



University
of Glasgow

ESTATES & COMMERCIAL SERVICES ENERGY STRATEGY (2018 - 2023)

**WORLD
CHANGING
GLASGOW**

ENERGY STRATEGY

Executive Summary



Using our buildings more efficiently

BETTER UTILITY DATA MANAGEMENT

PROJECT ACTION PLAN



STAFF AND STUDENT AWARENESS RAISING

BUILDING ENERGY OPTIMISATION



Supplying our sites from an increased amount of renewable utility supplies

REDUCTION OF FOSSIL FUELS



BUILDING APPROPRIATE RENEWABLE GENERATION



Excellence through design and continuous learning through soft landings

UTILISE BREEAM METHODOLOGY



COLLABORATION TO ENSURE CONTINUOUS IMPROVEMENT



FEEDBACK TO IMPROVE NEW DESIGN



Risk resilience and security of utility supply

ENSURE APPROPRIATE UTILITY PROCUREMENT



DEVELOP UTILITY RESILIENCE



Smart Campus activities, Academic research and working with others

CONTRIBUTION TO ACADEMIC RESEARCH UTILISING BUILDING STOCK



SMART CAMPUS ENGAGEMENT

INTRODUCTION

This strategy is a 5 year plan starting in late 2018 and has been developed to support the University Strategy 2015-2020 and the Estates and Commercial Services Five Year Business Plan 2016/17-2020/21 to better understand, manage and reduce the energy consumption and carbon emissions of the University's diverse building portfolio (320 buildings as of October 2018, ranging in age from the 19th to 21st century).

The University of Glasgow carbon footprint for 15/16 was 69,591 tonnes CO₂e and for 16/17 was 64,109 tonnes CO₂e

We aim to reduce the University's footprint by 20% with respect to the 15/16 figure, with a target of 55,500 tonnes CO₂e per annum by 20/21.

This Energy Strategy must deliver ~6,000 tonnes CO₂e emissions savings, while also ensuring that we continue to provide a reliable and resilient energy supply to our estate. We will normalise carbon emissions from gas and electricity consumption by gross internal area.

This Energy Strategy will bring together various teams and sources of information in a collaborative approach to ensure we; understand our building utility consumption, reduce wastage and are able to integrate renewable technologies to reduce grid reliance.

Ann Allen
Executive Director, Estates and Commercial Services

Vision – Our vision is an estate that uses energy and water efficiently, and takes advantage of opportunities to generate renewable/low carbon energy where technically and financially viable

Mission – Our mission is to deliver 6000 tonnes CO₂e in emissions savings per annum, from improved energy management

CONTEXT

This strategy has been developed to respond to a framework of legislation, and University strategic plans. These are summarised as follows:

Climate change (Scotland) Act 2009

- Lead by example in combatting climate change and contribute towards achieving the national emissions reduction target of 80% by 2050

Scottish Energy Strategy: The Future of Energy in Scotland

- Improve the energy efficiency of Scotland's homes, buildings, industrial processes and manufacturing
- Empower communities by supporting innovative local energy systems and networks

University Strategy 2015-2020

- A world class and world changing University
- Creating an efficient, well designed and built estate, which operates in sustainable manner

Estates and commercial services five year business plan 2016/17-2020/21

- Improved estates carbon efficiency; we will normalise carbon emissions from gas and electricity consumption, by gross internal area, in order to facilitate comparison with other similar organisations
- Assets and resources utilised in ways which reduce environmental impact

Campus Estates Strategy and 10 Year Capital Plan

- Creating a sustainable campus on which we use our resources wisely, in order to reduce carbon emissions
- Supporting delivery and operation of the £530 million of new property assets
- Maintain efficient operation of the existing estate

Carbon Management Plan

- Support carbon reduction targets set within the Carbon Management Plan

Climate Change Adaptation Plan

- Reduced heating demand to, and increased cooling demand from buildings in response to milder winters and hotter summers



KEY THEMES

The delivery and successful integration of the Energy Strategy will be built on and measured by the following five strategic themes:

1. **Using our buildings more efficiently**
2. **Supplying our sites from an increased amount of renewable utility supplies**
3. **Excellence through design and continuous learning through soft landings**
4. **Risk resilience and security of utility supplies**
5. **Smart Campus activities, academic research and working with others**

Use our buildings in a more efficient manner

We will:

- Undertake the development of good data management from a variety of sources to identify and benchmark best and worst performing buildings
- Develop a rolling action plan to identify projects which lead to energy and carbon reductions
- Increase the usage of the Salix fund as a finance mechanism to fund energy efficient projects
- Optimise the energy consumption of the building stock by operating buildings within agreed parameters appropriate for the building services

- Optimise the control of heating systems through the extension of the Building Management System (BMS) for each building whilst ensuring the current BMS strategy for each site and future sites better reflects the specific building requirements
- Optimisation of the Combined Heat and Power engine and District Heating network to ensure it meets the needs of building users in the most efficient and effective way. Exploring opportunities to add additional buildings onto the network to increase efficiencies
- Develop an understanding of the energy consumption split between fixed building services and any additional load energy consumption
- Encourage and empower staff and students to use energy and water in a more efficient way
- Develop close working relationships with Asset Management staff to feed into building condition reporting

Supply our sites with an increased amount of renewable energy

We will:

- Take forward the feasibility study to produce an options appraisal of renewable heating and hot water systems for our Garscube campus
- Reduce the usage of heavy fossil fuels to back up supplies only

- Assess the potential integration of renewable sources during any upgrade or refurbishment works
- Assess the options available for the sustainable sourcing of water supplies across our current building stock through retrofit options and for future stock through design solutions
- Ensure all new developments have an element of renewable generation suitable and appropriate to the building usage.

Excellence through design and continuous learning through Soft Landings

We will:

- Utilise the Building Research Establishment Environmental Assessment Method (BREEAM) for new construction ensuring the rating of Excellent is achieved; ensure options selected will provide most financially advantageous energy and carbon utilisation throughout the building lifespan
- Ensure an Energy Performance Certificate rating of A or higher is achieved for all new construction projects.
- Ensure the recertification of buildings after upgrade works
- Collaborate with Design teams during new or refurbishment projects to assess the potential integration of the WELL Standard whereby energy savings can be achieved from reductions in lighting intensity and changes to

room temperatures for example. Assess and report on the benefits achieved

- Collaborate with Project Management team to ensure continuous improvement and learning through the Soft Landings Framework in both design and refurbishment works

Risk Resilience and security of utility supplies

We will:

- Assess potential failure points for continuity of supply in conjunction with Emergency planning team and develop strategies to ensure resilience for business services

Smart Campus Activities, Academic engagement and working with others

We will:

- Contribute to academic research utilising the building stock as test beds where possible
- Engage with Smart Campus activities contributing to their design and integration into all current and future building stock
- Developing an understanding of energy storage and undertake analysis into opportunities for integration with new and existing buildings
- Develop good working relationships with other teams and departments throughout the University whereby ideas and projects can be developed and undertaken collaboratively



Approach

By working closely with academic staff in specific areas of research we can, where applicable, align these themes with the developments taking place in the university building stock. This approach may allow ground breaking technologies and ideas to be integrated into building design and construction, and also enable our buildings to function as 'living laboratories'.

To implement the Energy Strategy we will apply the Plan-Do Check-Act model from the ISO 50001 Energy Management standard.





Representatives from University of Glasgow Estates and Commercial Services, Scottish Power Energy Networks and Smart Campus

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