

Date: Thursday 22nd April 2021
Time: 10:00–12:00
Resources: [Available here](#)

MINUTES:

Energy & Water Management Topic Support Network Meeting

Attendees:

Andy	Anderson	APUC
Chris	Larkins	Heriot-Watt University
Claire	McCulloch	SRUC (Scotland's Rural College)
Dave	Gorman	University of Edinburgh
David	Beards	Scottish Funding Council
David	Charles	University of Strathclyde
David	Jack	University of Edinburgh
Dean	Drobot	University of Edinburgh
Derek	Mitchell	University of Dundee
Derek	Cowie	Inverness College UHI
Fergal	McCauley	City of Glasgow College
Gilbert	Valentine	University of Stirling
Gillian	Brown	University of Glasgow
Jamie	Pearson	Edinburgh Napier University
Jane	Boyle	University of Aberdeen
Joanna	Chamberlain	University of Cambridge
Johannes	Schamp	University of Stirling
John	Thorne	Glasgow School of Art
John	Walker	Queen Margaret University
Kenneth	Blake	University of the West of Scotland
Kenny	Allen	Glasgow Caledonian University
Martin	Webb	Edinburgh College
Paulo	Cruz	Glasgow Caledonian University
Robert	MacGregor	University of Edinburgh
Samuel	Griggs	The Open University
Sarah	Woodward	University of Southampton
Suzanne	Moody	Liverpool Hope University
Thomas	Harley	University of Edinburgh

Apologies:

Keith	Thomason	University of St Andrews
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	SUMMARY OF DISCUSSIONS	ACTIONS
1	<p>Welcome and Introductions <i>Dean Drobot, TSN Convener, University of Edinburgh</i></p> <p>Everyone was welcomed to the event.</p>	
2	<p>Energy Net Zero Master Planning Strategies from around the Sector</p> <p><u>Decarbonising a University using a Science Based Target approach</u> <i>Joanna Chamberlain, Head of Sustainability, University of Cambridge</i></p> <p>A Science Based Target (SBT) is developed using models that calculate the level of carbon reduction a particular organisation needs to achieve in order to do its ‘fair share’ in reducing global emissions. Inline with the Paris Agreement.</p> <p>Requires a 75% reduction of Scope 1 & 2 emissions by 2030.</p> <p><u>Some key initiatives</u></p> <ul style="list-style-type: none"> • Power Purchase Agreement for zero carbon electricity – 20% • Large scale onsite renewables • Removing gas from the estate • Capital programme – incorporating carbon into decision making • Energy efficiency retrofit projects • Electricity Devolution Programme • Electrification of the fleet • Independent assurance of sustainability data <p><u>Reshaping the Estate for sustainability</u></p> <p>Reducing the size of the estate by 1% every year until 2050 will deliver the same reduction as:</p> <ul style="list-style-type: none"> • Generating 50% of all electricity from onsite renewables • Purchasing remaining 50% of electricity from certified renewable sources (Power Purchase Agreements) • Shifting 50% of heat demand from gas to electricity • Achieving a 30% improvement in the thermal efficiency of buildings <p><u>Next Steps</u></p> <ul style="list-style-type: none"> • Measuring our fugitive emissions and including in our SBT • Setting a baseline for scope 3 emissions – improving data capture • Setting a SBT for scope 3 emissions 	

- Completing work to develop SBTs for the Collegiate University
- Developing an internal offsetting scheme for some aspects of scope 3 emissions

Net Zero Energy (University of St Andrews)

Dean Drobot, Head of Energy & Utilities Management, University of Edinburgh

Ambitious target of becoming net zero for environmental impacts, this includes all our carbon emissions (direct and indirect) to achieve net zero 2035. An Environmental Sustainability Board will steer this transition, part of which the E3 group (Estate, Energy and Environment) will masterplan our approach to Energy.

