Gurdon Institute

Introducing Behavioural Change Towards Energy Use

September 2012

Strategies undertaken as a University ECRP pilot department
The Gurdon Institute – a Pilot Department

The University established an Energy and Carbon Reduction Project (ECRP) Board to develop carbon reduction strategies within selected ‘pilot’ departments. The Gurdon Institute was selected as a pilot because of its high energy consumption. The role of a pilot department is to devise, implement and evaluate energy strategies. Our objective was to focus on energy management initiatives that ensured energy reduction measures by avoiding waste, but would not adversely affect the scientific research. Any successful strategies or working practices identified by the Institute may be rolled out across the wider University.

Introducing energy awareness

Following the successful installation of the real-time metering workplace tracker system (Building Sustainability Ltd) in February 2012, we launched an awareness campaign. Firstly we held a 3-day exhibition to promote energy awareness.

We produced posters which:
- introduced the workplace tracker
- suggested energy saving measures within a laboratory environment
- outlined the cost of energy
- presented the rewards of the University Incentivisation Scheme.

We asked everyone for their ideas – which were later discussed at our Environment committee and implemented where possible.

At the exhibition we launched an inter-lab energy reduction competition. We decided to take advantage of the competitive nature of the researchers and offered a £1000 grand prize – to be awarded at our annual retreat in September 2012.

Various forms of motivation (“bribery and reward”) were employed throughout the exhibition to maximise exposure and utilise the natural competitiveness of the Institute.

Coffee & cake was the reward for signing …

The Gurdon pledge

“I will endeavour to reduce my energy consumption and carbon footprint wherever practicable”
Feedback from one Lab:

“The initial reception of the energy initiative was mixed. Some members of the lab had strong feelings about particular issues, as an example, the suggestion of shutting down all computers over night rather than just putting them into sleep mode was perceived as a strong inconvenience by one member of the lab. For the most part, lab members were indifferent, as long as measures were not perceived to interfere with their work. Measures to be implemented were based on common sense (e.g. last person leaving should turn the light off) and suggestions brought up in energy rep meetings (e.g. timers for equipment). They were announced and discussed during lab meetings with suggestions of what to do made by the lab manager and energy rep.

Execution of energy-saving behaviour was dependent on determined individuals who took it upon themselves to turn off equipment at the end of the day. Newly arrived lab members were briefed about dos and don’ts in their introduction by the lab manager and reminders were made during lab meetings. We also put up some reminder signs in the lab.

Energy saving was largely achieved by turning off unused equipment (specifically over night).

As a consequence of the energy-saving measures, lab members were more vigilant in booking equipment, such as heat-blocks, because they knew it would be turned off if it hadn’t been booked. This in turn slightly facilitated work in the lab as it made experiments easier to coordinate.”

Behavioural change – the beginning

Enthusiasm v Resistance

The exhibition was a useful mechanism to gauge the mood for change within the Institute.

“Everything we did followed on from the exhibition in the tea room when people pledged to save electricity. Everyone from the top down accepts that it’s something we have to do. I suspect that the reason we were one of the biggest savers was because we hadn’t previously made any effort.”

Energy champions chatted with Institute members during the exhibition and experienced supportive comments but also less encouraging comments. Some Institute members perceived energy saving as the need to reduce experimental processes and were not prepared to consider changing.

We addressed these concerns by stressing that we wanted people to consider energy wastage and not to put research at risk.

We encouraged them to think about their own energy use – with the mantra ‘what can I do’: to plan experiments with energy in mind; and to be inspirational and make suggestions.

As 76% of Institute staff signed the Gurdon energy pledge, we considered this to be an encouraging number of people willing to try.

“I decided that if people were happy to make the pledge in order to get free cake then they should do something. We discussed what we should switch off at a lab meeting…it has lead to a couple of tantrums, but generally people have accepted it”

We have concluded that it is crucial to gather a core of motivated people - and they were easy to identify at the exhibition. The groups which had enthusiastic and energetic people driving energy saving initiatives made the best energy reductions.

“people need someone in the lab that is setting an example, otherwise, they still tend to forget the good habits.”

Behavioural change – the next phase

We see our future challenges to be:

- Sustaining initial momentum
- Recruiting the next (and on-going) generation of energy enthusiasts
- Embedding energy saving into our culture
The League Table

BSL developed a league table for the workplace tracker which shows the energy saving efforts of all individual labs. We displayed this in the tea room for all to see.

The competition and league table proved to be very compelling tools.

Individual laboratories have access to the workplace tracker and can view their energy saving efforts displayed in near actual real time, and many labs were checking periodically throughout the day to identify energy spikes and their source.

"The prize money on offer and the competitive element definitely helped things along. The ability to monitor our savings was also key. We could see that the measures we took initially made such a difference that we as a lab were motivated to maintain the change."

BSL were so impressed by the first month's results that they offered an interim prize to the winning lab – see above.

This was a much appreciated incentive, so the University agreed to fund further interim prizes.

The grand prize of £1000 was awarded at the Institute Annual Retreat.
What did we do?

Feedback from the labs:

“Our lab strategy was very simple. We just turned things off when they were not in use. We went around the lab and looked at all the equipment that we had permanently on, this was mainly heat blocks, water baths, a few centrifuges and the computers.”

“I think the general feeling is that they are a bit more aware of the amount of energy is daily wasted. Most of the lab has agreed that switching off lights when not needed and switching off equipment overnight have been key to this improvement. They also appreciate the positive effect of using timers for the waterbath in the tissue culture room.”

