

University of Dundee

Energy and Environment - Operational Plan

1.0 Introduction

The University is currently reviewing its Key Directorate objectives for 2012-15. This paper aims to provide a simple summary of the headline issues in the Energy and Environmental Operational Plan and overall performance update to 2010/11.

Strategically, the University has an ambition to reduce the carbon for its energy supply to the lowest level possible whilst maintaining its high level of Teaching and research activities.

The update highlights current energy and environmental policies and practices in place and legislative requirements, as well as the opportunities for the University to make some significant and positive reductions to its Carbon emissions resulting in both environmental and financial benefits.

It also provides an opportunity to analyse the current energy supply infrastructure to help it to meet the future energy challenges of supply continuity, cost certainty and value.

A summary of the actual consumptions, costs and emissions from 2008/09 year to the current year 2010/11 is given at the end of the document.

2.0 Sustainable Development Strategy

The University has published an Environmental Policy statement which sets out plainly and simply the University's commitment to sustainable development and effective environmental stewardship

<http://www.dundee.ac.uk/estates/energy&environment/environmentalpolicystatement>

The current Strategic Review of the University has identified "Sustainability and the Environment" as one of the key themes for the University's development in the near future and staff active in this area are being encouraged to work together. The Strategy will clearly explain what the University means by sustainable development across the institution's various areas of activity. This will include teaching and research, operational aspects and social responsibilities and expectations. The Strategy will establish a robust governance structure to manage each aspect within the strategy.

2.1 Sector Benchmarking



"Universities That Count"

In 2009-10, the University participated in the "Universities That Count" initiative. This self-assessment exercise was funded by the various UK Funding Councils, the Environmental Association for Universities and Colleges and the Department for Employment and Learning. Based on the well-established "Business in the Community" model, we assessed our approach to social responsibility issues including student and community engagement and the social benefits of our teaching and research. The exercise also considered our approach to sustainable development and our environmental performance.

The results of the initiative showed that:

Our Environment Index Score was 84.0% and the sector average was 67% - we were ranked 7 out of 54 UTC participants and were awarded a Silver UTC Standard.

The table below shows our overall score and the Impact Areas we achieved an Excellent or Outstanding score.

| Environment Index Performance | | | | |
|--|-------------------|-------------|--|----------------|
| 09/10 Score | Band ¹ | 08/09 Score | HE Sector Average | BITC Business |
| 84.0% | Silver | n/a | 70.2% | 84% |
| Impact Area of Outstanding Achievement (≥90%): | | |  | climate change |
| Impact Area of Excellence (≥75%): | | |  | transport |

- we manage our environmental and sustainability impacts well, especially in the areas of transport and climate change ;
- we need to improve in the area of social responsibility and develop a policy ;
- we need to develop a robust Community Strategy;
- we need to better co-ordinate our efforts across all these areas through improved governance, communication and delivery.

The “Universities That Count” process and format is being revised for 2010-2011.

“Learning in Future Environments” (LIFE)

The University meanwhile looks forward to the introduction of the new “Learning in Future Environments” (LIFE). Developed from the ‘Universities that Count’ scheme in which we secured a silver in 2010- we look forward to this new programme facilitating benchmarking and performance improvement. We also hope it will engage more of the sector, including FE colleges, in considering their wider sustainability and social responsibility impacts.

3.0 Utilities

Costs and Consumption (See also Appendix 1)

The usage and cost of energy in existing buildings has remained stable over the last few years. The cost of energy through the Scottish Procurement utilities contracts has reduced but this was offset for the University by the expiry of a 5 year fixed price gas contract that DUUSCo had in place.

This year the consumption of energy reduced slightly compared to the previous year, even allowing for a 4% colder winter.

Water consumption has been reducing year on year through increase in controls and moving away from mains water equipment cooling, equating to cost savings for the University.

Utility costs are expected from 2011 onwards to continue in an upward trend by around 10-15% per year towards 2020.

We will continue to monitor the efficiencies of all major plant and equipment and a new metering and monitoring system is being fitted this year to improve on the amount of data available and the reporting mechanisms.

