

by Lois Betts and Laura Bellamy



# Energy Management Team Interview

## What does energy management mean at Bournemouth University?

Energy management means that Bournemouth University (BU) can measure, report and reduce its energy consumption to support its sustainability work to reduce its impact on the environment. Sustainability is led by our Sustainability Committee reporting into the University's Leadership Team, and vital data comes from our energy management approach to enable both operational management of consumption and strategic investment in improvements to reduce our consumption and decarbonise the buildings. Our energy management system is combined with our environmental management system and is certified to both ISO14001 and ISO50001.

Our driving strategy is our Climate and Ecological Crisis Action Plan (CECAP), which includes a target to achieve net zero greenhouse gas emissions across all our activities by 2030/31. As we want to reduce our emissions as rapidly as possible, this is underpinned by Science Based Targets to achieve set reductions across all three scopes of emissions each year, eventually achieving a 50% reduction in actual emissions by 2030/31, compared to

our baseline year. Energy management is vital in achieving the scope 1 and 2 targets.

We have a nine-person Sustainability Team to support this, with four of us in the team working directly with Energy Management; the Sustainability Manager, Energy Manager, Energy Officer and our Sustainability and Energy Analyst. However, working with and engaging people at all levels of our organisation is vital, particularly our leadership team, Facilities Management, IT, Capital Development and building end users.

## Can you explain the return-on-investment that the Energy Management team brings to Bournemouth University?

BU normally spends around £2million on energy but following the energy crisis we expect this to be around £4.2million for 2022/23 academic

year due to unit price rises. In the last year, we have made operational changes through ISO50001 monitoring and energy crisis work which have reduced consumption by around 3% (c.500MWh) and implemented energy projects saving a further 1.5% this year (c.257MWh from new solar PV, transformer upgrades, UPS upgrades and LED lighting upgrades).

As a result of these operational changes and of investment in renewables on campus since 2012 we make annual energy cost savings of around £198,000 per year. This includes a fossil fuel saving of 560MWh per year by generating our own electricity on site through solar PV, 350MWh from generating our own heat from biomass and a net saving of 563MWh from generating our own renewable heat and cooling using our ground source heat pumps.

Against our 2018/19 baseline, our carbon savings achieved so far are a

10% reduction in scope 1 emissions, and a 26% reduction in scope 2 and 64% reduction in scope 3 emissions. Overall, this represents a 36% reduction.

## How are responsibilities shared in the team?

We work as an energy team to deliver the



university's approach to energy management. Our Sustainability and Energy Analyst provides the data foundation from the meter points and billing data to understand the consumption through overseeing our Automatic Meter Reading (AMR) system to allow us to see half hourly consumption data from around 500-meter points across our estate. Working closely with the Energy Officer and the maintenance team, we use our Building Management System (BMS) to implement building HVAC controls to



minimise energy consumption, whilst retaining comfort and ventilation. We use a system of time clocks and controls to align with building opening times and planned occupancy.

The Energy Officer reports to the Energy Manager who has vast knowledge of the building mechanical operations and uses this to identify both operational control tweaks for lower energy consumption, and larger projects to implement energy efficiency improvements. Recent energy efficiency projects include replacing our HV transformers, replacing relevant lighting with LED low energy lighting and replacing UPS in comms rooms with

more efficient units (see project details on the right). Our Energy Manager works with our capital development team and Sustainability Manager to identify and implement larger scale projects, including on site renewable generation from solar PV, solar thermal hot water projects and ground source heat pumps. This involves using data from our Sustainability and Energy Analyst to build a case for investment.

Our Sustainability Manager oversees our Climate and Ecological Crisis Action Plan (CECAP), which includes our plan to achieve net zero greenhouse gas emissions by 2030-31. This includes bringing together decarbonisation projects to make continual progress towards our goal. Last year, our Sustainability Manager has led the development of our campus Heat Decarbonisation

Plan (HDP). This was funded through the Low Carbon Skills Fund, from which we secured nearly £100k funding to carry out technical surveys and produce the plan. The HDP will guide our approach to decarbonising heating by moving away from fossil fuel gas to lower carbon technologies.

**How is information regarding energy management and the work that the team undertakes communicated to various stakeholders at the University?**

One of the key stakeholders who have a large influence over how much energy the university consumes is the IT department. In fact, data centres

**PROJECTS**

**(2021-2022 academic year)**

**Replacement of high voltage transformers with ultra-low loss transformers**

Following a review of the services infrastructure, it was identified that the current Tier 1 high voltage transformers were circa 32-47 years old. They had significant energy losses which accounted for 7% of the power consumed on Talbot Campus. We replaced three transformers this year with new Tier 3 high efficiency, ultra-low loss transformers which also have a new Midel biodegradable oil.

Tier 3 level transformers go beyond the minimum standard of Tier 2 required under regulations. The new units also reduce the risk of failure which would have a significant impact on operations should the existing ones failed. The reductions in energy and carbon are being measured over the coming years and could be as much as 26 tCO<sub>2</sub>e per year.

**Continued to replace lighting with LED low energy lighting**

It is now a standard procedure to replace any relevant lighting with LED low energy lighting. Over the last year, we installed 60 LED light fittings in Dorset House and 900 in Weymouth House. This is estimated to save around 15 tCO<sub>2</sub>e per year and approximately 35,000kWh.

