Protecting the Garden of England

Carbon Management Action Plan

End of Period Report

Kent County Council
kent.gov.uk

Foreword

Since this plan was agreed in 2011, the reduction in funding from central government has been a significant challenge in delivering the services and standards expected by Kent communities.

The council published its Strategic Statement 'Increasing Opportunities, Improving Outcomes' in 2015 and this plan and the cost savings it achieves supports the vision:

'Our focus is on improving lives by ensuring every pound spent in Kent is delivering better outcomes for Kent's residents, communities and businesses'.

As this report shows, I am delighted to say our environment programme has been successful and staff have risen to the challenge and delivered actions, which mean the reduction in our carbon dioxide emissions exceeded our 2015 target. The council has also avoided energy and fuel costs and reduced the impact of energy price rises, ensuring more of our budget can be used to deliver services and the outcomes for Kent that we have committed to.

This has been achieved through the council-wide strategy to improve the energy efficiency of our street-lighting and buildings, and making better use of our work spaces, which is helping us transform the way we carry out day-to-day business.

New mobile technologies, teleconferencing, multi-function printers and more flexible ways of working have also provided new opportunities for our staff to work differently and smarter, further reducing our carbon footprint and costs.

Looking ahead we have set ourselves a more challenging target to reduce our greenhouse gas emissions by 32% by 2021 and I am confident of our continued success to deliver it.

Matthew Balfour

1 Introduction

This report summarises the council's progress against the Carbon Management Action Plan for the five-year period 2011-2015

The plan set out the priorities for investment and staff behaviour change required to deliver its carbon dioxide emissions target and support delivery of the Kent Environment Strategy contributing to Kent-wide and national targets.

Since the plan was agreed, significant financial challenges due to the UK government's austerity programme were brought to bear. Despite this, performance at the end of the period is ahead of target, demonstrating the commitment of all staff to deliver efficiency savings and to give value for money to Kent taxpayers.

1.1 Our Achievements

The carbon dioxide emissions target set in 2011 was to deliver at least 2.6% reduction per annum up to 2015 compared to the 2010-11 baseline year, equivalent to a total reduction of 13% or 7567 tonnes.

This target was exceeded and we achieved a 15% reduction over five years, almost 8750 tonnes (equivalent to emissions from electricity used by 4419 average households in the South East region[1]).

The breakdown of this figure into the four main areas of energy and fuel use shows that all aspects of the plan achieved ahead of target reductions:

- **Energy and fuel use in corporate buildings reduced by 22%**
- **Street lighting electricity use reduced by 13.5%**
- **Fleet vehicle fuel reduced significantly by 43%**
- **Staff travel using personal vehicles reduced by 23%**

Using weather adjusted data, which removes the fluctuations caused by changing weather patterns, corporate estate buildings reduced by 17%. Other sectors reported are unaffected by the weather as this affects heating energy only.

In 2013, we reported our mid-term progress and we expected significant reductions in fleet emissions to be achieved due to leasing more fuel efficient vehicles, together with route planning improvements and mobile technology. These actions resulted in a huge 43% reduction in fuel emissions over five years.

In addition, the replacement of traditional lighting with light emitting diode (LED) lamps in lit bollards, signs and subways has ensured that street lighting came in just ahead of target. In 2015 a new street lighting strategy, which will see 120,000 street lights being upgraded to LED lamps by 2019, this is expected to reduce street lighting electricity use by at least 50%.

Despite reductions in headcount, the council continues to maintain a large network of environment champions known as Green Guardians (300+), who promote smarter ways of working. These actions include switching off lights and equipment when not needed, promoting teleconferencing usage and encouraging more active travel such as walking and cycling. These actions also promote a more active lifestyle, supporting the health and wellbeing of our staff too.

NOTE 1 Calculated using the sub national electricity consumption statistics 2005-2015 (South East region average 2015), published by the Department for Business, Energy and Industrial Strategy, January 2017 and 2015 electricity carbon dioxide conversion factors published by Defra

