The Scottish Parliamentary Corporate Body Carbon Management Plan 2020

Date: April 2013

Version number: 1

Owner: David Fairhurst

Approval route: Environmental Management Steering (Stewart Gilfillan)

Approval status: Approved

Contents

Introduction

The Scottish Parliamentary Corporate Body (SPCB) is committed to reducing its carbon emissions and to becoming a low carbon organisation. The SPCB recognises that the Parliament as a leading public sector organisation must demonstrate leadership by significantly reducing those emissions which contribute to climate change.

This Carbon Management Plan 2020 sets a seven year programme of work and organisational change to reduce the SPCB's carbon emissions. By March 2020 we aim to reduce our carbon emissions by at least 42% from the emission levels of 2005-2006.

This programme builds on the first carbon management plan which was launched in March 2010 and by March 2013 had resulted in a reduction in carbon emissions of 24%[1].

Our Vision	**What do we mean by a low carbon organisation?**
We are committed to becoming a low carbon organisation and to reducing our carbon emissions by 42% by 2020. **Our Target** We will reduce the Parliament's carbon emissions by 30% by March 2015 from 2005/2006 levels.	• One which is making real efforts each year to reduce emissions. • Where emission reductions are evident and robust. • Where all decisions take account of our environmental impacts – big and small. • One which has exemplary environmental practices

This Carbon Management Plan (CMP) sets out our plans to reduce our emissions. The plan is a live document which will be reviewed annually and updated as new approaches and opportunities for reducing our emissions are identified. The CMP will be an important tool to ensure that the commitments made within the SPCB's Strategic Plan are achieved.

Scope of Plan

The scope of the plan will cover all greenhouse gas emissions resulting from the delivery of the SPCB functions at the Scottish Parliament which can be measured to a reasonable degree of accuracy, as follows.

Building

- Electricity and gas
- Refrigerants
- Diesel -Generator + other equipment
- Water (mains + borehole)
- Waste (landfill – office and catering)

Travel

- Scottish Parliamentary Service official travel and travel by Members on official Parliament business.

Exclusions

- All embedded carbon in purchased goods and services
- Scottish Parliamentary Service commuting

[1] Carbon emissions are measured in tonnes of carbon dioxide equivalent.

Environmental Management System & CEMARS

The SPCB operates an environmental management system (EMS) certified to ISO 14001:2004. The CMP will be implemented as a programme within the management system and therefore will be covered by the systems governance, performance management and audit procedures.

In addition SPCB meets the requirements of CEMARS (Certified Emissions Measurement and Reduction Scheme). To achieve certification to this scheme an organisation must demonstrate that it has a robust commitment and plan to reduce greenhouse gas emissions and that its carbon footprint has been calculated in accordance with the requirements of ISO 14064-1:2006. Certification is confirmed annually by an external audit

Costs and Savings

If the 2020 target is achieved the savings are predicted to be a minimum of 1800 tonnes of carbon dioxide equivalent and approximately £300,000 per annum at 2012 prices. This could increase to £400,000 per annum if prices escalate as predicted over this period. By 2012 savings of £200,000 had been achieved.

A budget of £80,000 has been set for 2013/14, with approximate budgets set for the following two years. The required budgets for future years will be determined on a rolling basis. Innovation and research is a large proportional of the budget to ensure we have the opportunity to make best use of new technologies and opportunities which will arise.

Project type	2013/14	2014/15	2015/16
Strategy and Costed Projects	£37,000	£31,000	£25,000
Research and Innovation	£38,000	£34,000	£30,000
RACE Programme	£5,000	£5,000	£5,000
Total	**£80,000**	**£70,000**	**£60,000**

Carbon Emissions and Targets

The following targets have been set to ensure the overall carbon target is achieved.

Targets	2013/14	2014/15	2019/20
Carbon Emissions **Reduce carbon emission from the 2005/2006 total by:**	**28%**	**30%**	**42%**
Electricity **Reduce electricity consumption from the 2005/2006 total by:**	**28%**	**30%**	**40%**
Gas **Reduce gas consumption from the 2005/2006 total by:**	**9%**	**10%**	**14%**
Water **Reduce water consumption from the 2011/2012 total by:**	**10.5%**	**11%**	**14%**
Waste **Reduce landfill waste from the 2005/2006 total by:**	**70%**	**72%**	**90%**
Paper **Reduce total paper consumption by:** • **35% from the Session 2[2] total during Session 4 (2011-2016).**			

