UCL Carbon Management Implementation Plan

The following document outlines how UCL will implement the activities identified within the Carbon Management Plan.

1. Empowering and enabling the UCL community to make sustainable choices

Providing Information: UCL’s carbon performance will be reported upon officially through the UCL Sustainability Annual Report. However, progress will be visible throughout the year via the CarbonCulture live sustainability platform (showing energy, water and waste data), the Green UCL website and ongoing social media and newsletter updates. These provide essential vehicles to share best practice, provide information and generate enthusiasm for this work. Increasing the reach and impact of these platforms will form a vital part of our work going forward.

Taking responsibility: At the core of all sustainability activity across the university is the need for those with responsibility and accountability to drive action. The University Academic Manual states that Heads of Department have an Environment and Safety responsibility and that all departments should have a member of staff with environmental responsibilities. Green Champions have been established to fulfil this role and drive forward environmental improvements in their own departments and divisions, to massively increase the reach and influence of UCL’s sustainability programmes. Green Champions will be supported to drive action and change.

Providing motivation for action: The Green Impact programme provides the framework for carbon action. It supports and widens participation in the Green Champion network, helping staff and students to improve the impact of their own departments and divisions with training, information and resources. And alongside this work, it supports events and programmes to engage the wider UCL community with the issues, impacts and opportunities for involvement in reducing our carbon emissions. A wide variety of opportunities must continue to be provided, to reflect the diverse needs and impacts of the UCL community; from making energy savings and conducting environmental audits, to working on biodiversity projects and taking part in safe, active, low carbon travel.

Many of the activities identified in this Plan will require action by Estates and Departmental staff to ensure that equipment is turned off when not required, to identify where energy and water could be used more efficiently and to use routine maintenance activities as a means of reducing energy consumption. Training will be provided to key staff, for example maintenance, security, catering, Green Champions and facilities managers.
Harnessing UCL’s research through the Living Lab: Supporting UCL’s core academic aims, the Sustainability Team will work to both expand and formalise its work on the Living Lab. This will allow UCL Estates and other Professional Services staff to better collaborate with our academic community in making environmental improvements to the estate, generating research and providing tangible examples of climate action on UCL’s campus.

Travel choices by staff have a significant impact on UCL’s carbon emissions, we will therefore be undertaking research with staff to understand how this could be reduced, for example re-examining the link between international conference attendance and academic promotions and providing improved facilities to reduce the need for travel, e.g. video-conferencing.

Incentives: A major barrier for departments to take action to reduce carbon emissions is the lack of financial incentives. We will work with the UCL Finance team and departments to identify some appropriate incentive mechanisms. Key to this success will be providing data visibility to the UCL community – through the CarbonCulture platform (as outlined above).

Establishing feedback loops and opportunities for consultation will form a vital part of these programmes. Becoming more transparent, accessible and more involved in a two-way dialogue with the wider UCL community will ensure the buy-in and participation we need.

Actions

1.1 Establish a programme for engaging staff and students in low carbon activities

1.2 Develop a framework for UCL’s Living Lab programme to help widen participation.

1.3 Report regularly on carbon performance through:
   a) The UCL Environmental Sustainability Annual Report
   b) The Green UCL website
   c) Social media updates

1.4 Working with key staff and students
   a) Invest in the Green Champions programme to increase participation in energy, water and waste management efforts by staff and students
   b) Expand the Green Impact programme to include laboratories and provide funding for initiatives
   c) Develop targeted training programmes for staff that work in areas with a high carbon impact, such as laboratory managers, maintenance cleaning and security staff.
1.5 Use the CarbonCulture web platform to:

a) Display energy, water and waste data (in real-time where possible). Initially on a per Faculty basis, but moving to per Department as data improves.

b) Promote resource saving through data provision

1.6 Develop an incentive programme for building operators and users to reduce energy and water consumption

1.7 Develop a process for consulting with staff and students to identify carbon saving ideas, and gain feedback on existing initiatives.

1.8 Encourage low carbon travel through:

a) Events in conjunction with Camden Council to promote walking and cycling to UCL.

b) Investigate incentives for staff to use forms of transport that have a lower carbon impact, such as the train instead of flying.

c) Promote no-travel options such as using the video-conferencing facilities.

Potential savings

The activities outlined above would cost in the region of £300,000 over the next 5 years and achieve around 2,500 tonnesCO₂e/yr, and £500,000 of energy bill and maintenance savings/yr.
2. Creating a well-maintained sustainable campus

**Understanding energy and water use:** To gain a full picture of energy and water consumption more energy and water meters are needed. Linking these meters back to a centralised monitoring system will allow analysis of where energy is being wasted, and where to target energy efficiency investment.