2 Summary of Achievements

2.1 Buildings & Infrastructure

- The number of sites with oil fired heating has reduced from 19 to 9 sites, by converting boilers to gas or through site closures.
- Several LED lighting projects have been completed, including County Hall offices and is expected to save over £750,000 over their lifetime.
- ICT servers have been upgraded, replacing 562 outdated servers with 80 energy efficient models, estimated savings of over £700,000 in five years.
- New printing technology has reduced the number of printers and staff now physically visit the printer and enter a PIN code to collect their printed papers. This avoids papers being left uncollected, reducing paper waste.
- Three solar photo-voltaic (PV) installations completed in 2012 have exceeded expectations by returning savings 23% higher than predicted, with £50,770 of income generated in three years.
- Office refurbishments have been completed in West and Mid Kent and are underway in East Kent. Energy saving improvements include LED lighting and motion sensors, heating/cooling upgrades and controls and draught proofing.
- New facilities management contracts commenced 2014-15 are delivering improvements to building controls. The top 30 energy consuming buildings are being reviewed by energy specialists to identify future investment and saving opportunities.
- A programme of energy efficiency investment in KCC's buildings continues including boiler and lighting replacement.
- An initial feasibility study on the potential for a district heating scheme in Maidstone working with public sector partners has been completed.

2.2 Street lighting

- Small scale LED lighting schemes have been completed with £342,000 invested, including several thousand lit signs and bollards.
- Components are being recycled and re-used when new equipment is installed.
- The conversion of 120,000 street lights to LED commenced in spring 2016 and is due to be completed by 2019. This includes a central management system which will manage the timing and dimming of individual lights and detect faults remotely.

2.3 Business Travel

- The Energy Savings Trust carried out a Green Fleet review in 2011 and confirmed that the majority of leased fleet vehicles have emission levels that are good or best in class.
- The KCC Highways fleet was refreshed in 2013 leading to lower emissions per kilometre. Vehicle tracking technology continues to be used and half the fleet have stop/start technology which stops the engine when stationary, reducing fuel used.
- Business mileage using staff own vehicles has decreased year on year with a reduction of 3.5 million miles or 23% over five years, exceeding the target set.
- The roll out of digital telephony through Unified Communications is enabling more flexible and mobile working and simplifies the use of teleconferencing technology, further reducing business mileage.
- 14 electric vehicle charging points were put in place on Kent County Council premises. £270,000 (75% of the funding) came from the Department for Transport. As a result, the ZipCar pay-as-you-go car club at County Hall replaced two vehicles with electric hybrids, which have ultra-low emissions.

2.4 Staff Engagement

- Travel plans are in place for six main office locations across the County, providing information and promoting public transport options and walking and cycling routes.
- A third of Green Guardians have completed training accredited by the Institute of Environmental Management and Assessment (IEMA).
- Green Guardian focus groups were completed in 2013 and 2015. This has led to new resources being issued to give clearer direction on actions that can be taken by staff.
- The Smart campaign took place in 2012-13. Objective feedback suggests the behaviours encouraged are becoming the norm with good progress demonstrated by year-on-year reductions in car travel.
- Local Green Guardian groups have been established at three large office locations and these groups work with the building facilities managers to make improvements.

The programme of activity table summarises progress against 2015 target in Appendix 1

3 Emissions baseline and forecast

3.1 Scope

Carbon dioxide emissions are based on energy and fuel consumed by:

- Council estate buildings, which are included in the Carbon Reduction Commitment Energy Efficiency Scheme report.
- Street lighting and traffic controls (unmetered supplies).
- Travel for council business, which includes staff claiming business mileage when using their own vehicle and fuel used by council owned or leased fleet vehicles. The data includes lease car, own car and Zipcar (Car club) mileage but excludes staff travel by public transport, taxis and by air as this data is only available as a cost and not as miles travelled.

3.2 Latest data

The overall change in carbon dioxide emissions has been a reduction of 8,749.5 tonnes, a change of -15% which exceeds the target set by 2% or 1,182 tonnes.

