Case Study

Public Sector Carbon Management – Further Education

£56k

Annual savings

1,011 tCO_2

Carbon saved to date

Business focus

Gloucestershire College is a successful college of further and higher education in the UK, teaching 15,000 full and part time students across three main sites in Cheltenham, Gloucester and the Royal Forest of Dean. As the largest college in Gloucestershire it is also a major employer, with 1,300 staff. For several years Gloucestershire College had been working to reduce its usage of electricity and gas. Initially the prime driver was increasing energy prices, which cost the college approximately £500k each year. Recently however, there has been increased awareness of the environmental implications of the college's activities with staff and students keen to address this issue.

Participating in the 2011 Public Sector Carbon Management Programme Gloucestershire College was supported through the process of embedding carbon management into their organisation and the development of a comprehensive carbon management plan which is designed to achieve ambitious five-year carbon reduction targets.

In 5 years time Gloucestershire College would like to be recognised for its commitment to investing in technology for the future and embedding respect for the environment throughout the College. In light of this ambitious aim Gloucestershire College has pledged in its Carbon Management Plan to reduce 25% of its 2010 baseline carbon emissions from all its activities by July 2016. The college has identified savings through a range of energy efficiency, alternative energy and carbon management projects. One key project is the implementation of a comprehensive Building Management System (BMS) across the college sites.

What is BMS?

A BMS is a series of controllers linked by a simple communication network. A PC is also connected to the network to observe their performance and adjust settings.

Analysis of energy consumption data using a BMS is very effective in highlighting inefficiencies and locating opportunities for reducing energy consumption and costs. High periods of demand should coincide with busy working times and any disparity between this can help pinpoint inefficient or malfunctioning equipment or working practices.

Julian Baxter (left), Estates Director Gloucestershire College with the Head Caretaker, monitoring meters at the main incoming transformer, Gloucester Campus.

Why BMS?

It is estimated that electricity consumption accounts for 80% of carbon emissions from UK colleges. Clearly it is essential to correctly manage the use of electricity throughout buildings and this was the premise that led to the introduction of the BMS project at Gloucestershire College.

Director of Estates Julian Baxter considered a BMS system to be the most efficient way of managing consumption across multiple large sites. The business case for the project stacked up so well, with savings of up to £200k predicted over the first three years, that the project was easily passed by management. Gloucestershire College required initial investment of £29k to implement the BMS upgrade project, and payback was calculated at 0.43 years. Funding was easily secured and instant savings were realised upon project implementation. Controlling energy use remotely on a computer was found to be a far more efficient and cost effective process than the labour intensive checks on controls across the college sites that happened prior to BMS implementation.

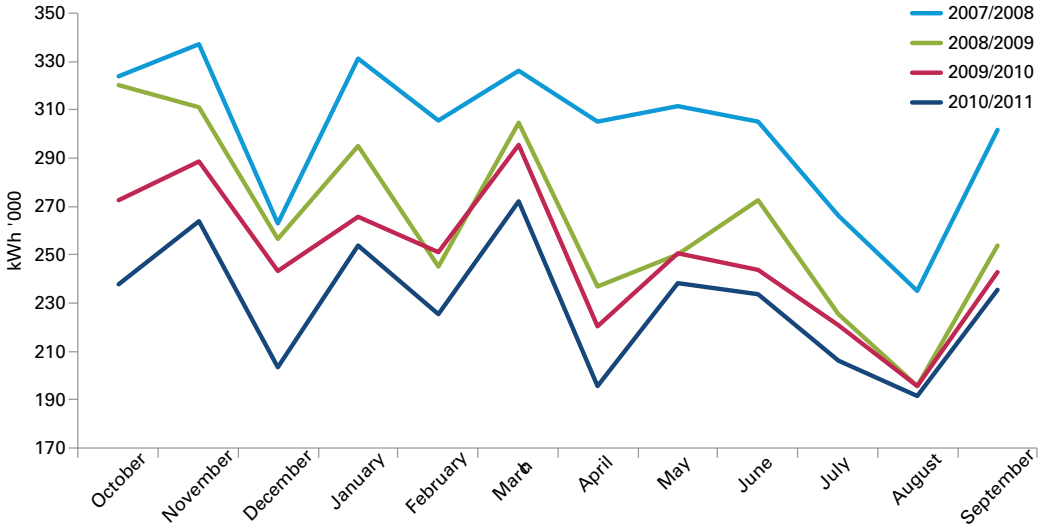
Energy and carbon savings

The savings realised from this project from 2009-11 have amounted to 1,927,136 kWh. This consumption saving has meant that Gloucestershire College has avoided paying £169k for electricity and has saved 1,011 tCO_2 over three years – that equates to an annual cost saving of 10%. The BMS system will allow energy consumption to be monitored into the future, on time scales that range from hourly to annually and comparisons like the graph on the right (Figure 1) will be able to be made on an annual basis.

Public Sector Carbon Management Programme

For information about the Carbon Trust's Public Sector Carbon Management Programme please email **publicsector@carbontrust.co.uk** or visit our **website**.

Figure 1 ***Gloucestershire College electric consumption***



> "A BMS system made both commercial sense and carbon sense. It is the best and most cost effective way of managing energy consumption. If you can't control it, you can't save it"
>
> Julian Baxter,
> Director of Estates