¹ Standard Threshold: Platinum ≥ 94%; Gold ≥ 89%; Silver ≥ 79%; Bronze ≥ 69%

Carbon Management

The existing Carbon Management Plan is currently being reviewed and updated to ensure that we are equipped to achieve our carbon reduction objectives and targets. In 2009-10 the University began working with the Carbon Trust to reduce our carbon emissions and, in doing so, to achieve both budget savings and to enhance our environmental reputation as an energy-efficient institution.

Much has also been done to raise awareness of environmental issues in the University, and we have built award-winning buildings such as the Queen Mother and Dalhousie Buildings with sustainability very much to the fore.

However, we need to do more. We are mindful of the internal and external drivers for enhancing our performance in this important area, and of the financial and reputational benefits that further improvement could bring.

The University has therefore set a target to reduce its carbon emissions by 20% over the next 5 years.

To do so we will need to:

*** change our attitude to carbon emissions and energy management**

Our energy bill currently amounts to £3.6m. While this is met from a centrally-held budget, much of the responsibility for controlling and reducing energy use lies with the Colleges and Directorates where individual behaviour needs to change.

*** set targets for carbon reduction in Colleges and Directorates**

We have asked each School/College and Directorate to bring forward proposals for achieving the 20% reduction target through their carbon management groups. This will involve considering all activities that affect our carbon emissions, including business travel, waste control, the use of networked printers, opportunities for recycling, the procurement of energy-efficient equipment and routine approaches to powering down equipment, lighting and PCs.

***change our attitudes to the use of space**

The amount of space we occupy is critically linked to our Carbon emissions and therefore needs to be recognised as a significant cost. We have more space than we require and some of our best learning and teaching spaces are inefficiently used. Central timetabling and revised attitudes to the booking of rooms will be fundamental in reducing the amount of space we occupy, leading to reductions in energy, maintenance and refurbishment costs.

To achieve all of this will require good management, clear objectives for reductions and - perhaps especially - personal commitment from students and staff to make the relatively minor shifts in their individual behaviour that collectively will make a significant difference.

Possibly the area which will require the most investment of both staff time and investment in technology is in our energy strategy. From being in the forefront of energy efficiency as the 1st Scottish university to install a CHP plant in 1996, we are now in a position of catch up. We are hoping to invest in different types of renewable energy, and other new technologies e.g. New Heat Store for CHP. The hardest element will be behavioral change from both our staff and students. This will require a paradigm shift away from thinking that our heat is 'free' and that electricity costs have no impact on a department's and subsequently the university's funding.

The University has established an Environment Task Group which is charged with developing and implementing the University's environmental policy, monitoring, auditing and reviewing our progress against defined targets and reporting to key University decision-making forums. The task group includes senior members of the University staff as well as representatives of the student body. It has set clear targets and will report against these at regular intervals. The task group will

disseminate information on environmental issues as widely as possible within the University.

| CO2 Source | Tonnes CO₂ 2008/2009 | Tonnes CO₂ 2009/2010 |
|------------------------|--|--|
| Energy | 18,601 | 18,890 |
| Waste | 256 | 257 |
| Water use | 145 | 56 |
| Staff business mileage | 1,978 | 1,354 |
| Procurement | 5,000* | 4,900 |
| Total | 25,980 | 25,457 |

Table 1 Breakdown of University Carbon Sources and Tonnages of Carbon Comparing 08-09 and 09-10. (* indicates estimated data)

Energy This shows a 2% decrease in our footprint. **efficiency projects**

In order to limit the cost of future energy and reduce consumption and Carbon emissions a number of projects have been completed or are being considered for future funding. These projects have been identified through energy audits. Whilst most of the projects listed have been funded from in-house budgets various methods of funding i.e. interest free loans, shared saving or lease agreements are now being considered for projects which have not yet taken place.

