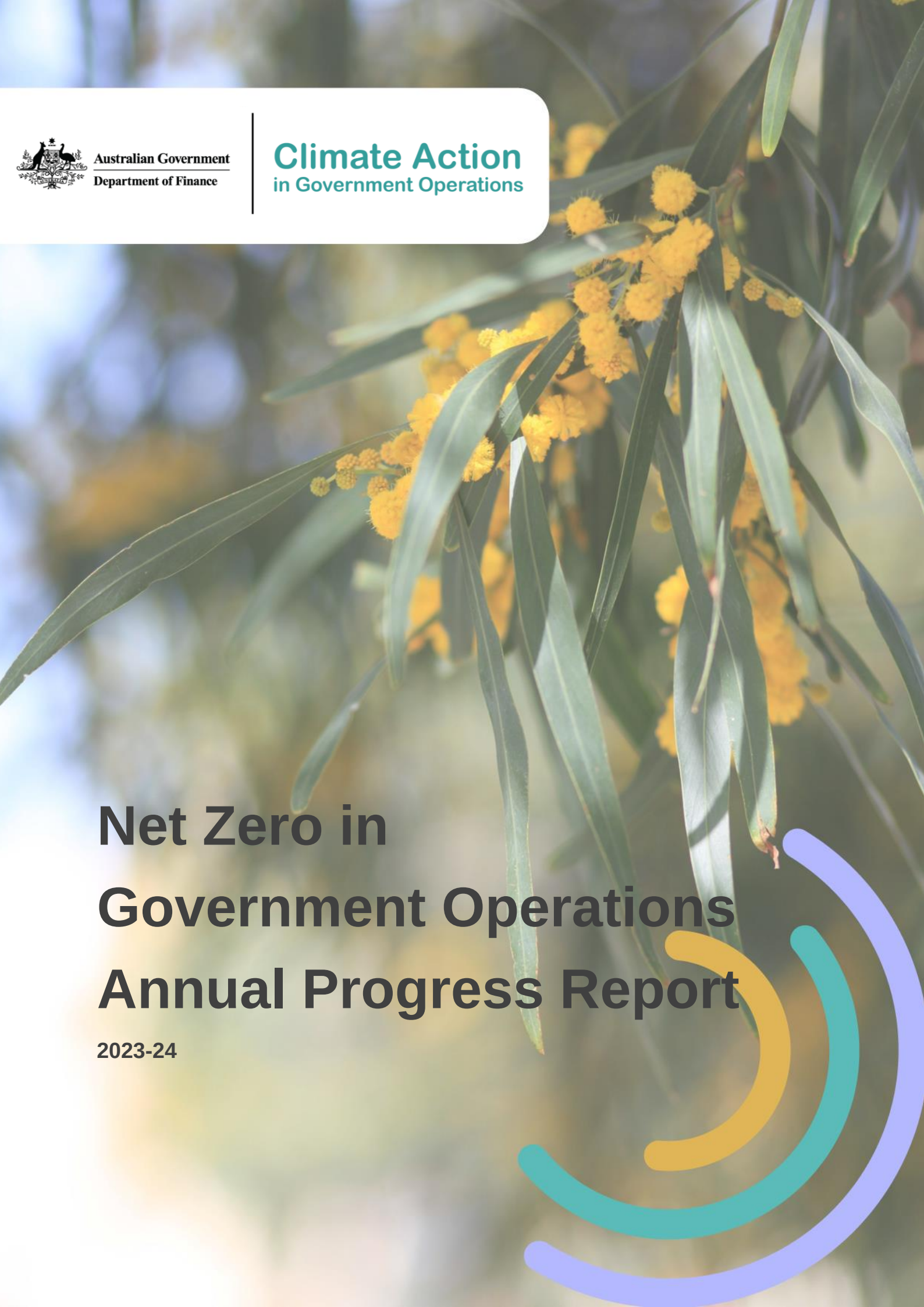


Australian Government
Department of Finance

Climate Action
in Government Operations

Net Zero in Government Operations Annual Progress Report

2023-24

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Executive Summary

The Net Zero in Government Operations Annual Progress Report (the Report) includes public reporting on emissions from Australian Government operations during the 2023-24 reporting period, and progress towards achieving the Australian Public Service (APS) Net Zero by 2030 target. Additionally, this Report includes an update on the status of the Commonwealth Climate Disclosure initiative.

The Report is separated into three parts:

- Part 1: Progress towards the APS Net Zero 2030 Target
- Part 2: Commonwealth Climate Disclosure
- Part 3: 2023-24 Australian Government Emissions Inventory

Part 1: Progress towards the APS Net Zero 2030 Target

Part 1 of this Report presents progress towards achieving the APS Net Zero 2030 Target (the 2030 Target) and an aggregated greenhouse gas emissions inventory at the 2030 Target level. The 2030 Target is outlined in the Net Zero in Government Operations Strategy (NZGO Strategy) and only applies to some Commonwealth entities.

The 2030 Target includes 95 non-corporate Commonwealth entities (NCEs). Corporate Commonwealth entities (CCEs) and Commonwealth Companies (CCs) may choose to participate in the 2030 Target. Additional details on 2030 Target participants are listed Appendix A.

As of publication there are 5 CCEs who have opted in to the 2030 Target:

- Murray-Darling Basin Authority
- National Library of Australia
- Regional Investment Corporation
- Sydney Harbour Federation Trust
- Tourism Australia

Scope 1 and scope 2 emission sources included in the 2030 Target are:

- Electricity
- Natural gas
- Fleet and other vehicles
- Refrigerants
- Other energy

Using the market-based method, the 2030 Target entities emitted an approximate total of 0.712 million tonnes of carbon dioxide equivalent (Mt CO_2-e) emissions in financial year 2023-24. Under the location-based method, there were 0.908 Mt CO_2-e, with electricity usage as the largest emissions source (0.854 Mt CO_2-e under location-based method, and 0.658 Mt CO_2-e under market-based method).

Part 1 of this Report also presents a status update of targets and measures from the NZGO Strategy, including:

- 38.29% of electricity consumed in 2023-24 was certified renewable electricity.
- 72% of in-scope passenger vehicle orders were low emission vehicles.
- The introduction of the Environmentally Sustainable Procurement Policy in July 2024.
- 80% of 2030 Target entities developed emission reduction plans, as of publication.
- 55% of 2030 Target entities with office space with allocated parking and fleet had an electric vehicle charging plan, as of publication.

Part 2: Commonwealth Climate Disclosure

Part 2 of the Report provides an update on the Commonwealth Climate Disclosure Pilot, which was completed in 2023-24. The pilot was the first stage in the implementation of public reporting on Australian Government entities' exposure to climate risks and opportunities, as well as their actions to manage them. The Commonwealth Climate Disclosure Pilot required all Departments of State and any entities that voluntarily opted-in to report on a limited range of climate risks management activities in 2023-24 annual reports.

Part 3: 2023-24 Australian Government Emissions Inventory

Part 3 of this Report presents an aggregated greenhouse gas emissions inventory at the whole--of--Australian-Government level. All Commonwealth entities and Commonwealth companies were required to report the emissions from their operations against the APS Net Zero Emissions Reporting Framework in their annual reports for 2023-24. Emission sources reported in 2023-24 were:

- Electricity
- Natural Gas
- Solid Waste
- Refrigerants
- Fleet and Other Vehicles
- Domestic Commercial Flights
- Domestic Hire Car
- Domestic Travel Accommodation
- Other Energy

Using the market-based method NCEs (99), CCEs (74) and CCs (16), emitted an approximate total of 3.890 Mt CO_2-e emissions in financial year 2023-24. Under the location-based method the emissions were 4.343 Mt CO_2-e. The single largest source of emissions is from electricity consumption (1.697 Mt CO_2-e using market-based method, and 2.150 Mt CO_2-e using location-based method).

The Report presents the data available at the time of collection. Some of the data remains to be finalised due to the misalignment of billing and reporting cycles impacting data collection. Future reports will update these values.