**UPS upgrades**

Working with our IT Team we have replaced the Uninterrupted Power Supply (UPS) systems within all the IT comms rooms with new more efficient units. These have been sized to meet the needs of each area ensuring that these are operating at the most optimum efficiency. As a result, the efficiency of these systems has increased from 87% to 98% creating estimated reductions of 100,000 kWh and 26 tCO<sub>2</sub>e per year.

consume around 10% of campus electricity. Our Sustainability Manager is the chair of our Sustainable IT group which enables collaboration on energy saving projects. For example, in 22/23 IT are rolling out a project to reduce energy consumption in data centres reducing the amount of equipment needed and replacing it with lower consuming devices. This will contribute to our goal of delivering a year-on-year energy consumption reduction of 15% for data centres and comms rooms.

For staff and students on the ground, we use a variety of communications routes to share progress. Our website and social media are regularly updated with achievements and opportunities for students and this includes a [dashboard](#) to show live energy generation data from the majority of our solar PVs. Our team is represented at staff induction, student fairs and open days. In the last year, we have encouraged sustainable and energy saving behaviour via the Green Rewards staff engagement platform, events such as our Climate Action Month and a student volunteering programme (Climate Action Student Team).

**Does the University offer any energy or sustainability training to the Sustainability Team or wider staff?**

The Sustainability Team's development is encouraged by the university, for example our Sustainability Manager

Lois has completed her MSc in Green Economy at BU with a distinction and our Energy Officer Laura is currently studying the Energy Institute's level 2 Energy Management course, funded by BU. We regularly attend online seminars and training to support our development including through the Energy Managers Association, the EAUC, IEMA and AUDE. For staff across BU, we offer Carbon Literacy training and have trained more than 80 staff to be carbon literate and 49 students so far. This includes a section about what BU are doing to reduce our carbon footprint and we have found the Carbon Literacy

benchmarking and awards. In 2022, the wider BU Sustainability Team were awarded the BU Vice Chancellors Award for Enriching Society. This recognised the impact that our sustainability work has across BU and included staff across BU who contribute through our Sustainability Committee, including academics, IT, estates, marketing and our students' union. Our energy and sustainability approach was also recognised through The Times Higher Impact Awards in 2021 where we were awarded the [DataPoints Merit Award](#). This was in recognition of our own action in areas of energy efficiency and



FROM LEFT: Elena Cantarello (Principle Academic in Life and Environmental Sciences), Zulfiqar Khan (Professor of Design Engineering and Computing), Emma Davies (Student Opportunities Manager, SUBU), Eleanor Wills, (Sustainability Support Officer), Toluwa Atilade (Students Union, VP Welfare and Communities), John Vinney (Vice Chancellor), Dave Archer (Energy Manager) and Lois Betts (Sustainability Manager)

Project a great way to reach staff and engage them in coming up with their own ways to reduce their own and BU's carbon footprint.

**Are the team's achievements celebrated by the University?**

The team's achievements are recognised both internally and externally through

sustainability as well as environmental education and net zero carbon commitments. Through this, BU were singled out by the judges in recognition of our data and evidence submitted as going the extra mile on the issue.

**What are the plans for this year?**

We have committed to achieving net

zero greenhouse gas emissions by 2030-31 in our Climate and Ecological Crisis Action Plan. This includes specific actions to use technology to reduce our emissions in our existing buildings and in capital development. For the coming year, we are developing our Heat Decarbonisation Plan which will guide our investment in low carbon heating and will make a significant improvement to our scope 1 carbon emissions. We have already identified projects for three of our buildings for installation of air source heat pumps on campus, which could save around 1.2GW of gas (while using 400MWh of electricity) annually. Further solar PV installations will increase our onsite renewable generation by around 150MWh next year. Together these projects should save us 162tCO<sub>2</sub>e in the first year of operation. Our Heat Decarbonisation Plan will identify further projects to contribute to achieving net zero by 2030-31.

We plan to continue our energy efficiency work both operationally through close control of our BMS and through projects such as replacing the remaining lighting at Talbot Campus

with LED lighting fittings. A challenge for us going forward is how we balance our energy reduction work with increased electricity usage from on site electric vehicle charging as we add more charging points on site this year and in our transition away from gas to electricity. To find out more about the BU sustainability and energy work visit <https://www.bournemouth.ac.uk/about/sustainability>.

**Authors' profiles:**

Lois Betts leads the sustainability team at Bournemouth University where she oversees the delivery of BU's commitment to net zero GHG emissions by 2030/31. Innovation is a strong theme for Lois, and in 2022 she created the Eco Entrepreneur Fund which seeks to support students and graduates to launch or grow their eco business ideas.

Laura Bellamy is the Energy Officer at Bournemouth University, having previously been the Sustainability and Energy Analyst. Laura implemented the monitoring and measuring of energy consumption at BU as part of the ISO50001 energy management system and enjoys using data to find ways to save energy and carbon.

**PROJECTS**  
(2021-2022 academic year)

**Passive cooling trial for comms room**

Working with IT Services, BU are trialling a passive cooling system in the comms room of Weymouth House. The system is designed to utilise outside air to cool the space minimising the need for cooling via air conditioning. Initial savings from portable metering show that the reduction in energy was 95%. Additional benefits beyond energy reductions are the reduced maintenance requirements related to air conditioning. Monitoring for this trial is continuing and further opportunities for more comms rooms are being investigated. These will look at options to use outside air to cool or to recover this heat and reuse it within the building.

**New solar PV array for Jurassic House**

Jurassic House is home to our data centre on Talbot Campus. In December 2021, it became the 7th building of ours to have solar panels installed. The new system is expected to save over 5 tonnes of CO<sub>2</sub>e each year, equivalent to two return flights to New York from the UK. You can read more about this [here](#).