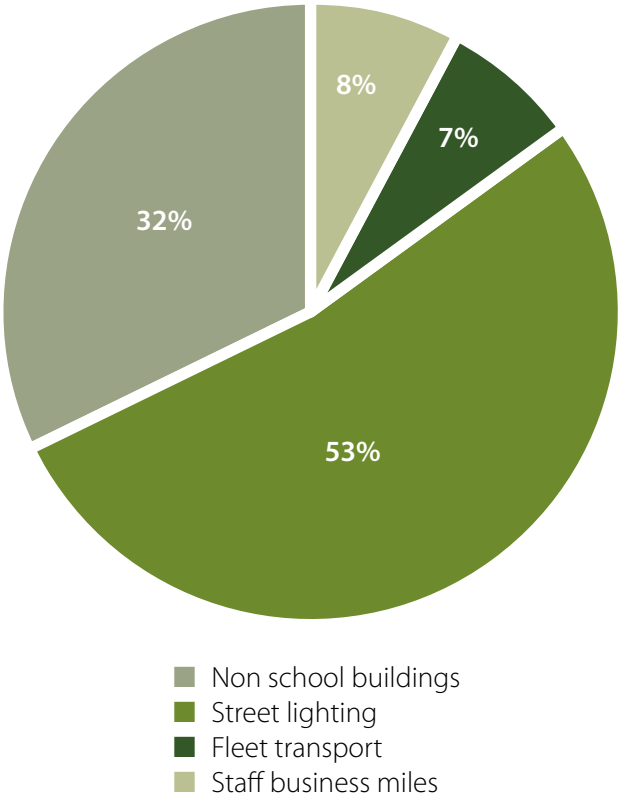
SOURCE	FUEL	UNITS	2010-11	Carbon Dioxide Emissions (tonnes)	2014-15	Carbon Dioxide Emissions (tonnes)
KCC Buildings	Electricity	kWh	23,092,357	12,493	21,940,808	11,870
	Gas	kWh	35,926,272	6,596	22,442,504	4,120
	Gas Oil	kWh	3,413,373	890	760,476	198
Total Buildings			**62,432,002**	**19,979**	**45,143,788**	**16,189**
Street lighting	**Electricity**	**kWh**	**55,320,316**	**29,928**	**49,587,479**	**26,827**
Fleet vehicles	Diesel/ Petrol	Litres	1,330,159	3396	986,492	2519
Business miles (leased and staff owned vehicles)	Average car, unknown fuel	Miles	15,844,131	4901	12,367,532	3920
Business miles (Zipcar car club)	Diesel/ Petrol	Miles	29,241	6	31,690	5.5
Total Travel				**8303**		**6444.5**
Total				**58210**		**49460.5**

Conversion factors used are those published by DECC/Defra to be used for calculating carbon emissions for reporting to comply with the Carbon Reduction Commitment scheme (used for energy data) or for Green House Gas reporting (used for transport data).

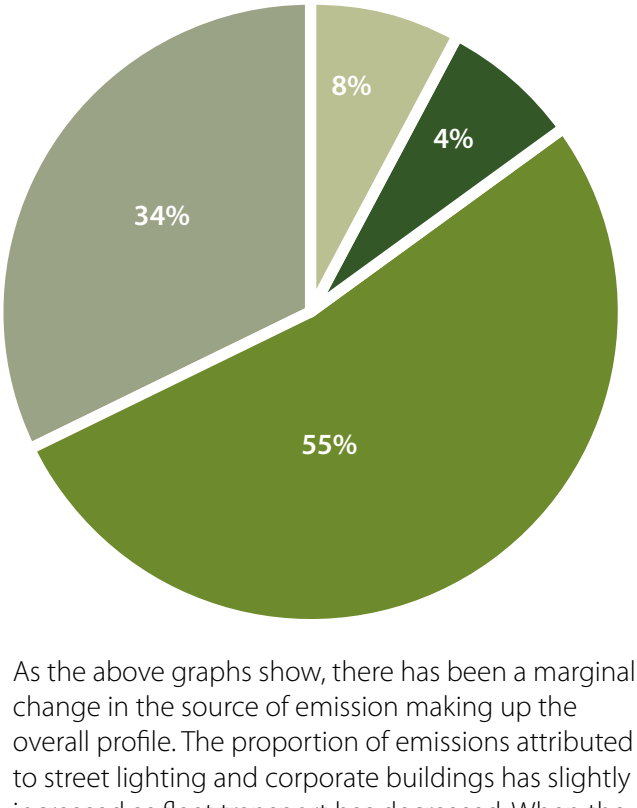
Buildings information has been gathered as part of the statutory reporting requirement to meet the Carbon Reduction Commitment Energy Efficiency Scheme rules. Street lighting is based on the Kent County Council street light inventory, as street lighting electricity is unmetered. Business miles data is obtained from the council's expenses claims and fleet vehicle fuel data from bunkered fuel supplies and fuel cards.

Graph 1 – Percentage of carbon dioxide emissions by source type

Carbon dioxide emissions 2011-12



Carbon dioxide emissions 2015-16



Non school buildings
Street lighting
Fleet transport
Staff business miles

As the above graphs show, there has been a marginal change in the source of emission making up the overall profile. The proportion of emissions attributed to street lighting and corporate buildings has slightly increased as fleet transport has decreased. When the street lighting strategy is implemented, we expect to see the proportion attributed to this source reduce significantly.

