

The Energy and Water Conservation Fund

Kirklees Metropolitan Council, UK

Summary

In 1992, Kirklees Metropolitan Council adopted the Friends of the Earth environmental charter for local government, which aims to reduce Carbon Dioxide emissions from KMC operations by 30% by 2005, from a 1990 baseline. Council buildings account for 62% of CO₂ emissions from Kirklees Council operations, and annual energy bills come to £4.6 million pounds.

End-user area	Target Audience	Technical
<input type="checkbox"/> New buildings	<input type="checkbox"/> Citizens	<input checked="" type="checkbox"/> Energy efficiency
<input checked="" type="checkbox"/> Refurbishment of buildings	<input type="checkbox"/> Households	<input checked="" type="checkbox"/> Heating
<input type="checkbox"/> Transport and mobility	<input type="checkbox"/> Property owners	<input type="checkbox"/> Cooling
<input type="checkbox"/> Financial instruments	<input type="checkbox"/> Schools and universities	<input type="checkbox"/> Appliances
<input type="checkbox"/> Industry	<input type="checkbox"/> Decision makers	<input checked="" type="checkbox"/> Lighting
<input type="checkbox"/> Legal initiatives (municipal regulations, directives, etc)	<input checked="" type="checkbox"/> Local and regional authorities	<input type="checkbox"/> CHP
<input type="checkbox"/> Planning issues	<input type="checkbox"/> Transport companies	<input type="checkbox"/> District Heating
<input type="checkbox"/> Sustainable communities	<input type="checkbox"/> Utilities	<input type="checkbox"/> Solar energy
<input checked="" type="checkbox"/> User behaviour	<input type="checkbox"/> ESCOs	<input type="checkbox"/> Biomass
<input checked="" type="checkbox"/> Education	<input type="checkbox"/> Architects and engineers	<input type="checkbox"/> Wind
<input type="checkbox"/> Other	<input type="checkbox"/> Financial institutions	<input type="checkbox"/> Geothermal
	<input type="checkbox"/> Other	<input type="checkbox"/> Hydro power
		<input type="checkbox"/> Other

Context

In 1994, the Target '97 campaign was initiated aimed at reducing energy consumption in the Council's non-housing properties by 15% over 3 years. The campaign focussed on four of the major fuel consuming Service areas (Education, Leisure, Office Accommodation and Social Services) and identified 413 of the largest fuel users. Their building managers were provided with information on their energy consumption, an energy target to aim for, and good housekeeping advice. An Energy Help Desk was set up as a free advice centre which offered site investigations where appropriate. Over the three-year period, energy savings of 6% were achieved. At the same time, water management measures made savings of around £128,000. It was seen that more than good housekeeping was required if significant reductions were to be achieved, and the Council agreed to provide around £100k a year to enable this to happen.

Objectives

The Energy and Water Conservation Fund was set up to enable Council services to make capital investments in energy efficiency in buildings and to help attract external funding for energy projects. 77% of applications to the fund so far have been from schools. The 192 schools in Kirklees are responsible for 57% of the CO₂ emissions from Council buildings – and the 65,000 pupils are the energy managers of the future.

Process

Energy and water consumption reports are sent each year by the Council's Energy Unit to the managers of 600 Council buildings, saying how much has been used in the previous year, and comparing this with a

three-year average and with national benchmarks. All Council buildings receive an energy survey every three years, containing costed recommendations on actions and investments which would help save energy and water and reduce bills. Building managers apply to the Fund for the money to carry out the work.

For most projects, the fund gives loans rather than outright grants, and they are repaid out of savings made from lower energy and water bills. Annual repayments are set at half the value of the savings, so even during the repayment period the applicants save money. These payments continue until the grant has been repaid, and then for another 2 years as a contribution to the fund's administrative and capital costs. For small projects (those which cost less than £1,000) the repayment method would be cumbersome and administratively expensive. Instead, half of the cost is met by the fund and half by the applicant. These small jobs tend to be improvements to heating controls, which rapidly repay the outlay.

So that usage before and after installation can be compared, fund applicants supply details of current energy and water consumption, floor area, hours and times of use, number of occupants and information about any activities with high energy and water usage (e.g. swimming pool or laundry). Expected savings are assessed so that the repayments can be calculated after allowing for any additional maintenance costs.