Updating the Building Management System to reflect the advances made in the Industry since its installation will provide significant opportunities for energy reduction – using big data from the hundreds of sensors around campus to provide alarms when energy consumption is exceptionally high, identify equipment that is no longer being controlled correctly and allow long term analysis of energy consumption. Ensuring that the settings on the BMS reflect current occupancy patterns and that all systems are under BMS control will be key to driving down energy consumption.

A new Heating and Cooling Policy will be used to specify appropriate hours for heating and cooling UCL’s buildings as well as the temperatures that the buildings will be maintained at. This will aim to provide a balance between providing users with control over their environment and reducing energy consumption.

**Reducing carbon from construction and refurbishment:** Buildings that have low energy and water consumption, and promote waste reduction can be achieved by applying the UCL specific Sustainable Design and Construction standards to projects alongside the SKA and BREEAM standards. These standards will also drive down the embodied energy of construction projects. From the outset of projects, we will identify performance targets for energy and water consumption. Careful monitoring of these targets alongside a post-completion evaluation approach will be used to ensure that refurbished buildings achieve the energy reduction that was intended (this is often not realised due to poor commissioning of new systems and lack of new occupant induction).

New build projects will aspire to achieve the BREEAM Outstanding standard and will showcase the latest thinking and developments in sustainable building design.

**Targeted carbon saving projects in our energy intensive buildings:** Around 80% of UCL’s energy is used by 30% of UCL’s buildings – these are research intensive buildings often containing laboratories. Such buildings have complex heating, cooling and ventilation infrastructure that have been added to over time. Therefore to achieve meaningful energy savings, it is necessary to first gain an in-depth understanding of the current state of the building through energy efficiency audits. The £10 million energy efficiency fund will initially be targeted at holistic energy saving projects in these buildings. Energy bill savings from these projects will be recycled back into further energy efficiency projects.
Decarbonising our research-intensive activities: Laboratories form a large part of UCL’s energy and water consumption – while much of this is necessary in order to facilitate the research – there are many opportunities for minimising energy and water use. We will develop a Green Laboratories Initiative to help laboratory staff reduce consumption.

Another significant source of carbon emissions – ~20% - is from computer servers. The proposed Data Centre consolidation programme to replace the numerous small inefficient server rooms across campus with new efficient centralised data centres will help to stem the growth of emissions from servers, but this will increasingly be a carbon growth area.

Actions

2.1 Increase the carbon performance of new developments and refurbishments

   a) Adopt UCL’s sustainable design specification for all UCL projects

   b) Apply the UCL carbon appraisal methodology to review options for carbon savings in all projects

   c) Commit all UCL building projects to achieve in-use energy performance targets

   d) Develop a comprehensive ‘soft landings’ procedure for projects to improve handovers with building occupants.

   e) Work with design teams to deliver a flagship sustainable University Quarter at UCL East

2.2 Implement holistic energy saving programmes for energy intensive buildings

   a) Undertake comprehensive energy surveys of all UCL’s energy intensive buildings

   b) Agree a programme of investment and a mechanism for recycling savings back into future projects

3.2 IT and research performance

   a) Support a UCL Green ICT strategy for consolidation of IT data centres (server rooms) to achieve economies of scale in terms of resource efficiency

   b) Work to improve the efficiency of new and existing data centres through a green data centre working group

3.3 Laboratories

   a) Develop a low carbon laboratories initiative addressing the use of energy intensive equipment (to include a sustainability forum for Lab Managers and users).
b) Work with Departments to ensure that resource efficiency is made a key part of all Job Descriptions for Laboratory Managers.

**Potential savings**

Out of the current £10 million energy efficiency budget, these activities are estimated to cost £3 million and achieve savings in the region of 3,000 tonnes CO\textsubscript{2}e/yr, and £1 million of energy bill and maintenance savings.
3. Low carbon energy supplied to UCL

A low carbon energy network for the campus: The district heating network was first installed in the 1960s, and although various investments have been made since then, there is still a substantial need for further investment to improve its efficiency. The first step in achieving this will be to ensure that there is comprehensive metering installed across the network, to identify where improvements are required. Options for replacing the existing Combined Heat and Power Engines will be identified, and the inefficient steam system will be replaced. Some UCL buildings are also provided with heat and electricity from the SOAS/IoE network, following the merger with the IoE. UCL will be working with other partners to improve the efficiency of this network too.

