CQUniversity AUSTRALIA

Decarbonisation Annual Report 2025

FACILITIES MANAGEMENT
MARCH 2026

Be. WITH CQU

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01

Introduction

Our planet is in our hands.
Central Queensland University (CQU) is committed to leading by example in the transition to a low- emissions future.

This Annual Decarbonisation Report forms part of CQU's broader sustainability and climate action agenda, providing a transparent and structured account of our institutional progress toward reducing greenhouse gas emissions. This is the 1st annual report developed under the approved decarbonisation plan and covers CQU activities for 2025.

The report presents total annual emissions across Scope 1 and Scope 2 categories, disaggregated by emissions source. It includes a year- on- year comparison with our established baseline, which has been selected as 2021 and tracks performance against CQU's decarbonisation targets.

In addition to emissions performance, the report outlines progress on key decarbonisation initiatives and actions implemented throughout the reporting period, documenting actions taken, their current status, and any changes to priorities or delivery timeframes.

Through this annual reporting process, CQU aims to ensure the robustness, accountability, and continuous improvement of its decarbonisation pathway, in alignment with sector expectations and climate science.



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Context

CQU has developed detailed decarbonisation planning procedures and process drawing on several guidelines and protocols including the international greenhouse gas (GHG) protocol, Australia's Climate Active Standard and the National Greenhouse Emissions Reporting Scheme (NGERS).[1]

This annual report should be read alongside the Decarbonisation Strategic Plan 2024-2028.

The Decarbonisation Strategic Plan, Annual Decarbonisation Report, Decarbonisation Framework, and Emissions Data and Action Register are owned, prepared and updated by CQUs Facilities Management Directorate.

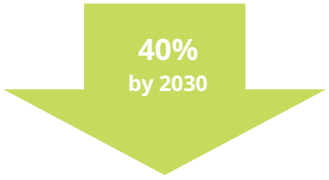
Ongoing quality management of data is paramount to a credible emissions reporting plan. Key interfaces with internal stakeholders such as the sustainability team are important to ensure data such as research-specific emissions are captured accurately and tested for relevance with respect to reporting. External technical advisors (Emmnanet) have also provided support on the emissions framework, methodology development, and analysis, offering additional technical oversight and ensuring alignment with recognised emissions accounting standards.

Emissions reduction strategy and initiatives

An emissions reduction strategy has been developed to guide CQU as it works towards its emissions reduction targets. The targets have been set based on alignment with the Australian Government's target of net zero by 2050. An interim target has been set to achieve a 40% reduction in Scope 1 and Scope 2 emissions by 2030.

Stage 1 Direct Reductions 2025-2030

A 40% reduction
in Scope 1 and 2 emissions relative to our 2021 emissions baseline
by 2030*



Stage 2 Net Zero 2030-2050

A 100% reduction
in Scope 1 and 2 emissions relative to our 2021 emissions baseline
by 2050*

*based on market-based method for Scope 2 emissions



[1] *This report is an operational document prepared to support CQUniversity's decarbonisation planning and emissions management. It is not intended to constitute formal climate-related financial disclosure. Information presented may inform future climate-related disclosures in line with emerging Australian regulatory requirements.*

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Our Emissions

Emissions Boundary and Baseline.

CQU has chosen to define its current emissions boundary as comprising Scope 1 and Scope 2 emissions (for sites and active corporate entities under its operational control in Australia) for the purpose of measuring and reporting against its current targets. The baseline year has been selected as 2021 as it represents the beginning of a period of increased data quality, follows the completion of a major air-conditioning program at CQU campuses, reflects the beginning of a period of step-change focus on energy and emissions and prevents excessive claims of reductions in emissions that have naturally occurred through greening of the grid.

The Decarbonisation Strategic Plan also outlines Scope 3 initiatives to reduce emissions ahead of establishing the baseline, planned for 2027–28. As such, Scope 3 emissions are not included in this annual report. Scope 3 emissions are indirect greenhouse gas emissions, other than Scope 2, generated across the wider economy as a result of the university's activities, typically including travel, procurement of supplies, construction, and waste. Once quantified, these emissions will enable estimation of potential reductions achievable through the university's emissions reduction strategies, in line with anticipated Australian climate-related disclosure requirements.

CQU's Scope 1 and 2 emissions within Australian operations in 2021 were 17.8 kt of carbon dioxide equivalent (CDE). More than 93% of emissions were due to grid-supplied electricity. Refrigerant leakage was the second largest contributor with over 5% (Note: this is a calculated factor not actual leakage).

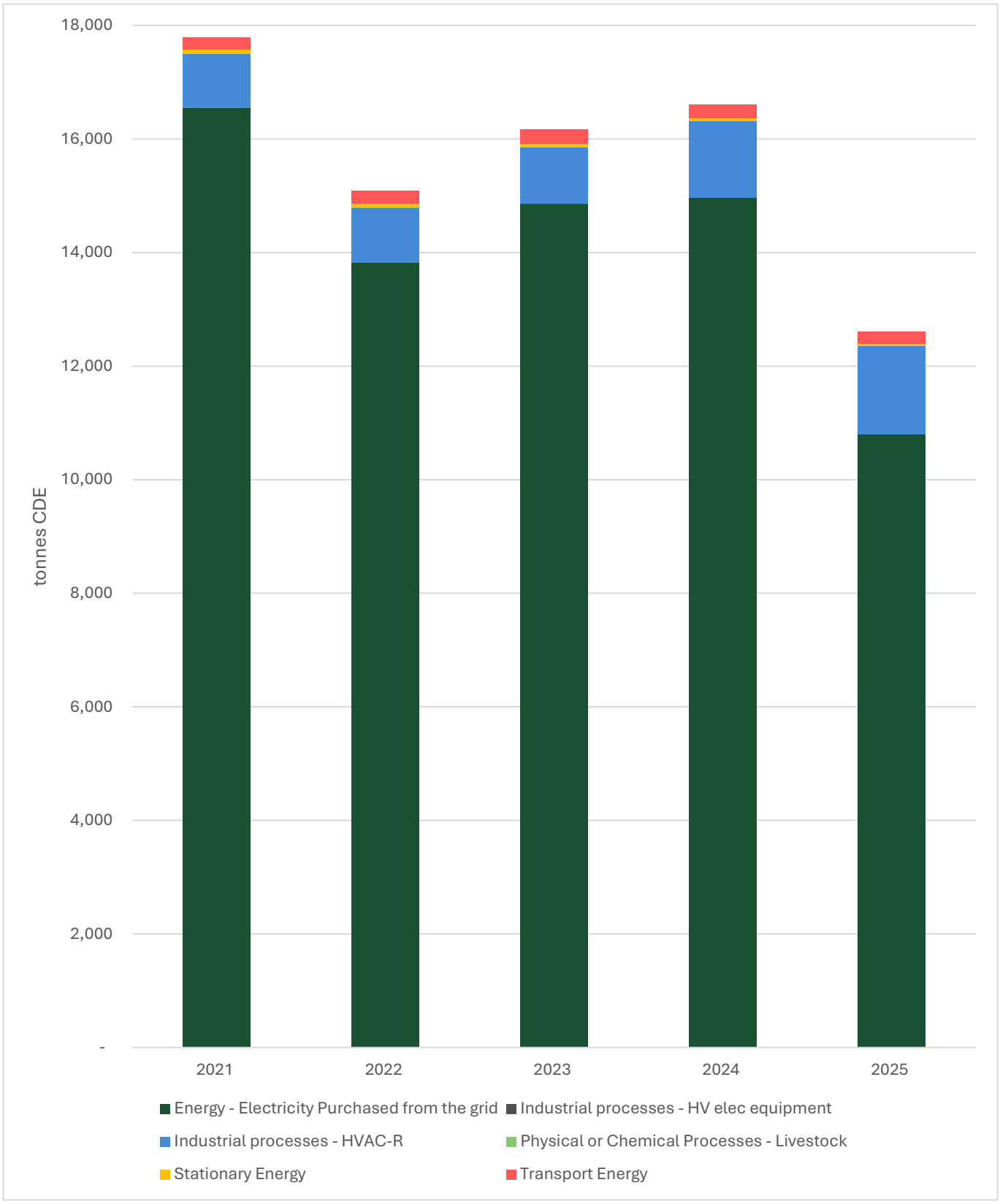
In 2025, Scope 1 and 2 emissions in 2025 were 12.6 kt CDE (using a market-based methodology) **which represent a 29% reduction.** This was due to a general greening of the grid and a range of direct actions that CQU has implemented including the voluntary surrender of LGC purchased via the electricity retail contract with CS Energy. Figures 1 and 2 show the scope 1 and 2 emissions, itemised by type showing the differences between 2021 and 2025

Figure 1 CQ University's 2025 Scope 1 and Scope 2 emissions
Electricity represents more than 85% of the total 12.6kt CDE.

	2021 kg CDE		2025 kg CDE	
Electricity purchased from grid	16,543,001	92.99%	10,800,099	85.65%
Refrigerant emissions (HVAC and HV)	953,802	5.36%	1,551,580	12.30%
Transport Fuels	218,138	1.23%	209,148	1.66%
Stationary Energy Generation	70,537	0.40%	44,850	0.36%
Research Processes - Livestock	5,091	0.03%	3,196	0.03%
Grand Total	17,790,569	100%	12,608,873	100%

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Figure 2 **CQ University's Scope 1 and 2 emissions – 2021 to 2025**



The following section of the report itemises the emissions from each source for Scope 1 and Scope 2.

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SCOPE 1 DIRECT EMISSIONS

Scope 1 emissions are described in the Greenhouse Gas (GHG) Protocol under four primary categories. Direct GHG emissions that occur from sources that are controlled or owned by CQU either at an individual site or facility level (such as natural gas) or aggregated corporately (such as vehicle fleet emissions).

Generation of Electricity Heat or Steam
These emissions result from combustion of fuels in stationary sources, e.g., boilers, furnaces, turbines.

Transportation of materials, products, waste, and employees
These emissions result from the combustion of fuels in company owned/controlled mobile combustion sources (e.g., trucks, trains, ships, airplanes, buses, and cars).

Fugitive emissions
These emissions result from intentional or unintentional releases, e.g., equipment leaks from joints, seals, packing, and gaskets; methane emissions from coal mines and venting; hydrofluorocarbon (HFC) emissions during the use of refrigeration and air conditioning equipment; SF6 emissions during use of high voltage equipment and methane leakages from gas transport.

Physical or chemical processing
Most of these emissions result from manufacture or processing of chemicals and materials, e.g., cement, aluminium, adipic acid, ammonia manufacture, and waste processing including waste water treatment. These processes include emissions from livestock including enteric fermentation and waste, use of fertilisers as well as Land Use, Land use change and forestry emissions.

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Table 1 Scope 1 emissions typical of an Australian University and used by Central Queensland University

GHG Protocol Category	Emissions source		Emissions activities	GHG emissions
Generation of energy	Gaseous fuels	Natural gas LPG	Use in boilers, heaters and cooking equipment	CO2, N2O, CH4
			Water Heaters and Cooking Appliances. forklifts	CO2, N2O, CH4
Transportation of materials and people	Liquid fuels	Diesel	On- site generators, site- based vehicles e.g. forklifts	CO2, N2O, CH4
	Solid fuels	Oils and greases Biomass	Consumption by energy generation equipment	CO2, N2O, CH4
	Liquid fuels	Petrol (gasoline) Diesel Ethanol	University vehicles	CO2, N2O, CH4
	Gaseous fuels	LPG	University vehicles	CO2, N2O, CH4
Fugitive emissions	HVAC- R		Air conditioning and refrigeration.	Various HFCs, PFCs
	HV electrical		On- site high voltage switchgear	SF6
Physical or chemical processes	Horticulture and agriculture		Research	CO2, N2O, CH4
	Livestock		Research	CO2, N2O, CH4
	Various research- based activities resulting in emissions (e.g. syngas from pyrolysis, methane from wastewater treatment)		Medical, agricultural, chemical engineering research	CO2, N2O, CH4, Other

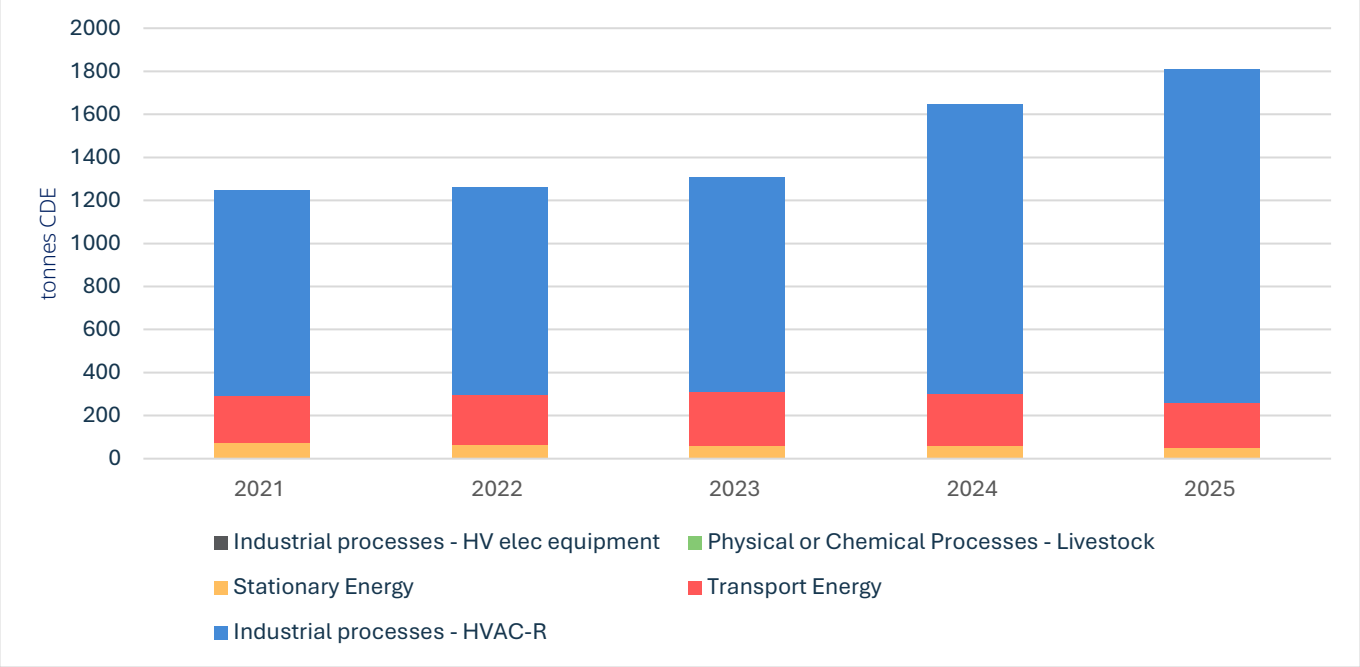
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SCOPE 1 DIRECT EMISSIONS

CQU's carbon inventory has been undertaken in accordance with a detailed Framework developed specifically for CQU to be consistent with the GHG Protocol, Climate Active Standards and National Greenhouse Gas Emissions Reporting Scheme (NGERS) as appropriate. Based on current emissions CQU doesn't trigger any site-specific of corporate energy consumption or emissions thresholds for reporting under NGERS.

Emissions from Scope 1 have risen from a total of 1,248 tonnes in 2021 to 1,809 tonnes in 2025 due to a more in-depth review of the emissions from refrigerants in HVAC and chillers, offset by a reduction from lower use of natural gas, fuel and livestock.

Figure 3 CQ University's Scope 1 emissions – 2021 to 2025



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Generation of electricity, heat or steam

CQU's stationary energy emissions arise from consumption of natural gas and LPG from the use of water heating, forklifts and cooking. Historic emissions data was based on primary data sourced from retailer invoices.

In 2021 these emissions totaled 71 tonnes which is approximately 6% of CQU's total Scope 1 emissions and 0.3% of CQU's Scope 1 and 2 emissions combined.

2025's emissions are 45 tonnes which is a material reduction driven by reduced natural gas usage.

Source	2021 Kg CDE	2025 Kg CDE
Stationary Energy	**70,537**	**44,850**
LPG	3,497	3,095
Natural Gas	67,041	41,755

Proportion – Scope 1

2021 Baseline – 5.65% 2025 – 2.48%



Date source: Natural Gas Consumption Register (taken from survey data compiled for TEFMA for each respective year. Primary data source was the issued invoice). For LPG data is taken from TEFMA annual surveys folder.

Transportation of materials, products, waste, and employees

CQU's transport energy emissions arise from consumption of petrol (gasoline), ethanol and diesel from the use of university vehicles including operational equipments (tractors, mowers etc) and rental cars. Invoice data from CQU's corporate fuel provider has been used to measure emissions since 2016.

Small quantities of fuel usage were obtained for plant and equipment and rental cars using credit card reconciliations

In 2021 these emissions were 218 tonnes which is approximately 17 % of CQU's total Scope 1 emissions and 1.2 % of CQU's Scope 1 and 2 emissions combined.

2025 consumption of diesel reduced and petrol increased from the 2021 baseline while ethanol reduced marginally. The net impact is a reduction to 209 tonnes.

Source	2021 Kg CDE	2025 Kg CDE
Transport Energy	**218,138**	**209,148**
Diesel	77,996	63,738
Ethanol	10	8
Gasoline (Petrol)	140,132	145,403

Proportion – Scope 1

2021 Baseline – 17.49% 2025 – 11.56%



Date source: DFM invoices/Ampol and BP

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Fugitive emissions

CQU's fugitive emissions arise from refrigerant leakage in its HVAC-R (heating, venting, air-conditioning and refrigeration) assets and SF6 leakage in its high voltage electrical equipment. The predominant sources are air-conditioning units which range in size from small, domestic-style, split system air-conditioners to large chillers. Measurement has been based on data from CQU's asset register since 2019. Assumed leakage rates have been based on relevant Climate Active categories for appropriate unit types.

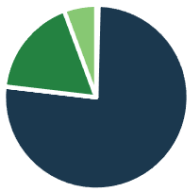
In 2021 CQU's refrigerant emissions were 953 tonnes per year which is approximately 77 % of CQU's total Scope 1 emissions and 5.4% of CQU's Scope 1 and 2 emissions combined. CQU's 2021 emissions of SF6 were 82 kilograms which is very small; approximately 0.01 % of CQU's total Scope 1 emissions and immaterial relative to CQU's Scope 1 and 2 emissions combined.

2025 emissions calculations show an increase from the 2021 baseline to 1,550 tonnes. This is mainly due to a redistribution of refrigerants assigned to various assets. In particular R143a to R134a. There was an increase in the rigour applied to identifying a very large number of smaller to medium sized HVAC-R assets leading to an increase in R410a and identification of freezers using R404a. It is expected that the accuracy of reporting HVAC-R will continue to improve as the asset register is updated to reflect new asset information.

Source	2021 Kg CDE	2025 Kg CDE
Industrial processes - HVAC-R	**953,720**	**1,549,768**
HCFC22	35,988	1,711
HFC32	76,011	10,655
R134a	63,180	959,857
R143a	768,672	-
R1234ze	2	9
R407c	4,896	12,929
R410a	4,969	312,257
R290	0	346
R404A	0	251,992
R600A	0	11
Industrial processes - HV elec equipment	**82**	**1,812**
SF6	82	1,812

Proportion – Scope 1

2021 Baseline – 76.45% 2025 – 85.68%





Date source: HVAC inventory

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Physical or chemical processing

CQU operates research programs that involve management of (beef) cattle, sheep and poultry with various program durations and outcomes. Emissions have been based on head counts obtained from research teams and are approximately 6 tonnes per year which is <0.5% of total emissions.

2025 saw a decrease in the number of cattle and sheep, leading to a corresponding reduction in emissions for this category to 3 tonnes.

Source	2021 Kg CDE	2025 Kg CDE
Physical or Chemical Processes - Livestock	**5,091**	**3,196**
Cattle	4,500	2,661
Sheep	440	376
Chickens	151	159
Proportion - Scope 1		
2021 Baseline – 0.41%		2025 – 0.18%





Date source: Mark Trotter.

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SCOPE 2 INDIRECT EMISSIONS FROM A GRID

Greenhouse gas emissions released to the atmosphere from the indirect consumption of an energy commodity such as energy consumed from a grid such as electricity, district heating and district cooling.

Electricity purchased from the grid.

CQU's electricity purchases from the grid are the most significant contribution to total Scope 1 and 2 emissions noting that Scope 3 emissions are yet to be quantified.

In 2021 electricity emissions totalled 16,543 tonnes which is approximately 93 % of CQU's total Scope 1 and 2 emissions combined. The vast majority being consumed at CQU's Queensland campuses.

2025 emissions show a material reduction relative to 2023, 2024 and 2021. This is primarily because CQU made a decision to voluntarily surrender the additional LGCs purchased from CS Energy for 2025 rather than selling them, which reduced the emissions by 5.1kt.

There was also a general greening of the grid, and a negative net growth in building GPA. While electricity consumption itself has remained static for the last three years, LED rollout continues across the campus, Emerald 200kW solar array has come online and 175kW car park solar system will be constructed in the first half of 2026 which will show as a future reduction once constructed.

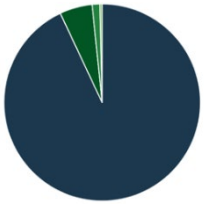
Emissions breakdown by State

Location Based

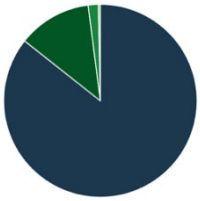
	2021 **Kg CDE**	2025 **Kg CDE**
QLD	16,959,598	14,244,595
NSW	595,867	436,823
VIC	374,576	315,504
SA	67,871	38,939
WA	86,676	-
	18,084,586	**15,035,861**
Market Based	**16,543,001**	**10,800,099**

Proportion - Scope 2

2021 Baseline – 93%



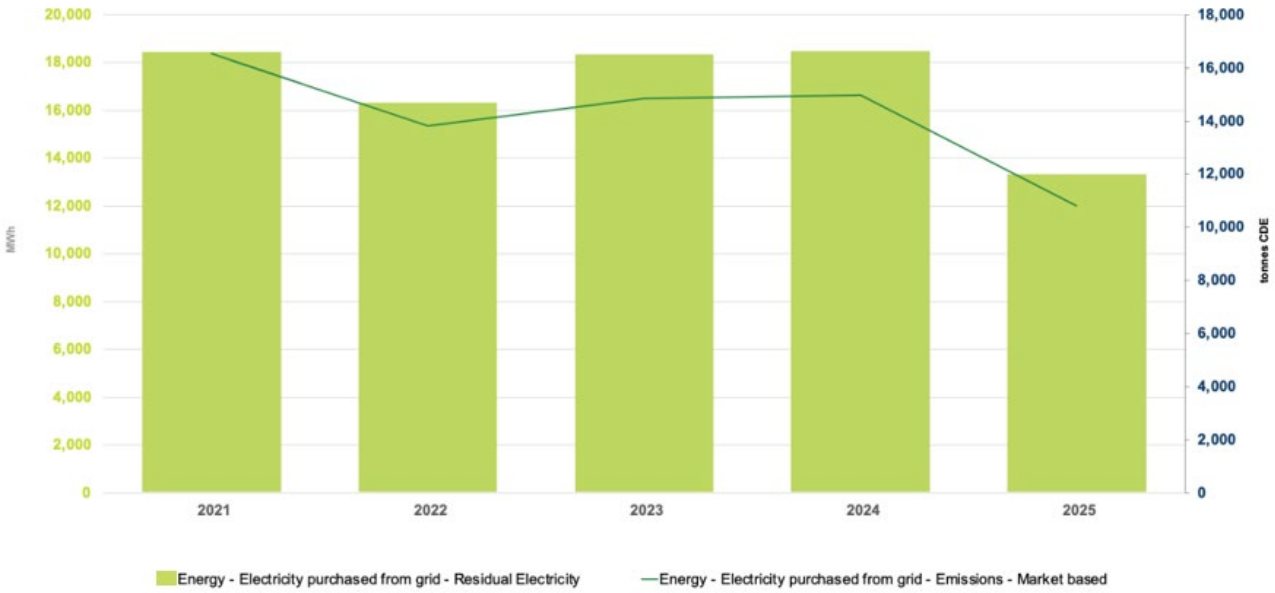
2025 – 85%



Date source: Electricity invoice data.

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Figure 4 CQU University's Scope 2 Emissions 2021 – 2025
*market based



CQU has elected to set its emissions reduction targets based on the **market-based method. The market-based method** calculates an organisation's electricity emissions in the context of its electricity *purchases*. It reports emissions according to an organisation's investments in different electricity products and markets, including from voluntary purchases of renewable electricity and mandatory schemes like the Renewable Energy Target.

Table 2 presents the market-based method applied to CQU's Scope 2 emissions from 2021 to 2025. It shows a reduction in emissions to 10.8kt CDE and an increase in renewable energy to 41.9%, largely due to the voluntary surrender of 5,157 LGCs, purchased via the electricity contract with CS Energy and generation from the solar system at Emerald.

Table 2 CQ University's Scope 2 Emissions Market based Calculations

Data type	2021	2022	2023	2024	2025
Total Grid kWh	22,665,322	24,068,789	22,633,921	22,669,866	22,524,614
Renewable Energy Target	18.54%	18.64%	18.96%	18.48%	17.91%
LGCs surrendered	0	3,242	-	-	5,157
Exported electricity	0	0	0	0	0
Residual Electricity	18,463,171	16,340,367	18,342,530	18,480,475	13,333,455
Emissions factors	0.90	0.85	0.81	0.81	0.81
Emissions - Market based	16,543,001	13,823,950	14,857,449	14,969,185	10,800,099
Behind-the-meter generation (small-scale)	-	-	246,375	246,375	246,375
Total Renewables	4,202,151	7,728,422	4,537,766	4,435,766	9,437,533
Renewable percentage	18.54%	32.11%	20.05%	19.57%	41.90%

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04

Taking Action

EMISSIONS REDUCTION STRATEGY: QUANTIFYING POTENTIAL EMISSIONS

Many of the potential emissions reduction actions outlined in the strategy, can be quantified. A number will require some further consideration and the measurement of existing emissions.

For example, the potential emissions reductions for several Scope 1 (Fuels) and Scope 2 (electricity) emissions have been quantified (see Table 3). In addition, a high-level assessment of the ease with which they can be implemented has been undertaken. The initiatives have thus been prioritised for execution based on the combination of their unit cost of emissions, ease of implementation and overall scale of emissions reduction potential.

SCOPE 1

Some scope 1 emissions reductions have been quantified and some estimated based on the potential uptake of measures such as fuel efficiency initiatives and reduction of travel in CQU vehicles, where business priorities allow.

Some strategies are subject to further consideration of the University and subject to any implementation plans such as the rate that the existing vehicle fleet is replaced with Electric Vehicles and powered by renewable energy.

SCOPE 2

Many of the potential Scope 2 emissions reductions have been quantified as the initiatives have been identified in the energy audit. Some others such as measures to reduce air conditioning load will need further analysis to determine the potential emissions reductions.

SCOPE 3

Once Scope 3 emissions have been quantified, it will be possible to quantify the potential emissions reductions available from actions in the emissions reduction strategy. For example, once waste audits have been conducted, it will be possible to estimate the potential emissions reductions from waste initiatives.

In the pages that follow we have documented CQU's Quantified Emissions Reductions Initiatives, and an update of progress on the Actions.

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CQ UNIVERSITY'S QUANTIFIED EMISSIONS REDUCTIONS INITIATIVES

Table 3 shows CQUs quantified carbon reduction initiatives from the plan for 2025 to 2030. Some initiatives have been progressed this year as identified in Table 4 on the next page. A key change to the plan for this year is that the LGC's from the contract with CS Energy were surrendered rather than sold. This decision was made because the value of the LGCs had reduced significantly during the year and no longer beneficial for CQU to sell them and helped to deliver a 29% reduction in emissions from the 2021 baseline, which is an advance of what was expected.