Biomass Energy Centre

- Operational since January 2017
- Gas savings represent over 5,000 tCO₂e per annum
- 23km of pipework connecting 45 of our plant rooms
- At its heart is a 6MW boiler which burns woodchip, sourced from SFC certified forests within Scotland (<50 miles of the plant)
- Situated on our Eden Campus site which is currently being developed to include energy innovation centres

Clean Energy Generation

- 1.2MW solar farm currently under construction with wider deployment of rooftop solar planned
- Planning permission resubmitted this year for Kenly Windfarm which combined with solar plans would meet the University's forecast electricity demand
- Radar mitigation issues from nearby military base remain a risk to the wind project

Smart Campus

- Commenced with £4.5m investment including 'Old Town' district heating network (CHP)
- Completed in combination with smart plant room upgrades (sensors, pumps, fans & valves)
- Trial installations currently underway on window & fabric upgrade in historic buildings
- Aim is to achieve low-embodied and life-cycle carbon building upgrade standard

Forecast Energy Flows

- Currently energy flows are very linear
- As we move towards 2035, our strategy is to shift away from natural gas

- Biomass usage will increase with hydrogen, thermal stores and V2G utilised
- Any shortfall in deployment will be required to be met by offsets

Low Carbon Heat Networks

Dean Drobot, Head of Energy & Utilities Management, University of Edinburgh

University of Edinburgh has committed to zero carbon by 2040 – baseline includes heat, power, student travel and staff travel.

Energy Master Plan

- **Right Size** - Evaluate space use and efficiency and enable shared services and flexible use of space
- **Deep Energy Efficiency** - Minimise heat and power demands, accelerate efficiency investments, plan for effective building fabric upgrades, continuous commissioning / IoT analytics
- **Exemplary Construction Standards** - Step change in construction quality and standards, 'Passive' new build and refurbishment, Next generation operating temperatures
- **Low Carbon Heat Networks** - Reduce DHN operating temperatures to <70°C, Future proof our buildings for low carbon heat, Plan for heat pump led heating strategies, Plan for regional energy network integration
- **Smart Energy Research Hubs** - Teaching, learning and research, 'Living Lab' for technology and digital tools.

Where we are on heat

- Appraisal of (likely) future heat supply pathways.
- Appraisal of 'light' and 'deep' building retrofit interventions.
- Comparative techno economic modelling:
- BAU/light/deep building retrofit pathways
- Heat pump / hydrogen / third party heat networks
- Engagement with regional partners.

What have we learned

- No 'silver bullet' - each campus has unique risks/opportunities.
- Low carbon heat is expensive – CAPEX and OPEX.
- Energy efficiency is crucial to mitigating OPEX
- Efficiency spend = 50% of CAPEX to 2040
- Increase spend from 5% to ~15% utility budget p.a.
- Our current strategic 'pathways' have 30% residual emissions.
- Our (extensive) heat networks are a key asset.

Our strategy

- Accelerated energy efficiency investments – heat focus.
- Maximise the lifespan and revenue from CHP assets
- Optimize heat network performance
- Lower existing heat network operating temperatures
- Heat pumps + regional heat network integration
- Minimised offsetting for residual emissions

Offsetting & Sequestration

Dave Gorman, Director of Social Responsibility and Sustainability, University of Edinburgh

Offsetting has a bad reputation among some colleagues – people are right to be sceptical but it still has a part to play. Very important to reduce emissions as far as possible first and only use offsets for the residual.

It's very complex – look at the experts but also need to develop principles for your own institutions – COP26 Universities Briefing paper is useful starting point.

Need to ensure offsets are considered in a wider sense and have environmental integrity – thinking about nature and social issues.

Longevity is important – the offset needs to last and you need mechanisms that assure longevity.

Two key types of offset reductions and removals

Additionality is a key principle - the offset has to be new. University of Edinburgh plan to do this themselves to ensure additionality.

Some universities are planning to offset Scope 1 & 2 but at University of Edinburgh we will only offset Scope 3 emissions.

Price is also important. £2 per tonne is far too cheap. £15-£30 is much more credible.