4 Infrastructure

Infrastructure services, both ICT and Property, are a major resource consumer in terms of energy use and key steps have and will continue to be taken to ensure that emissions from this source continue to reduce.

4.1 Asset Management Strategy

The council's asset management strategy includes the following key actions:

- Target 'green' investment in retained properties to maximise their efficiency and sustainability
- Reduce the running costs of individual buildings by improving energy and water efficiency programmes
- Reduce the backlog and future burden of maintenance by investing in sustainable construction.

The programme continues to focus on the following:

- Lighting replacement/modernisation with T5 lamps, or LED lamps.
- Lighting controls (daylight and/or movement activated sensors).
- Review of heating system controls, to include opportunities for installation of Buildings Management Systems (BMS).
- Use information and intelligence in Display Energy Certificate reports to drive quick-win solutions, for example insulation and draught proofing.
- Increased use of energy monitoring systems and Automatic Meter Reading.
- Further evaluating the feasibility of installing renewable energy technologies such as solar PV.

During 2011-2015, the council's office estate has undergone a full asset utilisation review and this has resulted in the closure of some offices, returning capital receipts of £7.8m. This has reduced available workstations by approximately 33% and floor space by 15,250 m^2. The remaining offices have undergone significant refurbishment at a cost of £39.5m to ensure better use of space and improve the energy and water efficiency with average annual revenue savings of £4.5m.

Offices in west and mid Kent areas have been completed and the programme continues in 2016 with the refurbishment of offices in the east Kent area. Improvements to lighting, heating and controls and insulation are being delivered in addition to providing more flexible workspaces to complement the ICT technology and support new ways of working.

4.2 ICT Strategy

The ICT strategy has delivered several technology improvements, which has reduced energy consumption in our buildings and enabled more mobile and flexible working leading to reductions in business travel.

These improvements are:

- New 'virtual' data servers reducing the number and total energy required to manage the ICT network and store data
- A Managed Print service, that enables staff to print, scan, fax and email information from most council locations, reducing the number of printers required. This has also enabled more secure printing and less wasted paper
- A Unified Communications service, moving telephone calls from the analogue to digital network. This included tele- and web-conferencing services with ability for share and update documents during a call.
- Updated mobile devices such as laptops, mobile phones and other hand held devices enabling staff to work more flexibly including at home and reduce office space

5 Financing

5.1 Funding Opportunities

The funding opportunities identified when this plan was written are listed below, including a summary of how these have been used:

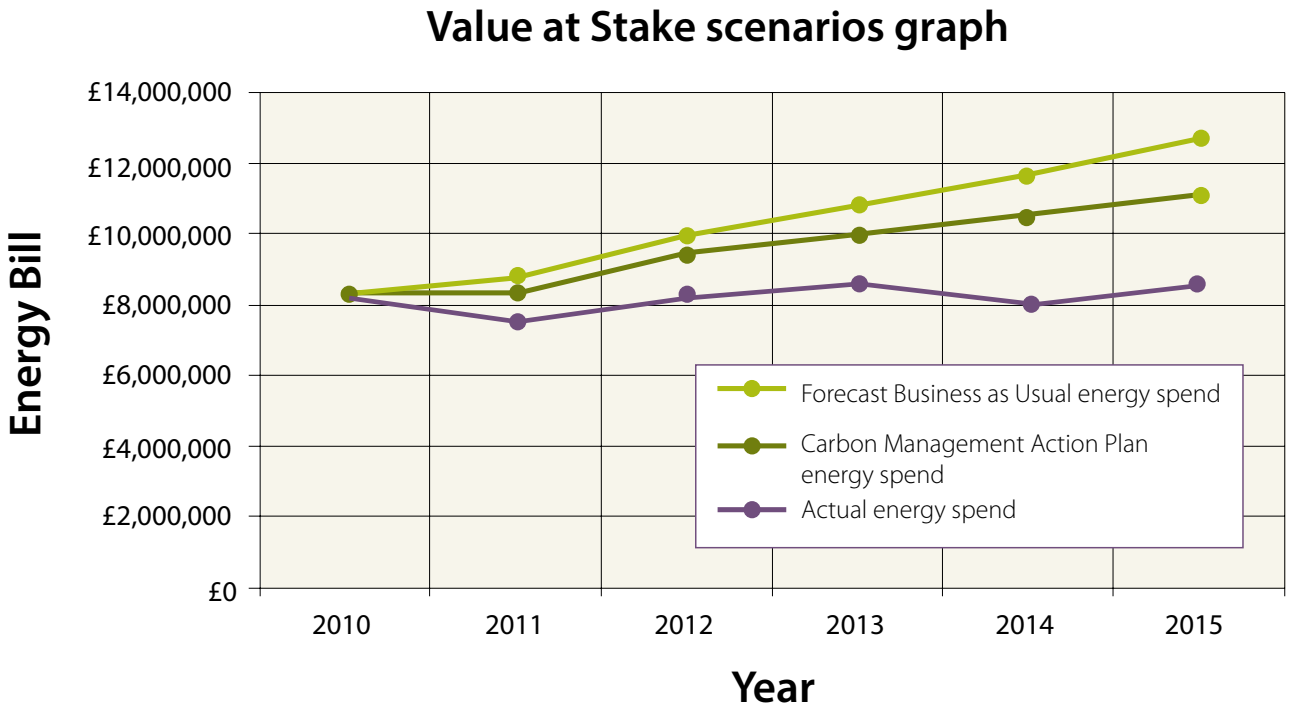
- **Property modernisation of assets capital funding** – this capital fund continues to improve KCC's assets and replaces end of life equipment such as boilers. Some of this investment delivers energy savings, including projects with a long term payback, which do not qualify for the energy efficiency investment fund.
- **The Carbon Trust** – Salix finance (recycling fund and SEELs) – this fund has been used to deliver energy efficiency projects, most recently LED lamp upgrades in County Hall offices, also LED lamp upgrades to illuminated, signs and bollards accounted for by the street lighting electricity consumption data.
- **Capital funding for invest to save energy schemes** – this funding was used to invest in three large solar PV arrays.
- **European Energy Efficiency Fund** – This fund has not been utilised.
- **Private sector financing of energy efficiency and /or renewables projects eg ESCO** – this financing option is currently being evaluated.
- **RE:FIT** – this financing option is currently being evaluated.
- **Local Sustainable Transport Fund** – no funds used for KCC estate projects.

