Building partnerships across the city

The Peterborough Environment City Trust has embarked on an ambitious energy saving programme involving the whole community. Rose Riddell looks at what has been achieved so far.

A city-wide community partnership embracing industry and business, local authorities, environmental groups, academics and the public could, it is estimated, yield savings of nearly £10.5 million and CO_2 reductions of almost 400,000 tonnes by 2010.

The Peterborough energy audit is one of more than 50 environmental projects that have been carried out or are being planned by the Peterborough Environment City Trust (PECT). The Trust is at the heart of the Peterborough Environment City initiative. This was launched in 1992 to broker partnerships between the commercial, voluntary and public sectors with the aim of improving Peterborough's environment overall and progressing Local Agenda 21. Richard Donoyou of PECT's energy audit team explains: "By adopting a partnership approach, we automatically involve the whole community – in particular the commercial sector – at every stage of the decision-making process. We believe that such an approach leads to lasting results and long-term success."

PECT has adopted the same objective as the Government's domestic commitment on tackling climate change: to reduce Peterborough's carbon dioxide emissions by 20% on 1990 levels by 2010. It is seeking to achieve this by reduced energy consumption across all sectors – domestic, municipal and industrial/commercial.

The energy audit was initiated in 1996 and an audit consultation document was issued for comment last year*. The audit was based on real data collected from all sectors of the community – but excluding transport which PECT is treating as a separate project.

Energy use

The audit was intended to be a snapshot of energy use in Peterborough in 1996/97, covering the city itself and the 28 surrounding parishes. It was based on data obtained from the surveys carried out by a specialist working group, plus other material that was available during 1996/97 such as government statistics, costs and tariffs and council records. The audit report provides predictions of consumption, spending and emissions. Its projections of savings and emission reductions are based on the then current technology and best, costed at 1997 prices.

Key areas for action were identified within each sector: domestic, industrial/commercial and municipal. These areas were deemed to account for a high proportion of total energy consumption or to contribute significantly to CO_2 emissions.

Specifically, the audit set out to:

- establish a justifiable methodology
- estimate the total city-wide energy consumption for 1996/97
- identify the key areas where energy efficiency action would have the maximum positive impact
- identify a series of measurable targets and indicators by which progress can be monitored
- make recommendations to enable the city to reduce its energy consumption in line with UK and world targets

The estimated energy consumption for Peterborough in 1996/97 was 3,217GWh, costing £74.5 million and producing 1.6 million tonnes of CO_2. The audit found that the majority of energy consumption and emissions arise from industrial and business activities – 64% and 68% respectively – w
sector accounts
and 29% of emissions. The municipal sector is responsible for only 3% of energy consumption and 3% CO_2.

The domestic sector

The audit looked at the various types of energy use within each sector. For Peterborough's 65,000 dwellings it looked at energy use in the home by examining domestic energy consumption for space heating, hot water, refrigeration, cooking appliances, 'wet' appliances (washing machines, tumble dryers, dishwashers), lighting, TVs and videos, and so on.

Although Peterborough's housing stock is relatively modern, with 55% of dwellings built after 1965 compared with a national average of 33%, the audit concluded that there is still plenty of scope to improve thermal efficiency by adopting a variety of measures: condensing boiler, cavity wall insulation, dry lining, double glazing, loft insulation, draught-proofing and insulating the hot water tank.

The audit concludes that the domestic sector could realistically reach a 20% reduction in its CO_2 emissions by 2010, through the introduction of Best Available Technology (BAT) and best practice. The priority areas for action were identified as space heating, domestic hot water and refrigeration, although opportunities exist for savings in all areas of domestic consumption.

Industrial and commercial sectors

The industrial and commercial sector in Peterborough accounts for the majority of the city's CO_2 emissions and energy consumption. The audit report comments: "There is a paramount need for business to be competitive, survive and grow, and a secondary need to be energy efficient. The expressed attitudes towards, and involvement in, any given energy-efficiency action will vary throughout the industrial and commercial sector. This is due to the relative energy spends being vastly different for each of the various businesses."

The business community comprises over 2,700 firms covering a diverse range of industrial and commercial activities which the audit

distinguished by standard industrial classification (SIC). It found that the total cost of industrial and commercial energy use in Peterborough in 1996/97 was £38 million and that emissions of CO_2 amounted to 1.1 million tonnes. It also established the proportion of energy used by each business category and provided a breakdown of the end-use of the energy to illustrate the differences between each SIC classification.