Carbon Projects complete or on-going

| Building | Project | Approx Project Cost |
|-----------------|--|---------------------|
| Harris Building | Cooling equipment (mains water to drain) | £8,000 |
| Boilerhouse | New Flue Damper for Boiler 4 | £4,000 |
| DUSA | Swimming pool cover | £14,000 |
| Wellcome | Fit Sava controls to fridges / freezers in Lab | £6,000 |
| Various | Control of Air conditioning by motion sensor | £3,000 |
| DoJ | New Led Lighting project | £9,600 |
| Campus wide | Sub Metering of buildings | £100,000 |
| Boilerhouse | Fit new heat store | Capital programme |
| Harris Building | Insulate Plant room | £2,000 |

Other Projects for future consideration

| | | |
|--------------------|-----------------------------------|-------------------|
| New CITR | 4th CHP Engine | £1,250,000 |
| MSI | Heat recovery from Fume cupboards | £20,000 |
| Campus Data Centre | Free cooling at data centre | £50,000 |
| Campus Building | Optimisation of Supply Voltage | £15,000 |
| Life Sciences | VSD,s for ventilation and AHU's | £5,000 |
| CITR | Extend VLTHW to new building | Capital programme |

Renewables

Green technologies being considered as part of the strategy include additions to the existing CHP Plant and smaller scale Solar Technologies. It may also be possible to develop a partnership with the Port Authority renewable schemes currently under consideration.

Legislation

Carbon

Far reaching Carbon Targets have been set by both the UK Government and the Scottish Executive namely 42% Carbon reductions by 2020 based on 1990 levels.

Part 4 of the Climate Change (Scotland) Act places duties on public bodies relating to climate change. These duties came into force on 1 January 2011 and apply to all 'public bodies' <http://www.scotland.gov.uk/Publications/2011/02/04093254/0>

Scotland's universities and colleges have publicly declared their intention to address the challenges of climate change and reduce their carbon footprints by signing the **Universities and Colleges Climate Commitment for Scotland (UCCCFs)** - this programme is delivered by the **EAUC** and funded by the **Scottish Funding Council**. Signatories produce and publish a 5-year **Climate Change Action Plan (CCAP)** which will be incorporated into established improvement processes, with the aim to achieve a significant reduction in emissions

We currently report our annual carbon figures to the EAUC under the Universities & Colleges Climate Commitment for Scotland, which all Universities in Scotland have signed up to. <http://www.eauc.org.uk/ucccf/home>

EPBD

The University was required as part of the EU Energy Performance of Buildings Directive to provide Energy Performance Certificates (EPC) to all "Public Buildings" over 1000m² in floor area. This has resulted in 30 buildings between the Campus and Ninewells covered under the rules to be assessed and rated for their energy performance. The certificates are on display in the main entrance to each of the buildings.

It is anticipated that phase II of the EU Energy Performance of Buildings Directive will make some of the recommendations incorporated within the existing EPC's to be mandatory thus improving the energy efficiency of the building stock.

Carbon Reduction Commitment (CRC)

The recent government spending review changed CRC into a carbon tax. The good news for the University is that they failed to qualify for the scheme with only 4700MWh of consumption through Half Hourly meters with the threshold being 6000MWh. The University therefore avoided a tax burden of around £260,000. The reason for this is that the University generates its own electricity through the Combined Heat and Power Plant (CHP).

The bad news is that the threshold will be reduced in future years with cost of Carbon also increased, the University will face the same tax bill currently being faced by all other Scottish Universities

The strategy will be to continue to comply with current Legislation and incorporate any new Legislation introduced.

4.0 Changing Behaviour

We continue to try and positively influence staff and students to change their behaviour with regard to reducing environmental impact. The Student Green Challenge Competition run in partnership with www.solarcitiesscotland.org.uk that encourages students across Dundee to take on six simple actions that will save both carbon and money, with a new challenge each month and continues to reduce and educate our students on reducing carbon emissions.