Look for wider benefits – can this be used for teaching or research?

Questions

How do you not disadvantage departments that are in historic buildings and have less opportunities for savings?

	<p>Cambridge plan to recognise different types of buildings and will set base lines on historic consumption. They hope to provide incentives for responsible electricity consumption locally and departments will be allowed to keep savings.</p> <p>£200 million above business as usual is very high – how did the Executive react to this cost?</p> <p>Cambridge has £200million per year utility spend and is committed to delivering SBT. They are looking at various sources of funding like government funding for heat networks.</p> <p>University of Aberdeen is experiencing push back from energy intensive departments and it is quite political.</p> <p>Cambridge was in pilot year 2 when COVID hit so hasn't fully rolled out yet – it is about being pragmatic and having committee approval. Historic baselines help – shared buildings are dealt with on a floor area basis – energy hungry departments tend to have their own buildings. Also previously charged departments a carbon levy per kWh in relation to the CRC allowance.</p>	
<p>3</p>	<p>Scottish Funding Council Financial Support <i>David Beards, Senior Policy Officer – Capital & Climate Change, SFC</i></p> <p><u>FY 2021-22 Financial Transactions Programme</u></p> <p>£34 million budget exclusively targeted at climate emergency / reducing carbon emissions</p> <ul style="list-style-type: none"> • Expression of interest invited by summer 2021 • Full applications summer 2021 onwards • Progress university climate change plans • Support collaboration where feasible • What kinds of projects might be supported? • What key programme features would be helpful? <p><u>College funding</u></p> <p>Programme for Government 2020. £95 million funding for public building decarbonisation over next five years</p> <p>Draft Heat in Buildings Strategy consultation</p> <p>Project / business case development:</p> <ul style="list-style-type: none"> • Update project registers and CMPs • 'Early wins' and longer term planning 	

	<ul style="list-style-type: none"> Evidence base for spending reviews <p><u>Discussion</u></p> <p>Will the £34 million be in the form of low interest loans? Yes.</p> <p>Can you share a link to specific criteria? Not finalised yet but hoping for input into this.</p> <p>Is this purely CAPEX fund? Yes.</p> <p>Need to make sure funding not purely allocated on carbon savings – need to acknowledge biodiversity crisis and how adaptation is factored in.</p> <p>For colleges what support can we get with developing projects? NDEE has support to develop business cases.</p> <p>Social issues are more of an issue could we link in apprenticeships or learning opportunities?</p> <p>Yes these sound like elements of an excellent project but will obviously take more time to plan.</p> <p>Is there a target cost per tCO₂ saved?</p> <p>Not from the SFC but sometimes SALIX use them to rank projects. £200 per tonne of CO₂ saved.</p> <p>Some exemplar practice at Strathclyde with the District Heating project and apprenticeship/engagement.</p> <p>Ground Source Heat Pumps are more expensive installation but also higher running costs so can't pay back loans therefore grants would be more appropriate.</p>	
4	<p>Energy Net Zero Master Planning Sector Survey & Discussion <i>Dean Drobot, TSN Convener, University of Edinburgh</i></p> <p>Results of the energy net zero master planning survey available here.</p>	
5	<p>EAUC Update <i>Jill Burnett, Carbon & Estates Project Officer, EAUC-Scotland</i></p> <ul style="list-style-type: none"> Waste Management TSN on the 4th May - Focusing on tackling lab plastics 	

	<ul style="list-style-type: none"> • Sustainable Construction TSN 12th May – Passivhaus Trust will present on their Passivhaus and Getting to Net Zero work and an update on the Net Zero Public Sector Buildings Standard from Jamie Goth at the Scottish Futures Trust. <p>Feel free to pass on details of these to any interested colleagues and I can help sign them up.</p>	
6	AOCB	
7	<p>Next meeting</p> <p>Please e-mail any suggestions for topics or speakers at our next meeting to jburnett@eauc.org.uk.</p>	
8	Thanks and close	