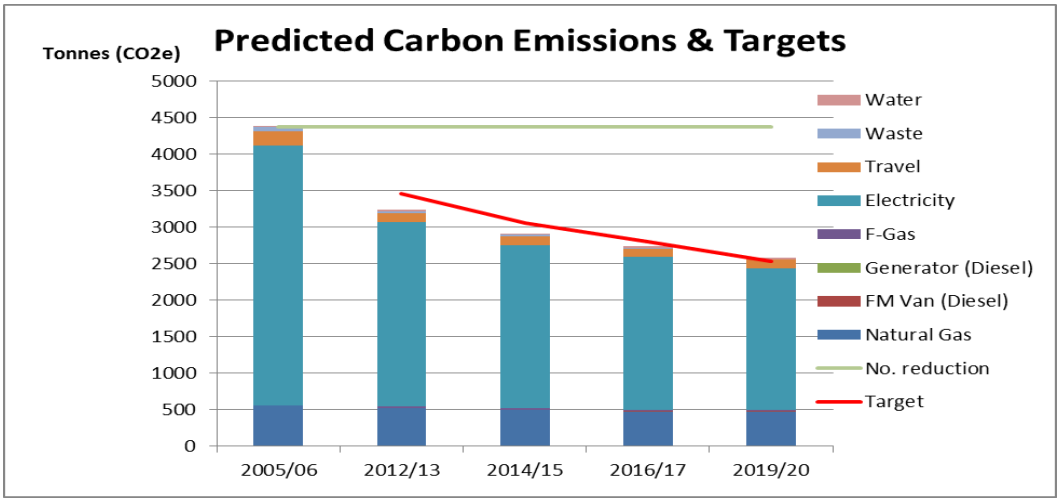
[2] Paper use for the whole of Session 2 is unavailable; the baseline is based on 2005-2007 information. The measurement of paper consumption is based on paper purchased for use in the building's printers and photocopiers and publications and official documents. The SPCB is planning to introduce a strategy to move towards a digital working environment this should assist with reducing paper. Once details of the strategy are confirmed a target will be set for Parliamentary session 5.

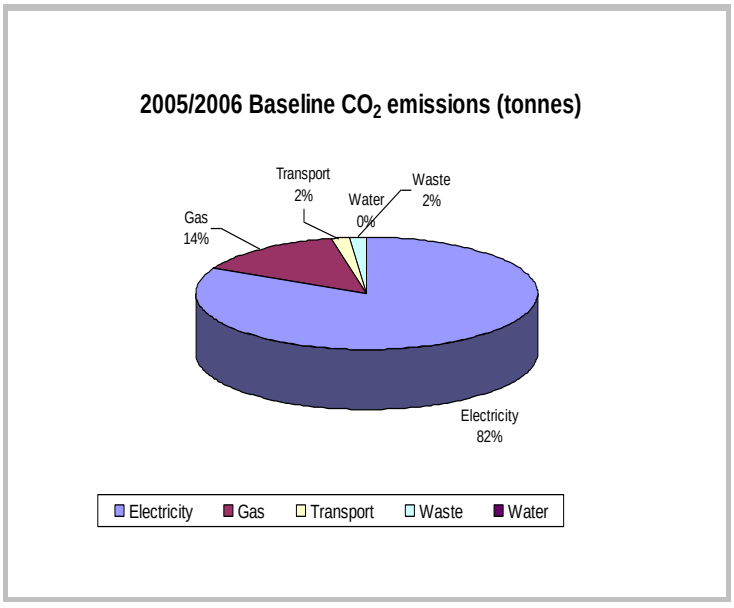
These targets will result in the emissions by source reducing as detailed in the table below.

Table: Carbon Emissions Targets and Reductions by Source

Source	Baseline* 2005	Predicted 2012/13	Target 2020	% Reduction by 2020 from 2005	% Reduction by 2020 from 2012/13	Reduction* by 2020 from 2005	Reduction* by 2020 from 2012/13
Natural Gas	558	520	480	-14	-8	78	40
FM Van	2	3	3	37	0	-1	0
Diesel	0.00	2	2	Increase	0	-2	0
F-Gas	0.00	18	10	Increase	-44	-10	8
Electricity	3564	2524	1905	-47	-25	1659	619
Travel	185	130	117	-37	-10	68	13
Waste	61	19	3	-95	-83	57	16
Water	7	20	18	n/a	-11	n/a	2
Total	**4377**	**3237**	**2538**	**-42**	**-22**	**1838**	**698**

*All figure in tonnes of CO_2e – unless otherwise stated





Strategic themes

The CMP will be developed around four strategic themes which will support a number of SPCB environmental policy objectives[3].