The fund also makes Fast Track grants to pay for extra cost-effective energy measures to be incorporated into capital works. For example, a scheme at Birkdale High School for additional funding to pay the extra cost of fully condensing boilers over high efficiency ones, and to finance automatically variable speed pumps, added a cost of £10,300 to a capital scheme costing £125,000. The annual savings from these extra measures are £2,498.

Fast Track applications are put forward by engineers in the Council's Mechanical & Electrical project section. Because Fast Track projects have such high savings, loans are usually repaid in less than 5 years and so only one extra year's payment is required for administrative costs.

Financial resources and partners

The Energy and Water Conservation Fund is allocated £100k per year from the Council's Corporate Wide Initiative budget. This will cease sometime in the future and loans will be funded out of the annual repayments from previous schemes.

Since 1998, grants totalling £606,987 have been made to 69 large schemes and 5 small schemes, mainly in schools and Sports Centres. Work to the value of £680,645 has been carried out, with the rest of the cost being met by external funding sources such as YE, Energy Saving Trust, Lightswitch and SchoolEnergy, by repayments to the fund, and by contributions from the applicants.

The work falls into 4 main categories. The amount spent on each is shown below:

lighting (automatic lighting controls, low energy lamps)	£376,584
insulation (infill to window panels, suspended ceilings, cavity wall insulation, secondary glazing, solar film, boilerhouse & pipe work insulation, draught proofing, draught lobbies)	£161,440
energy controls (thermostatic radiator valves, thermostats, general software improvements)	£75,676
Water (push taps, urinal flush controls, shower controls, rainwater recovery systems, waterless urinal controls, a mat watering system at Bradley Central Plant Nursery)	£66,945
Total:	£680,645

Results

In 2002/03, the schemes are expected to save their applicants £84,256 on their energy and water costs and to reduce their CO₂ emissions by 891 tonnes.

By 2006/2007, these first projects are predicted to have reduced their cumulative emissions by 4,719 tonnes and to have saved £44,564 on energy and water bills.

The work pays for itself in reduced energy bills quite quickly: lighting work in 2 to 6 years, energy controls in 2 to 8 years, water work in 1 to 7 years and insulation work in 5 to 10 years. The savings will continue to be made for many years to come: the lifetimes of the measures installed vary from 10 years for push taps to over 25 years for insulation work.



Fig 1: Water efficient capillary matting at Bradley Central Nursery

Lessons learned and repeatability

The fund uses Energy Matters to work closely with schools, helping Head teachers to manage their energy consumption and to involve pupils in learning about energy conservation and renewable energy as part of their education. Also, eighteen schools have already taken part in SchoolEnergy, an Energy Saving Trust/British Gas initiative which provided £49,415 to add to the fund’s loans for installing energy efficiency measures. The schools adopt a ‘whole school approach’ to energy saving. They form Energy Teams of teachers, governors, pupils, caretakers and cleaners and produce Energy Action Plans. Pupils work as energy monitors (the ‘E’ Team) in the classroom, and assemblies are held where the whole school discusses energy and the environment. The Council gives full training and support throughout the scheme.

There is no doubt that the measures installed reduce consumption of energy and water. The monitoring of this, however, has proved more difficult than was expected, when it was anticipated that a simple comparison between utility bills before and after installation would clearly show the benefits. In some cases, however, this has not been so.

In one school, for instance, where the Head, teachers and pupils worked hard to draw up and implement a ‘Whole School’ energy saving policy to qualify for matching funding of £3,500 from SchoolEnergy, the utility bills showed that only part of the predicted savings appeared to have been made. Automatic lighting controls, cavity wall insulation, draught proofing, new roof light pyramids, electronic thermostats, push taps, and low energy lamps had all been installed, costing £9,614. On investigation of the school’s complaint that the savings had not been made, it was discovered that the school had installed an IT suite running at full strength, every classroom had new computers and printers, there were three additional computers in the office and an extra room had been converted to a classroom.

The school was visited and the load of this extra usage was calculated. From this it could be shown what the consumption would have been had the energy saving measures not been taken. It was estimated that this additional equipment would have increased the school’s annual electricity bill by £228. In fact, despite this, and because of the energy saving measures installed under the fund, their bills dropped by £965!). The savings on water bills had been made as predicted, but those on coal were only £186, not the

£340 which had been expected. As the repayments had been worked out on savings which hadn't been made, and as the point of the scheme is to make savings and not have the applicants out of pocket, the annual repayments were reduced but agreed to be made over a longer period.

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Printed reports or other literature available:

Title: Energy and Water Conservation Fund Case Study

Cost: free