In addition to the above, £273,000 funding has been secured from the Department of Transport's Ultra Low Emissions Vehicle fund to deliver around 50 double electric vehicle fast charge posts in Kent, 14 of which are on the council's estate. Eight of the posts are in locations available to the general public.

6 Financial Benefits

The graph below demonstrates the forecast financial impact of the carbon management action plan arising from energy use from buildings and street lighting, this is referred to as the 'Value at Stake'. The actual energy spend has been added and shows this was well below the predicted spend levels when this plan was produced in 2011. This is due to a reduction in energy use coupled with lower than forecast energy costs.

When the carbon management action plan was written, it was predicted that a reduction in energy use of 2.6% per annum was expected to save £1.5m in 2015 with a cumulative saving over five years of £4.2m by 2015. It can be seen that actual energy spend is almost £4m lower than forecast in 2011, which is very positive news.



KEY

The 'Forecast Business as Usual energy spend' trend line shows the cost of energy using forecasted price increases (as at 2011) produced by KCC LASER, constant energy consumption at 2010/11 levels and no energy efficiency interventions.

The 'Carbon Management Action Plan energy spend' trend line shows the cost of energy if energy consumption reduces in line with the carbon dioxide emissions target of 2.6% per annum using the same forecast price increases.

7 Monitoring & Reports

Kent County Council is required by central government to produce two annual reports:

- **Carbon Reduction Commitment Energy Efficiency Scheme** – reported as absolute carbon dioxide emissions from the local authority estate buildings, including schools and academies. This report is submitted to the Environment Agency each July.
- **Green House Gas report** – reported as carbon dioxide equivalent (CO_2e) emissions for the local authority estate arising from street lighting electricity, energy use in KCC buildings, fleet fuel consumption and business travel. This report was published each Autumn and ceased in 2016.

A corporate report is presented every 3 months to KCC cabinet, which tracks progress of the corporate target for carbon dioxide emissions reduction (changed to total greenhouse gas emissions from 2017). For corporate reporting purposes, the baseline year has been reset to 2010-11 to align with the reporting requirements of the Carbon Reduction Commitment Energy Efficiency Scheme.

LASER energy management produce quarterly monitoring reports, which form the basis of the corporate carbon dioxide emissions report. These include a breakdown of data by source type and by individual building. These are reviewed internally and by our Total Facilities Management partners who help to identify trends, which require action and specific building energy efficiency opportunities.

Reports are available on the council's website

8 Conclusion

At the end of the five-year period, all aspects of the plan have been achieved or exceeded. This demonstrates the continued focus and commitment across the whole council to reducing our use of energy and fuel and saving money. This is enabling the council to continue to deliver services with less available budget and minimising increases to council tax, which directly benefits Kent's communities.

