Energy Action Plan

2024/25 to 2027/28

Version 1.0

Date January 2025

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Introduction - Energy and Water Action Plan

This Energy and Water Action Plan has been developed in line with the Carbon Management Plan to provide the detail on how the University plans to reduce energy and water consumption, improve efficiency, and reduce carbon emissions going forwards.

The Carbon Management Plan includes a target to reduce scope 1 and scope 2 carbon emissions from a baseline year of 2018/19 to net zero carbon by 2040.

This is a challenging target and there are a number of ways the University is implementing measures to achieve this. The plan therefore covers a wide range of areas and activities, and is divided in to a number of sections, Planned Energy Saving/Carbon Reduction Projects, Monitoring and Targeting, Energy and Water Awareness Raising, New Builds and Refurbishments, and Reporting.

The Energy measures required for the University to achieve net zero can be split in to 3 main areas:

1) Energy Saving Measures

   The University is continuing to implement Energy Saving Measures as a first step to reducing carbon emissions arising from energy use. This aligns with the fact that the greenest unit of energy is the one that you do not use.
   The University is developing an Energy Partnership with Siemens that will allow more Energy Saving Measures to be funded. Part of the first phase of the works to be covered by the Partnership will be lighting, and other energy saving measures have been identified for further investigation.

   Energy Awareness – This is an energy saving measure which helps maintain energy efficiency. Part of this is communication with information being provided on what the University is doing to improve energy efficiency and reduce carbon emissions. This has included information on the need to reduce heating temperatures.

2) Renewable Energy Supplies

   There are a range of options to increase the proportion of electricity provided by renewable sources. Where the University is developing an Energy Partnership with Siemens part of the first phase of the works is to increase the amount of Roof Top solar PV installed on site
   In addition to this the Partnership is investigating the option of installing a large ground based Solar PV array on one of the plots of land owned by the University.
   A possible further option for the supply of renewable energy would be for the University to buy renewable energy through a Power Purchase Agreement (PPA) subject to availability.

3) Heat Decarbonisation

   The University currently produces heating, and hot water primarily by using natural gas fired boilers. The aim is to reduce the use of natural gas on site. Currently there may be 2 main options to replace natural gas, One is primarily by using heat pumps, and the other is by potentially using hydrogen as a fuel. Both of these options need to be powered/produced by renewable electricity to be green.
   The University has had a Heat Decarbonisation Plan produced by Siemens which provides details on a range of options to decarbonise heat for it's operations. The plan is high level, and outlines how the University can progress towards achieving this aim.
   The measures for Heat Decarbonisation are shown later in the Plan after some of the Energy Saving Measures, and the measures to increase renewable energy supplies. That said as the technology for decarbonising heat is being developed and becoming more available there have been some installations of this technology in new builds e.g. Pears. Further there will

be some local installations of this technology at the University in refurbishment projects, for example the new air-handling unit due to go on the library roof.
In addition to this the University has produced a document; Heat Decarbonization Plan – University of Kent – Next Steps, which details how the main District Heating system could be decarbonised in a series of stages (see Appendix 2).

Energy Management Action Plan – Measures

2024/25 - Energy

Location	Description	Project Type	Program	Budget Cost, £	Energy Cost Saving £ p.a.	Energy Saving, kWh/year	Saving Carbon, tonnes	Status/Notes
Library	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	Oct24 - May25	TBC	152,000	493,349	102	Project is part of the Energy Partnership University of Kent/Siemens
Marlow	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	Mar25 - May25	Inc in Library Figures above	Inc in Library Figures above	Inc in Library Figures above	Inc in Library Figures above	Project is part of the Energy Partnership University of Kent/Siemens
Jarman	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	Mar25 – May25	Inc in Library Figures above	Inc in Library Figures above	Inc in Library Figures above	Inc in Library Figures above	Project is part of the Energy Partnership University of Kent/Siemens
Sports Centre	Installation of new Solar PV array on the roof.	Renewables Project	Mar25 – May25	TBC	209,000	674,522	140	Project is part of the Energy Partnership University of Kent/Siemens
Library	Expansion of the Solar PV array on the roof.	Renewables Project	Mar25 – May25	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Project is part of the Energy Partnership University of Kent/Siemens
Kennedy	Installation of new Solar PV array on the roofs.	Renewables Project	Mar25 – Apr25	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Project is part of the Energy Partnership University of Kent/Siemens

Location	Description	Project Type	Program	Budget Cost, £	Energy Cost Saving £ p.a.	Energy Saving, kWh/year	Saving Carbon, tonnes	Status/Notes
Jarman	Installation of new Solar PV array on the roofs.	Renewables Project	Mar25 – Apr25	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Project is part of the Energy Partnership University of Kent/Siemens Dates dependant on structural survey results
Registry	Installation of new Solar PV array on the roofs.	Renewables Project	May25 – Jun25	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Project is part of the Energy Partnership University of Kent/Siemens Dates dependant on structural survey results
Colyer Fergusson	Installation of new Solar PV array on the roofs.	Renewables Project	May25 – Jun25	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Project is part of the Energy Partnership University of Kent/Siemens Dates dependant on structural survey results
Cornwallis	Installation of new Solar PV array on the roofs.	Renewables Project	May25 – Jul25	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Inc in Sports Centre Figures above	Project is part of the Energy Partnership University of Kent/Siemens Dates dependant on structural survey results
Marlow	Fitting VSDs to the North and South supply fans	Energy Saving Project	Sep24		12,700	59,000	12	Complete
Rutherford College	Removal of chiller from storage room	Energy Saving Project	Nov24		1,400	6,500	1	Complete

