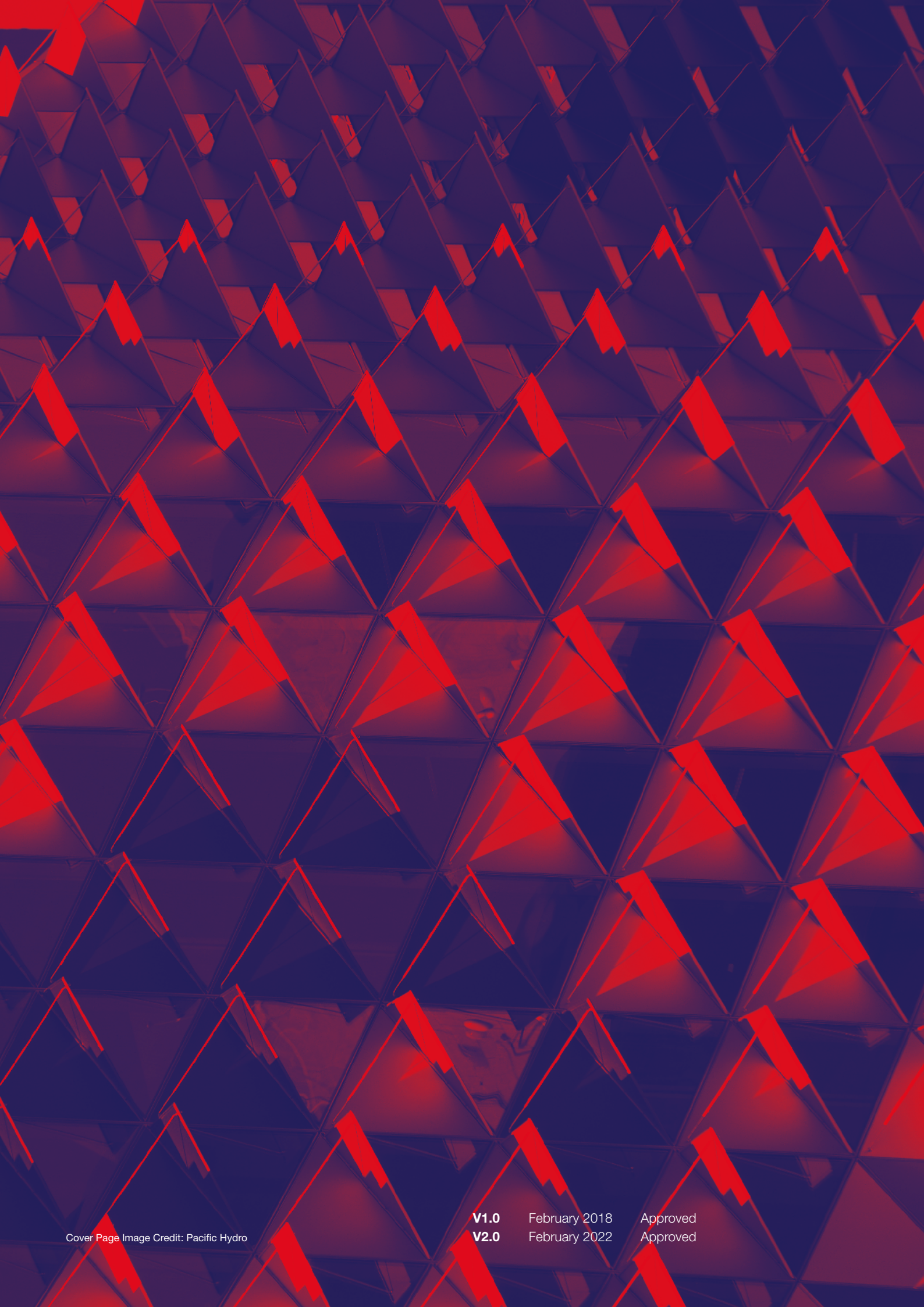
Carbon Management Plan

RMIT UNIVERSITY



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V1.0	February 2018	Approved
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1. Introduction

RMIT University aims to model institutional-wide excellence and take an influential role in helping shape a sustainable future.

RMIT University recognises that climate change is rapid and intensifying. Many of the changes observed in the climate are unprecedented in thousands, if not hundreds of thousands of years, and some of the changes already set in motion, such as continued sea-level rise, are irreversible over hundreds to thousands of years. However, strong and sustained reductions in emissions of carbon dioxide (CO2) and other greenhouse gases would limit climate change. While benefits for air quality would come quickly, it could take 20-30 years to see global temperatures stabilize. (AR6 – IPCC, 2021)

The high to moderate climate change risks include an increased number and intensity of hot days, higher intensity rainfall and storm events, as well as long-term drying. RMIT University is at risk from climate-related impacts which will affect students, staff, buildings, infrastructure assets and the broader community.

“Climate change is the biggest thread modern humans have ever faced… [and] is a ‘crisis multiplier’ that has profound implications for international peace and stability.”

UN Secretary-General Antonio Guterres, February 2021.

The Sustainability Policy states that the University must, ‘ensure that RMIT’s greenhouse gas emission reduction targets and actions enable a transition to a low carbon future, whilst adapting the university to the impacts of climate change’.

The UN Sustainable Development Goals (SDGs) provide a pathway for organisations to a more sustainable future. The 17 goals and their respective set of targets and indicators help organisations to identify sustainability aspects relevant to their operations and add value. Governed by the Sustainability Committee, RMIT made a formal public commitment to the SDGs through the Sustainable Development Solutions Network in June 2017. The SDGs which have the most material impact on addressing climate change are:

- **Goal 7 Affordable and Clean Energy:** Ensure access to affordable, reliable, sustainable and modern energy for all
- **Goal 12 Responsible Production and Consumption:** Ensure sustainable consumption and production patterns
- **Goal 13 Climate Action:** Take urgent action to combat climate change and its impacts

To pro-actively address these impacts within the University portfolio, a number of key strategic plans have been developed:

- RMIT Carbon Management Plan (2022)
- RMIT Climate Change Adaptation Plan (2020)
- RMIT Sustainable Transport Plan (2015)

The RMIT Carbon Management Plan provides strategic guidance for RMIT University to manage its greenhouse gas emissions profile and sets the goal to be a carbon neutral organisation. The Plan also serves as a commitment by RMIT University to accurately measure, report and manage the emissions profile within the changing legislative framework in Australia.

The first iteration of the Carbon Management plan (2018) committed RMIT to be carbon neutral by 2030. However, in recognition that more urgent action is needed to mitigate catastrophic climate change impacts and from the progress the University has made to date, RMIT is strengthening its target:

RMIT University commits to being a carbon neutral organisation by 2025 as a significant step to demonstrate the University's commitment to sustainability and addressing climate change. Carbon neutrality will be certified under the Australian Government's Climate Active scheme.

A significant portion of the University's emissions come from the use of energy within the organisation. The University will continue to address energy consumption through a range of priority areas outlined in this plan. To keep the document current, the Carbon Management Plan will be reviewed and updated every two years.

1.1 Summary of Actions

To reach the commitment to be a certified carbon neutral organisation by 2025 RMIT will address the emissions portfolio with the following actions:

Energy Efficiency

- RMIT University will preference energy efficiency all new building design decisions and asset selection.
- RMIT University will aim to reduce the overall energy consumption of the building portfolio and identify areas of energy wastage.
- RMIT University will continue to target a 5-star Green Star Buildings (formally Design As-Built) rating for all applicable new developments and significant refurbishments.
- RMIT University will continue to tune the existing Building Management System parameters to ensure energy efficiency is prioritised and energy wastage is minimised across all operations. without compromising student and staff outcomes.

Renewable Energy

- RMIT University is committed to expanding on-site and off-site renewable energy generation wherever possible.
- RMIT University is committed to 100% renewable electricity across the operations portfolio by 2025.

Electrification

- RMIT University will preference electricity as the only source of energy in all new buildings and refurbishments wherever practical and commercially viable.
- RMIT University will aim to remove smaller natural gas assets through targeted projects, replacing them with electrical equivalents where practical and commercially viable.

Sustainable Transport

- RMIT University will prioritise sustainable transport options for students and staff, encouraging active transport and public transport options ahead of vehicle transport.
- RMIT University will actively support the transition of transportation options to electric options.
- RMIT University will develop partnerships to provide public electric vehicle charging infrastructure at strategic locations across the University.
- RMIT University will procure electric vehicles for the fleet within the appropriate travel category at the next major fleet refresh and consider a wider inclusion.
- RMIT University will offset the emissions from all domestic and international travel by 2025.

Carbon Offsetting

- RMIT University will offset all residual emissions in a way that demonstrates best practice by implementing key principles in offset purchasing decisions by 2025.

Data and Analytics

- RMIT University will assess monitoring and metering decisions on a case-by-case basis, driven by the principle that meters must enable useful and timely data to underpin demonstrable actionable insights.
- RMIT University will continue to work with the sector to support best practice reporting methodologies.

2. Context

The RMIT Carbon Management Plan provides strategic guidance to measure and manage the greenhouse gas emissions profile of the University. The plan maps actions to meet the University's carbon neutral commitment and will assist in meeting the University's legislative reporting requirements.

RMIT University has made sustainability commitments over two decades. The second iteration of the RMIT Carbon Management Plan further solidifies these commitments and sets the strategy for future years around greenhouse gas emissions.

Throughout the document key commitments and actions will be called out and highlighted (look out for the blue boxes).

2.1 Commitments

RMIT is committed to advancing its sustainability ambitions as an organisation that models institution-wide excellence by embedding sustainability principles and practices throughout learning and teaching, research and operational activities.

- In 1995, RMIT University became a signatory to the Talloires Declaration. The Talloires Declaration is a document containing the signatures of higher education institution leaders, pledging that their respective university or college will become world leaders in developing, supporting and maintaining sustainability.
- In 2003, RMIT University became a signatory to the United Nations Global Compact, the world's largest corporate sustainability initiative. Currently, there are 7 Australian academic institutions holding membership to the Compact. RMIT submits an annual communication on engagement to the Compact on the practical actions the organisation has taken to promote the principles.
- In 2008, RMIT University signed the Australian Technology Network (ATN) Declaration of Commitment to Local, National and Global Sustainability, which pledges to make sustainability a focus in the University's teaching and learning programs, research, infrastructure and operations. Included with this agreement was the commitment for all ATN Member Universities to reduce their greenhouse gas emissions by 25% by 2020 on a 2007 baseline. RMIT achieved this target in 2016, four years ahead of schedule.
- In 2011, RMIT University signed up to the Sustainable Urban Precincts Program, two large energy performance contracts with Siemens and Honeywell. The program of works aimed to reduce the greenhouse gas profile of the University. This project has delivered 30,000 tonnes of greenhouse gas emission reductions for the University.

- In 2015, the University joined the UN Global Compact Network Australia (GCNA) to strengthen our commitment to UN Global Compact and the universal principles on human rights, labour, environment and anti-corruption. As part of this membership, RMIT is required to submit an annual Communication on Progress – RMIT currently undertakes annual reporting under the Global Reporting Initiative (GRI).
- In 2015, RMIT University committed to reducing greenhouse gas emissions in alignment with Sustainability Victoria's TAKE2 campaign. The campaign records current and future actions government, industry and the community will be taking to reduce emissions. This assists Sustainability Victoria with monitoring its progress towards the 2050 zero greenhouse gas emissions reduction target. RMIT's pledge details actions we have/are undertaking to address greenhouse gas emissions and take action on climate change.
- In 2017, RMIT University recognised the UN's Sustainable Development Goals as a pathway to creating inclusive future societies as a signatory to the Sustainable Development Solutions Network University Commitment to the Sustainable Development Goals.
- In 2019, RMIT University began purchasing 8GWh of renewable electricity per year under the Melbourne Renewable Energy Project.
- In 2021, RMIT University began purchasing a further 15GWh of renewable electricity per year under the Melbourne Renewable Energy Project 2.
- In 2022, RMIT University joined the UN's Race to Zero initiative to drive commitments to around the shift to a decarbonised economy. Joining others around the work in the race to net zero, absolute zero or climate positive goals.

2.2 Scope

The RMIT Carbon Management Plan covers all scope 1, 2 and 3 emissions across the entire RMIT Group. Inclusions are based on operational control assessments adapted from the National Greenhouse and Energy Reporting Act 2007 (Australia).

RMIT Group

RMIT Australia
- City Campus
- Bundoora Campus
- Brunswick Campus
- Point Cook
- Bendigo

RMIT Vietnam
- Saigon North
- Saigon South
- Hanoi
- Da Nang

RMIT Europe
- Barcelona

Ref: Appendix A – Organisational Boundaries.

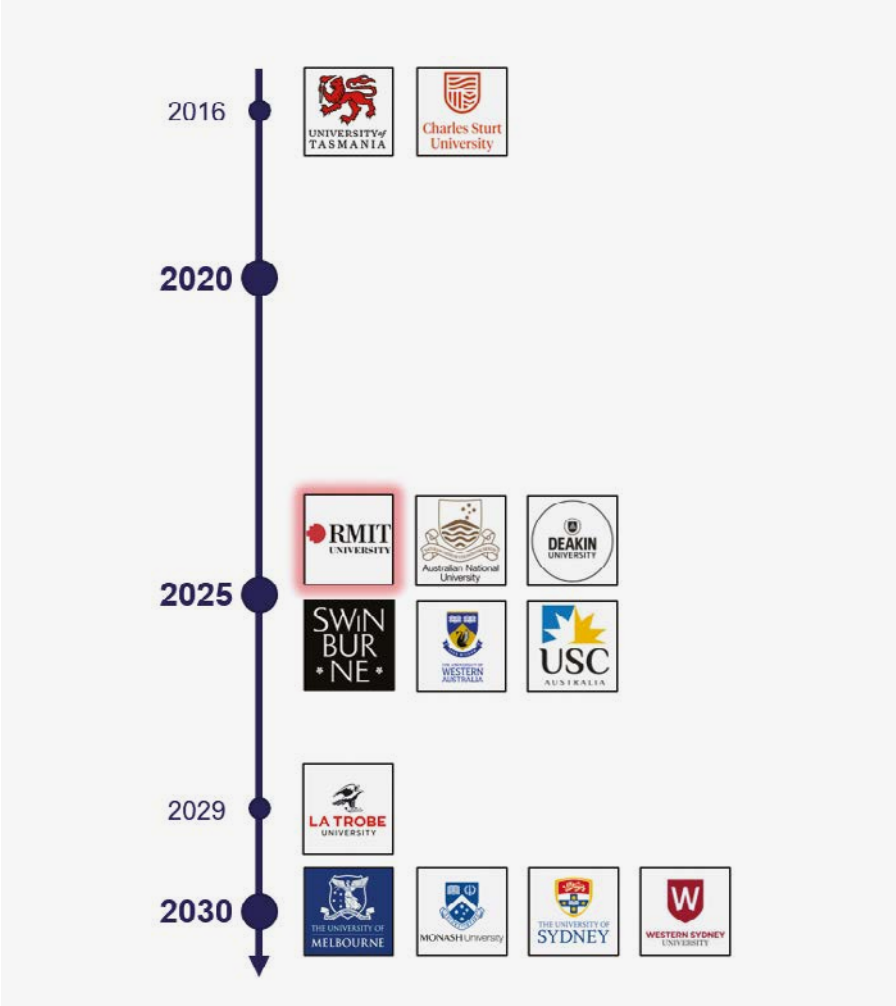
2.3 Positioning

RMIT University is a sustainability leader within the local and international communities in which it operates. It is important that emissions management reduction targets align with community expectations and set a leadership example for the public and private sectors.

Subsequent sections outline the targets set by other Universities in Australia and different levels of government in which RMIT operates.

Australian Universities

Universities in Australia play a lead role in demonstrating the capability of implementing effective sustainable practices. By 2021 a third of all Universities in Australia had committed to a carbon neutral target. Below is a graphical representation of a number of Australian University emissions reduction targets.



Government

Local Government – City of Melbourne – Climate Change Mitigation Strategy 2050

The City of Melbourne's operations have been certified as Carbon Neutral for a number of years. The City of Melbourne's Climate Change Mitigation Strategy to 2050 sets a goal for the municipality to be net zero by 2050, covering all activities within the council area. This target aligns to the 1.5C Paris Climate Agreement and will require significant action and collaboration across the municipality.

This Climate Change Mitigation Strategy identifies the actions that they can take to leverage systemic change. This includes aspirations to pilot a virtual power plant powered by renewables in the city and will expand renewable energy purchasing to facilitate agreements for businesses across the city. The City of Melbourne are also advocating for State and Federal Government action to deliver 100 per cent renewable energy to the city and to increase the ambition of Australia's climate policy.

State Government – Victorian State Government – Net Zero by 2050

The Victorian State Government set an emissions target of net-zero by 2050. With interim reduction targets of 28-35% by 2025 and 45-50% by 2030 (below 2005 levels). To achieve these emissions reduction targets actions include:

- transition the state to a clean energy future
- invest in innovative technologies
- recognise and safeguard the role of our natural environment in reducing emissions
- support Victorian businesses and communities to cut emissions

Federal Government – 26-28% Reduction by 2030

The Australian Federal Government first communicated its Nationally Determined Contribution under the Paris Agreement is to reduce emissions to 26-28 per cent below 2005 levels by 2030. The Australian Federal Government's policies reduce emissions by boosting energy productivity, reducing waste, rehabilitating degraded land, increasing renewable energy and driving innovation.

International – Paris Agreement

The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century.

Implementation of the Paris Agreement requires economic and social transformation, based on the best available science. The Paris Agreement works on a 5- year cycle of increasingly ambitious climate action carried out by countries. By 2020, countries submit their plans for climate action known as nationally determined contributions.

The Paris Agreement follows from the earlier Kyoto Protocol to fight global warming by reducing greenhouse gas concentrations in the atmosphere to a level that would prevent dangerous anthropogenic interference with the climate system.

2.4 UN Sustainable Development Goals

The Sustainable Development Goals (SDGs) are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice. The SDGs were developed through consultation with the 194 members states of the United Nations and formally adopted in September 2015. The SDGs formally replace the Millennium Development Goals and further the agenda of sustainable development in the global community.

The Carbon Management Plan explicitly addresses Goal 7, Goal 12 and Goal 13 of the SDGs and contributes towards the targets detailed below.

SDG	Target	How the RMIT Carbon Management Plan contributes
	7.2 **Increase substantially the share of renewable energy in the global energy mix by 2030**	Continue to invest in the development and implementation of both on-site and off-site renewable energy generation sources – in the short term, this includes the expansion of on-site solar PV installations or the purchase and support of renewable energy certificate or carbon offset schemes.
	7.3 **Double the global rate of improvement in energy efficiency by 2030**	Improving building energy intensity across the RMIT portfolio through improvements to design standards and infrastructure upgrades.
	12.2 **By 2030, achieve sustainable management and efficient use of natural resources**	Reducing energy consumption levels of RMIT buildings, increasing recycling rates, reducing resource intensity of construction and renovations.
	12.a **Support developing countries to strengthen their scientific and technological capacities to move towards more sustainable patterns of consumption and production**	Future purchase of carbon offsets that align to the directions outlined in the Carbon Offset Strategy.
	13.2 **Integrate climate change measures into national policies, strategies and planning**	Setting emissions reduction targets and reducing emissions onsite to contribute to climate change mitigation.

2.5 Learning, Teaching and Research

RMIT acknowledges that some of the largest impacts the University can have are beyond the boundaries of the institution. These impacts are through the application of sustainability knowledge passed to the next generation of RMIT students entering the workforce, or innovative design and technology solutions developed by RMIT researchers – catalysing change throughout global communities.

Within the University boundary, there is also a significant role to play for students and staff, the implementation of the carbon neutral priorities may result in projects that have student interface through coursework or the installation of new technologies in a live operating environment with research applications and data collection.

The breadth of the interaction will depend on the depth of the relationships between operational and academic staff, ensuring any opportunities are realised and practically implemented.

3. Carbon Neutral Target

3.1 Carbon Neutral 2025

RMIT University commits to being a carbon neutral organisation by 2025 as a significant step to demonstrate the University's commitment to sustainability and addressing climate change. Carbon neutrality will be certified under the Australian Government's Climate Active scheme.

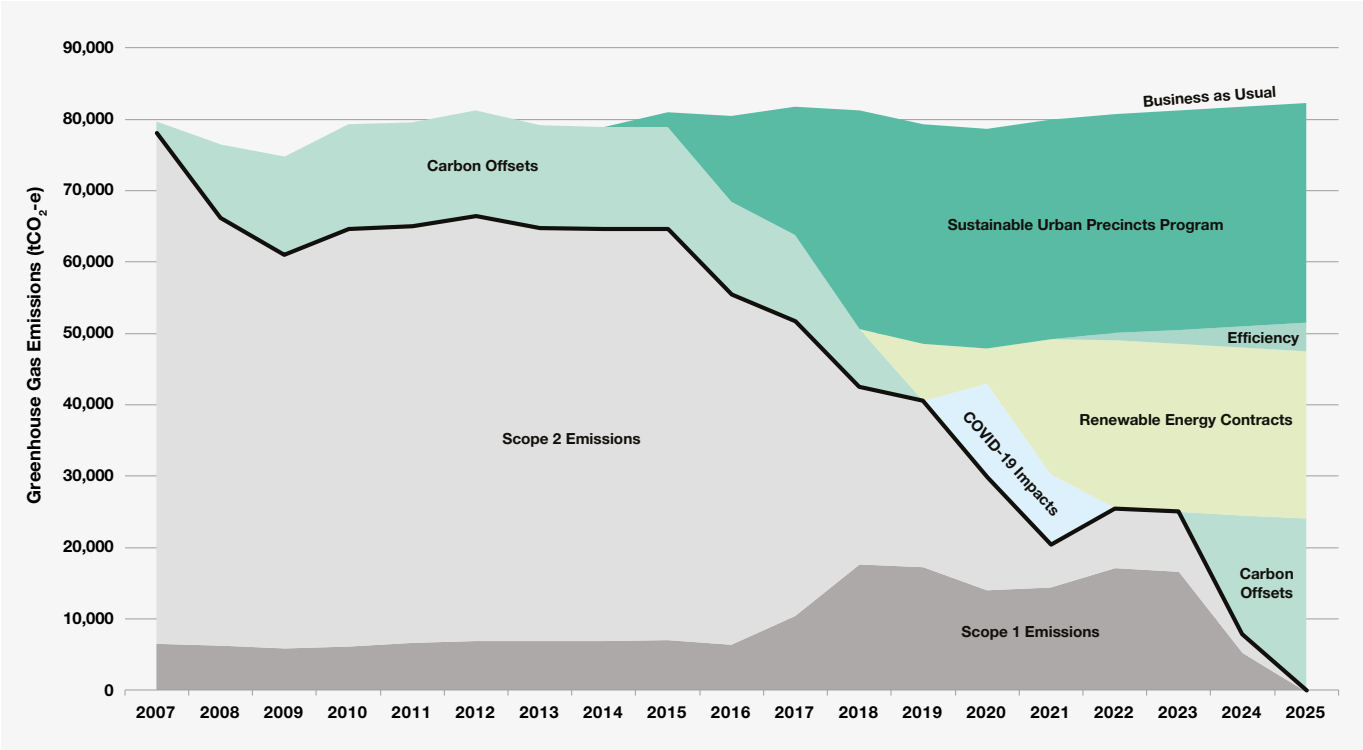
RMIT will strive to implement on-site initiatives to meet half of the emissions reductions, while the balance may be sourced from offsetting activities. RMIT will report the emissions profile in the Annual Sustainability Report (or equivalent annual publication).

Emissions Reduction Target 2025 Details	
Scope	The target covers Scope 1, 2 and 3 emissions in alignment with the Australian Government's Climate Active Carbon Neutral Standard for Organisations.
Accounting	The target year is the 2025 calendar year (1 Jan 2025 – 31 Dec 2025). Required emissions reductions to achieve the target will be purchased in arrears.

RMIT will review the target every two years to determine its adequacy and the University's trajectory. In future reviews RMIT may wish to consider a 'carbon positive' goal, noting the increasing recognition that more aggressive global emissions reductions may be necessary to slow down global temperature rises.

3.2 Progress to Date

RMIT Emissions Forecast to 2025



In reporting on the progress to date RMIT's emissions profile from 2007 to 2020 represents the actual reported emissions taken from the RMIT emissions database, this data is used to then forecast the expected emissions profile out to the carbon neutral target date in 2025. The impacts due to COVID-19 have introduced a level of uncertainty to future forecasts as the University has introduced a hybrid teaching model, this is represented as a temporary decrease across the portfolio in 2020 and 2021.

The profile forecasts emissions growth under a business as usual scenario, this is based on the emission intensity of RMIT's building portfolio extrapolated by the average observed increase in gross floor area from the last 10 years, this is shown as a 1% per annum under a business as usual scenario.

The graph focuses on the scope 1 & 2 emissions, it is acknowledged that the complete emissions profile (including scope 3 emissions) will be larger, therefore the offset purchase required for 2025 will need to expand to cover all three scopes. RMIT does not have historic scope 3 emissions data, but this is being developed over time.

4. Emissions Inventory

4.1 Carbon Management Hierarchy

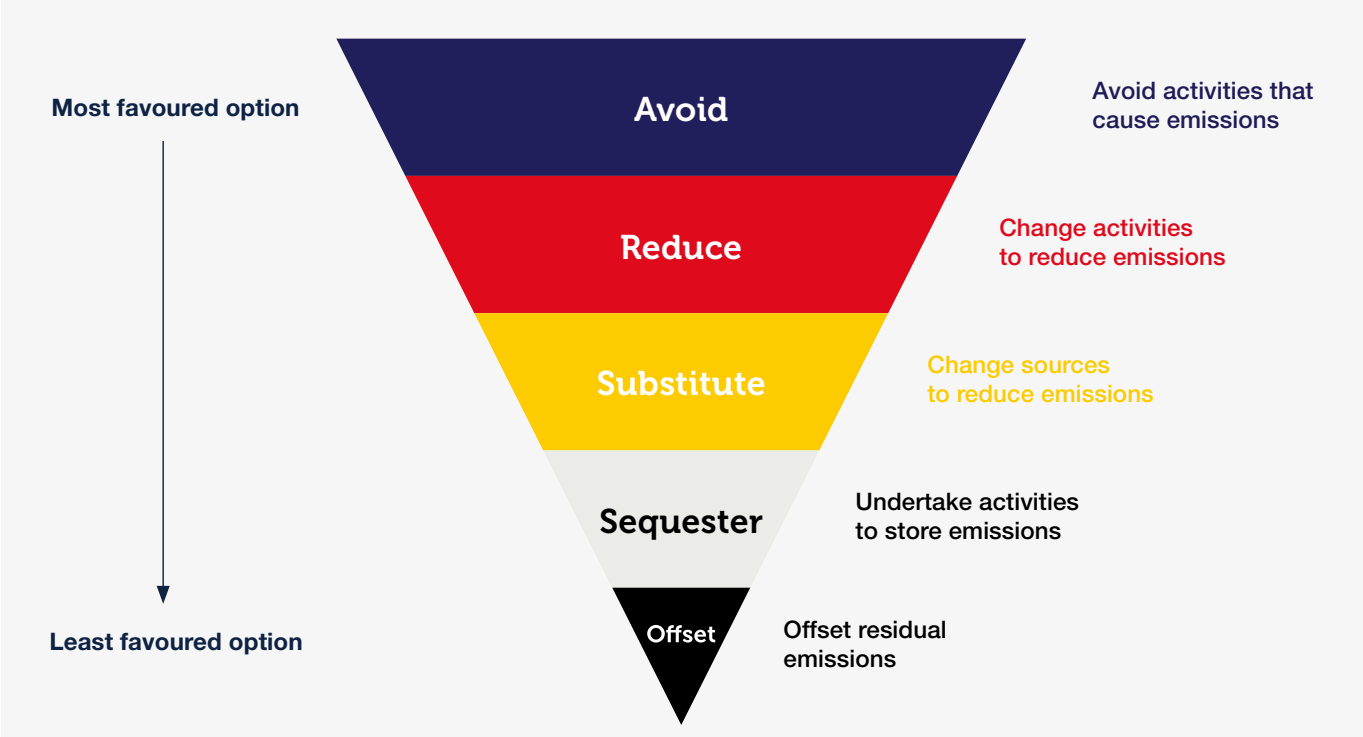
Avoidance: The best way to reduce your carbon impact is by directly avoiding greenhouse gas emissions. Avoidance opportunities often do not require a capital investment and may just be a change in behaviour for a business, a change in controls or settings, other opportunities may involve investment but result in a cost-saving or other benefit.

Reduction: Reducing greenhouse gas emissions typically involves the installation or modification of equipment so that it creates fewer emissions than before (e.g. high-efficiency lighting); it can also encompass the recovery of energy from existing processes (e.g. heat output from co-generation).

Substitution: Changing the primary energy source used to be from a less emission-intensive source, may offer carbon reductions (e.g. on-site solar PV or other on-site generation); this may also include the purchase of renewable energy through contracting. Given RMIT's carbon neutral target, preference will be given to shifting to zero-emission options instead of incremental improvement.

Sequestration: Emissions can be actively removed from the atmosphere through activities or processes, these can include carbon stored in forests, vegetation, soils and the ocean. For many organisations, there may be limited opportunities to be directly involved in this activity.

Offsetting: Carbon offsetting is the purchase of a reduction certificate that allows a reduction project outside of the scope of an organisation to be claimed against the profile. Carbon offsets provide a legitimate means of reducing the net impact of greenhouse gas emissions. Offsets sit as the least favoured option in the hierarchy because at-source opportunities should be considered first. However, the purchase of offsets as the marginal abatement option can effectively introduce an internal carbon price that may be factored into all emission-related decision-making and planning.



The RMIT Carbon Management Hierarchy is based on the Victorian Environmental Protection Authority carbon management principles.

4.2 RMIT Emissions Profile

RMIT University's emissions profile is defined as including all scope 1, 2 & 3 emissions for all future commitments and goals.

RMIT tracks the changes in emissions over time through a subset of the University's total emissions profile. For the purposes of demonstrating progress since 2007 the scope 1 & 2 emissions will be used as the consistent benchmark, this subset of emissions provides certainty in historical data and consistency for reporting.

RMIT University commits to disclosing scope 1, 2 & 3 greenhouse gas emissions annually across the entire RMIT Group (including international operations).

RMIT Simplified Emissions Profile Summary

4.3 Standards Used

The emissions inventory is compiled in alignment with the Greenhouse Gas Protocol – Corporate Accounting and Reporting Standard 2015, the approach and principles in ISO 14064-1:2006 and the Australian Government's Climate Active Standard for Organisations.

Organisational control and boundaries are determined using methodologies aligned to the National Greenhouse and Energy Reporting Act 2007. Activity data is collected and emissions are calculated according to the National Greenhouse Accounts (NGA) Factors published annually by the Australian Government Department of Environment. Where available, locally applicable Australian emissions factors are used; when a local emissions factor is not available a relevant international factor will be substituted and referenced. For scope 3 emissions a sector-based emissions factor is typically used, unless a specific supplier provided emissions factor is provided or can be calculated.

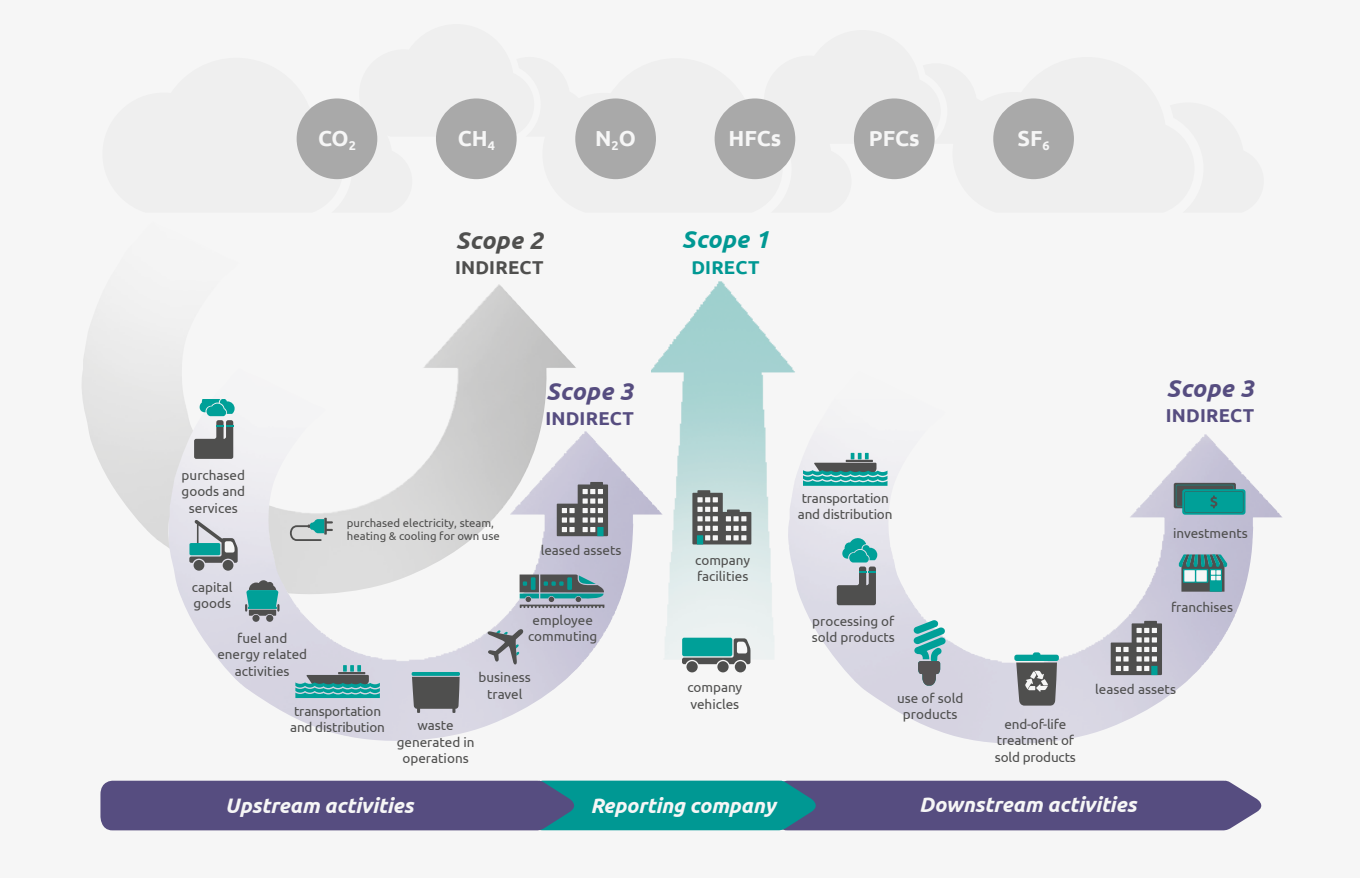
4.4 Assurance

RMIT does not currently pursue external assurance for the disclosure of the emissions profile, instead opting for internal auditing of existing processes and procedures consistent with the principles of the Integrated Management System (Quality, Environment, Health and Safety) as well as the Asset Management and Facilities Management Systems.

RMIT maintains a comprehensive emissions database which meets our existing legal obligations, this emissions database currently provides a level of assurance to the organisation that the profile is being adequately monitored and managed, including a full audit trail of all records.

4.5 Emissions Scope

RMIT considers scope 1,2 & 3 emissions material for the purposes of measurement and management; in alignment with the Greenhouse Gas Protocol and the Australian Government's Climate Active Standard for Organisations.



Scope 1 emissions represent emissions caused on-site and are primarily caused by the consumption of natural gas, but also includes the use of fuel within RMIT fleet vehicles and aircraft in the flight school.

Scope 2 emissions represent emissions from the consumption of electricity on-site, calculated using the 'location-based' method, based on the average emissions of the relevant state electricity generation mix.

Scope 3 emissions represent emissions that are generated in the upstream or downstream supply chain as a consequence of the activities of RMIT University. The sources are typically not owned or controlled by RMIT and can include sources such as purchased materials, transportation of fuels, the use of sold products/services and air travel.

Emissions are back-calculated as far as possible for new emissions sources or if new data becomes available. Previously reported data that is found to be erroneous or can be more accurately determined may be updated retrospectively.

Baseline

RMIT first calculated its scope 1 & 2 emissions inventory for 2007, following the introduction of the National Greenhouse and Energy Reporting Act 2007. The concept of the 2007 baseline is only applicable when looking at RMIT's scope 1 & 2 emissions.

Since the baseline was established at RMIT the methodologies and boundaries have been updated to disclose a more complete emissions profile, covering scope 1, 2 & 3 emissions

Tracking of RMIT emissions reductions are against the 2007 baseline figures using the National Greenhouse Account factors for 2006-07 and 2007-08 respectively. All activity data for the baseline period is contained within the RMIT emissions database.

Exclusions

Emissions not included in the RMIT emissions profile are sites for which it is deemed that RMIT does not have operational control (see Appendix A – Organisational Boundaries).

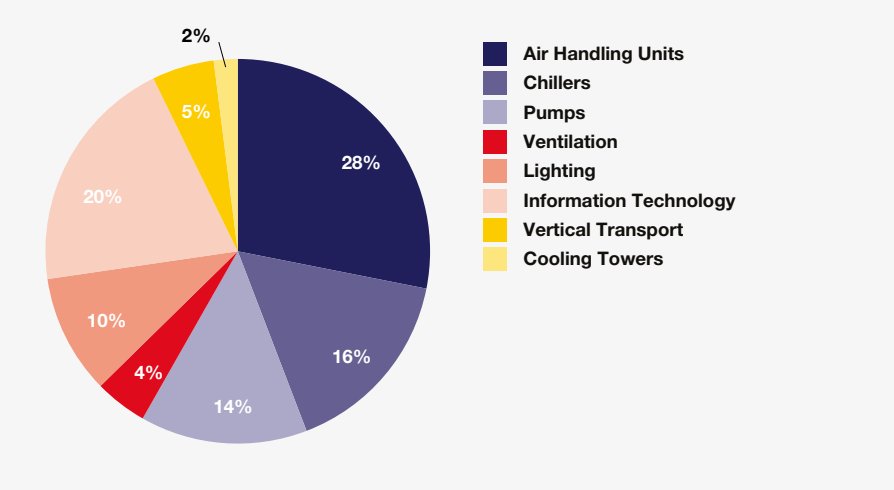
4.6 Energy Usage

Energy audits completed across the RMIT University Australian portfolio give an indicative breakdown of the end-use of energy on-site. The two major sources of energy are electricity and natural gas consumption. Electricity is primarily used for heating, ventilation and air conditioning (HVAC) activities, while natural gas is primarily used in on-site electricity production, as well as in boilers for space heating purposes.

Since the installation of a 3.2MW co-generation plant and a 1.2MW tri-generation plant the natural gas profile has more than doubled. The plants generate approximately 40% of RMIT's electricity requirements, significantly reducing the import high emissions intensity grid electricity. The effective emission intensity of generation from the power plants is approximately 0.50 kgCO2e/kWh compared with Victorian grid power at 0.98 kgCO2-e/kWh in 2020, representing almost a 50% reduction.

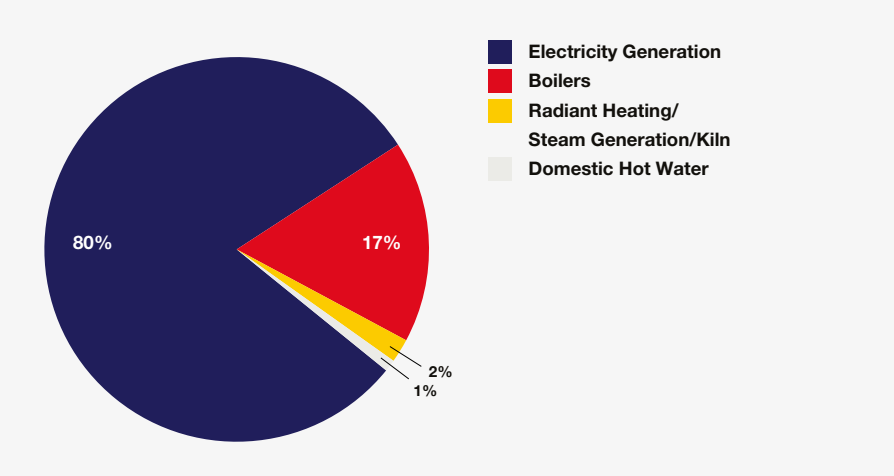
Electricity

Approximately 50% of the University's electricity use goes to HVAC or related activities, a further 20% goes to various IT equipment and 10% to lighting. As mentioned above, the electricity supplied to RMIT has changed significantly through the installation of the two power plants. Electricity demand has also decreased due to projects installing LED lighting, chiller replacements and HVAC improvements. The total electricity requirement of RMIT is approximately 57,000 MWh/year.



Natural Gas

An indicative breakdown of the natural gas (total use 340,000 GJ/year) used across the portfolio shows the vast majority of natural gas is used in the co-generation and tri-generation plants to generate electricity, hot water (for heating) and chilled water (for cooling from the absorption chiller associated with the tri-generation plant). Additionally, a significant number of boilers are also used to meet heating requirements on-site.



5. Carbon Neutral Priorities

The following priority areas provide the University with the greatest opportunity to reduce emissions across the portfolio and support action in our broader community.

Energy Efficiency

- Prioritising energy efficiency in the built environment

Renewable Energy

- On-site and off-site renewable energy

Electrification

- Transition out of natural gas (where practical)

Sustainable Transport

- Consider all transport activities to reduce emissions from travel

Carbon Offsetting

- Offset remaining emissions from credible sources

Data and Analytics

- Open access to data to facilitate the above items

It is acknowledged that RMIT has already significantly progressed along the journey to carbon neutral and some opportunities may greater potential than others. Ultimately a significant purchase of carbon offsets will be required to finally move RMIT University to a position where it can report to be carbon neutral. The size and scale of the purchase will vary depending on the emissions profile recorded in 2025.

5.1 Energy Efficiency

Energy efficiency means using less energy to perform the same task, it is often the lowest cost and quickest way to reduce greenhouse gas emissions. With energy costs increasing over time and with the growth of student numbers it is important that any new building or refurbishment is as energy efficient as possible. Implementing energy efficiency through the application of sustainable design principles in buildings can save energy and reduce financial costs. Energy efficiency improvement also often offers multiple benefits such as improved comfort and health, improved productivity, resilience and potential to reduce capital costs and capacity of renewable energy production equipment.

RMIT University will preference energy efficiency for all new building design decisions, refurbishments and asset selection.

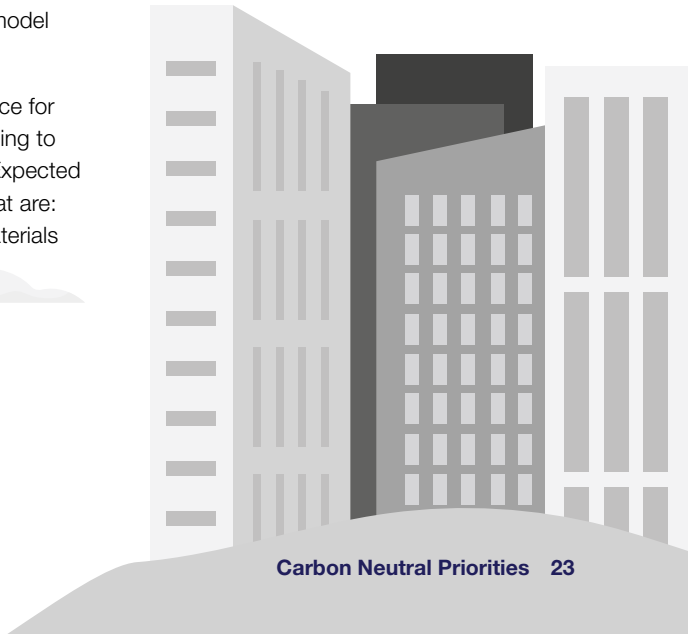
RMIT University will aim to reduce the overall energy consumption of the building portfolio and identify areas of energy wastage.

5.1.1 Sustainable Design Principles

RMIT is strongly committed to transforming its own built environment to create sustainable and resilient cities. Consideration of holistic design of infrastructure is important in reducing the emissions impact of RMIT's buildings. Ensuring sustainable design principles are incorporated appropriately where they can assist in delivering energy efficiency, supporting emerging low emission solutions and helping to manage ongoing costs.

RMIT ensures that changes to the built environment demonstrate leadership excellence in sustainable design and innovation. The University values the Green Star framework from the Green Building Council of Australia (GBCA), as a clear and consistent model to recognise sustainability design.

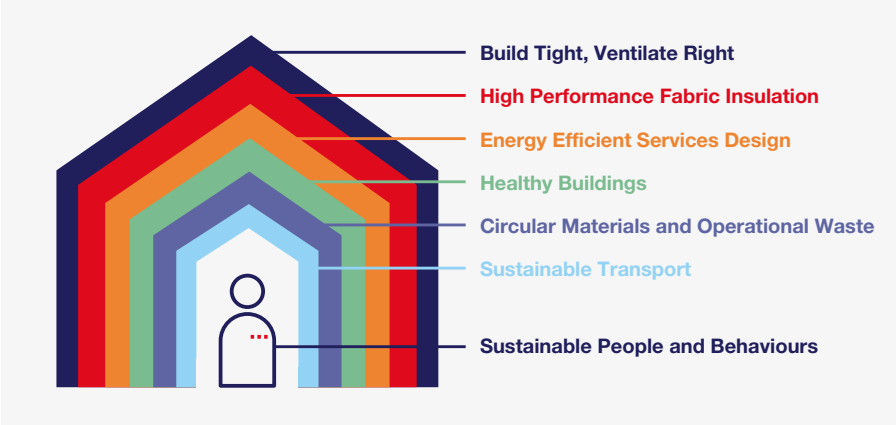
The Green Star framework has evolved over time to ensure it reflects best practice for sustainability in the built environment. The future focus for Green Star is responding to the global megatrends that are shaping the industry, including climate change. Expected changes outlined by the GBCA include a focus on 'climate positive' buildings that are: fossil fuel-free, highly efficient, powered by renewables, built with low carbon materials and offset with nature.



RMIT University will continue to target a 5-star Green Star Buildings (formally Design As-Built) rating for all applicable new developments and significant refurbishments.

Achieving a rating that exceeds 5-Star is encouraged where it can be demonstrated that there is a robust business case for the incremental capital expenditure in order to achieve whole-of-life cost benefits, user amenity, functionality and strategic outcomes.

For all other projects, RMIT will apply sustainable design principles through the application of the RMIT Design Standards. The RMIT Design Standards are regularly updated by the Property Services Group to reflect best practice design and a changing education environment. The sustainable design principles are outlined below with reference to the specific clause in the RMIT Design Standards and are the basis on which the Sustainability Team engages throughout the project lifecycle. The sustainable design principles cover wide sustainability considerations, with a particular focus on energy-efficient design.



5.1.2 Building Management Systems and Controls

Heating, ventilation and air conditioning (HVAC) systems are the single largest input affecting thermal comfort in the built environment, which is the most important criterion for occupant wellbeing and is typically the issue that produces the greatest occupant dissatisfaction. Where occupants can control (or influence) indoor air temperature and there is dissatisfaction, energy efficiency targets are missed due to strategies being overridden.

A Building Management System (BMS) or Building Automation System (BAS) is a computer-based control system that monitors and controls the building operations. The most common function of a BMS is to control the building HVAC system; other operations can include electrical equipment, lifts, elevators, plumbing, fire systems, CCTV and security.

RMIT currently had a significant number of BMS across the portfolio, over time these have been consolidated through the following primary systems.

Location	Primary BMS Provider
City Campus	Siemens Desigo
Brunswick Campus	Honeywell Enterprise Buildings Integrator (EBI)
Bundoora Campus	Honeywell Enterprise Buildings Integrator (EBI)

The RMIT Design Standards specify that all new BMS installations must be BACnet compatible to ensure communications and interoperability. It is expected that all BMS servers are virtualised to allow Property Services staff and contractors to access the systems remotely.

RMIT University will continue to tune the existing Building Management System parameters to ensure energy efficiency is prioritised and energy wastage is minimised across all operations without compromising student and staff outcomes.

RMIT will continue to adapt BMS parameters to ensure the following are considered:

- Optimal start and stop of plant and equipment
- Building warm up and cool down cycles
- Night purge
- Automatic seasonal plant sequence selection
- Seasonal temperature setting adjustments
- Load-based control strategies
- Economy cycle control
- Equipment runtime monitoring and duty cycling
- Occupancy control and control setback
- Links to digital twins and multiple data streams such as weather data and teaching schedules so that actual performance can be compared with expected performance to identify problems

Work continues with the RMIT Timetabling Team to ensure that BMS schedules match the timetabled usage of buildings (for example spaces are not conditioned into the evening after scheduled classes have finished). Building timetabling strategies are influenced by appropriate time of use schedules so classes can be consolidated across the portfolio where it makes sense – such as having buildings dedicated to evening classes to allow closures of other less efficient buildings out-of-hours.

5.1.3 Information Technology

Property Services continues to work alongside the RMIT Information Technology Services (ITS) group to strategically address the procurement and operation of ITS hardware and software across the portfolio. In recent years there have been considerable changes to the ITS portfolio which have reduced energy and emissions. Initiatives include:

- Servers virtualised onto outsourced data centres
- Assets progressively upgraded, providing more efficient 'thin client' solutions such as laptops and docking stations
- The Windows 10 'Managed Operating Environment' improves power demand and allows for automatic Staff PowerPlan
- Consolidation of the printing fleet removing individual and multiple office devices for centralised multi-functional devices.

Changes to the windows operating environment have allowed for the implementation of a range of settings that influence energy use. For example, timeout settings now enable screensavers to turn on after 10 minutes of inactivity for staff computers and after 60 minutes in teaching spaces (to minimise disruptions). After a further 10 minutes on screensaver, the computer will switch to system standby (monitors, hard disk and other internal devices will switch off) to save on power consumption. Noting there are some practical limitations to these strategies, including computer labs where devices need to be active on the network to receive software updates and be ready for use with students at any time.

Digital signage is becoming a popular choice throughout the University portfolio, as it allows for centrally managed consistent messaging across all campuses. The Property Services team will continue to challenge the continued rollout of these screens to ensure they are only being installed in 'high profile' areas where the high exposure to students and staff.

5.1.4 Sustainable Urban Precincts Program

Due to the size and scale of this previously implemented program, it is important that the background is provided in the Carbon Management Plan. The program of work transformed the way that the University both produces and consumes energy.

Background

RMIT undertook a $128 million plan to cut energy and water use and greenhouse gas emissions – the largest program of its kind in the southern hemisphere. RMIT worked with Siemens and Honeywell to identify and implement opportunities for energy and water savings in 77 buildings across the City, Bundoora and Brunswick campuses.

The Sustainable Urban Precincts Program (SUPP) resulted in a 30,000-tonne reduction in annual greenhouse gas emissions per and water use was also cut by 53 million litres. Through an integrated approach to investment in capital, the program provided improved mechanical infrastructure conditions and increased operational efficiencies for the University. The program of works was developed according to the Victorian Government's Department of Treasury and Finance Energy Performance Contract guidelines.

Pre-qualified Energy Service Companies (ESCOs) undertook energy and water audits on RMIT University, then engaged in a competitive tender process, leading to RMIT awarding contracts to Siemens and Honeywell. The ESCOs then undertook a Detailed Facility Study and shaped an Energy Performance Contract for consideration. Signed in 2013, these contracts are broken down into several separable portions by Energy Conservation Measure (ECM). Siemens was responsible for the City campus, while Honeywell was responsible for the Brunswick and Bundoora campus. Initiatives included: on-site generation, boiler upgrades, chiller upgrades, BMS replacement, lighting and water efficiency.

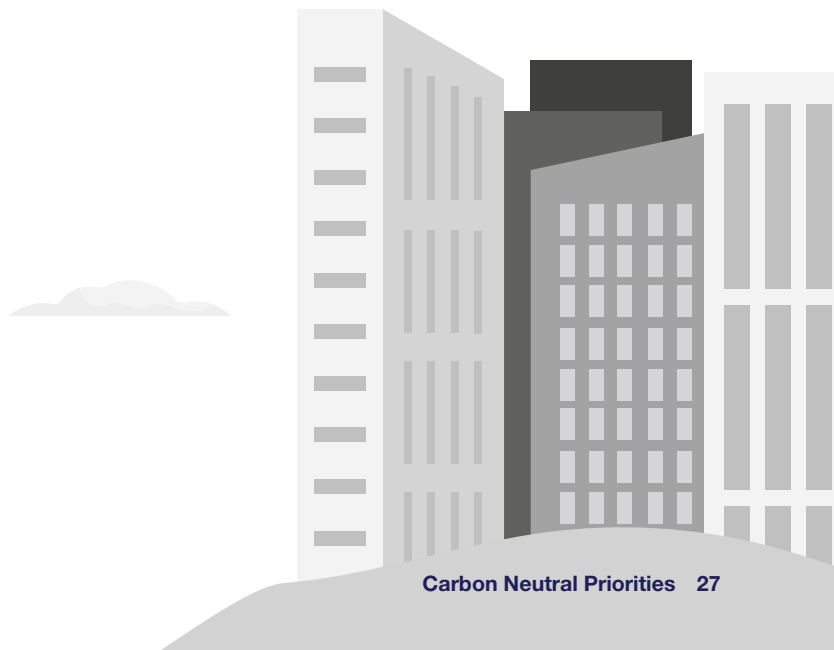
Energy Performance Contracts

SUPP was delivered under an Energy Performance Contract, this is where an ESCO is engaged to improve the energy efficiency of a facility, with the guaranteed energy savings paying for the capital investment required to implement improvements.

Measurement and Verification

Measurement and verification is an important part of an Energy Performance Contract, as it assists in the validation of the savings proposed. Comprehensive measurement and verification will give RMIT the confidence that energy and greenhouse gas savings are to be realised throughout the life of the project.

The methodologies used to measure and verify the savings were devised based on the type of Energy Conservation Measures and detailed in the ESCOs M&V Plans. The M&V plans must comply with the International Performance Measurement and Verification Protocol. Measurement and verification is managed internally at RMIT by the Sustainability Team in Property Services.



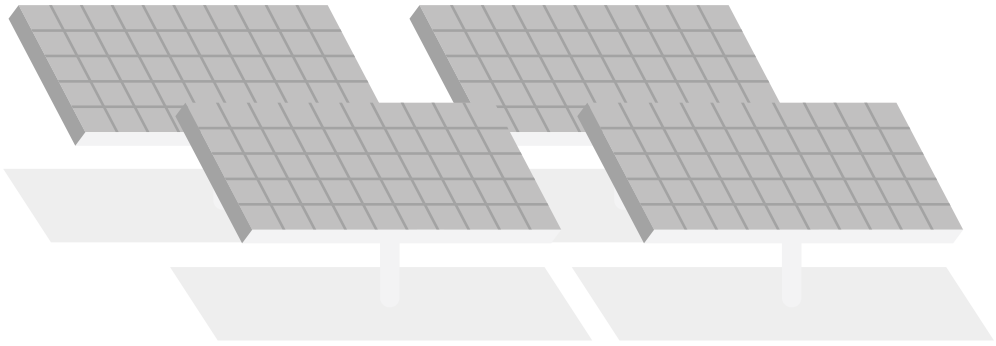
5.2 Renewable Energy

RMIT is committed to expanding renewable energy generation as a significant driver to decarbonise the energy supply across all the regions where it operates.

RMIT University is committed to expanding on-site and off-site renewable energy generation wherever possible.

RMIT aims to support renewable energy through the installation of on-site renewable energy generation sources (primarily solar PV) and contracting electricity renewable energy supply agreements.

It is acknowledged that there are limitations to the system-wide benefits that are derived from contracting renewable energy in Australia where there is no legislation instrument to increase the proportion of renewable energy in the grid. Although the Australian Renewable Energy Target was met in September 2019, the carbon accounting benefits will still fall to the organisation contracting renewable energy with a purchased emissions factor of zero (carbon neutral electricity) as outlined under the Climate Active standard.



5.2.1 Solar PV

Solar photovoltaic generation (commonly referred to as solar PV) is a power system that generates electricity from sunlight. A solar PV system consists of solar panels, an inverter (to convert DC to AC power), mounting, cabling and other accessories. Solar PV can be roof mounted, ground mounted or integrated within a building façade. Solar PV systems generally operate 'behind the meter' for most customers, meaning the electricity they can generate offsets the amount of electricity otherwise required to be purchased from an energy retailer. Electricity can also be exported to the grid, but prices paid (feed-in tariffs) are generally reducing and there is little value in oversizing a system that will export large volumes of electricity.

The amount of electricity generated each day will depend on a large number of factors that include the amount of useable sunlight (irradiance), the amount of cloud or shading, the ambient temperature, the angle of the solar modules relative to the sun, the orientation of the solar system (i.e. North, South, East and West) and soiling.

RMIT Property Services supported a number of students from disciplines such as Engineering and Property Construction and Project Management, to undertake Solar PV feasibility studies across the portfolio. The feasibility studies conducted were embedded into coursework accreditation and include consideration of spatial availability, overshadowing, planning overlays, base building electrical load, government rebates, grants and financial analysis. Subsequently, RMIT has installed a number of solar PV systems across the portfolio and has the potential for future installations.

RMIT Campus	RMIT Building Number	Potential Number of Panels	Potential System Capacity (kW)	Potential Generation (kWh/annum)	Potential Carbon Reduction (tCO_2-e/annum)	Status
City	2	120	20	26,280	28.4	Installed
City	6	40	13	17,082	18.4	Installed
City	40	22	4	5,256	5.7	Installed
City	45	61	19	24,966	27.0	Installed
City	51	32	10	13,140	14.2	Installed
City	55	72	25	32,850	35.5	Installed
City	56	270	81	106,434	114.9	Installed
City	66	64	16	21,024	22.7	Installed
City	70	144	36	47,304	51.1	Installed
City	71	114	35	45,990	49.7	Installed
City	78	38	12	15,768	17.0	Installed
City	80	114	35	45,990	49.7	Installed
City	94	277	86	113,004	122.0	Installed
City	96	8	2	2,628	2.8	Installed
Bundoora East	253	344	86	113,004	122.0	Installed
Bundoora East	255	24	6	7,884	8.5	Installed
Brunswick	512	357	100	131,400	141.9	Installed
City	1	71	18	23,652	25.5	Potential
City	3	352	88	115,632	124.9	Potential
City	4	32	8	10,512	11.4	Potential
City	5	192	48	63,072	68.1	Potential
City	7	40	24	31,536	34.1	Potential
City	9	240	60	78,840	85.1	Potential
City	13	360	90	118,260	127.7	Potential
City	14	120	30	39,420	42.6	Potential
City	15	56	14	18,396	19.9	Potential
City	21	20	5	6,570	7.1	Potential
Bundoora West	202	432	108	141,912	153.3	Potential
Bundoora West	203	1,065	266	349,853	377.8	Potential
Bundoora West	204	48	12	15,768	17.0	Potential
Bundoora West	205	60	15	19,710	21.3	Potential
Bundoora West	206	60	15	19,710	21.3	Potential
Bundoora West	207	60	15	19,710	21.3	Potential
Bundoora West	208	108	27	35,478	38.3	Potential
Bundoora West	210	144	36	47,304	51.1	Potential
Bundoora West	211	126	32	41,391	44.7	Potential
Bundoora West	213	141	35	46,319	50.0	Potential
Bundoora West	215	81	20	26,609	28.7	Potential
Bundoora West	217	66	17	21,681	23.4	Potential
Bundoora West	220	123	31	40,406	43.6	Potential
Bundoora West	224	69	17	22,667	24.5	Potential
Bundoora West	231	78	20	25,623	27.7	Potential

5.2.2 Melbourne Renewable Energy Project 1

The following project is relevant to the RMIT Australia operations.

RMIT University is one of the largest landholders in the Melbourne CBD and subsequently has a strong relationship with the Council. The City of Melbourne has declared a climate emergency and have made it a focus to address climate change through emission reductions. RMIT University has partnered with the City of Melbourne through strategic initiatives to address emissions across the precinct.

The Melbourne Renewable Energy Project (MREP1) was the first time in Australia that a group of large-scale energy users collectively purchased large scale renewable energy through a group purchasing model.

RMIT University is proud to be alongside a number of leading Melbourne businesses, universities, council groups and cultural institutions who have joined forces to deliver a 39-turbine, 80MW wind farm in Ararat, Victoria. The group all share similar sustainability objectives and joined to drive investment in new renewable energy and local Victorian jobs.

The group, led by the City of Melbourne, used their combined purchasing power to take the project to market in 2017. The Crowlands wind farm that has now been constructed is owned and operated by Pacific Hydro and the retail electricity under the agreement is supplied by Tango Energy.

The MREP1 group are purchasing around 88GWh annually, enough power to run 17,600 households in Melbourne. The project is estimated to displace 96,800 tonnes of carbon every year in the Victorian electricity generation sector, equivalent to taking 22,500 cars off the road. The wind farm became operational in March 2019 creating around 140 jobs in regional Victoria during construction.

RMIT purchases 25% of its grid electricity from this project (8GWh per annum) and accounts for the electricity as a carbon neutral supply. The success of MREP1 has led RMIT to lead a second project.

Image credit: Pacific Hydro

Image credit: Pacific Hydro

5.2.3 Melbourne Renewable Energy Project 2

The following project is relevant to the RMIT Australia operations.

RMIT University led a second corporate group power purchase agreement under the Melbourne Renewable Energy Project 2 (MREP2), facilitated by the City of Melbourne. Bringing together seven large energy users, the group undertook a similar market exercise to source long-term renewable energy supply.

The group contracted with the existing Yaloak South wind farm, located west of Melbourne. The wind farm is owned and operated by Pacific Hydro and the retail electricity under the agreement is supplied by Tango Energy.

The MREP2 group are purchasing 110GWh annually, enough to run 22,000 households in Melbourne. The project is estimated to displace 123,000 tonnes of carbon every year in the Victorian electricity generation sector, equivalent to taking 28,000 cars off the road.

RMIT purchases a further 50% of its grid electricity from this project (15GWh per annum) and accounts for the electricity as a carbon neutral supply.

5.2.4 100% Renewable Electricity

RMIT is currently purchasing 23GWh per annum of carbon neutral electricity, leaving a remaining 7GWh sourced from the grid. This supplied is associated with the balance of the imported electricity required for the high voltage supply points associated with the embedded co-generation plant (City campus) and tri-generation plant (Bundoora West campus).

As of 2021, these supplies have not been contracted under renewable energy supply agreements as the University does not have long term certainty around the required contract volumes. The primary reason for this uncertainty is the future investment required to keep the co-generation and tri-generation plants operational following the expected major engine rebuilds at 8 years (2024 and 2025 respectively). Once a position on rebuilding the engine is made certain the University will be in a better position to commit the final volume of electricity to a renewable energy supply agreement and reach 100% renewable electricity for all electricity imports.

RMIT University is committed to 100% renewable electricity across the building portfolio by 2025.

5.3 Electrification

RMIT undertakes significant energy transformation on-site, primarily through two large-scale embedded power plants. The two power plants are known as the co-generation plant (City campus) and the tri-generation plant (Bundoora West campus) that convert natural gas into electricity and waste heat.

The following section addresses the existing power plants that RMIT currently operates and proposes possible options for the future.

5.3.1 Co-generation Plant

RMIT operates a co-generation plant at the City campus. A co-generation plant is the use of an engine to generate electricity and useful heat at the same time. The RMIT co-generation plant is connected to the reticulated natural gas network in Melbourne.

Located on the rooftop of building 10 the plant consists of two 1,600 kWe reciprocating engines, producing a total potential output of approximately 3,200 kWe at high voltage. The electricity is stepped down to low voltage via a transformer and supplied into the RMIT network of three low voltage substations within the Bowen Street precinct. The heat from the engine is put through a heat exchanger to provide heating hot water through a network of distributed pipework through RMIT buildings.

The co-generation plant is designed for grid parallel operation and is ‘load following’ – meaning the plant will generate electricity depending on the electricity demands of the site. The plant also runs as a non-export embedded generating systems, so the site will always import electricity and an ‘import buffer’ is always maintained, this is currently sized as 200kW. The individual engines have the capability to operate down to a 50% capacity.

The plant has been operating since January 2018 and since that time has been shown to produce approximately 16,000,000 kWh/year at an emissions intensity of 0.52 kgCO2-e/kWh, while the site will import approximately 4,000,000 kWh/year from the grid.
The total annual emissions avoided are around 9,000 tCO2-e/year.

5.3.2 Tri-generation Plant

RMIT operates a tri-generation plant at the Bundoora West campus. A tri-generation plant is the use of an engine to generate electricity and heat, but also the use of an associated absorption chiller for cooling as well. The RMIT tri-generation plant is connected to the reticulated natural gas network in Melbourne

Located under building 210 the plant consists of a single 1,200 kWe gas-fired turbine with associated heat exchanger and absorption chiller. The electricity is supplied into the RMIT network of four low voltage substations distributed across the entire Bundoora West Campus. The campus also has a network of distributed pipework for heating hot water and chilled water. During the winter months, the heat from the turbine is put through a heat exchanger to provide heating hot water, during the summer months the heat is run through an absorption chiller to use the energy to reduce the temperature of the chilled water and provide cooling.

The tri-generation plant is designed for grid parallel operation and is 'load following' – meaning the plant will generate electricity depending on the electricity demands of the site. The plant also runs as a non-export embedded generating systems, so the site will always import electricity and an 'import buffer' is always maintained, this is currently sized as 200kW. The individual engines have the capability to operate down to approximately a 50% capacity.

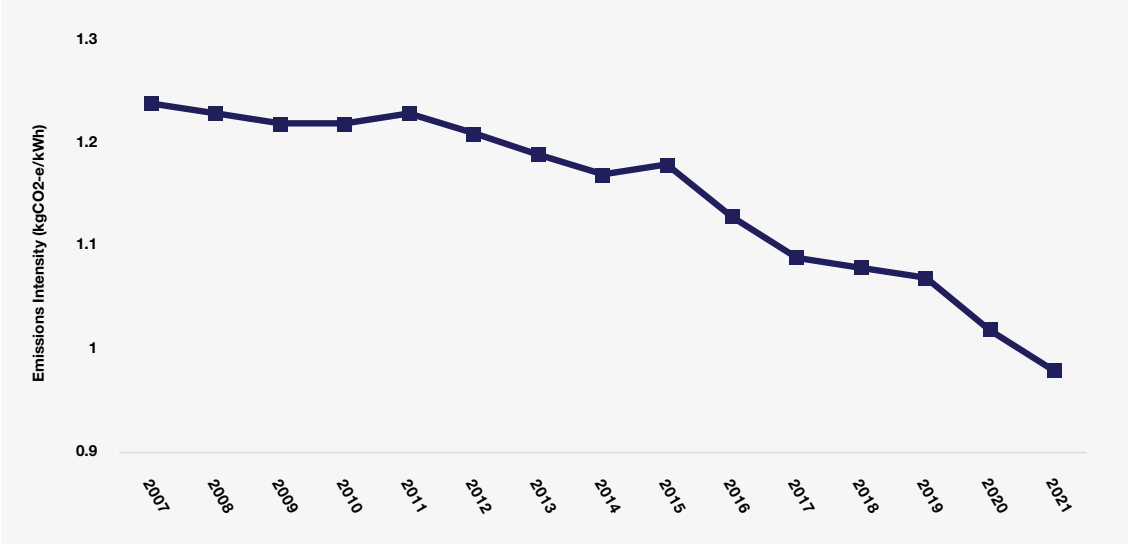
The plant has been operating since January 2017 and since that time has been shown to produce approximately 8,000,000 kWh/year at an emissions intensity of 0.50 kgCO2-e/kWh, while the site will import approximately 2,500,000 kWh/year from the grid. The total annual emissions avoided are around 4,500 tCO2-e/year.

5.3.3 Electrification

Electrification using high-efficiency technologies encourages the reduction of emissions across building portfolios by allowing the building sector to effectively decarbonise. Electrification depends on the resources used to generate electricity in the National Electricity Market (NEM), which is currently undergoing a transformation as fossil fuel sources are being replaced with low-cost renewable energy sources such as wind and solar, coupled with ever-advancing firming activities such as battery farms and pumped hydro.

The transformation to renewables in the NEM is likely to take decades but is accelerating. In the last 14 years, the emissions intensity of electricity generation in Victoria has dropped 21%. This change reflects the retirement of major fossil fuel generating plants such as Hazelwood and the significant expansion in wind and solar generation in western Victoria.

Emissions Intensity of Electricity (VIC)



While the grid de-carbonises there are a number of steps that large organisations can take to immediately decarbonise their electricity supplies – such as the signing of power purchase agreements and the retirement of Large-scale Generation Certificates (LGCs) allowing organisations to claim the benefits of supply from carbon neutral electricity. As well as behind-the-meter renewable energy generation.

Simply put, natural gas is a fossil fuel and any natural gas assets installed must create greenhouse gas emissions from combustion to operate.

5.3.4 Electricity Preference in Design

The world must transition to renewable energy to address the increasing impacts of climate change. The University must decouple its energy requirements from fossil fuels, to do this RMIT should implement the following principle:

RMIT University will preference electricity as the only source of energy in all new buildings and refurbishments wherever practical and commercially viable.

To implement this principle RMIT should embed this within all relevant internal documentation including the RMIT Design Standards and project gateway documents.

Where possible existing gas assets across the University should be progressively replaced with electrical equivalents. Examples of electric equivalent assets include:

Natural Gas Based Asset	Electrical Equivalent Asset
Gas Boiler	Heat Pump*
Gas Space Heater (Internal)	Reverse Cycle Air Conditioner (Split System)
Gas Radiant Heater (External)	Electric Radiant Heater
Gas-fired Domestic Hot Water Cylinder	Electric Domestic Hot Water Cylinder
Instantaneous Gas Hot Water Unit	Electric Domestic Hot Water Cylinder
Gas Stovetop	Electric Stove or Induction Cooktop

**Acknowledging there is an effective upper limit for heat pump operating temperature commercially available as of 2022.*

5.3.5 Future of On-site Power Plant Generation

A significant component of the electrification strategy is limited by the existing co-generation (3.2MW) and tri-generation (1.2MW) power plants. Both power plants are approaching their major engine overhaul (approximately 7 years post installation), at which time a significant capital investment decision is required for whether the University proceeds with the rebuild of the engines.

RMIT will essentially need to decide at this point to head down one of the following paths:

- Invest the capital to overhaul the engines, recommitting to operating the engines for the short-medium term; or
- Cease operating the power plants and revert back to grid electricity for the University and the operation of the existing thermal plant.

If RMIT was to overhaul the engines, it would essentially commit RMIT to operating the engines for a further 7 years to extract appropriate operational benefit from the capital investment. It will result in RMIT remaining a large consumer of natural gas.

An alternative scenario is for RMIT to cease operation of the power plants at both the City and Bundoora West campuses. In both locations, RMIT currently maintains adequate electrical supply capacity from the network to import enough electricity to meet the required demand of the campuses. Additionally, both sites are equipped with an adequate thermal plant (natural gas boilers and chillers) to serve the thermal demands for the campuses.

In order to further detail the trade-offs between the two options the following table summarised the major outcomes between the two decisions:

	Continue to operate the power plants	Cease operation of the power plants
Grid Electricity Requirements	Small grid import volumes	Large grid import volumes
Natural Gas Supply Requirements	Large natural gas consumption volumes	Small natural gas consumption volumes
Energy Market Considerations	More dependent on natural gas market price fluctuations, which are becoming increasingly tied to international energy demand	More dependent on electricity market price fluctuations, which are becoming tied to regulatory impacts managing the overall trend to renewables (which are seen to provide cheaper electricity).
Direct Emissions Profile	Lower	Higher
Other Consideration	Solar PV installations are complex within an operational environment containing multiple generation sources.	Solar PV installations can proceed with little operational impediments. A long term renewable electricity contract would cover the majority of emissions, significantly reducing the net emissions profile.

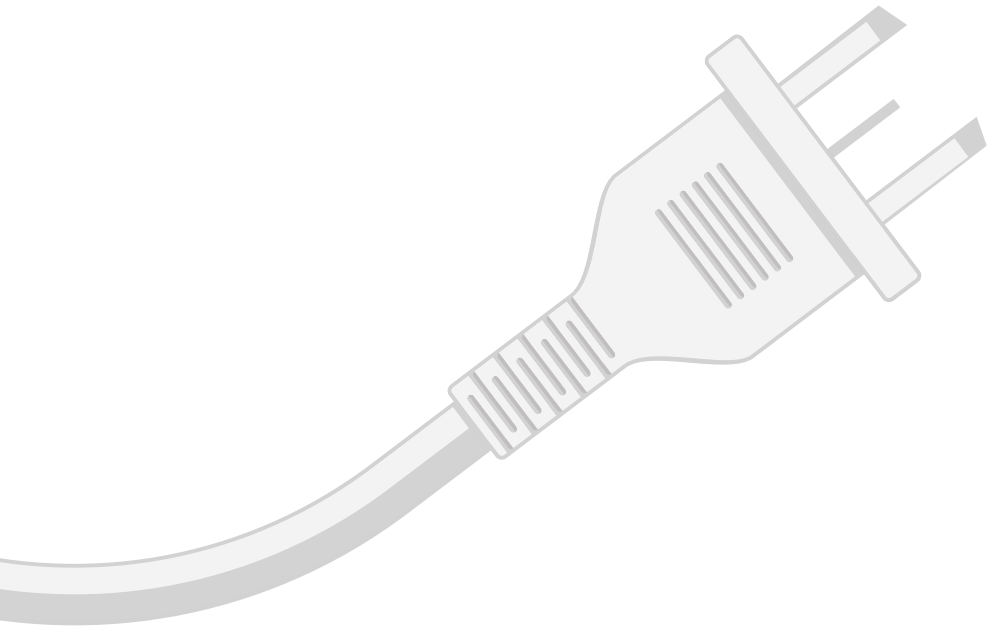
Either operational decision will provide certainty to enable RMIT University to commit the electricity requirements of the site to a long-term renewable energy power purchase agreement. The Property Services Group will continue to develop this transition plan over the next two years to firm up a position on the future operation of these power plants.

5.3.6 Small-Scale Electrification Priority

While the larger electrification impacts are tied to the larger operational decisions around the co-generation and tri-generation plants – small scale uses of natural gas within the building portfolio can also be addressed.

Priority should be given to projects to remove downstream gas assets in buildings with the goal of capping and removing natural gas supply infrastructure. Future asset lifecycle replacement programs should have this as a priority goal.

RMIT will remove smaller natural gas assets through targeted projects, to be replaced with electrical equivalents where practical and commercially viable.



5.3.7 Batteries, Demand Management and Storage

As the proportion of electricity supplied by variable renewable energy sources such as solar and wind increases, the price of electricity falls when they are generating at high output, while the price of electricity at other times can remain high. Energy storage options can be used to maximise the value of energy generated on-site, and can also minimise the cost by shifting the electricity demand for activities to times of lower prices.

Energy storage can take many forms, though for RMIT it is typically through storage of electricity in batteries, or of heat or cooling in thermal storage systems, usually tanks of hot or chilled water. Storage options mean that electricity, heating or cooling to deliver useful services can be provided at times other than when renewable energy is produced. This flexibility offers the potential to reduce energy costs. Batteries can also provide other services that can earn revenue, such as stabilising the voltage or frequency of the electricity system.

In many cases, the timing of demand for energy can be shifted to times when costs are lower. For example, a building may be 'pre-cooled' so that it uses less cooling energy at peak times when electricity is expensive and the electricity grid is under stress.

The cost to install electrical storage remains the largest barrier to the installation, with most projects not providing a financial return during the expected life of the assets. Seeking alternative funding (or grants) may make these viable in the short. RMIT will continue to evaluate the financial viability of such projects, as it is likely that this is a technology that will see significant cost reductions and production efficiencies are achieved within supply chains.

Hydrogen as a fuel and storage medium is also gaining momentum in Australia. Hydrogen is believed to have future use for natural gas distribution networks, both as a blend during a transition phase and ultimately and full changeover in the long term. In the short term customers and distributors are considering the possibility of localised generation and small-scale blending for existing natural gas appliances. Additionally, various jurisdictions are also considering implementing green hydrogen certification schemes (green hydrogen is generated through electrolysis that is backed by renewable electricity), similar to certification schemes in the electricity market for renewables. As solutions and schemes become commercialised these will be considered for application within the RMIT environment.

5.4 Sustainable Transport

Sustainable transport makes a positive contribution to the communities they serve, providing mobility to facilitate social and economic connections. There are a number of costs of transport including accidents, air pollution and physical inactivity. To address the impacts of transport choices individuals are required to evaluate the need for travel and consider the alternative options that may be available before making a transport decision.

To assist students and staff to make sustainable transport decisions, RMIT supports a range of options that avoid the need for physical travel such as business communications platforms to facilitate online meeting, online education (e-learning), webinars and conferences.

RMIT encourages active transport options, providing information on popular walking or cycling routes to campus, secure storage for bicycles on campus as well as a number of location-specific bicycle parking options.

RMIT University will prioritise sustainable transport options for students and staff, encouraging active transport and public transport options ahead of vehicle transport.

RMIT operates a number of campuses globally, each with different transport requirements for staff and students for the purposes of study and work.

- The RMIT City campus is in the centre of Melbourne, subsequently is well served by public transport options and private vehicle usage by staff and students is minimal.
- The RMIT Brunswick and Bundoora campuses are regarded to be more suburban.
  - At the Bundoora campus the public transport option are less direct, subsequently higher numbers of staff and students travel in private vehicles.
  - At the Brunswick campus the nature of the education activities often requires staff and students to travel with materials which also leads to travel choices favouring private vehicles.
- The RMIT Vietnam campus in Saigon South is centrally located and the use of motorcycles is highly favoured by the community.

Further specific sustainable transport initiatives will be outlined under future iterations of the RMIT Integrated Sustainable Transport Plan (to be updated in 2022).

5.4.1 Electric Transport

RMIT owns and operates a fleet of vehicles located at the three main campuses in Australia which can be booked by staff.

RMIT University will actively support the transition of transportation options to electric options.

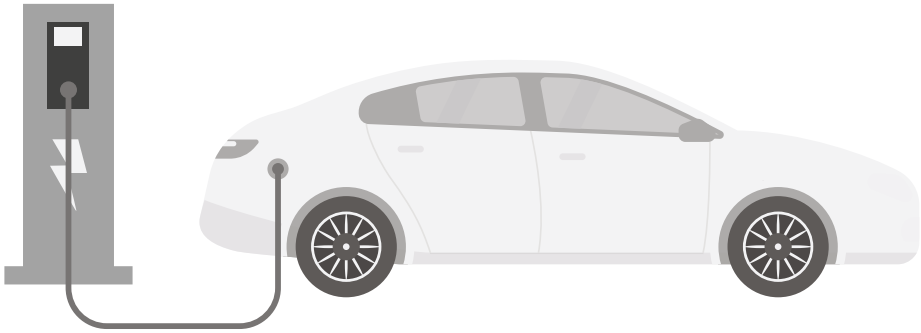
There is an accelerating shift from internal combustion powered vehicles to electric transport that store electricity in batteries built into the vehicle or scooter. Using electricity for transport is much more efficient than internal combustion. When run on renewable electricity, carbon emissions from transport are near zero. Additionally, because electric engines are technically simpler, more efficient and renewable electricity is relatively cheap, electric transport can be much cheaper, even though their initial prices are currently higher.

To support the transition of transportation options to electric RMIT must both demonstrate the change and provide the appropriate infrastructure to support our community to make the change too.

5.4.2 Electric Vehicles

There are three types of cars that fall under the category of electric vehicles, these include:

- **HEV – Hybrid Electric Vehicle:** these recover energy as the vehicle slows, so energy is stored instead of being dissipated to the environment as heat from the brakes. They store this energy in batteries that provide part of the energy required to run them. They are not plugged into electrical sockets.
- **PHEV – Plug-in Hybrid Electric Vehicle:** these have larger batteries that can be charged from the grid or a solar system, as well as a conventional IC engine. They can run on electricity much of the time but, if the battery runs low, their IC engine operates to extend range.
- **BEV – Battery Electric Vehicle**: these rely completely on an electric motor powered by a battery in the vehicle. If the battery runs low they must be recharged from an electricity supply. This may be a home or work charge point, or a fast charger provided by a third party.