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Introduction

This Annual Progress Report (the Report) outlines the activities undertaken by Commonwealth entities and companies during the 2023-24 reporting period to support the Australian Government's APS Net Zero by 2030 commitment. It provides an aggregated report of the progress of the Net Zero in Government Operations Strategy (NZGO Strategy) and the complementary Commonwealth Climate Disclosure policy, including:

- progress towards the APS Net Zero 2030 Target and reporting on the targets and measures as detailed in the NZGO Strategy (Part 1: Progress towards the APS Net Zero 2030 Target)
- an update on the Commonwealth Climate Disclosure implementation (Part 2: Commonwealth Climate Disclosure)
- an aggregated account of Commonwealth entities' and companies' greenhouse gas emissions for the 2023-24 period (Part 3: 2023-24 Australian Government Emissions Inventory).

The Report is accompanied by the **2023-24 Net Zero in Government Operations Annual Progress Report Workbook** which provides all tables included within the Report and provides further details on each Commonwealth entity and company.

Part 1: Progress towards the APS Net Zero 2030 Target

Net Zero in Government Operations Strategy

The Net Zero in Government Operations Strategy (NZGO Strategy) was launched on 28 November 2023. It describes both the commitment and approach to achieve net zero in Government operations by 2030.

The NZGO Strategy includes the following components:

- Broad specification of measures to reduce greenhouse gas emissions. These include emissions reduction through a combination of energy efficiency, renewable energy and other measures.
- Details of the Commonwealth entities and companies that are included in the Australian Public Service (APS) Net Zero 2030 Target (the 2030 Target).
- Provisions for security agencies to set emissions reduction targets where this does not compromise operational and capability requirements.
- Emissions reporting requirements of each Commonwealth entity and Commonwealth company. Commonwealth entities and companies are required to disclose their emissions in their annual reports.
- The publication of an Annual Progress Report (this Report) to allow for whole--of-Australian--Government aggregated emissions reporting.
- Details of the emission sources included in the 2030 Target (see Part 3: 2023-24 Australian Government Emissions Inventory for further details).

As per the NZGO Strategy, the progress towards and achievement of the 2030 Target is measured at the aggregate level.

	Scope 1 Emissions	Scope 2 Emissions	Scope 3 Emissions
NCEs	Emissions reporting		
	2030 Target		✗
CCEs	Emissions reporting		
	Opt in to 2030 Target		✗
CCs	Emissions reporting		
	Opt in to 2030 Target		✗

Figure 1: Commonwealth entities and companies and emission scopes included in the APS Net Zero 2030 Target

The 2030 Target includes all non-corporate Commonwealth entities (NCEs). At this stage, the target includes scope 1 and scope 2 emissions (see Defining 'Scope'). Decisions on scope 3 will be made in the future as data becomes available.

Non-corporate Commonwealth security agencies will take action to reduce their emissions aligned with the NZGO Strategy and will set emissions reduction targets where this does not compromise operational and capability requirements.

Corporate Commonwealth entities (CCEs) and Commonwealth companies (CCs) may choose to participate in the 2030 Target. As of publication there are 5 CCEs that have opted in to the 2030 Target.

There are also Commonwealth entities and companies with partial inclusions in the 2030 Target. Partial inclusions are either the result of security agency exceptions or because of reporting arrangements.

As of publication there are 4 CCEs and 1 CC who have set their own net zero targets.

Comprehensive details are provided in Appendix A Commonwealth entities and companies included in the APS Net Zero 2030 Target.

APS Net Zero 2030 Target emissions

The data presented here has been collated using the methodology shown in Appendix C Methods. It is a subset of the data reported in the 2022-23 Net Zero in Government Operations Annual Progress Report and the Part 3: 2023-24 Australian Government Emissions Inventory. The data presented here reflects the emissions data inclusions and exclusions as described in Appendix A Commonwealth entities and companies included in the APS Net Zero 2030 Target.

Tracking of emissions reduction progress between 2022-23 and 2023-24 emissions, is not appropriate at this time, as some data remains to be finalised due to the misalignment of billing and reporting cycles impacting data collection. Future reports will include progress towards emissions reductions.

Table 1: APS Net Zero 2030 Target emissions

Scope 2 Electricity	**2022-23**	**2023-24**
Number of Commonwealth entities*	109	112
Electricity consumed (GJ)	4,596,257	4,742,092
Electricity emissions (t CO_2-e) Market based method	678,915	658,436
Electricity emissions (t CO_2-e) Location based method	862,769	854,423
Scope 1 Natural gas	**2022-23**	**2023-24**
Number of Commonwealth entities	95	97
Natural gas consumed (GJ)	236,782	249,914
Natural gas emissions (t CO_2-e)	12,201	12,878
Scope 1 Fleet and other vehicles data (transport energy)	**2022-23**	**2023-24**
Number of Commonwealth entities	92	94
Fuel consumed (GJ)	711,181	487,705
Total emissions (t CO_2-e)	49,948	33,287
Scope 1 Refrigerants†	**2022-23 Not reported**	**2023-24 Optional reporting**
Number of Commonwealth entities	Not applicable	0
Total losses (kg)	Not applicable	Not estimated
Total emissions (t CO_2-e)	Not applicable	Not estimated
Scope 1 Other energy (stationary energy)	**2022-23**	**2023-24**
Number of Commonwealth entities	91	93
Stationary fuels consumed (GJ)	102,963	102,939
Stationary fuels emissions (t CO_2-e)	7,228	7,226

Notes:

1. Emissions are presented as tonnes of carbon dioxide equivalent (t CO_2-e).
2. * Number of entities included in the 2030 Target emissions totals is greater than 100, due to non-2030 Target entity data being reported by a 2030 Target entity which cannot be separated and therefore included in totals – see Appendix A for further details.
3. † Optional reporting of emissions from refrigerants was introduced in 2023-24. Mandatory reporting will be phased in from 2024 through to 2027, with the expectation that the baseline for the 2030 Target refrigerant emissions will be established in financial year 2026-27.

Measuring success – targets and measures status update

TARGET	MEASURE	STATUS	
NET ZERO ENERGY			
By 1 January 2028, 80% of the Commonwealth's procured electricity, that is generated off-site and purchased by entities, must be renewable where available. By 1 January 2030, 100% of the Commonwealth's procured electricity, that is generated off-site and purchased by entities, must be renewable where available.	Percentage of total electricity usage, by 2030 Target entities, that is renewable.	Voluntary Renewables + Mandatory Renewables.	Of the total electricity (1,317,247,932 kWh) consumed by 2030 Target entities, 38.29% (504,364,471 kWh) was certified renewable energy, with 0% generated onsite and 38.29% offsite.
	Percentage of electricity consumption generated offsite and purchased from renewable sources.	Mandatory Renewables	Of the total electricity consumed by 2030 Target entities, 18.72% (246,588,81 kWh) of was part of the Large-scale Renewable Energy Target.
		Voluntary Renewables	Of the total electricity consumed by 2030 Target entities, 19.57% (257,775,658 kWh) of electricity was renewable energy generated offsite and purchased (includes Large-scale generation certificates (LGCs), Greenpower and ACT Jurisdictional renewables).
	Percentage of electricity generated on-site that is certified renewable energy.	Voluntary Renewables	No certified renewable electricity generated on-site (includes on-site generated LGCs. Does not include Small-scale technology certificates).
NET ZERO BUILDINGS			
Office space leased from 1 July 2025 for four or more years, over 1000sqm: • achieved the relevant base building and/or tenancy NABERS energy rating of 5.5 stars or 4.5 outside metro cities; and • maintained the relevant base building and/or tenancy NABERS energy rating of 5.5 stars or 4.5 outside metro cities.	Percentage of leased office space that meets the respective targets.	To be reported in Annual Progress Report 2025-26.	

TARGET	MEASURE	STATUS
Office space refurbished from July 2026, greater than 1000sqm: • achieved a 5.5 star or higher NABERS energy rating. • maintained a 5.5 star or higher NABERS energy rating.	Percentage of office space refurbished in the reporting period that meets the respective targets.	To be reported in Annual Progress Report 2026-27.
From 1 July 2026, office space purchased or constructed by or for the Commonwealth with a value greater than $15 million must obtain a 4-star Green Star certification using the climate positive pathway and 6-star NABERS rating.	Percentage of purchased or constructed office space that meets the respective targets.	To be reported in Annual Progress Report 2026-27.
Office space with allocated parking and fleet from 1 July 2024 have an electric vehicle charging plan where possible.	Percentage of office spaces with allocated parking areas that have EV charging plans.	As of 1 July, 10 of the 44 2030 Target entities with office space with allocated parking and fleet, had an EV charging plan, or 23%. As of publication, 24 of the 44 2030 Target entities with office space with allocated parking and fleet, had an EV charging plan, or 55%.
Office space with allocated parking from 1 January 2025 to have facilities to support electric vehicle charging if a Commonwealth entity has electric fleet vehicles on site where possible.	Percentage of office spaces with allocated parking areas that have EV charging available.	To be reported in Annual Progress Report 2024-25.

TARGET	MEASURE	STATUS
NET ZERO PROCUREMENT		
Develop the scope 3 cost modelling assessment and work with agencies in its development.	Outcomes to be published showing categories for tailored emissions reduction efforts.	To be reported in the 2025-26 Annual Progress Report and inform the 2026-27 mid-term review of the NZGO Strategy.
Develop an Environmentally Sustainable Procurement Policy and publish by January 2025.	Successful delivery of the Environmentally Sustainable Procurement Policy by January 2025.	Achieved. Commencing 1 July 2024, the Environmentally Sustainable Procurement Policy was introduced.
Develop guidance and training to support the Environmentally Sustainable Procurement Policy and implement by January 2025.	Successful development of training and guidance to support the Environmentally Sustainable Procurement Policy by January 2025.	Achieved. Guidance and training to support the Environmentally Sustainable Procurement Policy can be found on the Department of Climate Change, Energy, the Environment and Water's website under Toolkit and resources. Further materials will continue to become available throughout the implementation of the Procurement Policy.
NET ZERO FLEET		
25% of new passenger vehicle orders to be low emission vehicles (LEVs) within 2022-2023.	Reporting outside of this strategy – progress against the target is published on Finance's website.	Achieved. In 2022-23, 44% of passenger vehicle orders were LEVs, compared to the transitional target of 25%.
50% of new passenger vehicle orders to be LEVs within 2023-2024.	Reporting outside of this strategy – progress against the Low Emission Vehicle (LEV) Target is published on Finance's website.	Achieved. In 2023-24, 72% of in-scope passenger vehicle orders were LEVs, compared to the transitional target of 50%.
75% of new passenger vehicle orders to be LEVs by 2025.	Reporting outside of this strategy – progress against the target is published on Finance's website.	To be reported in Annual Progress Report 2024-25.
NET ZERO TRAVEL		
Increased uptake and usage of the NABERS Energy tool within accommodation providers.	Number of providers within the travel booking system that disclose a NABERS energy rating.	An update of the travel booking tool is planned to occur in 2025, enabling hotels with a NABERS energy certification status to be displayed in the travel booking system for accommodation providers. This means that as of 1 July 2024, no NABERS energy ratings were disclosed within the travel booking system.

TARGET	MEASURE	STATUS
NET ZERO ICT		
Improved access to greenhouse gas reporting through increased usage of the NABERS Data Centre rating tool.	Increase in suppliers who are utilising the NABERS based rating on a baseline of January 2024 and measured against July 2026.	As of 1 January 2024, 3 suppliers of 8 data centre facilities used by the 2030 Target entities had NABERS Energy for data centres (Infrastructure) energy ratings. This number will be used as a baseline to be measured against in July 2026.
PEOPLE AND CULTURE		
Capability uplift across the APS.	Initially will report on participation rates and details on the number of sessions and activities held.	Capability uplift activities in the 2023-24 financial year to support the 2030 Target included: • 13 webinars, 7 drop-in sessions, 3 working group sessions and 27 presentations at various multi-entity forums and conferences, with the provision of ongoing direct engagement and support to entities. • Establishment of the GovTEAMS Community of Practice (over 700 members). • Development, testing and release of the "Foundations of Net Zero in Government Operations" course on APSLearn.
EMISSION REDUCTION PLANS		
By 30 June 2024 (31 August 2024 extended deadline), entities must develop a long-term emissions reduction plan.	Percentage of emissions reduction plans developed (2024).	As of the extended deadline date of 31 August 2024, 34 NCEs and 2 CCEs (36 total) of the 100 2030 Target entities, had developed emission reduction plans, or 36%. As of publication, 75 NCEs and 5 CCEs (80 total) of the 100 2030 Target entities had developed emission reduction plans, or 80%.
Entities provide an annual progress report towards 2030 targets.	Percentage of overall emissions reduction per Commonwealth entity since 2022-23 reporting.	Emissions reductions per entity will be published in 2024-25 once amendments to 2022-23 and 2023-24 data are finalised.

Part 2: Commonwealth Climate Disclosure

Commonwealth Climate Disclosure is the Government's policy for Commonwealth entities and companies to publicly report on their exposure to climate risks and opportunities, as well as their actions to manage them, delivering transparent and consistent climate disclosures to the Australian public.

This initiative serves to provide greater transparency, accountability and credibility in the way climate risks are managed across the Commonwealth. It also supports the delivery of emissions reduction targets under the Paris Agreement and the APS Net Zero 2030 Target.

Climate disclosure by Commonwealth entities and companies will commence reporting over a four-year onboarding period. Departments of State and some Commonwealth entities that voluntarily opted-in, commenced implementation as part of the Pilot in this reporting period.

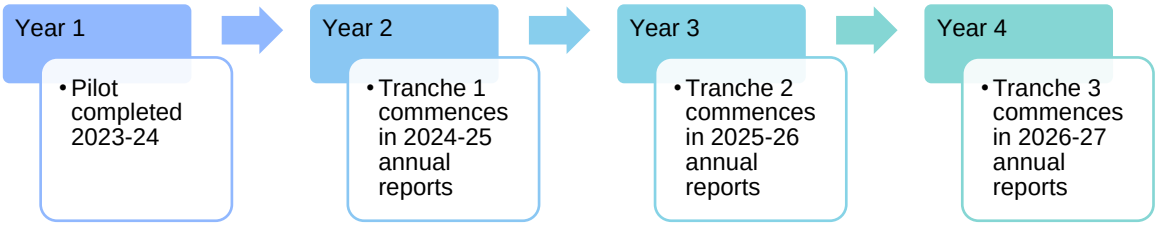


Figure 2: Four-year implementation timeline

In 2024-25, the implementation stage will commence against the Commonwealth Climate Disclosure Requirements for Tranche 1 Commonwealth entities in 2024-25 annual reports.

Pilot update

In 2023-24 the Commonwealth Disclosure Pilot (the Pilot) was completed. The Department of Finance (Finance) supported Commonwealth entities making their first disclosures, trialled support services, built internal capability and demonstrated public sector leadership.

The Pilot required all Departments of State to participate, while all other Commonwealth entities could opt in. All participants published climate disclosures in their annual reports.

Through the Pilot, Finance provided Commonwealth entities with capability building support and guidance to meet the climate disclosure obligations through one-on-one workshop engagement, thematic reviews and feedback on disclosures prior to annual report publication, and hosting webinars.

An evaluation of the Pilot is underway to inform implementation of Tranche 1 in financial year 2024-25. Insights from this evaluation as well as progress in Tranche 1 implementation will be provided in the next Annual Progress Report.

Part 3: 2023-24 Australian Government Emissions Inventory

Australian Government Emissions Reporting

The Net Zero in Government Operations Strategy (NZGO Strategy) reintroduced greenhouse gas emissions reporting for Commonwealth entities and companies. The Department of Finance, supported by the Department of Climate Change, Energy, the Environment and Water, developed the APS Net Zero Emissions Reporting Framework (the Framework) that adapts existing greenhouse gas emissions related accounting frameworks to leverage best practice. It has been designed to promote consistency of reporting across Commonwealth entities and companies.

The NZGO Strategy requires Commonwealth entities and companies to publicly report their greenhouse gas emissions from their operations in Australia and Australia's external territories (that is Norfolk Island, Christmas Island, Australian Antarctic Territory, Coral Sea Islands, Heard Islands, McDonald Islands, Cocos (Keeling) Islands, Ashmore Islands and Cartier Islands) in line with the Framework. As part of the reporting requirements under section *516A* of the *Environment Protection and Biodiversity Conservation Act 1999*, all NCEs and CCEs were required to publicly report on their emissions commencing in 2022-23 annual reports. CCs commenced reporting from 2023-24.

The aggregate emissions for Commonwealth entities and companies are presented in the 2023-24 Australian Government Emissions Inventory (the Inventory) and has been collected in line with the Framework. The collection of this data is a result of considerable effort undertaken across the Australian Government and its service providers. Key methodologies related to the collection and calculation of this data are shown in Appendix C Methods, Appendix D Emissions factors and Appendix E Energy content factors.

Defining 'Scope'

The emissions from a Commonwealth entity or company's activities can be categorised as either scope 1, scope 2 or scope 3. The Framework requires all Commonwealth entities and companies to report on scope 1, scope 2 and select scope 3 emissions. The Emissions Inventory is distinct from the 2030 Target, which only includes scope 1 and scope 2.

Scope 1 emissions reflect emissions from sources owned or controlled by entities, including the combustion of stationary fuels (such as fuels used in buildings for boilers, generators and so on) and transportation fuels (such as in the vehicle fleet). Scope 1 emission sources included in the Inventory and the 2030 Target are natural gas use, fleet and other vehicles, refrigerants, and some other energy sources, such as LPG and diesel fuel in generators.

Scope 2 emissions are indirect emissions which occur because of an entity's use of electricity. These emissions are physically produced by the combustion of fossil fuels to create the electricity and are considered as indirect as the electricity is generated outside an entity's boundaries. Electricity is included in the Inventory and the 2030 Target and is reported via two methods: the location-based method and the market-based method. Further details of these methods can be found in Electricity and Appendix C Methods.

Scope 3 emissions reflect other indirect emissions produced by the activities of entities. For 2023-24, scope 3 emission sources include domestic flights, solid waste sent to landfill,

domestic car hire and accommodation, and indirect emissions associated with the extraction, production and transportation of energy sources (natural gas, fleet vehicles and other energy sources) as well as the transmission and distribution losses associated with electricity use. Scope 3 emissions are not included in the 2030 Target.

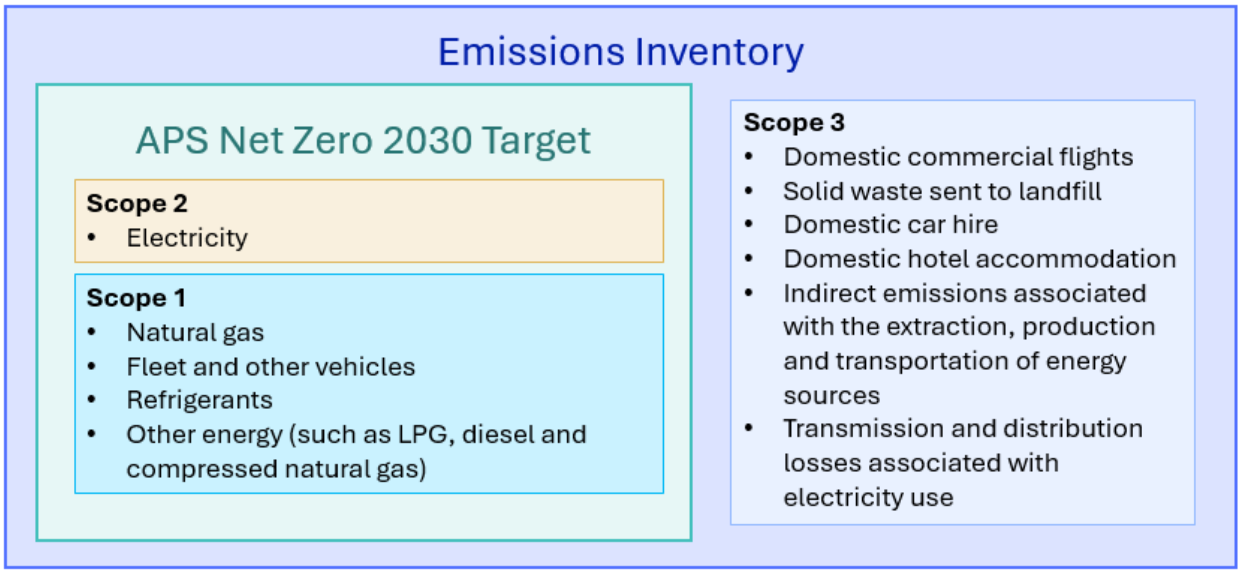


Figure 3: Scope 1, 2, and 3 emission sources included in the APS Net Zero Emissions Reporting Framework

Changes to emissions reporting

The 2023-24 period was the second year of emissions reporting under the APS Net Zero Emissions Reporting Framework. Changes to emissions reporting are outlined in Table 2.

Table 2: Changes to emissions reporting

	2022-23	2023-24
Number of Commonwealth entities and companies reporting	158	189

Emission sources	• Natural gas
	• Electricity
	• Fleet vehicles
	• Domestic flights
	• Other energy
		• Natural gas
		• Electricity
		• Fleet and other vehicles (including Commonwealth operated marine vehicles and aircraft)
		• Solid waste
		• Refrigerants (optionally reported in 2023-24, to become mandatory in future years)
		• Domestic travel, including:
		  ○ Commercial flights
		  ○ Hotel accommodation
		  ○ Hire Cars

		• Other energy (collected as stationary fuel use)
Recategorisation of emission categories	Emissions from aircraft that are owned, leased, contracted and/or chartered by the Australian Government reported under 'Other energy' or 'Domestic flights'.	Emissions from aircraft that are owned, leased, contracted and/or chartered by the Australian Government reported under 'Fleet and other vehicles'. 'Domestic flights' renamed to 'Domestic commercial flights'.
Data processing	Flight activity data from Whole of Australian Government Travel Arrangements was pre-processed to remove flights that were not flown (for example, refunded flights).	Flight activity data was post-processed using 'ticket type' to remove emissions associated with refunded flights, additional emissions from exchanged flights and records associated with invoices for additional luggage and the like.

Australian Government emissions inventory

Data within the 2023-24 Inventory presents an aggregate summary of emissions reported by 189 Commonwealth entities and companies - 99 NCEs, 74 CCEs and 16 CCs, for the 2023-24 financial year.

As noted above, emissions reporting for 2023-24 includes additional reporting entities and additional emissions sources, in comparison to 2022-23 reporting. As such, the totals in the 2023-24 Inventory cannot be compared to those reported in the 2022-23 NZGO Annual Progress Report. In 2022-23, 158 Commonwealth entities and companies reported emitting 3.286 Mt CO_2-e (location-based) and 2.920 Mt CO_2-e (market-based) from natural gas, electricity, fleet vehicles, domestic flights and other energy use. In 2023-24, the same 158 Commonwealth entities and companies reported 3.128 Mt CO_2-e (location based) and 2.742 Mt CO_2-e (market based),[1] from the same five emission sources. These totals are a subset of the data reported in the 2023-24 Inventory and provide the most like for like comparison between 2022-23 and 2023-24 emissions data.[2]

The data presented in the Inventory represents the latest emissions estimate at the time of publication. The values presented in separate Commonwealth entity and company annual reports will not sum to the values in the Inventory due to a small amount of data being updated after Commonwealth entity and company internal reporting deadlines. Emissions reported by a Commonwealth entity or company may also include emissions reported on behalf of another Commonwealth entity or company. These instances are listed in the accompanying 2024 NZGO Annual Progress Report workbook. Not all data sources were available at the time of the Report and additional amendments may be required in future reports.

Figure 4 and Figure 6 show the percentage of emissions for each scope (1, 2 and 3) by activity.

[1] Due to billing cycles not aligning with financial years, not all data sources were available at the time of publication and these emissions totals may be adjusted in the future

[2] Emissions totals may vary from that in individual Commonwealth entity and company annual reports due to variations in internal deadlines to finalise annual reports for each Commonwealth entity or company, see Appendix B Caveats for more detail.

Figure 5 and Figure 7 show the percentage of emissions from their respective activities, including electricity, natural gas, solid waste, refrigerants, fleet and other vehicles, domestic travel including commercial flights, accommodation and hire car, and other energy (further categorised as Defence and non-Defence).

Electricity emissions were calculated with the location-based method (Figure 4 and Figure 5) and market-based method (Figure 6 and Figure 7), with further explanation of the calculation methods in Electricity.

Location-based emissions breakdown

Table 3: Australian Government Greenhouse Gas Emissions Inventory – Location-based method

Emission Source	Scope 1 (t CO_2-e)	Scope 2 (t CO_2-e)	Scope 3 (t CO_2-e)	Sum of emissions (t CO_2-e)
Electricity (Location Based Method)	N/A	1,947,343	202,214	2,149,557
Natural Gas	242,390	N/A	41,875	284,265
Solid Waste*	N/A	N/A	118,848	118,848
Refrigerants*†	4,422	N/A	N/A	4,422
Fleet and Other Vehicles	213,653	N/A	53,870	267,523
Domestic Commercial Flights	N/A	N/A	147,801	147,801
Domestic Hire Car*	N/A	N/A	4,086	4,086
Domestic Travel Accommodation*	N/A	N/A	52,287	52,287
Other Energy‡	1,047,527	N/A	265,805	1,313,332
Other Energy - stationary energy	75,744	N/A	19,702	95,446
Other Energy - Defence	971,783	N/A	246,103	1,217,886
Sum of emissions (t CO_2-e)	**1,507,992**	**1,947,343**	**886,786**	**4,342,121**

Notes:

1. Emissions presented in Table 3 represent the total Australian Government greenhouse gas emissions, which includes emission sources that are not part of the 2030 Target. The 2030 Target emissions are in Part 1: Progress towards the APS Net Zero 2030 Target.
2. Data has been presented as whole numbers. Emission totals less than one t CO_2-e were rounded up to the nearest whole number to ensure emissions were not under reported.
3. * Indicates emission sources collected for the first time in 2023-24. The quality of data is expected to improve over time as emissions reporting matures.
4. † Indicates optional emission source for 2023-24 emissions reporting.
5. ‡ Other Energy has been split into two categories, stationary energy and Defence.
    a. Other Energy - stationary energy represents emissions from combustion of fuels in stationary (non-transport) sources. Further details in Other energy.
    b. Other Energy - Defence includes emissions reported by the Department of Defence that are the result of Defence operations, which are not included in the 2030 Target. Defence has set its own targets, with further details in Appendix A Commonwealth entities and companies included in the APS Net Zero 2030 Target.

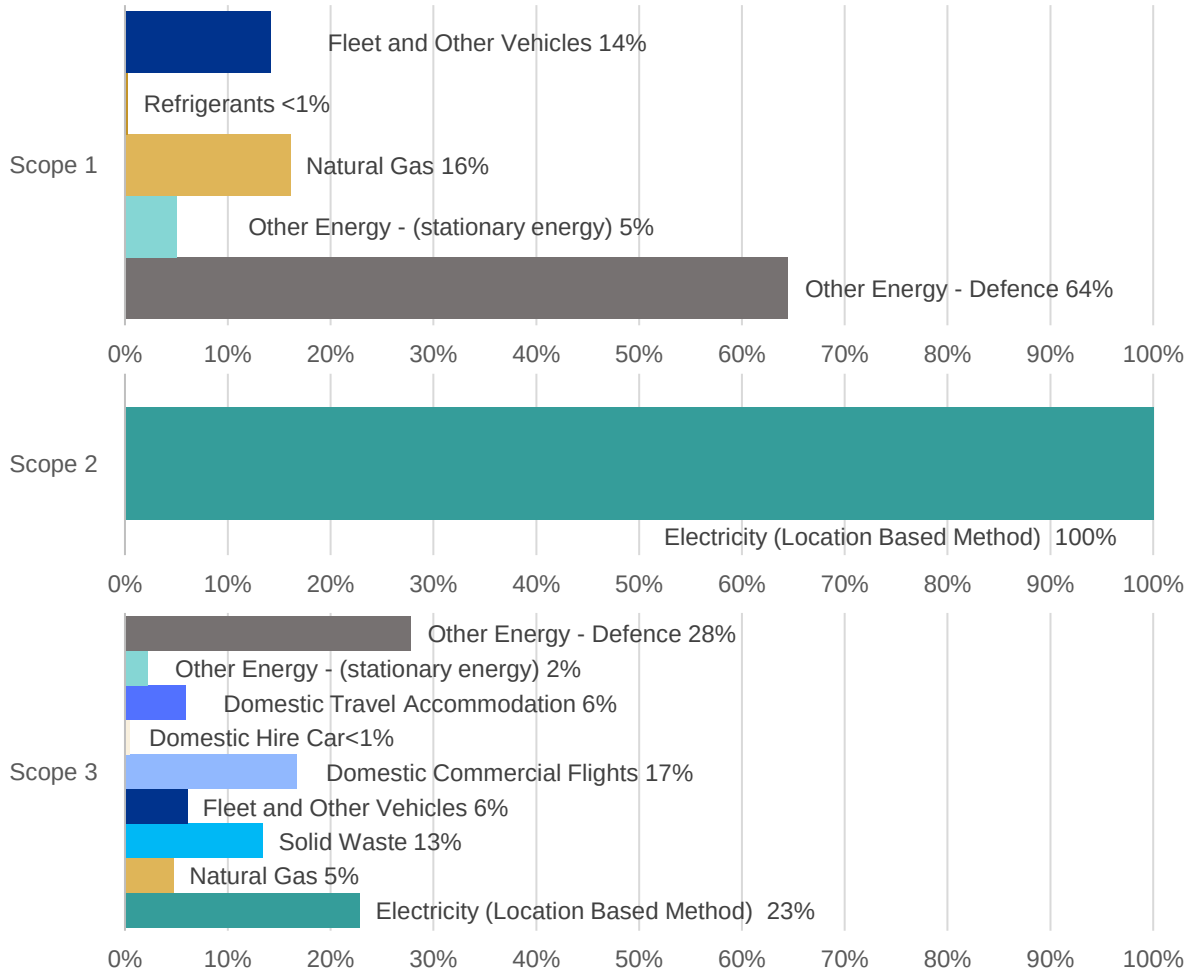


Figure 4: Percentage of emission sources for each scope (location-based method)

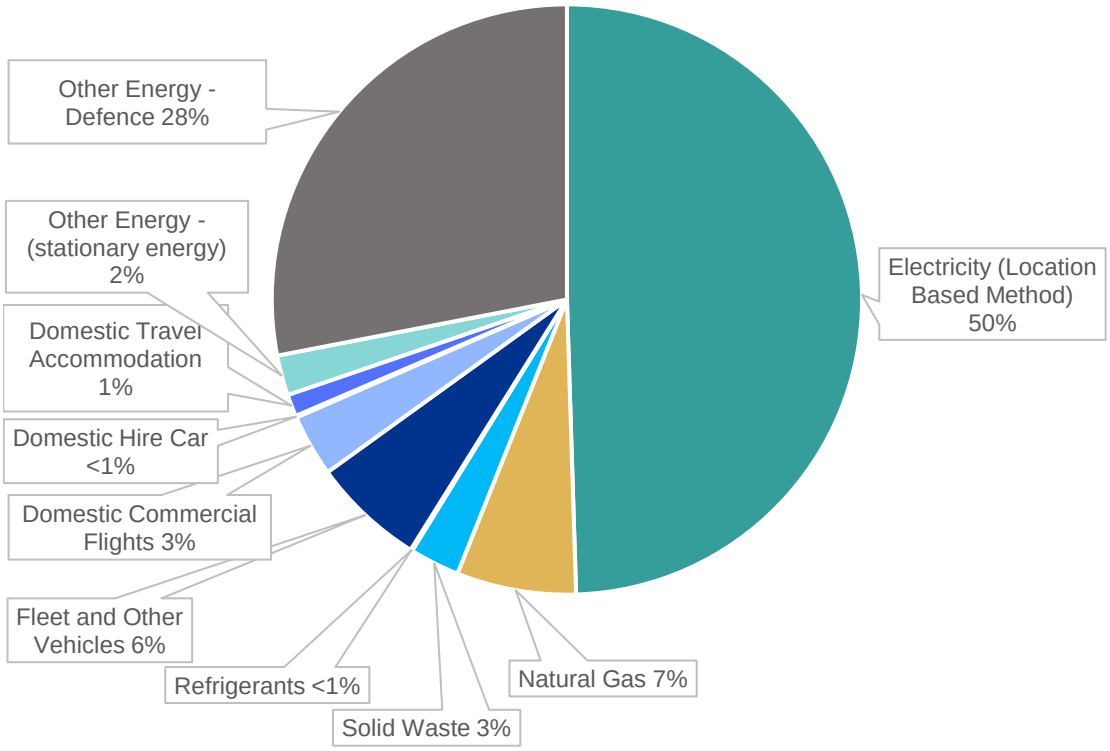


Figure 5: Percentage of emissions by activity (location-based method)

Market-based method emissions breakdown

Table 4: Australian Government Greenhouse Gas Emissions Inventory – Market-based method