Saving energy through people is an essential element of an organisation's energy management strategy. In partnership with Nifes and funded by Carbon Trust, in 2012 we shall launch a new 3- year energy awareness campaign <http://www.nifes.co.uk/energy09.html>

5.0 Teaching and Research in Sustainable Development

With “Sustainability and the Environment” identified as one of the key themes for the University’s development (see below) increasing attention is being paid to this area of our teaching. Internal re-organisation has created a School of the Environment, linking Geography, Town and Regional Planning and Architecture. This will facilitate the linking of existing teaching in these fields and the exploration of new opportunities, e.g. this School is heavily involved in discussions on a new programme in Marine Spatial Planning. Postgraduate programmes in climate change, renewable energy and advanced sustainability of the built environment have become fully established, as well as individual modules across many programmes, e.g. an LLM module in sustainable development. Sustainability literacy is also being actively pursued as an element of the institution-wide Employability initiative.

More specifically, the University has been undertaking a project on Education for Sustainable Development in the Professional Curriculum, supported by the Higher Education Academy. This project has taken advantage of the many undergraduate programmes at Dundee that are accredited by statutory and professional bodies to explore the extent to which education for sustainable development features as part of their accreditation requirements. Further work with each discipline has then investigated how staff are including sustainability issues in their teaching, or feel unable to include them because of the overriding need to work within the constraints of accreditation, and what support might be beneficial to enhance this area of our provision. An internal symposium and network established as part of this project formed the basis of wider efforts to bring together the many staff whose work includes element of sustainability, and a conference on Education for Sustainable Development in the Professional Curriculum was held in April 2011, with contributions from academic staff at Dundee and other institutions, students and employers. The project has also formed the hub for the establishment of a new Sustainability website with a section for information on courses as well as sections on research and estates issues and with a role as the focus a network of staff and students interested in this area. <http://www.dundee.ac.uk/sustainability/>

6.0 Sustainable Investment & Procurement

The Procurement Office manages central contracting on behalf of the University. It does this through a combination of work streams. They have also developed a sustainable procurement policy http://www.dundee.ac.uk/procurement/policies/sustainable_procurement.htm

Procurement works in collaboration with Scottish Public Sector via Procurement Scotland and within the Higher and Further Education sector via APUC (Advanced Procurement for Universities and Colleges). Further, the Procurement Office works

in a regional collaboration with Tayside Public Sector and this includes, NHS Tayside, the Councils of Dundee, Angus and Perth & Kinross and University of Abertay. This has been a successful venture that has also brought APUC and Scotland Excel representatives into its meetings and there is far more collaboration regionally than previously.

When tendering for goods and services, whether through collaboration or as an individual institution, Corporate Social Responsibility is important as an award criterion. Documentation is scrutinised to ensure compliance and site visits, audits and spot checks are carried out as necessary. Regular review meetings are held throughout the length of a contract, where this is a University contract it will be dealt with by the Procurement Office, where this is a collaborative contract, the organisation leading the procurement will chair the reviews with input from individual institutions.

In addition, the Procurement Office was engaged (via the Procurement Strategy Group for Universities) in the construction of standardised documentation for public sector use when tendering, to ensure that questions concerning sustainability of supply and responsible procurement were asked in a way that was understandable.

The Procurement Office is also actively engaged in analysing its supplier base and is always seeking to work with the University's most critical suppliers and also those where the majority of spend is. In this way, the Procurement Office is able to target its resources to better manage responsible procurement.

They are currently working with our students association to affiliate with 'Workers Rights Consortium' (WRC). The WRC is an independent organisation set up by students that monitors whether university suppliers are exploiting workers and violating their human rights.

7.0 Student Community and Sustainability Aspects

Our environmental credentials are key to securing student appeal, also essential to our long term prosperity. We held our annual green week and student sustainability conference in November. The conference was in partnership with our Enterprise Gym and had many inspiring guest speakers. During the week our students could access information on how to reduce their carbon footprint (and costs) in a number of areas, which included waste, transport, energy and water , with the week finishing with our Green Sale

<http://www.dundee.ac.uk/media/dundeewebsite/estates/documents/energyenvironment/green%20week2011.pdf>

We also host a full programme of events during Fair Trade Fortnight.

