Carbon Management and Climate Adaptation and Resilience Action Plan 2022-2024

University of Wollongong

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Acknowledgement of Country

We Acknowledge that Country for Aboriginal peoples is an interconnected set of ancient and sophisticated relationships.

The University of Wollongong spreads across many interrelated Aboriginal Countries that are bound by this sacred landscape, and intimate relationship with that landscape since creation.

From Sydney to the Southern Highlands, to the South Coast.

From fresh water to bitter water to salt. From City to Urban to Rural.

The University of Wollongong Acknowledges the Custodianship of the Aboriginal peoples of this place and space that has kept alive the relationships between all living things.

The University Acknowledges the devastating impact of colonisation on our campuses' footprint and commit ourselves to truth-telling, healing and education.

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1.   Introduction

This Carbon Management and Climate Adaptation and Resilience Action Plan has been developed to establish priorities and tasks to be actioned by the Environment Unit over 2022-2024 specific to the management of energy and carbon emissions and climate impacts at UOW campuses and facilities.

The UOW Sustainable Futures Committee (SFC) overseas the pursuit and delivery of UOW environmental sustainability objectives as well as the integration of environmental Sustainable Development Goals and sustainability initiatives and targets across all aspects of University activities.

The Environment Unit's focus is on the environmental sustainability of UOW operations and implements initiatives and actions to reduce impacts and address relevant UN Sustainable Development Goals. The Environment Unit is working with the Sustainable Futures Committee to achieve common objectives.

The management of energy and carbon on our campuses supports the implementation of the following UN Sustainable Development Goals:

- Goal 7 Affordable and clean energy
- Goal 11 Sustainable cities and communities
- Goal 12 Responsible consumption and production
- Goal 13 Climate action

The objectives of this Carbon Management and Climate Adaptation and Resilience Action Plan are to define strategies and actions to achieve the following at our campuses and facilities:

- Monitor and reduce energy intensity
- Maximise onsite renewable energy generation and alternative energy opportunities
- Monitor and reduce fuel consumption
- Reduce carbon footprint (Scope 1, 2 and 3)
- Identify and manage climate risks to campus assets and infrastructure
- Improve awareness and educate the UOW campus community about energy conservation and carbon and climate adaptation and resilience.

In addition, actions addressing carbon management and reducing of our carbon footprint can also be found within the Transport and Access Action Plan as well as the Waste Management Action Plan.

2.   Background

The previous Energy and Carbon Management Action Plans have focused on Wollongong Campus (where the Environmental Unit had operational control) and on energy consumption and management (of electricity and gas utilities and solar energy generation). However, following the implementation of the One UOW organisational structure, the responsibilities of the Environmental Unit expanded to include student accommodation and other Australian Campuses thus, this Action Plan now incorporates all these sites. The data presented below encompasses all Australian Campuses and accommodation sites and is presented on a financial year basis to align with the data gathered for the annual National Greenhouse and Energy Reporting (NGER).

The total greenhouse gas emissions for UOW (Scope 1 and 2) continued to trend downwards with an equivalent 28,000 tonnes of CO_2 emitted during the 2021-22 financial year, down from 34,420 in 2015-16, see Figure 1. Scope 1 emissions represents approximately 10% of UOW's total emissions and include emissions that are a direct result from activities that are carried out on campus for example natural gas for heating and hot water, diesel and other fuels for transportation, LPG gas bottles etc. The remaining 90% emissions are Scope 2 emissions which include the indirect emissions that come from activities on campus such as the burning of coal or gas for the production of electricity.

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According to the Science Based Targets initiative, if we are to have an approximate 50% chance of limiting global warming to 1.5°C by 2100, corporations need to reduce Scope 1 and 2 emissions by a minimum of 4.2% per annum[1]. A 5% year on year reduction has been included in the future targets presented in the figures below along with the ambition of sourcing 80% of the total electricity from renewable sources by 2025.
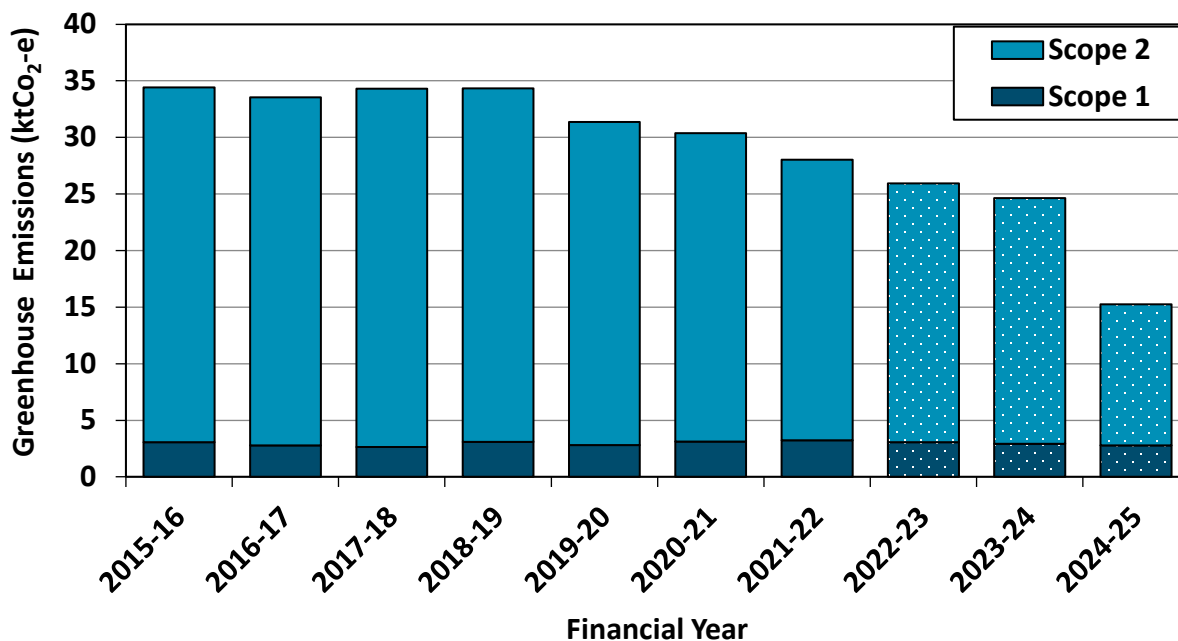

Figure 1. Greenhouse gas emissions by financial year

Although the ultimate goal is to reduce the total greenhouse gas emissions and energy consumption to as low as possible, these will fluctuate year on year and may increase as the campuses continue to grow to accommodate more students, staff, and research activities. As such a more indicative measure of the performance of the campuses is energy and greenhouse gas intensities on a per gross floor area (GFA) and per Equivalent Full Time Student Load (EFTSL).

When examining the greenhouse gas emissions intensity per EFTSL there is a general downward trend however, an increase is observed from the 2019-20 financial year to 2021-22. This can be attributed to a smaller student body with reduced international students due to border closures. This is expected to reverse in future years as international travel grows and students return to study at UOW, see Figure 2.

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[1] SBTI CORPORATE NET-ZERO STANDARD OCTOBER 2021 VERSION 1.0. (n.d.). [online] Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf.
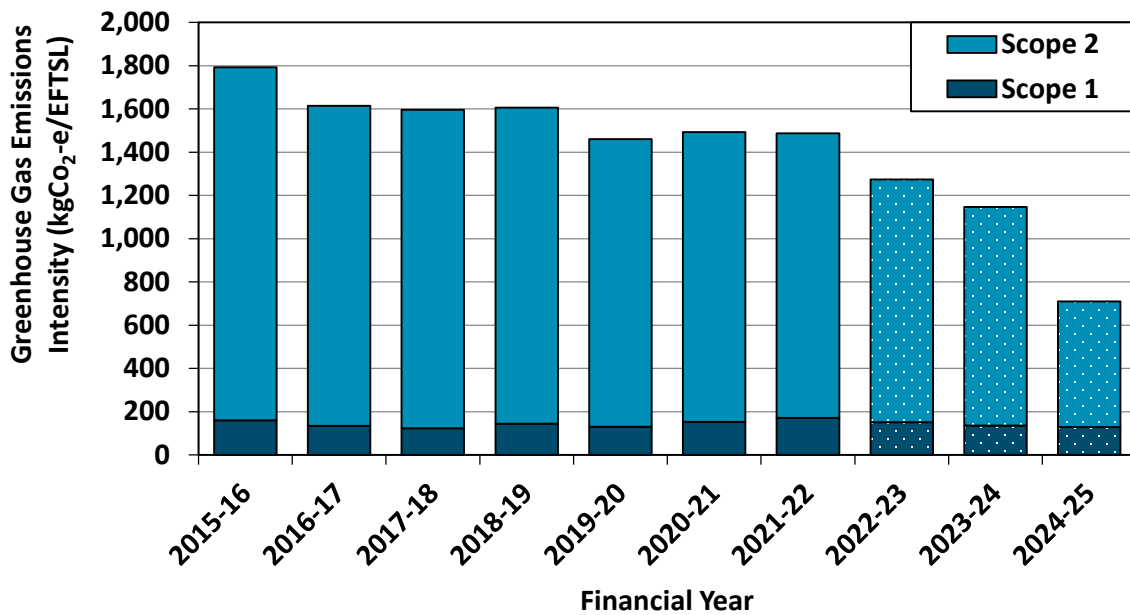
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Figure 2. Greenhouse gas emission intensity by EFSTL per financial year

The energy intensity by GFA and percentage share of onsite renewable and green retail electricity is displayed in Figure 3. As shown energy intensity has been trending down since the peak in 2018-19 financial year. It is difficult to quantify the effect that sustainability initiatives have had on energy intensity when considering the considerable changes that COVID 19 has had including campus closures and an increase in working or studying from home. This may result in an increase in energy intensity values from 2021-22 as society continues to adapt to the pandemic. Regardless of this, the Environment Unit have set a target to reduce energy intensity by 5% year on year while continuing to increase onsite renewable generation.
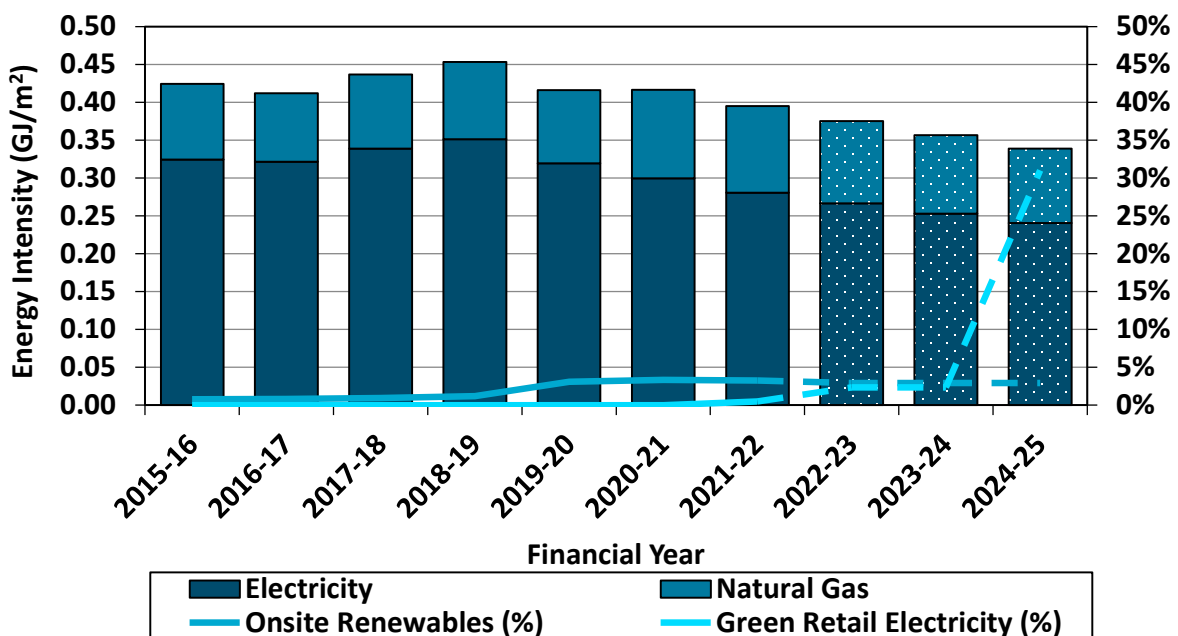

Figure 3. Energy intensity by gross floor area and percentage of renewable electricity per financial year

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3.   Strategic Areas

This Action Plan focuses on the following areas:

1. Energy and emissions management:
    *   Energy demand and consumption management
    *   Energy procurement and management
    *   Fleet management and fuel use (also refer to Transport and Access Action Plan)
    *   Onsite renewables generation and offset initiatives
    *   Scope 3 emissions management
    *   Monitoring and reporting
    *   Strategic and technical advice, engagement and collaboration.
2. Climate adaptation and resilience:
    *   Reduce exposure and increase adaptive capacity to risks associated with climate change
    *   Strategic and technical advice, engagement and collaboration.

4.   Energy and Carbon Management Actions

The following actions have been identified as potential projects/initiatives to improve energy performance and reduce emissions associated with scope 1, 2 and 3.

Table 1 – Energy demand and consumption management

Action	Priority	Indicative Date
Conduct energy audits to determine opportunities for energy savings and improved thermal comfort.	High	Ongoing
Review and upgrade indoor lighting systems and controls.	Medium	Q4 2024
Review and upgrade outdoor lighting systems and controls.	Medium	Q4 2024
Evaluate efficient hot water systems and controls.	Medium	Q2 2024
Evaluate HVAC systems, equipment schedules and settings.	High	Q1 2024
Work with IMTS to investigate energy reduction strategies for ICT systems and communication.	High	Q3 2024
Regularly review power factor correction.	Medium	Ongoing
Review processes and procedures and develop strategies to reduce energy consumption.	High	Q4 2023
Assess the installation of additional energy efficiency appliances and fittings.	Medium	Q4 2024
Work with UOW Pulse and retail tenants to support energy efficiency actions (practices and improved infrastructure).	Medium	Ongoing
Work with Faculties to identify high energy use equipment and any opportunities for reducing potable water use (through practices or improved infrastructure).	Low	Ongoing

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Action	Priority	Indicative Date
Through the UOW Procurement Policy prioritise the purchase of assets and products that are energy efficient.	Medium	Ongoing
Identify locations of existing high energy demand infrastructure.	Medium	Ongoing

Table 2 – Energy procurement and management

Action	Priority	Indicative Date
Continuously improve and manage energy billing verification process.	High	Ongoing
Track, forecast and plan energy consumption and expenditure.	High	Ongoing
Review and manage green energy procurement options.	Medium	Q4 2024

Table 3 – Fleet management and fuel consumption

(Actions are also listed in the Transport and Access Action Plan)

Action	Priority	Indicative Date
Work with Print and Distribution to investigate options for transitioning the University fleet to a Green fleet (electric or hybrid vehicles) and associated electric charge points for these vehicles.	Medium	Q3 2024
Work with Print and Distribution to investigate options to enable better utilisation and other operational efficiencies of university fleet vehicles (e.g centralised pool cars, booking systems, maintenance).	Medium	Q3 2024

Table 4 – On site renewable generation and offset initiatives

Action	Priority	Indicative Date
Assess and review the status and effectiveness of existing onsite solar and identify opportunities for improvement.	Medium	Ongoing
Identify opportunities for new onsite solar installations as well as other alternative energy (low carbon) technologies.	Medium	Ongoing
Develop strategies to monitor ongoing performance of onsite solar generated and maximise what is consumed onsite.	Medium	Q3 2023
Identify opportunities to offset scope 2 emissions.	Medium	Q4 2023
Identify opportunities to offset scope 1 emissions.	Medium	Q4 2023
Identify opportunities to offset scope 3 emissions.	Medium	Q4 2024

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Table 5 – Scope 3 emissions identification and management

Action	Priority	Indicative Date
Work to identify and quantify scope 3 emissions.	High	Q2 2023
Identify actions to reduce scope 3 emissions.	High	Q2 2023

Table 6 – Monitoring and reporting energy and carbon

Action	Priority	Indicative Date
Manage and review the energy metering and monitoring system and upgrade and expand as required.	Medium	As required
Monitor energy consumption and performance at all campuses and facilities.	Medium	Quarterly
Measure and verify actions/events impacting on energy consumption.	Medium	Quarterly
Analysis of data for ongoing performance and emerging trends and report and track against University KPIs and targets.	Medium	Quarterly
Provide data and prepare energy and carbon performance reports as required for enquiries and business needs and benchmarking.	High	As required

Table 7 – Strategic and technical advice, engagement and collaboration

Action	Priority	Indicative Date
Work with the Sustainable Futures Committee to review carbon, energy, onsite renewables targets.	High	Ongoing
Work with UOW Finance and Sustainable Futures Committee, Policy Working Group to embed energy efficient and low carbon objectives into organisation wide procurement processes, and other relevant procedures and policies.	High	Ongoing
Integrate energy and carbon management and objectives into Campus Estate Plans and design guidelines.	High	Ongoing
Produce tools and information, behavioural change and awareness programs to support energy efficiency and low carbon objectives.	High	Ongoing

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5.   Climate Adaptation and Resilience Management Actions

The following actions have been identified as potential projects/initiatives to improve UOW's adaptive capacity and resilience to climate change.

Table 8– Reduce exposure and increase adaptive capacity to the risks associated with climate change

Action	Priority	Indicative Date
Undertake risk assessments and prepare climate adaptation plans specific to each campus (addressing primary effects of temperature, rainfall and sea level rise and secondary effects associated with humidity, drought, flood, hail, dust, storm and wind events and bushfire).	Medium	Q4 2023
Implement actions identified in the climate adaptation plans based on risk priority.	Medium	As required

Table 9: Climate change adaption strategic and technical advice, engagement and collaboration

Action	Priority	Indicative Date
Produce tools and information, behavioural change and awareness programs to support climate change adaptation and resilience of staff and students and community.	Medium	Q4 2024
Work with Emergency Management Committee/Crisis management committee, Sustainable Futures Committee and Policy Working Group to embed climate change adaptation and resilience measures into relevant organisation wide procedures and policies.	Medium	Q4 2024
Integrate climate adaptation and resilience actions and objectives into Campus Estate plans and design guidelines.	Medium	Q4 2024

6.   Delivery

The prioritisation and implementation of specific actions defined in this Action Plan will depend on the environmental and financial benefits of each action, technical feasibility, budget and resources available and interaction with other projects and works at UOW.

A strategic and structured approach will be taken to ensure the suitable assessment, development and implementation of relevant actions by:

- Identifying and prioritising actions based on environmental benefits, financial feasibility and onsite investigations.
- Liaise with the relevant stakeholders to assess technical, operational and financial requirements.
- Prepare detailed business cases for UOW approval including:
    - Recommendation
    - Objectives
    - Scope
    - Environmental, operational, financial and risk analysis
    - Delivery method
    - Program

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The final evaluation, planning, funding and implementation of these actions are intended to be achieved utilising the resources of the Facilities Management Division and engaging relevant contractors when required.

This Action Plan will be reviewed annually to monitor and record the status of the different strategies and actions.

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Final Audit Report 2022-10-19

Created:	2022-10-19
By:	Clayton McDowell (claytonm@uow.edu.au)
Status:	Signed
Transaction ID:	CBJCHBCAABAA7OSbyVlflL5vRXYypc2bfi-dEp2RlmNf

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2022-10-19 - 2:24:32 AM GMT- IP address: 203.10.91.91

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Signature Date: 2022-10-19 - 2:27:18 AM GMT - Time Source: server- IP address: 203.10.91.91

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2022-10-19 - 2:27:19 AM GMT

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Signature Date: 2022-10-19 - 4:24:41 AM GMT - Time Source: server- IP address: 203.10.91.78

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