

Innovation in Energy Budgeting

Despite impressive energy efficiency measures, the University of Cambridge's energy costs rose from around £4 million in 2002/03 to over £14 million in 2008/09. Almost half of this usage is in laboratories and data centres, with the Chemistry building alone accounting for almost 10%.

To encourage users to be economical in use, and to take advantage of considerable investment in sub-metering, the University Estates Department – with the backing of the high level Resource Management Committee - introduced new financial arrangements for all its academic schools and major administrative units in August 2008. Each was given a target for 2008/09, based on metered use of electricity in 2006/07, with a 3% addition to allow for some growth. (Historical growth in electricity consumption has been 4% per annum for the whole university Estate since 1998). Usage in any shared buildings was split in proportion to floor area.

At the end of the year, units bettering their targets received a cash transfer, based on 11.3p for every kWh saved beyond the target. Units exceeding their targets were charged the same price for every additional kWh. The outcome was consumption 1.14% - almost 1.3 million kWh - below target, resulting in a net transfer of £150,000 from central funds to the rest of the University. The main beneficiary was the School of Clinical Medicine, which received £57,669. However, the School of Technology had to pay £36,691 for exceeding its target.

For 2009/10 and 2010/11 the targets will be the average of a) the target, and b) the actual consumption, in the previous year, plus a growth allowance of only 2%. The averaging gives some leeway to the worst performers, and puts modest additional pressure on the better ones. Further tightening is likely in future.

Users are being helped to take advantage of the scheme through the creation of a Departmental Energy Champions network; quarterly energy reports to departments; access to half hourly metered data through the University's Systems Link website; and publication of advice in newsletters.



Paul Hasley

Key Points

- Shared cost/savings scheme for reducing electricity introduced in 2008 in response to rocketing energy costs.
- All departments have a target based on previous year's electricity use with allowance for growth. Targets progressively more challenging.
- More money for Departments who better their targets, and motivation to do better for those who fail.
- Scheme initiated by senior management and supported by network of energy champions.
- Financial savings of £0.82M in first year compared to business as usual.
- Greater engagement of academics on energy issues.

S-Lab Case 8 – Shared Energy Savings

Key Benefits

Carbon Emissions Avoidance – In its first year the scheme was a major factor in the near halving of the rate of increase in electricity consumption, i.e. from 4% to just over 2%. This equates to 3,852 tonnes of avoided CO₂ emissions. For 2009/10 CO₂ emissions avoidance of 1,476 tonnes is projected.

More Money for Science – Although the sums of money involved are only a small percentage of total School budgets, they are a ‘bonus’ which can make a difference in several valued areas, e.g. student projects, staff travel. They can therefore have a disproportionate effect on motivation.

Academic-Estates Linkages – barriers have been reduced because the scheme is not seen as coming from Estates, who are therefore perceived as a source of advice and other help on energy efficiency. The Energy Champions network is also creating new points of connection.



David Green

Views

“We were worried that the scheme would be strongly resisted. In fact, it’s been accepted as reasonable and fair, and many people have seen it as a great opportunity to get additional money for their activities. Although the sums are relatively small, they have a big psychological impact and so are an ideal way of driving change in a decentralised university such as Cambridge.”
Paul Hasley, Energy Manager

“We do very energy intensive research but have managed to find improvement opportunities. We’ve also involved more of our final year students on relevant projects, such as modelling our building energy flows. The money was important, but it’s also about pride and consistency. A lot of our work is on making engines and turbines more energy efficient so we should practice what we preach.”

David Green, Superintendent of Workshops, Department of Engineering

Motivated Users

The School of Biological Science already had a good track record in energy management but worked closely with Estate Management to achieve further savings, resulting in a transfer of £43,069. The measures included use of LED spot lights, installation of automatic lighting controls and continuing vigilance by Departmental staff who encouraged colleagues to turn off lights and (more importantly) equipment such as autoclaves off every night. The transferred funding has been put into a ring fenced fund to finance further measures, such as purchase of very energy efficient (A** rated) fridges.

The School of Technology’s ‘fine’ was sufficient to attract senior management attention, with the consequence that Sustainability and Energy Committees have been established to identify and implement saving opportunities. New servers will now use evaporative cooling (financed by the University’s Salix fund) rather than conventional DX chillers and sub-metering of individual research groups will be introduced to devolve costs even closer to end users.

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