<http://www.dundee.ac.uk/estates/energy&environment/whatson/>

Our People and Planet Society, hold weekly skill- sharing workshops and have set up a 'Freeshop' in Micro- computing building.

Due to student demand we have created a student allotment within our Botanic gardens . This is the responsibility of our students and they have benefitted in learning about sustainable food growing. The allotment has also had success in a local gardening competition which in 2011 saw them win 2nd place in a local garden and allotment competition. They have won a silver certificate, signed gardening book and £20 of gardening vouchers.

Last year we set up a halls recycling project. We invited students to take to designated recycling sites (drop off points) everything usable to recycle, which they would otherwise discard. There was a RAGBAG box for textiles with monies raised being returned to Student Halls Committees and various boxes for specific items--- Pots and Pans, Crockery, Cutlery, Kitchen Utensils, Electrical Items, Unopened food packets and Tins. Items were then offered to new students in September free of charge on first come first serve basis. In its 1st year this scheme has raised £1,300 for our students' halls committees. Due to the success of this we are making it an annual event.

<http://www.dundee.ac.uk/studentservices/supportworker/recycle.htm>

8.0 Summary of Other Areas of Sustainable Development Performance

8.1 Compliance

- See Legislation Section

8.2 Sustainable Design

It is now a requirement of the Scottish Funding Council that all new build projects achieve an 'Excellent' award from the Building Research Establishment Environmental Assessment (BREEAM). This is to recognise the low carbon design standards that have been incorporated within its design and operation. All refurbishment projects are required to achieve a BREEAM 'Very Good' certificate. Failure to comply may put future funding at risk. We have two Green Gown award winning buildings on campus - The Queen Mother Building and the Dalhousie Building.

8.3 Environmental Task group

The University has established an Environment Task Group which is charged with developing and implementing the University's environmental policy, monitoring, auditing and reviewing our progress against defined targets and reporting to key University decision-making forums. The task group includes senior members of the University staff as well as representatives of the student body. It has set clear targets and will report against these at regular intervals. The task group will disseminate information on environmental issues as widely as possible within the University.

8.4 Waste

The amount of waste recycled has reached a high of 50% . We have consistently met our annual recycling rate to increase recycling by 5%/annum. Despite a higher proportion of waste being recycled, the overall volume of waste has remained the same. This is partly attributable to our space rationalisation, which has resulted in many office relocations and where possible furniture is re-used but many staff have taken this as an opportunity to dispose of many unwanted and unnecessary items from their offices.

8.4 Travel and Parking

We are now on our 2nd Green Travel Plan, 2009- 2014, having met or exceeded targets from our previous 5-year travel plan.
<http://www.dundee.ac.uk/media/dundeewebsite/estates/documents/energyenvironment/travelplan.pdf> We actively promote sustainable travel and are members of www.dundeeliftshare.com where we have our own dedicated section for university staff and students. We currently have over 400 members and last year introduced new dedicated car parking spaces exclusively for liftsharers. Liftsharers can also share the cost of a parking permit between cars. Students are not allowed to park on campus and in their welcome packs and student handbooks we actively encourage students not to bring a car as it is not necessary to get about in Dundee, with main campus only a 5 minute walk from the city centre. All new students are given a city cycling map and students have set up their own cycling society.

We have increased our bike parking spaces every year since 2007 and now have 35 secure individual lockers, 149 spaces in secure covered shelters and 220 spaces available in Sheffield stands around the campus. Within our halls of residences we also provide 164 secure covered spaces. We have recently held a travel survey to update the targets set in 2008.

During freshers week we run cycle classes for students, where they can use the pool bikes for classes and trips around Dundee. Classes are also run all year as part of our staff development programme.
<http://www.dundee.ac.uk/ppd/courses/mpd/#d.en.8423>

A recent initiative that we have recently set up is a 'pool van' whereby staff from any department can borrow a van for as little as 30 minutes. This is strictly for University business use and saves departments booking vans for whole days, or in some cases departments can get rid of their van which was only being used for a couple of hours a week.
<http://www.dundee.ac.uk/estates/facilities/vehiclebookingform/#d.en.40653>

During November we took delivery of 2 electric vans for campus use, which will result in a reduction of 5 tonnes of carbon /annum.