Three SICs were responsible for an estimated 41% of energy consumption and 44% of industrial and commercial carbon dioxide production (see Table 1).

Because of the wide variation in the way in which individual businesses use energy, it was difficult for the auditor to make and cost general recommendations, as was done for the domestic sector. The report notes: "Where energy use is a large and visible part of an organisation's activities, it is likely that energy efficiency actions have been considered, and that steps have been taken to curtail consumption."

Indeed, PECT's business energy survey revealed that 54% of respondents had addressed energy efficiency issues, while only 8% said that it would be too costly or they did not have time. However, the audit concluded that "it may well be difficult to achieve, by 2010, a 20% reduction in [industrial and commercial] CO_2 emissions through the use of BAT and best practice" although it estimated that, on a best-case scenario, it would be possible to achieve a 15% reduction in emissions by 2010, primarily from more efficient use of electricity.

Table 1: Largest single industrial and commercial uses

	Fuel type	% MWh consumption	% CO_2 production
'Other' manufacturing (textiles, food, clothing)(SIC 4)	Electricity	16.5%	15%
Distribution, catering and repairs (SIC 6)	Electricity	12.5%	14%
Metals and chemicals (SIC 2 and 3)	Electricity	12%	15%

Table 2: Sectoral targets

	Total CO_2 emissions 1996/97 (tonnes)	Required savings (tonnes) - 20%	Potential savings (£m)	CO_2 target (tonnes)
Domestic	475,000	95,000	6.6	111,500
Industrial and commercial	1.1 million	220,000	3.7	220,000
Municipal	40,700	8,100	0.11	8,200

The municipal sector

Peterborough's municipal sector accounts for only a small proportion of energy consumption and corresponding emissions. The top three areas measured in terms of fuel use by MWh consumption and CO_2 production were identified as education, welfare services and street lighting, with gas consumption for space heating playing a major role in municipal energy use. For example, the education and welfare services accounted for almost 36% of gas consumption in terms of MWh.

The audit report notes that, as with the commercial sector, the variation in energy use is wide, so broad recommendations would be unhelpful. Peterborough City Council has already made a commitment to energy efficiency and the report calls on it to put this into practice by auditing all its operations to identify what needs to be done. The audit concludes that by applying BAT and best practice to its operations, Peterborough City Council could realistically achieve a 20% reduction in its CO_2 emissions by 2010.

Achieving the targets

The audit sets out a range of targets for each sector (see Table 2), divided into each of the key action areas, and identifies various options for achieving them. It considers ways of reducing energy consumption and its associated carbon dioxide emissions through the use of combined heat and power (CHP) and renewable energy sources, options to improve energy efficiency and the provision of information and advice.

For example, one of the target aims is to survey all industrial and commercial activities for CHP potential and install CHP systems at suitable sites. The audit predicts that although there is limited scope for large-scale CHP in Peterborough, small-scale CHP use (100kW to 1MW of capacity) would be more suitable. The report considers that in 10 to 15 years this technology should have a significant impact, particularly since the deregulation of the supply industry may make it economic for small users to sell excess capacity. The target is to generate approximately 42,500 MWh of electricity from new CHP plant by 2010, representing a CO_2 reduction of 100,000 tonnes.

The provision of specialist advice is considered vital in reducing energy usage, and the report highlights the importance of focusing information so that it is of relevance to the end-user, whether individual householders or managers of large commercial outfits. The Peterborough Energy Efficiency Advice Centre had, at the time of the audit, already offered advice to over 20,000 householders. Targeted advice will be extended to commercial and municipal activities, covering issues such as gas space heating, refrigeration and ventilation and lighting.

Next steps

Now that the audit process has been completed and consultation on its findings and recommendations have taken place, the Special Working Group is starting to look at practical projects to implement the targets. Funding bids under the Home Energy Conservation Act and the Single Regeneration Budget are being put together by the City Council.

The industrial and commercial sector offers the greatest challenge but also the greatest rewards, says the report. But real progress will only be made if ways can be found to realise the potential for reducing energy bills through the introduction of energy efficiency measures, fuel switching, education, and energy generation through new technologies. **R**

** "The Peterborough energy audit. Consultation document March 1998", available from the Peterborough Environment City Trust. Tel: 01733 760883, £10. A technical supplement is also available from PECT, price £10.*