“For the water baths and heat blocks which have to spend a bit of time coming up to temperature we turned them off and asked people to turn them on again when they were in use.”

“We also try to shut down our TC hoods when no longer needed for the day. I taped 'switch off when not needed' labels on equipment and if I'm the last in I check things are switched off.”

Other ideas from the labs:

Energy wastage on the agenda at lab meetings
Energy /environmental awareness at lab induction for new members
Lots of signage in the labs
Measuring equipment energy use

Other initiatives:

Yellow or red cards were put on equipment to raise energy awareness – labs were encouraged when they had lots of yellow cards.

‘Happy’ and ‘Sad’ lighting stickers were stuck on doors as a fun way to draw attention to unnecessary lights to Gurdon members. – this had a mixed reaction, some found it patronising whereas others liked gathering happy stickers.

A Gurdon Facebook was established to aid communication and share ideas with the Gurdon community (both current & past members). This wasn’t a very useful forum - we will review our web presence.

To inform end users we monitored the power usage of Mac desktops and laptops and found that sleep mode, after 30 minutes of inactivity, saved between 30-40% consumption. A complete power off over night (17:00 – 09:00) of a desktop computer saved up to 70% energy.

“The general feeling is good and people seem happy, but I am sure we can keep it up - and better :-)”
Behaviour change
Our success so far is a result of cutting out the waste and motivating people to do so.

We have identified the following key components that helped make our campaign a success:

- Motivate – competition, prizes, cake
- Inform – tracker, ipad, lab meetings, induction
- Identify committed individuals and support them
- Reward – incentivisation refund, party

Sustaining the change
To acknowledge everyone’s success at energy reduction we applied to the Green Organisation for a Green Apple Award – and we were successful!

This has re-energised enthusiasm and we are planning an apple themed party at the Institute soon after the award ceremony.

The on-going ventilation audit/feasibility study will soon have an ‘end user’ engagement aspect to it. We anticipate that members of the Institute will take a great interest in this for two reasons:

1. Potential energy savings
2. Prospect of smoothing out hot spots and draughts in lab and office areas

We consider it an achievement to get energy awareness on the agenda at most of the lab/group meetings, and hope this will gradually embed energy issues into the Institute culture.

We will encourage lab managers to include energy and environmental awareness at induction for all new members so that good practice continues.

The Environmental Committee is our main conduit for energy and environmental initiatives, we need this committee to develop into a vibrant and forceful voice within the Institute.

We must continue to motivate and inspire individuals – currently they are key to the success of behavioural change.

We presented a poster at the Institute retreat to remind everyone of their achievements and progress so far. (attached)
YOU HAVE ACHIEVED:

An overall reduction of approx 19% energy usage in Laboratory areas since March 2012
This meets and exceeds our agreed target of 10% reduction

A Green Apple award from THE GREEN ORGANISATION for…

…… ‘Changing behaviour towards energy use in research laboratories’

The award will be presented to representatives from the Institute at the House of Commons on 12 November 2012

Saving energy is important and financially attractive, but it is vital that research and productivity do not suffer. Therefore, the behaviour change focused on stopping energy wastage rather than stopping usage.

Savings have been made by:
- Switching equipment off whilst not in use
- Adopting a culture of ‘why is this equipment ON’ rather than ‘why is this equipment OFF’
- Timers on some equipment eg. water baths, to warm up for the morning and off at night
- Formulating a ‘last out – power down’ checklist
- Identifying energy hungry equipment (ie. autoclaves) and adopting efficient patterns of use
- Remembering to switch lights off when a room is unoccupied
- Just thinking a bit more about where wastage was occurring

Using energy below the target set by the University has resulted in a substantial refund

STOP PRESS

GEORGE - from energy consultancy BSL - will be visiting the GURDON every Thursday. He will visit all labs/groups to assist you with energy saving ideas. We have scheduled a monthly meeting for all of you for the next 5 months. So keep the ideas flowing
WHAT ELSE IS GOING ON?

LIGHTING

We conducted lighting trials in the large level 3 equipment room (323). Occupancy sensors were installed which turned lights off after 15 minutes if no movement was detected. Data was collected for 1 month with sensors and 1 month without.

Lighting trials continue in Ahringer Lab and Piddini Lab. Both occupancy sensors and daylight harvesting controls have been installed.

VENTILATION

A specialist ventilation and energy consultancy company have been appointed to conduct
- an audit of our ventilation plant
- a feasibility study for improvement and energy savings
- recommendations for action

‘The Cube’ started the project 2 September and we expect them to take 2-3 months to complete their survey and report.

Cooling has a seasonal effect……..

Total energy used for this period:
- 291,517.6 kWh
- equal to 157,711 kg CO2
- or £ 26,236.6

ELECTRICITY = MONEY

UPDATE

INCENTIVISATION SCHEME

All Departments are set an annual energy usage target, if we use less than the target – we get a refund

GURDON INSTITUTE ELECTRICITY USAGE:

2011 Target 5,076,279 kWh
2011 Actual usage 4,922,794 kWh
3.02% under target resulting in a refund of £10,613.50

2012 Target
2012 Actual usage forecast
6.23% under target

Reducing energy use
Reduces energy cost
and
potential refund in 2012 of approx £22,000

HOW SHALL WE SPEND THE MONEY (responsibly) - to benefit All

Re-Furnish and Revamp the Tea room
Outdoor furniture
Standardised recycling bins
Special Thanks to

George Bartley (BSL) for donating an interim competition prize and providing much enthusiasm and support to the Institute.

The enthusiastic staff members who made the initial project so successful.