8.5 Community Links

We are members and partners with many organisations.

Sustain Dundee

This was established as a charitable company limited by guarantee in March 2003 and registered with ENTRUST. It is a multi-agency group of private, public and voluntary organisations including Scottish Enterprise Tayside, the University of Dundee, Tayside Recyclers, Community and Voluntary Alliance, NCR and Forward Scotland as well as the Council.

In its mission statement, Sustain Dundee 'exists to encourage and support projects which promote sustainability in its widest sense, including land improvement, measures to combat pollution, preservation and improvement of historic and architecturally important buildings, sustainable resource use and biodiversity for benefit of the public.'

Dundee Fair Trade Forum

Being a fair trade campus and members of Dundee fair trade Forum, we contribute to many events across the city, including hosting Scotland's 1st fair trade conference in 2008.

Dundee City Council

We have participated in many projects with Dundee City Council (DCC), a recent project being as stakeholders in the Smarter Choices, Smarter Places group, which within Dundee was branded 'Dundee Travel Active' www.dundeetravelactive.com

Currently in talks with DCC about developing an electric charge point network across the city using 'Plugged- in places funding' which is for Community partnerships.

We have also been asked to take part in a Government led low emission charter for Dundee.

Solar Cities Scotland

Solar Cities Scotland aims to develop and promote the use of renewable energy in all its forms and offer practical advice on low carbon living for urban communities across Scotland. They are currently working with our student population, encouraging them to reduce their carbon emissions.

<http://www.solarcityscotland.org.uk/partners.aspx>

Tayside & Central Transport Partnership (TACTRAN)

TACTRAN is the statutory regional transport partnership for Angus, Dundee City, Perth & Kinross and Stirling. We are members of TACTRAN sustainable transport group and are asked to respond and advise on all transport strategy documents within the region. <http://www.tactran.gov.uk/>

9.0 Conclusions

We have continued to progress with several small scale projects that will enable the University to be better equipped to meet the costs and liabilities for energy supply. Energy usage will require a greater shift towards innovative low carbon and renewable technologies at both a large and small scale. We will continue to deliver the key aspects of raising awareness to create partnerships with end users, identifying projects through the process of environmental auditing, monitoring and targeting existing plant efficiencies and ensuring compliance with all relevant Legislation and tax issues.

APPENDIX 1 Key Performance Indicators

Table 1 highlights the trends for a number of key performance indicators from 2008/2009 to 2010/2011.

| SUSTAINABLE DEVELOPMENT ASPECT | 2008/2009 | 2009/2010 | 2010/2011 |
|---|--------------------|-------------------|-------------------|
| UTILITIES | | | |
| Energy Costs | | | |
| Electricity Costs (£) | 1,984,134 | 1,882,850 | 2,135,435 |
| Gas/Heat Costs (£) | 1,822,461 | 1,800,690 | 1,612,234 |
| Water Costs (£) | 371,042 | 375,588 | 359,568 |
| Total - all fuels (£) | £ 4,177,637 | £4,059,127 | £4,107,237 |
| Energy Consumption | | | |
| Elec (kWh) | 30,226,079 | 30,421,797 | 30,247,141 |
| Gas/Heat (kWh) | 52,417,529 | 53,966,829 | 53,431,506 |
| Total - all fuels (kWh), (raw consumption) | 82,643,608 | 84,388,626 | 83,678,647 |
| Energy Emissions (tonnes CO2) | | | |
| Electricity emissions | | 7,335 | 7,456 |
| Gas emissions | | 7,510 | 7,400 |
| CHP emissions | | 9,975 | 9,760 |
| % Green electricity | % | % | 15% |
| Total (tonnes CO2) | | 24,820 | 24,616 |
| Water and Sewerage | | | |
| Water consumption (m3) | | 184,811 | 175,387 |