

EXETER CITY COUNCIL

SCRUTINY COMMITTEE – RESOURCES 24 MARCH 2010

ENERGY MANAGEMENT REPORT

1. PURPOSE OF THE REPORT

- 1.1 To inform Members of the measures currently in place to manage energy use within civic buildings.

2. BACKGROUND

- 2.1 The council manages its energy use via a proprietary Building Management System (BMS). This allows for the ongoing control and monitoring of:

- Lighting
- Heating – based on either outside temperature and/or thermostats in room; the outside temperature governs the boiler setting, the room thermostats can then control local room temperatures.
- Air conditioning
- Hot water
- Ventilation of car parks
- Carbon dioxide monitoring

- 2.2 The BMS is controlled from a computer terminal in Contracts and Direct Services by the electrical and mechanical engineers. They perform ongoing daily monitoring of the operation of plant installations and systems. The BMS system flags problems automatically and is used by the engineers to respond to complaints raised by facility managers or other staff.

- 2.3 A list of sites controlled by the BMS is included in Appendix I. These sites are monitored by sensors fitted to items of plant such as boilers, valves and pumps.

3. BENEFITS OF USING A BMS

- 3.1 Using the BMS has a number of benefits;

- Control – it allows control of plant and equipment where sensors are in place (as in Appendix I).
- Monitoring – it allows monitoring of the operation of plant and equipment
- Warning - the system highlights or flags up any operation, repair or maintenance issues for example where plant and equipment are not operating correctly or to their optimum efficiency.
- Information – it allows historic data to be collected and analysed for client information.

- 3.2 Energy and fuel use is optimised by careful setting of heating, light and hot water and air conditioning controls and monitoring through the BMS. For example the car parks lighting systems which are a very heavy energy user are set to pre-determined times so that lighting is only provided when it is operationally needed.

- 3.3 It can be evidenced that measures taken in controlling heating fuel use at Civic Centre have delivered beneficial savings. For example in 2008/09 the cost of oil used was £7,000 less than that budgeted (31%). At the present time in 2009/10 savings of some £3,500 (16%)

are predicted, on a reduced budget, despite the exceptional cold snap this winter and substantial increases in fuel costs this year.

- 3.4 Despite the above, the BMS cannot fully compensate for deficiencies in existing systems and changes to building design or use. The Civic Centre is a case in point. It has had double glazing fitted, partitions removed, extensions built and the installation of numerous pieces of IT yet it still has largely the same heating system with the same zoning and thermostatic controls as when it was built. This, when personal preferences are factored in, makes it virtually impossible to provide an acceptable ambient temperature throughout the building due to its age and configuration.

4. PLANNED IMPROVEMENTS FOR THE BMS

- 4.1 Whilst the BMS controls and monitors fuel use it cannot establish what energy is being saved. A software upgrade later this year will allow for this in conjunction with 'smart' metering to better monitor lighting, power, gas via the existing BMS system. This will give greater control and data capture to be able to determine energy use and identify more accurately where the energy is used. This will allow comparative analysis on say a floor by floor basis.
- 4.2 We will be working with the BMS supplier to examine the benefits of a Virtual Private Network which, with a possible separately hosted server, to enable remote monitoring and fault diagnosis of the BMS system, prior to service visits. This will reduce contractor site time resulting in less cost and should lead to less down time when equipment breaks down.

5. ADDITIONAL IMPROVEMENTS

Energy Saving Voltage Stabiliser/Optimisation Units

- 5.1 A Voltage Stabiliser Unit (VSU) was installed in the Civic Centre 18 months ago. This, along with other initiatives, has produced a saving of some 8-10% reduction in electrical use over that time. The other initiatives that have contributed to this reduction are the installation of energy efficient lighting, the increased use of movement detectors for lights and items of plant have been replaced with more efficient equipment such as lift controls. It is proposed to install a Voltage Optimisation Unit (similar to VSU) to reduce the energy use of lighting system at the Matford Centre.

Low Energy Lighting

- 5.2 The programme of fitting low energy lights in virtually all locations in the Civic Centre was completed some time ago with many lights working from movement detecting (PIRs) to save energy when rooms are not occupied. This has been extended by the installation of low energy light fittings in various car parks; Civic Centre, Guildhall, Broadwalk House and similar work is planned for Mary Arches, King William, Cathedral and Quay Car Parks in due course as funding permit. These installations should deliver substantive savings both by reducing the present high running costs and through increasing the period for replacing lights. This action also contributes to the Council objective in relation to reducing carbon emissions.

Digital Thermostats

- 5.3 In an attempt to improve the control of the Civic Centre heating digital thermostats are to be installed as a pilot scheme. These will both be more accurate than those currently in use and will give a visual display of actual temperature to provide assurance to staff as to the temperature in offices.

Alternative Sustainable Energy Supply

- 5.4 Whilst we have installed some sources of alternative sustainable energy supply they do not generate large energy savings. As part of the Carbon Management Programme it is planned to retro fit photovoltaic cells to a number of civic buildings. This will not only save on energy use but will also enable us to make use of the recently introduced fuel buy back scheme and feed energy into the grid when it is not needed in our buildings.

6. ENERGY PURCHASE

- 6.1 Over a number of years the Council has developed a partnership with UX Online; an organisation that manages the letting of tenders and fuel suppliers at no direct cost to the Council. Their knowledge of the energy market has been crucial in optimising the benefit from fluctuations in the price of fuel.

7. RECOMMENDED

That Members note the content of the report.

HEAD OF CONTRACTS & DIRECT SERVICES

COMMUNITY & ENVIRONMENT DIRECTORATE

Local Government (Access to Information) Act 1985 (as amended)
Background papers used in compiling this report: