Lancaster University

Lancaster University
Energy and Utilities Plan
2024-2029

"Making campus a sustainable and inspiring place to be."

Introduction

Covering 560 acres of land with over 200 buildings, our campus supports the day-to-day activities of over 19,000 students and staff requiring significant energy.

Effective strategic and operational management of utilities and energy consumption is critically important for the financial sustainability of the university, as well as playing a key role in the delivery and measurement of achieving our scope 1 and scope 2 emissions target.

In 2022/23, we spent over

£7 Million

on imported utilities

Continued Progress

Our Energy & Utility Plan, first introduced in 2017, has already achieved so much by placing carbon reduction at the heart of our capital development and refurbishment programme.

In the last 5 years alone, despite an increase in building space by 19,000 square metres and a growth in our student / staff population by 20%, we still reduced our scope 1 and 2 emissions by 3%.

The University is investing a further £57million on two major renewable projects – our new 11.5MW solar PV farm and Low-Carbon Energy Centre 2, will play a significant role in decarbonising our campus.

BUT WE NEED TO DO MORE

The university 'Agile Working Project' aims to maximise building occupancy and efficiency in use, this will provide input to match energy controls to revised working patterns.

Recognising that our wider capital plans will transform our campus energy systems, we will continue to use enhanced building performance data to drive energy saving decision making.

Our Journey...

2012

Commissioning of Wind Turbine, Combined Heat and Power Engine (CHP) and Biomass boiler

2017

Soft landing of Energy Information System (EIS) and sub-metering system upgrade

2020

Declaration of climate emergency commitment

2023

Energy Centre upgrade: Replacing 12MW of non-condensing Gas/Oil boilers with 8.4MW Gas/Hydrogen compatible modular boilers

2023

"Heat Pump Ready Programme" District heating efficiency improvement scheme

2024

Commissioning of 11MW solar farm in Forrest Hills

2026

Commissioning of Energy Centre 2, powered by 8MW of Air-Source Heat Pump to the heat network

2030

Achieve Scope 1 & 2 Emisions targets

In 2022/23, Lancaster University's utilities consumption was equivant to the usage of:

Grid electricity

>7,500

Households

Natural gas

>3,500

Households

Water

>168

Olympic swimming pools

At the same time, our wind turbine is powering around

14% of the campus electricity demand

University Emissions Target

Scope 1

Direct emissions from natural gas and fuel consumption and refrigerant loss

Scope 2

Purchased energy emissions from imported grid electricity

2030 Scope 1 & 2 - Net Zero

Our Objectives

To help achieve the University's strategic carbon emission targets across scope 1 and 2 emissions, this energy and utilities plan has four key objectives.

1

Statutory Compliance

"We will maintain, and proactively prepare for, compliance with new regulatory requirements."

With approaching national Net Zero targets, new and more stringent standards are expected.

The University will ensure full statutory compliance with all applicable energy and utilities regulations.

Action

An enhanced compliance reporting dashboard and risk register will validate compliance, and proactively anticipate the implementation of new legislation.

Biomass boiler in our Energy Centre, governed by OFGEM under the Renewable Heat Initiative (RHI)

2

Operationalise New Energy Provisions

"We will efficiently utilise our energy assets to their full potential and minimise reliance on imported energy"

Since Lancaster University established its scope 1 and scope 2 carbon reduction target significant progress has been made to decarbonise our campus. During the lifespan of this Energy and Utilities Plan, our energy systems will continue to diversify and on-site renewable energy generation will increase.

As we transform our energy systems to decarbonise our campus, we will minimise imported energy and maximise renewable generation.

Actions

- A long term asset management plan for the Wind Turbine
- A decommissioning plan for t he CHP
- Operational establishment of the new Energy Centre 2
- Deployment and management of sophisticated control systems to allow performance optimisation and systems interaction
- Deliver and utilise new solar farm generation
- Review of supply contracts with utility suppliers to maximise cost effectiveness on imported utilities

11MW Solar farm to be contructed in Forrest Hills

3

Data-driven Performance Management

"We will continually improve data transparency to enhance our knowledge of the campus. We will identify and `measure what matters' to target energy reduction with increased efficiency"

Data is a precious asset, when targeted, reliable, and actionable.

We will strategically manage energy data to provide actionable performance reporting to inform and influence decision making.

Actions

- Identify what data matters and to whom
- New Energy Information System (EIS), to ensure high levels of data visualisation, reliability, and availability across all utilities (electric, gas, heat, water)
- Creation of emissions / performance indicators to rank all assets, pin-pointing abnormal consumption, operational improvement or change in activities
- Smart metering and data logging strategy
- Utilise data to study interactions between campus generation to match campus demand

The use of Internet-of-Things (IoT) devices that allow wireless, real time data collection

4

Energy Stakeholders Engagement

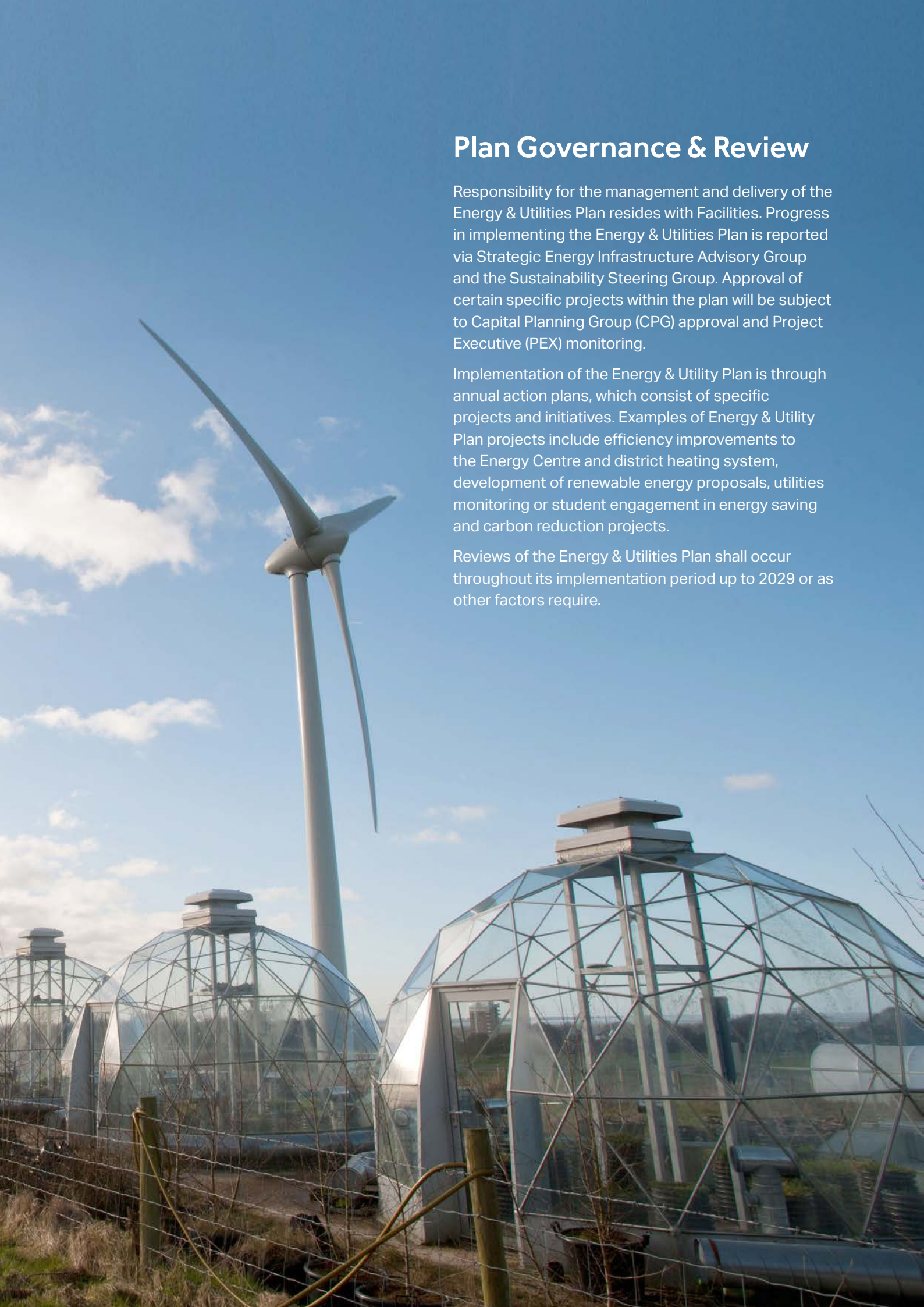
"We will engage with campus tenants, staff and students and other relevant university stakeholders to highlight and collaboratively identify energy saving opportunities"

Engagement will be crucial, and we will target encouragement and general involvement across all campus tenants, staff, and student consumers.

Actions

- Collaborate with all university stakeholders to raise awareness and promote energy reducing opportunities
- Increase support to campus business consumers, providing performance orientated billing and consumption advisory visits
- Maintain and strengthen strategic and operational collaboration with UPP on energy efficiency schemes across their residential buildings

Community group visiting the Wind Turbine, with tour hosted by Facilities staff



Plan Governance & Review

Responsibility for the management and delivery of the Energy & Utilities Plan resides with Facilities. Progress in implementing the Energy & Utilities Plan is reported via Strategic Energy Infrastructure Advisory Group and the Sustainability Steering Group. Approval of certain specific projects within the plan will be subject to Capital Planning Group (CPG) approval and Project Executive (PEX) monitoring.

Implementation of the Energy & Utility Plan is through annual action plans, which consist of specific projects and initiatives. Examples of Energy & Utility Plan projects include efficiency improvements to the Energy Centre and district heating system, development of renewable energy proposals, utilities monitoring or student engagement in energy saving and carbon reduction projects.

Reviews of the Energy & Utilities Plan shall occur throughout its implementation period up to 2029 or as other factors require.