Emission Source	Scope 1 (t CO_2-e)	Scope 2 (t CO_2-e)	Scope 3 (t CO_2-e)	Sum of emissions (t CO_2-e)
Electricity (Market Based Method)	N/A	1,511,004	186,549	1,697,553
Natural Gas	242,390	N/A	41,875	284,265
Solid Waste*	N/A	N/A	118,848	118,848
Refrigerants*†	4,422	N/A	N/A	4,422
Fleet and Other Vehicles	213,653	N/A	53,870	267,523
Domestic Commercial Flights	N/A	N/A	147,801	147,801
Domestic Hire Car*	N/A	N/A	4,086	4,086
Domestic Travel Accommodation*	N/A	N/A	52,287	52,287
Other Energy‡	1,047,527	N/A	265,805	1,313,332
Other Energy - stationary energy	75,744	N/A	19,702	95,446
Other Energy - Defence	971,783	N/A	246,103	1,217,886
Sum of emissions (t CO_2-e)	**1,507,992**	**1,511,004**	**871,121**	**3,890,117**

Notes:

1. Emissions presented in Table 4 represent the total Australian Government greenhouse gas emissions, which includes emission sources that are not part of the 2030 Target. The 2030 Target emission are in Part 1: Progress towards the APS Net Zero 2030 Target.
2. The market-based values above were calculated for the total of all Commonwealth entities and companies, rather than calculated on an individual Commonwealth entity or company basis. The values presented in separate Commonwealth entity and company annual reports will not sum to the values in Table 4.
3. Data has been presented as whole numbers. Emission totals less than one t CO_2-e were rounded up to the nearest whole number to ensure emissions were not under reported.
4. * Indicates emission sources collected for the first time in 2023-24. The quality of data is expected to improve over time as emissions reporting matures.
5. † Indicates optional emission source for 2023-24 emissions reporting.
6. ‡ Other Energy has been split into two categories, stationary energy and Defence.
    a. Other Energy - stationary energy represents emissions from combustion of fuels in stationary (non-transport) sources. Further details in Other energy.
    b. Other Energy - Defence includes emissions reported by the Department of Defence that are the result of Defence operations, which are not included in the 2030 Target. Defence has set its own targets, with further details in Appendix A Commonwealth entities and companies included in the APS Net Zero 2030 Target.

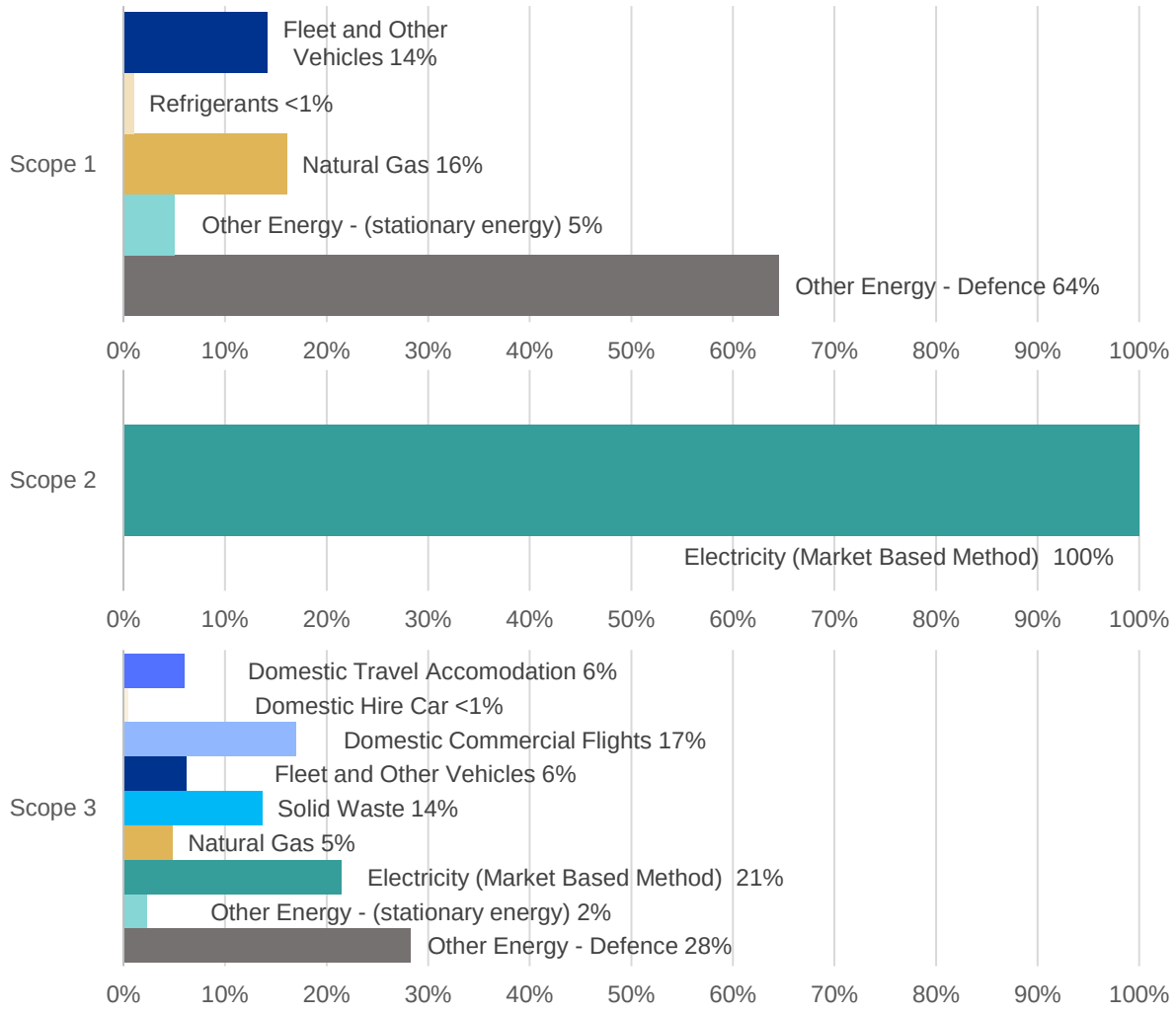


Figure 6: Percentage of emission sources for each scope (market-based method)

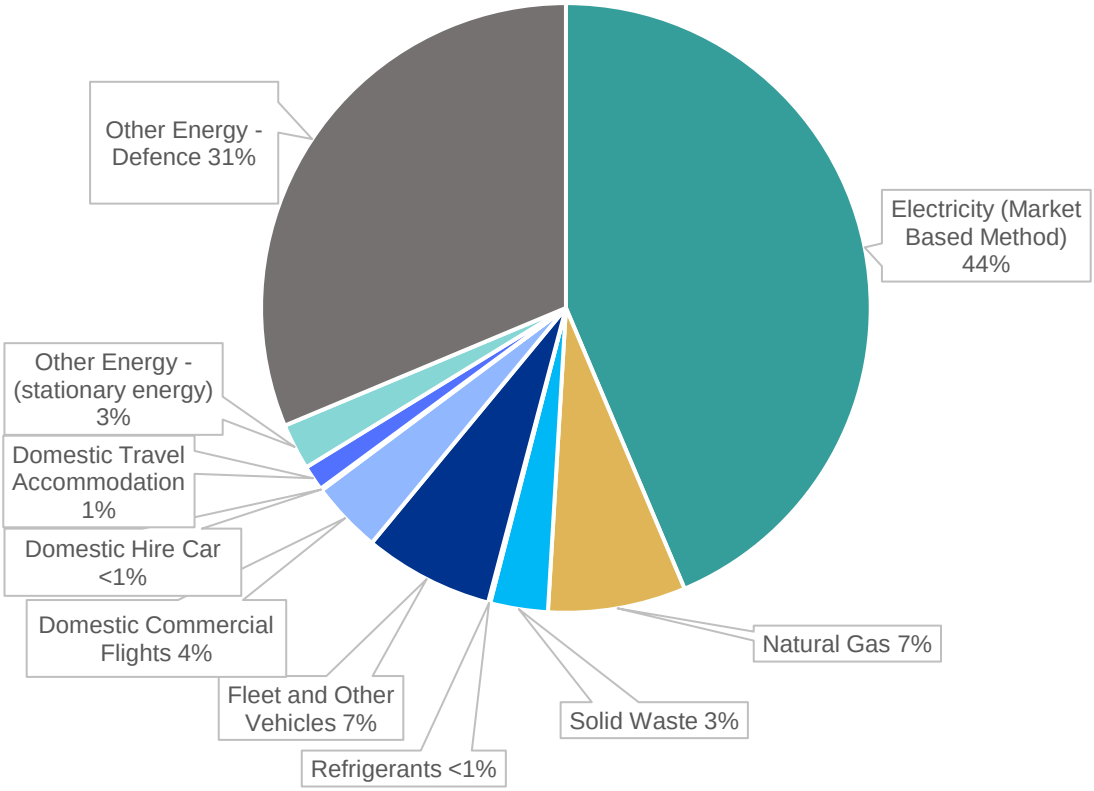


Figure 7: Percentage of emissions by activity (market-based method)

Electricity

Electricity emissions include indirect emissions produced as a result of the burning of fossil fuels by the generator of the electricity (scope 2), and emissions associated with transmission and distribution losses from electricity use (scope 3). Electricity emissions were calculated using the location-based method and market-based method. Reporting electricity emissions under both methods provides different perspectives of the emissions associated with an entity's electricity usage.

