007  
Version: 1 Final  
Author: Greg Wares - Energy Manager and Project Leader  
Approval: Roy Hill - Director of Estates Services and Project Sponsor

Edinburgh Napier University Carbon Management Programme

**Carbon Management Plan 2008 - 2013**

Date: 30th March 09  
Version number: 31  
Owner: Grant Ferguson, Assistant Director Facilities Services  
Approval route: Environmental Sustainability Advisory Group  
Approval status: Draft for consultation

Produced by the Edinburgh Napier University Sustainability Office in association with the Carbon Trust

University of Abertay Dundee Carbon Management Programme

**Carbon Management Plan (CMP) 2009 to 2013**

Date: 27 March 2009  
Version number: 1  
Owners: Karen Provisia, Director of Estates & Campus Services, Project Sponsor; Andrew Dunstan, Director of Property Management, Deputy Project Sponsor; David Jordan, Energy Management Engineer, Project Leader; David Duckett, Safety Advisor, Deputy Project Leader

Approval status: Pending

Perth & Kinross Council Carbon Management Strategy & Implementation Plan 2007-2017

**Local Authority Carbon Management Programme**

Perth & Kinross Council's Carbon Management Strategy and Implementation Plan (2007-2017)

*"Carbon Management is fundamentally about the effect of use of a Council's scarce resources. After all, every pound spent on energy is a pound not spent on service delivery."*

**If not us, then who? If not now, then when?**

Date: 27 March 2007  
Version number: 2 (provisionally revised) not dated 08/04/07  
Owners: Gordon Dick and Doug Pitt  
Approval: remains subject to full SEA and subsequent endorsement of new post-May arrangements

Carbon Management Programme for the NHS

**Guy's and St Thomas' NHS Foundation Trust Carbon Management and Implementation Plan (CMIP)**

Approval:

University of Glasgow

**Carbon Management Programme Carbon Management Plan (CMP) April 2009**

University of Stirling Carbon Management Programme

**Carbon Management Plan (CMP)**

Date: 27 March 2009  
Version number: 1  
Owners: Karen Provisia, Director of Estates & Campus Services, Project Sponsor; Andrew Dunstan, Director of Property Management, Deputy Project Sponsor; David Jordan, Energy Management Engineer, Project Leader; David Duckett, Safety Advisor, Deputy Project Leader

Approval status: Pending



# The Five Step Process

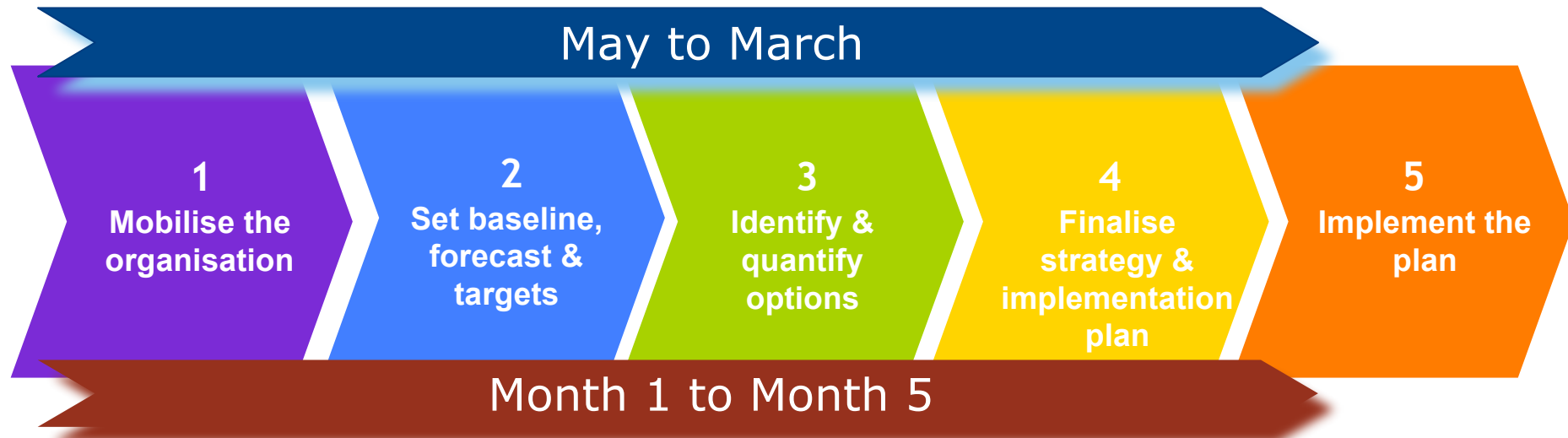


# The Five Step Process



## Carbon Management Programme

Typical emissions	10,000-150,000 tonnes CO <sub>2</sub> e
Typical 'people'	1,000 - 25,000
Duration	10 months: May - March
Resource required 'Cohort'	~200 man days Scotland wide, cross sector



## Carbon Management-lite

Typical emissions	1,000 - 10,000 tonnes CO <sub>2</sub> e
Typical 'people'	100 - 2,000
Duration	5 months
Resource required 'Cohort'	~70 man days sector or regional



# **Carbon Management-*lite***



# Carbon Management-lite



Carbon Trust seeks formal commitment and 'signs up' participants

Participants organised into regional cohorts



1. Planning, Vision and Scope

Participant begins internal preparation: securing resource, and identifying information sources