Table 3 Quantified carbon reduction initiatives 2025 – 2030

	Emission reduction/(increase) kt CDE	Cumulative % from 2021 baseline
2025 - 2026		
Reinstate air-con BMS controls	1.8	10.3%
Solar PV programme	1.5	18.9%
Minor energy audit recommendations	0.8	23.5%
Scope 1 initiatives	0.1	24.1%
Cumulative savings	**4.2**	
2026 - 2027		
Net Growth	(0.9)*	17.5%
Cumulative savings	**3.3**	
2028 - 2030		
CS Energy re-contract (estimate)	10	84.2%
Residual Scope 1 and 2 offsets	1	100%
Cumulative savings	**14.3**	

** Estimated increase from associated activities from planned additional buildings (for example New Cairns campus, Rockhampton Consolidation project)*

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Table 4 CQ University's quantified emissions reductions initiatives largest to smallest

ID	Action	KPI/Targets	Time	Ease of execution	Summary	Progress
S2-EL-01	Reinstate BMS time controls: Reestablish BMS communication networks and time controls.	**Emissions savings: 1,800 t CO2-e p.a.** Electricity savings: 2.5 GWh p.a. Cost savings: $160,000 p.a.	2025		**PROGRESSING:** ROK011, ROK091, RKC00B & MKY094 added to neoview platform	
S2-EL-02	Reinvest energy savings in solar PV (each year)	**Emissions savings: 1,500 t CO2-e** Electricity savings: 1.4 GWh p.a. Cost savings: $90,000 p.a.	2026		**PROGRESSING:** Trail 1.75kw car park system in design phase (Dec 2025) to be completed by mid 2026	
S2-EL-03	Computer shutdowns: Implement systems to turn off unoccupied computers.	**Emissions savings: 266 t CO2-e p.a.** Electricity savings: 350 MWh p.a. Cost savings: $24,027	2025		**PROGRESSING:** Discussions are proposed to review and determine optimal operating hours and evaluate alternative methods for delivering content to staff and students. Decision expected early 2026	
S2-EL-04	Consolidate buildings and spaces: initiatives to increase the utilisation of spaces within university buildings.	**Emissions savings: 260 t CO2-e** Electricity savings: 350 MWh p.a. Cost savings: $20,000	2026		**PROGRESSING:** Investigations are continuing. While Rockhampton City relocating to Rockhampton North spaces are transient	
S2-EL-05	Refine air-con time controls: Reinstate BMS control of air conditioning operating timers.	**Emissions savings: 196 t CO2-e p.a.** Electricity savings: 300 MWh p.a. Cost savings: $17,000	2024		**PROGRESSING:** ROK037, ROK028, ROK029, ROK030 & ROK033 (ground floor) added to neo view BM platform	
S2-EL-06	Conservatorium air-con manual control: Building Managers to switch off air conditioning systems when buildings are unoccupied.	**Emissions savings: 52 t CO2-e p.a.** Electricity savings: 70 MWh p.a. Cost savings: $4,676 p.a.	2025		**COMPLETE:** Conservatorium air condition is on a timer set to standard operating hours with a push button override when times outside of this period	
S2-EL-07	Replace RockCity mechanics workshop lights: LED High Bay Lighting Upgrades.	**Emissions savings: 14 t CO2-e p.a.** Electricity savings: Cost savings: $1,215	2025		**ON HOLD:** As Rockhampton City is being consolidated to Rockhampton North campus, upgrades at this site will not occur	
S2-EL-08	Rockhampton North library solar PV reconnection: Recommission the system to improve performance.	**Emissions savings: 5 t CO2-e p.a.** Electricity savings: 18 MWh pa Cost savings: $457 p.a.	2025		**REMOVE:** Rockhampton North Library has never had Solar PV installed. A CQU wide Solar asset condition report is proposed in 2026.	
S1-TF-01	Fuel switching: Immediate programme to encourage E10 and/or bio-diesel uptake for compatible vehicles	**Emissions savings: 6.3 t CO2-e p.a.**	2025		**PROGRESSING:** New fleet purchases have all been E10 compatible, though uptake on E10 usage is still low	
S1-TF-02	Fuel switching: Review scope for EV uptake based on appropriate vehicles and use cases. Develop fleet conversion prioritisation list and timeframes	**Emissions savings: 210 t CO2-e p.a.**	2035			
S1-AC-01	Adopt good practice for HVAC-R asset management for refrigerant leaks	**Emissions savings: 167 t CO2-e**	2035			

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