Location-based method

The location-based method is a way to estimate an entity's electricity emissions based on its geographical location. This method takes into account the intensity of emissions from electricity generation in the state or territory where the entity operates.

The key component of this method is the location-based scope 2 emission factors (see Appendix D Emissions factors). These are state-based emission factors derived from on-grid electricity generation, and they are calculated using the physical characteristics of the electricity grid. These factors are updated each financial year, reflecting the electricity generation within each state and territory. They also consider interstate electricity flows and the emissions attributable to those flows.

The location-based method calculates an average emission factor for all electricity consumed from the grid in a given state, territory or electricity grid. This method of reporting mirrors the emissions intensity of the grid where the electricity consumption takes place.

It is important to note that this method reflects the average emissions intensity of the electricity grid in the location where energy consumption occurs. However, it does not permit any claims of renewable electricity from grid-imported electricity usage. This means that even if an entity uses renewable energy sources or purchases GreenPower or large-scale generation certificates, this will not be reflected in the location-based method's estimation of their emissions.

Market-based method

The market-based method is a way to estimate an entity's electricity emissions based on its purchase or generation of certified renewable electricity products. This includes both voluntary purchases or generation of renewable electricity and mandatory schemes like the Renewable Energy Target.

This method provides a snapshot of an entity's electricity emissions in the context of its certified renewable energy generation and purchases. It reflects the emissions intensity of various electricity products, markets and investments. A key component of this method is the use of a residual mix factor (see Appendix D Emissions factors), which allows for unique claims on the zero-emissions attribute of renewables without double-counting.

The market-based method assigns an emissions factor of zero to an entity's investments in renewable electricity. It then uses a national residual mix factor, sourced from the National Greenhouse Accounts Factors, to calculate emissions from any remaining electricity consumption.

However, when entities consume electricity from the grid, they are using electricity generated from a variety of technologies in operation at the time of consumption, which may include non-renewable sources. While the market-based method allows entities to align their consumption with investments in renewable electricity, it does not imply that they are consuming electricity solely from renewable generators.

In 2023-24, the 189 Commonwealth entities and companies reported emitting an approximate aggregate sum of 2.15 Mt CO_2-e associated with electricity usage calculated by the location-based method, or 1.70 Mt CO_2-e, calculated by the market-based method (see Figure 8).

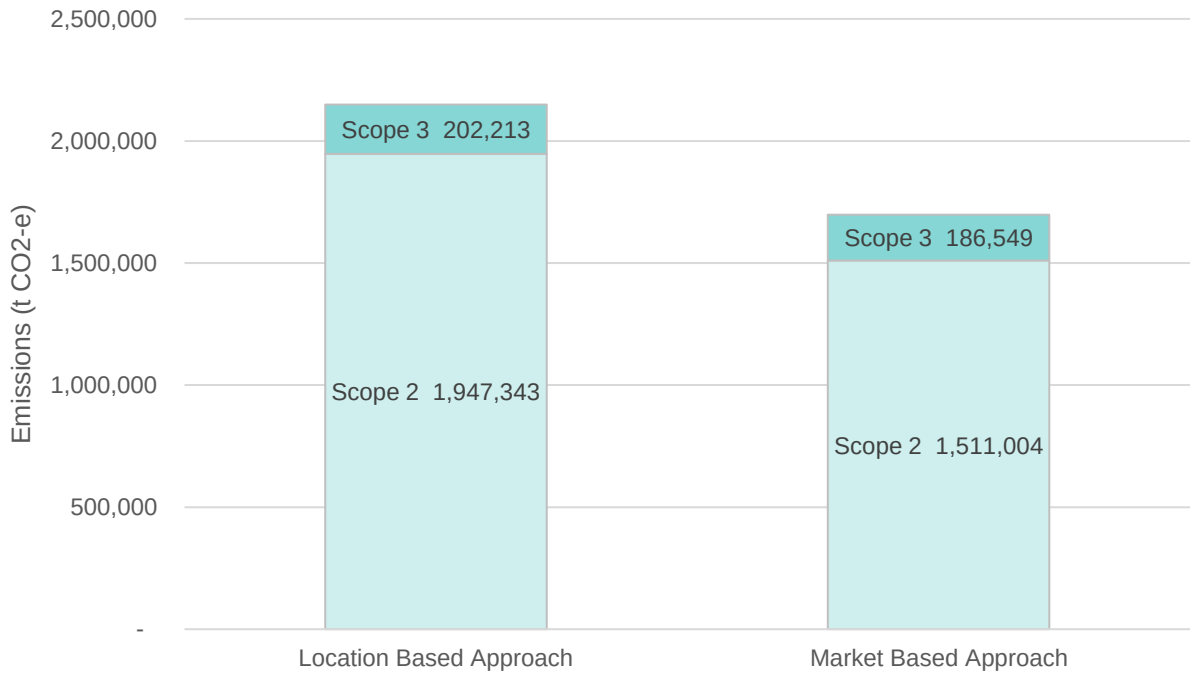


Figure 8: Location-based and market-based emissions (t CO_2-e) comparison

Location-based electricity emissions

The location-based method allows emissions associated with electricity usage to be calculated by state (see Table 5 and Figure 9).

Table 5: Electricity emissions by state/territory grid location and scope (location-based method)

State/Territory grid	Electricity usage (kWh)	Electricity usage (GJ)	Scope 2 emissions (t CO_2-e)	Scope 3 emissions (t CO_2-e)	Sum of reported Emissions (t CO_2-e)
NSW	1,198,903,953	4,316,054	811,418	64,741	876,159
ACT	513,158,833	1,847,372	347,306	27,711	375,017
NT (DKIS)	111,867,291	402,722	60,006	7,652	67,658
QLD	355,180,590	1,278,650	260,845	53,703	314,548
SA	161,722,016	582,199	41,336	12,226	53,562
TAS	30,437,994	109,577	3,506	219	3,725
VIC	405,241,799	1,458,870	320,952	26,260	347,212
WA (SWIS)	97,790,620	352,046	51,751	3,873	55,624
WA (NWIS)	77,834,083	280,203	48,475	5,604	54,079
OTHER	2,713,050	9,767	1,748	225	1,973
Total	**2,954,850,229**	**10,637,460**	**1,947,343**	**202,214**	**2,149,557**

Notes:

1. DKIS: Darwin Katherine Interconnected System
2. SWIS: South West Interconnected System
3. NWIS: North West Interconnected System
4. OTHER: Any site not on the above grids, such as some territories not connected to the mainland, had the national electricity emissions factor applied.