Building Emissions

"Improve the energy efficiency of the building and use renewable energy where appropriate."
The CMP will review where and how energy is used in the building with the aim of reducing the total amount of energy used. We will invest in new equipment which delivers energy savings when appropriate business cases exists and reduce energy wastage by improving control of equipment in the building and make heating, ventilation more responsive to our requirements. The potential for using renewable technologies to provide some of the building's energy requirements will also be investigated.

Sustainable Travel

"Reduce the need to travel - where appropriate - and promote the use of sustainable travel by people working in and visiting the building"
The CMP will gather information on how people travel to and from the Parliament and where possible encourage the use of lower carbon forms of travel. This may lead to new policies and facilities for the Parliament.

Decision Making

"Improve environmental performance through its strategic planning, risk management and decision making"
To ensure deep and sustained cuts are made into the Parliament's emissions will require decisions and planning to recognise the impact they have on our carbon footprint. To ensure this happens, regular reviews will be undertaken of decision making and the management of projects and budgets at all levels.

The RACE: Real Action Carbon Emissions

"Ensure all members of staff, Members of the Scottish Parliament and other building users fully understand the contribution they can make to improve environmental performance".
Building users – MSPs, their staff, SPS staff, contractors and visitors – all have a role to play in achieving our vision to become a low carbon community. How they use the building and travel to and from the Parliament will ultimately determine whether emissions can be reduced. A key theme will be to encourage all users to develop low carbon lifestyles both here and at home. A dedicated communications and engagement strategy for the RACE programme is currently being implemented to help fulfil this policy objective. The RACE programme will play a critical role in supporting and encouraging building users to participant in the other strategic themes from high level decision making to sustainable travel.

[3] SPCB Environmental Policy 2012. Policy objective noted in bold below the strategic aim.

Projects

A range of projects and strategies have been identified which will ensure the short and long term targets are achieved. If all the projects identified are implemented and deliver the savings predicted the targets will be achieved.

An allowance has been made for the energy which will be required to operate the new External Screening Facility. Additional projects to be researched during the next two years should deliver additional savings providing contingency against increases in building use or organisational change.

Projects are in three categories:

- Strategies (On going) – A number of areas such as FM, Broadcasting and BIT will deliver energy and carbon reductions as assets or equipment is replaced on a planned basis. General assumptions have been made that newer equipment is more efficient. It has been assumed that the costs and savings from these strategies will be realised from 2014/15 to 2017/18. Where detailed and additional projects have been identified such as to improve the Chamber lighting the savings attributed to this project have been removed from the overall lighting strategy savings.

- Research and Innovation – Research will continue throughout the life of the plan into new technologies and approaches to reduce energy and carbon emissions. A number of these research projects are expected to deliver actual initiatives which result in savings. These will provide some contingency against an increase in building use or projects which do not deliver the predicted savings.

- Costed – These projects have been costed in detail with likely savings estimated to a reasonable degree of accuracy. They may still be classed as high or medium risk if the technology or approach has not been used before by the Parliament. A number of these projects – such as upgrading to LED lighting - will be implemented in the year when equipment is due for replacement.

Care has been taken not to duplicate the savings between project categories. The Environmental Management Steering Group will work with the relevant offices to ensure projects are delivered and the savings are achieved.

In addition it has been assumed that the carbon content (kg CO_2e per kWh)[4] of grid electricity will gradually reduce by 2020 in accordance with Scottish and UK Government policy. This reduction will deliver a minimum reduction in emissions of 257 tonnes. This reduction plus the savings from the CMP will ensure emissions are reduced by more than the 1838 tonnes required to achieve the 2020 target.