As the wider programme of estate space utilisation and office refurbishments continues, further efficiencies will be achieved through better use of premises and workspaces. Further reductions in buildings energy use will be achieved in the next five-year period.

The street lighting strategy to convert 120,000 streetlights to LED by 2019, will lead to significant savings in energy costs and greenhouse gas emissions over three years.

In 2017, the Highways leased fleet will be due a refresh providing the opportunity to make a step change in reducing fuel use. It is hoped that the service will be able to take advantage of the new generation of electric hybrid vehicles, further reducing harmful emissions and saving on fuel costs.

At the end of 2015 the positive trend in reduction of business miles was starting to level off. This is partly due to the fact that the county's population of older people is growing, increasing the number of people requiring social care support with many being supported to live independently in their own home. It is expected that smaller reductions are more likely to come from equipping staff with newer technologies, helping them to work more effectively while being mobile and supporting client's needs.

We will continue to promote Smart actions and engage staff through our Green Guardian network and are joining up the activity of this network with our building facilities managers.

For further information about the Council's Carbon Management Action Plan please contact Deborah Kapaj, Sustainable Estates Programme Manager on 03000 410237 or by email at scc@kent.gov.uk.

Appendix 1 Update on Programme of Activity

Theme	Key activity	Achievement of 2015 targets	Future Plans
Energy Efficiency	ICT servers replaced Ongoing refresh of computers County Hall offices LED lighting Unified Communications digital telephony Office strategy – reduction in number of offices and full retrofit of 7 buildings in west and mid Kent to	Zero oil fired boilers (non-schools estate) **AMBER** 9 buildings have oil fired heating (down from 19). 22% reduction in carbon dioxide emissions from buildings **GREEN** (Exceeded target of 13% reduction)	Zero oil fired boilers Complete office strategy in east Kent Implement estate wide LED lighting upgrades Target heating & cooling improvements
Renewables/ low carbon technology	3 x Solar PV installations completed Several other technologies evaluated but were non-viable due to constrained budgets Completed the schools biomass feasibility study	3 buildings had a full retrofit including renewable technology (where feasible) **GREEN** Schools biomass pilot did not proceed -unacceptable financial risks	Confirm business case for District Heating in Maidstone Continue to pilot/assess feasibility of renewable and low carbon technologies
Street-lighting and traffic controls	Conversion of sign lights, lit bollards and subway lighting to low energy/LED lamps Trial Switch-off of surplus lights and part night lighting End of life lamps replaced with LED	75% of streetlighting are low energy lamps **AMBER** £342,000 invested in low energy/LED lamp upgrades. 13.5% reduction in carbon dioxide emissions **GREEN**	£40m street lighting strategy to convert 120,000 lamps to LED and install a central management system (2016-2019)

Theme	Key activity	Achievement of 2015 targets	Future Plans
Fleet vehicles	EST Green Fleet Review completed Highways fleet vehicles refreshed – 50% of fleet has stop-start and all have GPS tracking technology Pilot driver training completed -did not deliver expected efficiencies 14 Electric vehicle charging points installed Evaluated the future potential for EV or hybrid vehicles	Fleet vehicle emissions are best in class and drivers have received fuel efficiency training **GREEN** 43% reduction in carbon dioxide emissions **GREEN**	Introduce electric hybrid vehicles or other low emission models where feasible
Energy behaviours	Two rounds of Green Guardian focus groups completed Refreshed Green Guardian programme and resources Green Guardian IEMA accredited training commenced Delivered 'Smart' behaviours campaign Visible energy displays trialled at County Hall	>80% switch off rate all strategic buildings* **GREEN** Smart behaviours becoming embedded in the ways of working. 320 Green Guardians	Support Green Guardians to champion the introduction of new technologies and flexible working strategy
Travel behaviours	Six office travel plans issued -promotion of alternatives to car travel Took part in Department for Transport funded 'Alternatives to Travel' pilot New tele-conferencing solutions available (Unified Communications)	At least 6 strategic offices have a workplace travel plan **GREEN** 17.6% decrease in claimed mileage (3.5 million miles) **GREEN** 20% increase in teleconferencing usage vs 2010 (unable to measure due to change in systems in 2013)	Implement Skype 4 Business

*Qualitative measurement only
Unified Communications – digital telephone and conference call system
RHI – Government's Renewable Heat Incentive

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