Energy and Water Management Action Plan – Measures

2025/26 - Energy

Location	Description	Project Type	Program	Budget Cost, £	Energy Saving £ p.a.	Saving, kWh/year	Saving Scope 1 + 2 Carbon, tonnes	Status/Notes
Sports Centre	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	2025-26	TBC	TBC	TBC	TBC	Project is planned to be part of the Energy Partnership University of Kent/Siemens
Cornwallis	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	2025-26	TBC	TBC	TBC	TBC	Project is planned to be part of the Energy Partnership University of Kent/Siemens
Keynes College	Replacement of Fluorescent Lighting with LED Lighting. Additionally new automatic lighting controls are to be installed as part of these works.	Energy Saving Project	2025-26	TBC	TBC	TBC	TBC	Project is planned to be part of the Energy Partnership University of Kent/Siemens
Eliot College and Rutherford College	Closing Student Accommodation rooms	Building Change of Use	Summer 2025					
Cornwallis Octagon	BMS - Software and Sensors - Honeywell							
Buildings fitted with Siemens AMR	Electric - Trace Electric Loads							

2026/27 - Energy

Location	Description	Project Type	Program	Budget Cost, £	Saving £ p.a.	Saving, kWh/year	Saving Carbon, tonnes	Status/Notes
Various	BMS - Software and Sensors - Honeywell	Energy Saving Project	TBC	TBC	TBC	TBC	TBC	Outlined
Buildings fitted with Siemens AMR	Electric - Trace Electric Loads	Energy Saving Project	TBC	TBC	TBC	TBC	TBC	Outlined

Energy and Water Management Action Plan – Measures

Major Projects

Location	Description	Project Type	Program	Budget Cost, £	Saving £ p.a.	Saving, kWh	Saving Carbon, tonnes	Status/Notes
TBC	Ground based large solar PV Array	Stand alone	TBC	TBC	400,000*	1,400,000*	300*	Concept
Keynes College	Decarbonisation of Heating – Siemens		TBC	TBC	TBC	TBC	TBC	For more detail see the Report - 01 Heat Decarbonisation Plan - UoK - Next Steps - V2 18.11.24

Notes

- The size of the solar PV array is provisionally a 1.5MW solar PV array, and rather than energy saved, the figure is for energy generated.

Status

Planned – Works are scheduled to be done.
Outlined – Works are scoped and assessed, but not scheduled
Concept – Initial proposal requiring an assessment to scope and evaluate

Energy Awareness Raising

Futureproof

Futureproof is a wide-ranging initiative based around the 17 Sustainable Development Goals. Included within these goals is 13 Climate Action, which directly addresses the issue of the need for carbon reduction through energy efficiency, and the requirement for renewable energy. Further, several of the other goals indirectly reference the need for energy and water efficiency. The Futureproof website can be accessed using the link below.

https://www.kent.ac.uk/sustainability/futureproof

The Futureproof program promotes awareness of the issues associated with energy, and water use, and encourages staff and students to reduce use of these resources. This in turn helps to maintain good practice in terms of using energy helping to minimise unnecessary wasting of energy. Further Staff can volunteer to become Sustainability Champions, and information on energy and water can be provided to assist them with particular Projects.

A Sustainability Team Awareness Program has recently been introduced and as part of this a 6 week Energy module was implemented in Nov/Dec 2024.

Laboratory Efficiency Assessment Framework (LEAF)

LEAF is a method of benchmarking for sustainability in labs. A project to check performance in some of the University labs is due to start in Feb25. The scope of this will include energy efficiency in labs including of lab ventilation. This may lead to the identification, and implementation of energy saving measures.

Further methods of raising energy awareness

- Responding to Departmental Enquiries, and providing additional information on how heating and hot water operate, and what can be done locally to improve the performance and energy efficiency of these systems.

- Providing practical assistance to help with course work by showing how existing heating and hot water services are provided on request. This work is in line with using the University's operations as a living lab type arrangement.

- Ongoing development of the Carbon and Water webpages to demonstrate what the University is doing to reduce carbon emissions, and how it is progressing against targets.

Appendix 1

Types of Energy Saving/Carbon Reduction Projects

There are a number of different programs of work that are undertaken by the University. These fall in to 4 main types of Project:

1) Energy Saving Measures

The stand alone works are individual measures like the implementation of presence detection to improve control of lighting, or ventilation plant.

2) Refurbishment Works

An example of recurring works is the refurbishment of the replacement of heating and hot water systems in University accommodation. Here when the refurbishments are carried out the opportunity is taken to include energy saving and water saving measures. These measures can include replacing conventional boilers with condensing boilers to improve energy efficiency, and in time replacing boilers with heat pumps.

3) Building Change of Use

This covers where energy use in a building will reduce due to a change in use of a building as part of the overall rationalisation of buildings at the University.

4) New Builds

Where the University is constructing new buildings these are generally additions to the building stock. The University needs to reduce energy consumption at the same time as increasing building capacity. As a result, new buildings need to have minimal energy requirements, as the entire new load will add to the University's existing carbon emissions making it harder to achieve overall reductions.

The Building Regulations give a baseline to work to in terms of energy efficiency, the requirements for BREEAM then add to these requirements. Where new builds are constructed these meet, or exceed the Building Standards for energy efficiency. The University aims to achieve BREEAM excellent for new buildings. New buildings typically have a proportion of their energy supplied from renewable sources and this is usually be solar photovoltaic panels. An Energy Performance Certificate (EPC) is produced for each new building, which gives the Energy performance rating for the building fabric, and services, but does not include process loads. This can result in a significantly lower Display Energy Certificate (DEC) rating than the EPC.