

University of Cambridge

Carbon Reduction

Incentivising Power Savings

Section 1 About the project

Summary

The largest part of the University's carbon footprint relates to the electricity used to power its research. With energy procurement managed from central funds the "Electricity Incentivisation Scheme" (EIS) was designed to make University "departments" aware of their electricity usage.

Prior to the scheme, year on year growth in electricity was around 4%. This increase has been all but eliminated without compromising any of the University's research objectives.

The approach

Electricity has traditionally been free at the point of use as all utility bills are paid from a central budget. Although staff and students are encouraged to behave responsibly and avoid wasting energy the financial impact of rising energy costs was kept remote from the people incurring those costs. This made it difficult for individual departments to justify spending their own time, money or other resources on things which would save energy, even when there was a clear benefit to the University as a whole. EIS was introduced to try and rectify that problem.

By setting annual targets, energy efficiency is encouraged by financially rewarding savings made against target and likewise penalising usage above. The balance of reward and penalty payments makes the scheme cost neutral to the University. Targets are reviewed regularly and progressively made more challenging.

Our goals

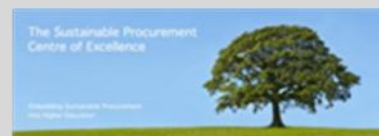
- That there should be an absolute reduction in the total Scope 1,2 & 3 emissions from 2005 levels by 2020.
- The University's target is to cut carbon emissions from buildings by 34% by 2020.
- That Scope 1&2 emissions attributable to activities which are associated with scientific and technical research within Departments, as defined by Tonnes CO₂/£ related to research income, should seek to reduce by 34% from 2005 levels by 2020.



UNIVERSITY OF
CAMBRIDGE

Profile

- Russell Group HEI
- Over 18,000 FTE students
- around 8,400 staff
- More than 150 departments, faculties and other institutions
- Over 300 buildings
- In excess 0.5M m² floor space



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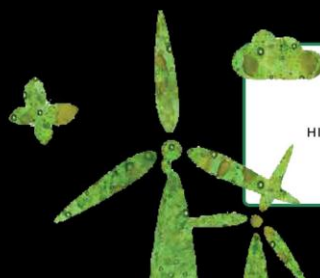
Obstacles and solutions

Senior Management commitment	The scheme was instigated and is annually reviewed by the University's Planning and Resources Committee; as improving energy efficiency is a key part of the long standing Environmental Policy, which is; "to manage its activities, buildings and estates in an environmentally sustainable manner, to conserve and enhance natural resources and to prevent environmental pollution to bring about a continual improvement in its environmental performance."
Making it work	By utilising the existing energy metering in conjunction with floor space allocation data, electricity usage is apportioned to the respective departments within each building. Although necessarily less than ideal, the prohibitive costs and delays in installing vast amounts of sub-metering equipment required to measure energy more accurately at a departmental level make the adopted approach reasonably fair and easy to apply.
Setting targets	The purpose of the scheme is not to precisely measure the electricity consumption of every department but to provide a benchmark of departmental electricity usage against which changes in usage can be measured. For multi-occupied areas, the emphasis has been on encouraging everyone to look at their contribution to electricity usage and promoting how to reduce it individually, departmentally and collectively.
Decoupling energy savings from growth in academic activity	There was a perception that making departments more accountable for the cost of energy they were using could discourage further growth in academic activity, especially where it involved energy intensive research. However, there is no evidence that that this has happened to date and without going into the details of Full Economic Costing the principle that those using the energy should bear the cost of it is now seems to have been generally accepted.

Performance and results

Since its introduction in Aug 2008, EIS is achieving its aim of encouraging departments to consider the economic implications of their activities, by curbing the unchecked year on year growth in energy usage, against a background of delivering increasing levels of energy intensive research.

- 2008/09 electricity usage reduced around 6% compared to the business as usual projection with a £0.82M University-wide saving reported against attributed savings of 6,714MWh and environmental benefit of 3,632 Tonnes CO₂.
- 2009/10 all University Schools used less electricity than their target allocation. Overall University's electricity usage was around 3% below target and a saving of £0.36M reported with attributed savings of 3,855MWh with an environmental benefit of 2,085 Tonnes CO₂.
- 2010/11 the overall University's electricity usage was 4.4% below target and saving of £0.51M reported with attributed savings of 4,950MWh with an environmental benefit of 2,678 Tonnes CO₂.
- Provisional 2011/12 results show electricity savings 0.6% below target, saving £0.51M with attributed savings of 715MWh with an environmental benefit of 387 Tonnes CO₂.



Lessons learned

The concern over whether the scheme would act as a constraint against academic activity has actually been a key factor in making the scheme work by encouraging departments to review their energy usage and find ways to manage it more efficiently. Energy efficiency savings have been achieved whilst at the same time academic activity has continued to grow, measured by both student numbers and research income. The scheme has led to greater involvement between departments as well as the utilisation of entrepreneurial technologies, some of which have been developed at the University.

Although EIS has been successful at curbing growth, it is recognised that more significant interventions will be required in order to make the deep cuts in emissions that the University is committed to.

Sharing your project

The challenge of how to encourage the adoption of energy efficient behaviours on campus and to then make sure those behaviours become firmly embedded into every day practice is common to every Higher Education Institution in the country. Cambridge is therefore keen to promote the success of this particular approach.

- The University regularly presents at events promoting best practice in sustainability within the Higher Education Sector such as those organised by HEEPI, JISC, goodcampus, S-Labs and Salix. The Electricity Incentivisation Scheme has attracted great interest at such events and has led to further communications on the subject with individual Higher Education Institutions, such as Edinburgh and Manchester.
- Both goodcampus ⁽¹⁾ and RECSO have published case studies on the Scheme. Recognition has even spread outside the sector with presentations being given at industry gatherings such as the Energy Event 2012 ⁽²⁾.
- The Department of Engineering in particular frequently hosts events promoting best practice in energy efficiency, often focussed on the evaporatively cooled server room. For this project the Department gave up valuable academic space to allow the installation of low energy cooling equipment and this decision may not have been taken if it were not for the Electricity Incentivisation Scheme.

⁽¹⁾[goodcampus case study](#) ⁽²⁾[Energy Event 2012 Guide](#)

What has it meant to your institution to be highly commended at the Green Gown Awards?

The University of Cambridge is delighted that the Green Gown Awards judges recognise the work that has been put into the Electricity Incentivisation Scheme at Cambridge and that valuable lessons have been learned which could be applied more widely across the Higher Education Sector.

Further information

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