5.4.3 Charging Infrastructure

The provision of public EV infrastructure is important in supporting the transition to electric transportation. Charging infrastructure is a chicken-and-egg scenario, as potential purchasers of EVs are worried about the provision of infrastructure to support their travel choices, but organisations are not willing to install the infrastructure without the demand. This is where large public organisations such as Councils, Universities and large corporations can step in to encourage adoption.

For the provision of public EV charging infrastructure RMIT should adopt a 'fee-for-use' model to provide appropriate cost recovery at the University while providing a public service.

RMIT should seek grant programs or commercial partnerships as an alternative to capital funding to implement public EV charging infrastructure. Though should a future decision be made to purchase EVs in the fleet, appropriate internal charging locations should be established – these should be separate from the public charging infrastructure, so the public assets remain available for the greatest amount of time.

Charging infrastructure for electric scooters and electric bicycles should also be supported on the same basis as Electric Vehicles. At this stage there are a range of alternative solutions, such as pay-per-use 'battery swaps' are becoming popular for scooters in South East Asia. While electric bicycles often have removable batteries that can be plugged into standard electrical sockets – this is unlikely to be an area that would be cost recovered.

RMIT University will develop partnerships to provide public electric vehicle charging infrastructure at strategic locations across the University.

5.4.4 Fleet

Property Services to continue to evaluate the fleet vehicle purchasing strategies. The following analysis should be included in future fleet purchasing decisions:

- Analysis of travel activity by staff for duties to better understand the ability for mode shifting, car-sharing and avoiding travel
- Procurement of a total number of vehicles that are appropriately sized for the requirements (e.g. smaller cars for intercampus travel)
- Investigation into vehicle sharing platforms to facilitate car-sharing when staff are taking the same trip
- Use of vehicle/car share schemes (such as Go-Get), where e-bikes or cars are available at convenient locations for subscribers to use
- Investigation into utilising hybrid vehicles or electric vehicles within the fleet portfolio, especially for intercampus travel; and
- Investigate the costs associated with offsetting the carbon emissions from the corporate fleet (through programs such as Greenfleet or purchase of carbon offsets).

RMIT University will procure electric vehicles for the fleet within the appropriate travel category at the next major fleet refresh and consider a wider inclusion.

5.4.5 Air Travel

Flights are a significant component of RMIT's scope 3 emissions profile, the emissions from air travel are tracked through the University's travel providers. Air travel can be an essential part of a global education provider, although there an increasingly viable alternative solutions becoming available for conferences and remote research applications. In the interim air travel can be actively targeted to offset the emissions generated from the activity.

RMIT University will offset the emissions from all domestic and international travel by 2025.

5.5 Carbon Offsetting

An offset is the purchase of an emissions reduction (usually sold in one-tonne carbon dioxide equivalent CO2-e units under a certification scheme) undertaken outside the boundary of your organisation. In purchasing an offset, the organisation purchases the rights to claim the reduction, as the certificate is evidence of emission reduction. After the emissions reduction is surrendered to an appropriate authority that emission reduction cannot be claimed again as a further reduction.

While offsets are typically a 'last option' after emission reduction has been maximised, they are a necessary part of most organisations' emission reduction strategies. They can provide a useful mechanism to encourage greater emissions reduction. If offsets are being purchased to 'top up' emission reductions, then effectively every decision made within the organisation that impacts on emissions affects the number of offsets that must be purchased. Therefore, an action that cuts emissions will reduce the number of offsets to be purchased, while one that increases emissions incurs a cost for the purchase of offsets. Effectively carbon offsets establish the avoidable cost of emission reduction. This can be used to encourage additional emission reductions by staff and students.

5.5.1 Emissions Reductions

RMIT will strive for best practice approaches in achieving emissions reductions. RMIT will first prioritise reducing emissions through improvements to its operations over purchasing offsets (see Carbon Management Hierarchy).

RMIT University will offset all residual emissions in a way that demonstrates best practice by implementing key principles in offset purchasing decisions by 2025.

5.5.2 Offset remaining emissions

RMIT acknowledges it will continue to produce emissions and will need to purchase offsets at some level and support our emissions reduction targets. It is expected that offsetting will contribute less than half of all action towards meeting these targets.

RMIT will use the following decision-making principles to evaluate and select the type of offsets purchased.

RMIT will only purchase offsets that meet the Australian government's Climate Active standard and demonstrate environmental and social responsibility. The Climate Active standard allows offsets to be procured either from the established international voluntary offset schemes or from the Australian market. The approved international voluntary offset schemes include the Verified Carbon Standard and the Gold Standard.

5.5.3 Key Principles

The key principles which will be used to inform offsetting purchasing decisions made by RMIT are (in priority order):

- **Compliance with Climate Active:** The Australian Federal Government's Climate Active scheme is considered the Australian Standard for achieving and claiming carbon offsets for an organisation. RMIT will seek alignment with Climate Active for its approach to measuring and verifying carbon offsets.
- **Social responsibility:** RMIT will consider the social impact of all decisions to reduce carbon emissions in the purchase of offsets. Decisions that have positive social outcomes will be prioritised.
- **Location:** RMIT will seek to align the origin of offsets to countries which the University has a presence in education delivery. This creates a stronger relationship and provides potential work opportunities for RMT students
- **Timeliness:** RMIT will seek carbon offsets vintage years will be matched as close as possible to the reporting period for which RMIT is looking to offset.
- **Certainty in emissions reduction:** RMIT will prioritise carbon offsets which deliver a high level of confidence in the resulting emissions reductions.
- **Transparency:** RMIT will favour offsets projects that are transparent about the impacts of their emissions, what actions they take to minimise their impacts and their associated decision-making processes and assumptions. RMIT will be transparent to stakeholders about our emissions offset purchases and all associated decision-making processes and assumptions, this includes identifying the projects from which offsets are purchased.
- **Leadership by example:** RMIT will seek to deliver an approach to carbon offsetting that demonstrates leadership to the community.
- **Biodiversity:** RMIT will prioritise actions that have a positive impact on biodiversity
- **Cost-effectiveness:** RMIT will consider the cost-effectiveness of carbon offsets through the greatest emissions reduction at the lowest cost, subject to meeting the environmental and social criteria listed here.

The principles form the basis of this approach and must be incorporated into every step of the program. The carbon offset approach ensures RMIT's approach towards carbon offsetting for its organisational operations aligns with the Climate Active standard, is environmentally and socially responsible and undertaken in a timely manner. Principles will be taken into consideration for all decisions made, in priority order, where feasible.

5.5.4 Evaluation

RMIT is committed to ensuring that its carbon offset approach follows best practice. In order to maintain this commitment RMIT's approach will be reviewed and, when appropriate, updated to incorporate new emissions sources, new emissions reduction opportunities, policy changes and other best practice approaches.

The carbon offset approach will be directly implemented into future tender evaluation criteria.

RMIT will share the details of the emissions reduction purchase through the RMIT communication channels. Any feedback gathered from stakeholders will help shape future emissions reductions purchases.

5.6 Data and Analytics

The following section articulates the strategic approach for RMIT with regards to data capture, analytics, visualisation and reporting. RMIT defines the characteristics which are useful for guidelines or design standards.

Substantial consumption of natural gas, electricity and heating and cooling should be monitored.

5.6.1 End-use Energy Sub Metering

Metering should be at a zone level that provides adequate information on how the building is used specifically and not just lighting and power. Rooms and any energy-intensive equipment should be metered separately. Separate meters are required for:

- Lighting – a minimum of one sub-meter per floor and per tenancy area within a floor
- Generation – Solar PV units and other energy generation sources to monitor performance
- Significant fans with air handling units with greater than 10kW input power
- Lifts
- Cooling systems with greater than 20kW input power
- Data centres
- Space heating (including combined heating and cooling systems with greater than 50kW input power)
- Domestic hot water units
- any other major energy consuming items that are considered a specialist area

All end-use submeters should be connected to the base building-specific building management system and available for trending.

5.6.2 Monitoring and Metering Principle

Energy data alone is insufficient to create indicators that can provide ‘actionable and timely insights’ or reflect the efficiency with which services are provided. For example, where hot water is provided, it is crucial to know the energy per unit of delivered heat, as well as the quantity and temperature of the water. Hours of occupancy, occupant density and weather conditions are useful to evaluate building performance. For example, if cooling energy demand is high at certain times on a sunny day, the windows causing the problem can be identified.

For buildings and process systems, digital twins can be helpful to determine what factors are deviating from expected performance. This can identify emerging problems and maintenance requirements.

RMIT University will assess monitoring and metering decisions on a case-by-case basis, driven by the principle that meters must enable useful and timely data to underpin demonstrable actionable insights.

5.6.3 Electricity Metering Characteristics

RMIT meters shall be a 'smart meter' style, with critical characteristics including:

- Quarter-hour data capture of the voltage (V), current (A), active power (kW), reactive power (kVA)
- Maximum demand and average demand
- The meter shall have two years of data storage capability in an easily accessible format
- Digital LCD display or equivalent on the front of the meter for ease of set-up and operation
- Minimum accuracy consistent with Class 1 (to IEC 61036) or better
- The meter is required to have a minimum of two pulse outputs for potential connection to other metering devices
- The meter must have a minimum one-year manufacturer warranty.

Where possible the 'smart meter' should be integrated with the Building Management System or the carbon management system to capture the interval data depending on the intended end use.

5.6.4 Dashboards and Analytics Platforms

In previous years RMIT trialled a public dashboard platform within the Swanston Academic Building (Building 80). The dashboard displayed information on interactive touch screen displays, taking metered data from electricity, water, natural gas, rainwater, grey water and a weather station. There was little interaction with the dashboard from analysis of the user data. Following the trial, RMIT no longer supports the installation of public-facing sustainability dashboards within buildings. Public sustainability dashboards are not to be encouraged in RMIT Design Standards at this time.

RMIT supports the development of web-based analytics platforms, which would broadly follow the approach of a 'data lake' that can be queried by the users to run analytics and reporting. RMIT prefers this approach as it can provide flexibility in end-use for multiple user groups, including RMIT operational staff, researchers and students. Operationally these approaches could use RMIT single sign-on capabilities and have varying levels of access granted to users, allowing the possibility of use as a teaching resource and PowerBI dashboards published on the RMIT public webpages.

Should RMIT pursue this approach it will require input from other major RMIT departments (ITS, Data and Analytics, Risk). It is expected that the use-case will be developed through a series of stakeholder workshops and relevant procurement processes will be followed.

5.6.5 Reporting

RMIT University has a number of mandatory and voluntary, internal and external reporting requirements that are completed throughout the year. These reports include:

- National Greenhouse and Energy Reporting
- Times Higher Education Impact Rankings
- Sustainability Annual Report (GRI Standards)
- Annual Report
- Tertiary Education Facilities Management Association

Reports often specify a range of different inclusions, data transformations, normalisations and span varying time periods – to address this RMIT utilises an emissions database to act as a 'single source of truth' for reporting data.

RMIT University will continue to work with the sector to support best practice reporting methodologies.

RMIT notes that there is significant variance in external reporting methodologies, particularly in where reporting organisations are still in their infancy – this results in inconsistencies in performance across the sector. Examples include:

- reports that reward organisations for plans and commitments without requiring implementation or delivery
- reports that do not normalise datasets or consider energy and emissions intensities for evaluations
- reports that do not consider on-site energy transformations
- reports that reward organisations that purchase offsets without considering real reductions

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