Alongside the existing heat networks we are investigating a ground source cooling and heating network for the Central Campus – this would use the latent coolth of the aquifer to cool buildings, and could also store heat during the summer for winter use. A test borehole is currently in operation to identify whether this would be viable.

A low carbon energy supply for UCL: Currently the UK’s energy supply and policy landscape means that buying renewable electricity does not deliver a net carbon benefit. The exception to this is through direct investment in renewable energy technologies or power purchase agreements. We will develop an energy supply transition strategy, based on reviewing the economic and environmental impact of alternative energy supplies and expected sector developments.

Demand response: We will look to generate revenue from Demand-Response schemes (where UCL is paid to match the time of electricity use to times of high generation). This reduces carbon emissions by allowing more renewable energy technologies to be used, and reducing reliance on gas and coal-fired power stations.

Actions

3.4 Prepare for the transition to a low carbon energy system on the estate

a) Develop an energy supply transition strategy, based on reviewing the economic and environmental impact of alternative energy supplies

b) Investigate options for renewable energy installations off campus e.g. through Power Purchase Agreements.
2.3 Creating a low carbon energy network for the campus
   
a) Continue to improve the metering of the district energy networks to monitor performance and target improvements
   
b) Decommission the steam network and put the buildings on the hot water district heating system
   
c) Further investigate a ground source heating and cooling network for the central campus.
   
d) Develop a strategy for the low-carbon renewal of the existing district heating system
   
e) Undertake a review of potential renewable technologies that could be integrated into buildings on campus

2.4 Demand response
   
a) Investigate different options for participating in the Demand Response market

Potential savings
Out of our current £5 million energy efficiency budget, these activities would cost £1.7 million and achieve savings in the region of 7,000 tonnes CO₂eq/yr, and £1.2 million of energy bill and maintenance savings.
4. Buying better and sharing what we have

**Developing sustainable purchasing guides and standards:** Purchasing of goods and services is undertaken through central procurement frameworks, but also locally by Departments. To ensure that these purchasing decisions consider the whole-life carbon and economic cost of a product, we will be developing a sustainable purchasing guide that can be used by all buyers to make smart, sustainable purchases.

We will also develop more in-depth buying standards for key goods that have a high energy impact. The initial focus of these standards will be:

- Fridges and Freezers (in particular -80°C freezers used in laboratories)
- Laboratory equipment – e.g. autoclaves, drying ovens and incubators
- Computing equipment – desktop computers, laptops and servers
- Heating, ventilation and cooling equipment
- Chemicals – expanding and improving the existing Quartzy system

Further categories of priority spend will then be identified for later action.

**Training and engagement with key staff:** We will then work with key staff within departments who are responsible for purchasing to help them implement these buying standards and to make more informed choices around other goods. Where there is a significant capital cost increase associated with better energy performance we will investigate a fund to cover part of the cost uplift.

**Reducing the impact of Travel:** The goods that we buy not only have a carbon impact from their manufacture, but also in their delivery to UCL. To reduce the environmental and nuisance impact of construction deliveries to UCL, we are consolidating all construction deliveries from many suppliers onto a single vehicle that delivers to campus. This has been a great success reducing deliveries to campus, we are now investigating rolling this out to the rest of UCL’s deliveries.

We will also develop a Sustainable Business Travel Policy with the aim of moving shorter journeys to more sustainable modes of transport, for example switching from plane to train.

**Actions**

4.1 Develop a sustainable purchasing guide to inform buying choices across UCL.

4.2 Research and produce in-depth buying standards for a range of energy intensive products including:
a) Fridges and Freezers (in particular -80°C freezers used in laboratories)
b) Laboratory equipment – e.g. autoclaves, drying ovens and incubators
c) Computing equipment – desktop computers, laptops and servers
d) Heating, ventilation and cooling equipment
e) Chemicals – expanding and improving the existing Quartzy system

4.3 Provide training and guidance for staff with purchasing responsibilities to help implement the purchasing guide and the new buying standards.

4.4 Investigate the feasibility of rolling out the UCL logistics programme to Business As Usual activities.

4.5 Develop a UCL Business Travel Policy

Potential savings

The activities outlined above would cost in the region of £100,000 over the next 5 years and achieve around 3,000 tonnesCO₂e/yr, and £500,000 of energy bill and maintenance savings/yr.