Develop baseline using tools as provided

Cohort kick-off and Baseline Workshop

2. Baseline

Identify and qualify opportunities for short and long term emissions reduction

Finalise quantification

◆	Cohort Event
▲	Participant Event/Document

3. Opportunities

Prepare Carbon Management Plan

4. Prepare Carbon Management Plan

Draft CMP      Final CMP

5. Implementation

Month 1	Month 2	Month 3	Month 4	Month 5	
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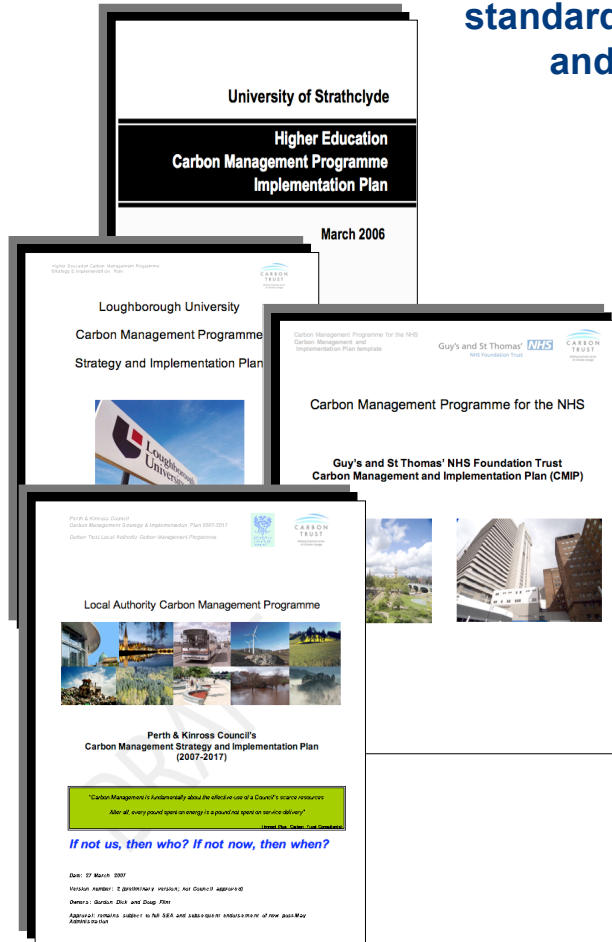
email and telephone support




# What Carbon Trust Provides



**Software toolkit** of template documents, examples, standard factors and measures, integrated spreadsheets and 'white paper' guidance on technical issues





### Heating Controls 9

**Description:**  
The effective control of heating operating times and room temperatures is essential if heating energy consumption is to be minimised. The principal retrofit opportunities for upgrading heating controls are:

- A change from fixed start to optimum start time control.
- The installation of zone control valves linked to local thermostats and/or time switches.
- The fitting of thermostatic radiator valves (TRVs).

A correctly installed optimum start controller will delay the start up of a building's heating system in mild weather, typically delivering around 10% savings relative to conventional time switches. They are often cost effective in buildings with a heating boiler capacity of 100kW or more.


Zone controls are potentially suitable for any part of a building that has distinct heating requirements, either in terms of the hour of operation or heat gain, for example solar gain on south facing zones.

In practice, the installation of zone controls may be complicated by the heating circuit arrangements and a detailed survey is normally required.

**Quantification:**  
A commercial quality optimum start controller can be installed for around £750 and will have the same cost for any size of boiler.

Savings achieved are heavily influenced by the size of the building, but as an example, a 2,000m<sup>2</sup> single shift open plan office will typically consume around 300,000kWh/year of gas for space heating. Saving 10% by the use of an optimum start controller would reduce gas usage by 30,000kWh/year, worth £900/year, at a gas price of 3p/kWh (including CCL). The payback period would therefore be less than one year.

Cost:	£
Cost Savings:	££
Carbon Savings:	CC
Visibility:	*
Difficulty:	😊



**A network of peers** going through the same process at the same time



**Experienced consultants** funded by the Carbon Trust

**Learning from past participants**



Thank you!



# Carbon Management-*lite*



Activity	Deliverable	Project Leader	Management Team	Executive Support
Phase 1: Planning, setting scope and kick-off with external event.	Project Plan written following internal or proposed template. Sections 1 and 2 of Carbon Management Plan (CMP) drafted	6 – 10 man days		2 - 5
<b>Phase 2:</b> Identify, quantify and capture emissions baseline and forecast	Baseline captured in Baseline tool Plan Section 3 drafted	6 - 10	3 - 5	
<b>Phase 3:</b> Identify, quantify and prioritise opportunities for emissions reduction .	Projects and opportunities captured, quantified and prioritised with implementation funding and resources identified as Section 4 of CMP Quantification captured in CMPR software tool	8 - 12	6 - 10	2 - 3
<b>Phase 4:</b> Plan implementation, complete CMP and present for corporate sign-off	Confirm funding and resources for implementation as well as on-going governance and document as Section 5 of the Plan. Complete drafts of previous sections of the CMP and prepare Executive Summary.	8 - 12	4 – 6	2 - 3
<b>Phase 5:</b> Implementation	Measured reduction in emissions by project.			