Emission Reduction Summary	tonnes
Reductions by 2012	1140
CMP 2020 Projects	
Strategies	186
Costed	274
Lower carbon electricity	257
Total	**1857**

[4] It has been assumed that the kg CO_2e per kWh electricity will reduce by 13% from 0.527 in 2011/12 to 0.460 kg in 2019/20

Strategies

Strategy	Cost	Annual Saving			Pay back (years)	% of footprint
		kWh	Fin[5]	CO_2e (tonnes)		
Green IT Strategy (10% reduction)	0	80,090	£7,769	43	0.0	1.07
Lighting efficiency programme (15% reduction)	£24,000	82,492	£8,002	44	3.0	1.10
Catering Energy Strategy (10% reduction)	0	26,133	£2,535	14	0.0	0.34
FM Asset Replacement Strategy (5% reduction)	0	66,861	£6,486	35	0.0	0.88
Broadcasting Asset Replacement Strategy (10%)	0	20,000	£1,940	10.5	0.0	0.26
Recycling and Waste Reduction Programme • Collection of paper towels for composting • Policy on charging for single use catering items.	£1,000		£1,000	16	1.0	0.40
Water Management Programme • Improved flushing regime • Improve urinal control	£2,000		£3,000	2	0.7	0.05
F-Gas (Refrigerant) Maintenance Regime	0			8	n/a	0.20
Sustainable Travel Programme	£1,000			13	n/a	0.32
RACE Programme	£5,000					
Totals	£28,000	275,576	£30,731	186		5

Costed Projects

Costed Projects 2013/14	Cost	Annual Saving			Pay back (years)	% of footprint	Risk
		kWh	Fin	CO_2e (tonnes)			
Chamber ventilation controlled on air quality	£989	11,178	£1,084	10	0.9	0.25	M
ITC Room - Trial EC fans for air conditioning units	£3,600	14,016	£1,360	7	2.6	0.18	M
ITC Room - Remaining EC fans for air conditioning units	£14,049	48,180	£4,673	25	3.0	0.63	M
Cooling pumps (EP19/20) control changes	£0	14,405	£1,397	8	0.0	0.19	M
Cooling pumps (SP9/10) commissioning	£6,000	13,800	£1,339	7	4.5	0.18	M
MSP Corridor Lighting	£6,000	12,133	£1,177	6	5.1	0.16	M
Ventilation Commissioning (AHU 6,9,19)	£3,000	10,143	£984	5	3.0	0.13	M
Catering - Saturday shut down	£0	10,595	£1,028	6	0.0	0.14	L
Re-programme heating pumps for Garden Lobby + Public Foyer	£500	23,755	£2,304	13	0.2	0.31	L
Ventilation (AHUs) Modified BEMS Controls (Heating set points etc)	£500	0	£0	30	1.0	0.75	M
Monitoring and Targeting Software	£2,000	30,000	£2,910	16	1.0	0.39	S
Total	£36,638	188204.108	£18,256	133	21.4	3.31	

[5] Savings based on electricity costing 9.7p per kWh and gas costing 2.357 p per kWh.

Costed Projects 2014/15	Cost	Annual Saving kWh	Annual Saving Fin	Annual Saving CO_2e (tonnes)	Pay back (years)	% of footprint	Risk
Comms Room 10 Free Cooling	£1,550	37,256	£3,614	20	0.4	0.49	M
Ventilation Commissioning - remaining	£15,000	15,234	£1,478	8	10.2	0.20	M
Ventilation - air quality sensors	£10,000	15,234	£1,478	8	6.8	0.20	M
Total	£26,550	67,724	6,569	36	17	1	

Costed Projects 2015/16	Cost	Annual Saving kWh	Annual Saving Fin	Annual Saving CO_2e (tonnes)	Pay back (years)	% of footprint	Risk
Chamber Lighting	£15,000	50,000	£4,850	26	3.1	0.65	H
UB Corridor Lighting	£5,850	11,479	£1,113	6	5.3	0.15	M
T5 Eco Tubes	£1,000	14,560	£1,412	8	0.7	0.19	L
Total	£21,850	76,039	£7,376	40		2.77	

Costed Projects 2018/19	Cost	Annual Saving kWh	Annual Saving Fin	Annual Saving CO_2e (tonnes)	Pay back (years)	% of footprint	Risk
Internal car park lighting controls	£7,000	16,824	£1,632	9	4.3	0.22	H
T5 Eco to LED	£41,880	72,680	£7,050	38	5.9	0.95	H
Total	£48,880	89,504	£8,682	47		1	

Research and Innovation

Research will be continued to identify projects which may lead to further reductions in the SPCB's carbon footprint.

A number of areas will be actively investigated including:

- Photovoltaic panels.
- Direct water heating
- Improved boiler efficiency
- Voltage Optimisation
- Pond energy use
- Energy monitoring strategies
- Wind turbines
- Heat pumps for Catering Hot Water
- Heat pumps for under floor heating
- Improved pumps controls
- Improving building shut down arrangements