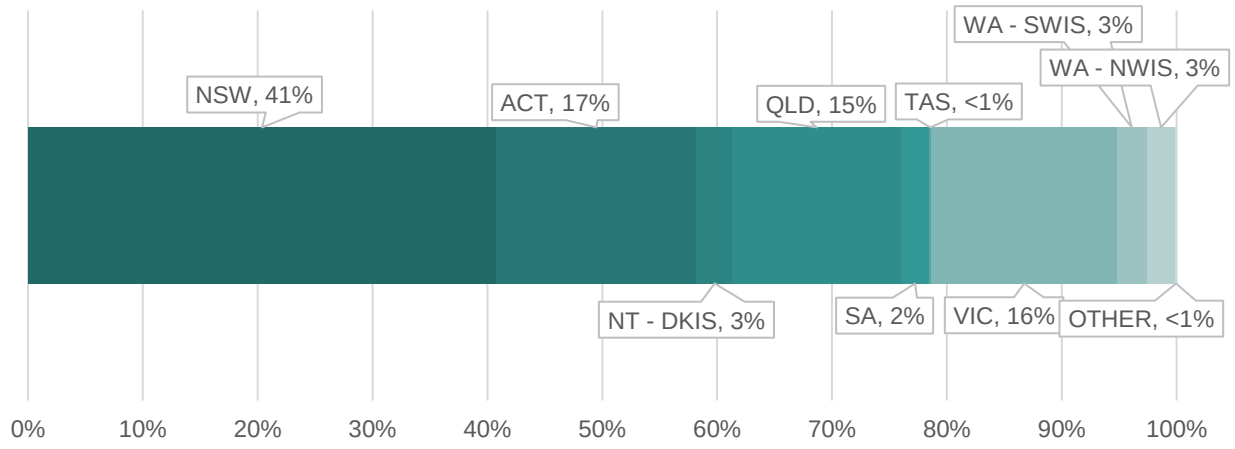


Figure 9: Electricity emission per state as a percentage

Market-based electricity emissions

The market-based method calculates emissions associated with electricity use based on the entire electricity grid and the renewable electricity generation percentage without regard to state lines. As such, emissions are calculated on a national basis and not presented as state-by-state.

Under the market-based method, renewable energy can also be split into two categories – voluntary and mandatory. Voluntary sources are those where a decision has been made to purchase or generate renewable energy, such as large-scale generation certificates (LGCs) purchased and surrendered (3.18%), purchased GreenPower (2.06%), electricity consumed in the ACT (12.87%) where renewable energy is purchased by the ACT Government (considered a Jurisdictional renewable power percentage) or the generation and surrender of LGCs (0.12%). The remaining renewable energy used by Commonwealth entities and companies comes from the mandatory national Large-scale Renewable Energy Target (18.70%) (see Table 6 and Table 7). Renewable energy used by Commonwealth entities and companies comes from voluntary and mandatory renewable energy sources representing a total renewable percentage of 36.94%.

Table 6: Electricity emissions and renewable percentages (market-based method)

Market Based Approach	Electricity usage (kWh)	Emissions (t CO_2-e)	Renewable Percentage
Total certified renewable electricity consumed from grid	**1,087,936,526**	**-**	**36.81%**
Large-scale Renewable Energy Target (LRET)	552,680,502	-	18.70%
LGCs* purchased and surrendered (including Power Purchasing Agreements)	94,040,778	-	3.18%
GreenPower	60,810,603	-	2.06%
Jurisdictional Renewables (LGCs* surrendered)	380,404,643	-	12.87%
Total certified renewable electricity generated onsite (not including STCs†)	**3,444,000**	**-**	**0.12%**
LGCs* generated onsite, surrendered and consumed onsite	2,810,355	-	0.10%
LGCs* generated onsite, surrendered and returned to grid	633,645	-	0.02%
Total non-renewable electricity from grid	**1,863,469,704**	**1,697,553**	**-**
Residual Purchased Electricity	1,863,469,704	1,697,553	-
Total Electricity consumed	**2,954,850,230**	**1,697,553**	**36.93%**
Scope 2 emissions		1,511,004	-
Scope 3 emissions		186,549	-

Notes:

1. * Large-scale generation certificates (LGCs).
2. † Small-scale technology certificates (STCs).
3. Renewable electricity usage and the renewable percentage only reflect certified renewable electricity consumption or generation and does not include non-certified electricity generated on site, such as electricity generated by small behind-the-meter-solar arrays.

Table 7: Total certified renewable energy consumed

Total certified renewable electricity	**1,091,380,526 kWh**	**36.93%**
Mandatory[1]	552,680,502 kWh	18.70%
Voluntary[2]	538,700,025 kWh	18.23%

1. Mandatory renewables are the portion of electricity consumed from the grid that is generated by renewable sources. This includes the renewable power percentage.
2. Voluntary renewables reflect the eligible certified renewable energy surrendered by the entity. This may include purchased or generated large-scale generation certificates, power purchasing agreements, GreenPower and the jurisdictional renewable power percentage (ACT only).

Natural gas

Natural gas includes emissions produced by combustion of natural gas (scope 1), and indirect emissions associated with the extraction, production and transportation of natural gas (scope 3).

In 2023-24, the Australian Government reported emitting an approximate aggregate sum of 285 kt CO_2-e associated with natural gas (see Figure 10 and Table 8).

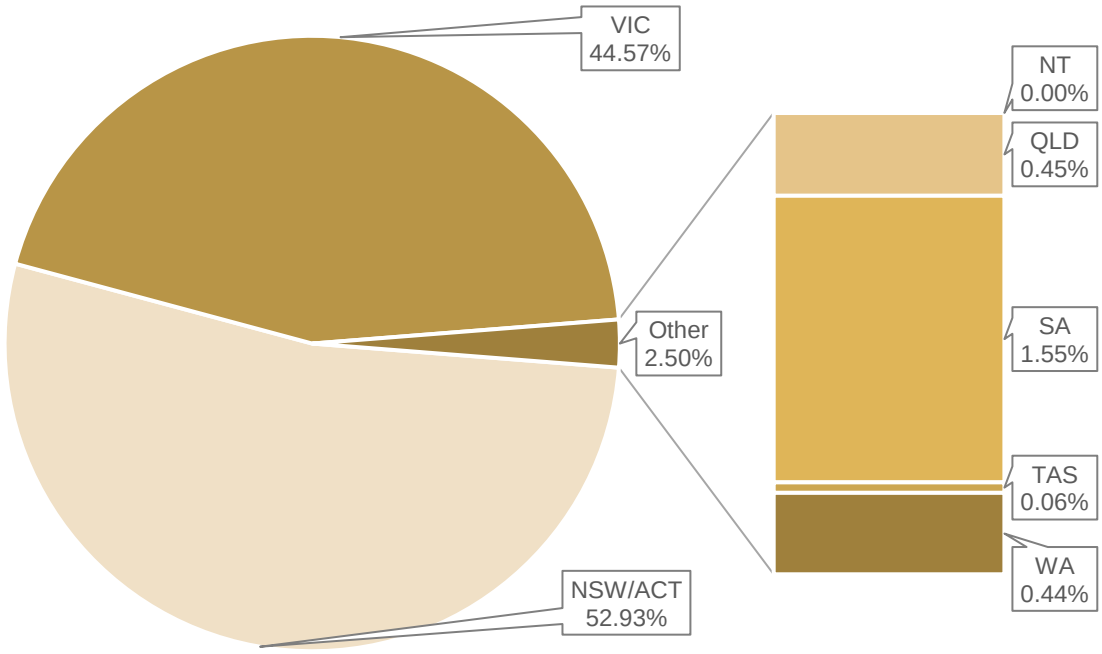


Figure 10: Percentage of natural gas emissions by state

Table 8: Natural gas emissions by state/territory and scope

State/Territory	Usage (GJ)	Scope 1 emissions (t CO_2-e)	Scope 3 emissions (t CO_2-e)	Sum of reported emissions (t CO_2-e)
NSW/ACT*	2,360,527	118,989	31,470	150,459
NT	60	3	1	4
QLD	21,161	1,090	184	1,274
SA	70,900	3,653	759	4,412
TAS	2,900	149	12	161
VIC	2,339,305	117,345	9,357	126,702
WA	22,536	1,161	92	1,253
Total	**4,817,389**	**242,390**	**41,875**	**284,265**

Note:

1. * NSW and ACT use the same emission factors for natural gas. During data collection, natural gas was combined using an NSW/ACT option and cannot be separated in the results.

Solid waste

Reporting emissions from solid waste was introduced for the 2023-24 reporting period.

Solid waste includes emissions produced by the disposal of solid waste via landfill (Scope 3). The solid waste data captured here is associated with the operation of building facilities (for example, office waste). Commonwealth entities and companies were not required to report construction waste or recycled waste as this falls out of the scope of the Framework, however, could report additional data for solid waste at their discretion.

As 2023-24 is the first year of reporting solid waste data, reporting was done on a best-efforts basis. The following data should not be considered complete or robust and is expected to improve as emissions reporting matures.

In 2023-24, the Australian Government reported emitting an approximate aggregate sum of 119 kt CO_2-e associated with solid waste disposal (see Figure 11 and Table 9).

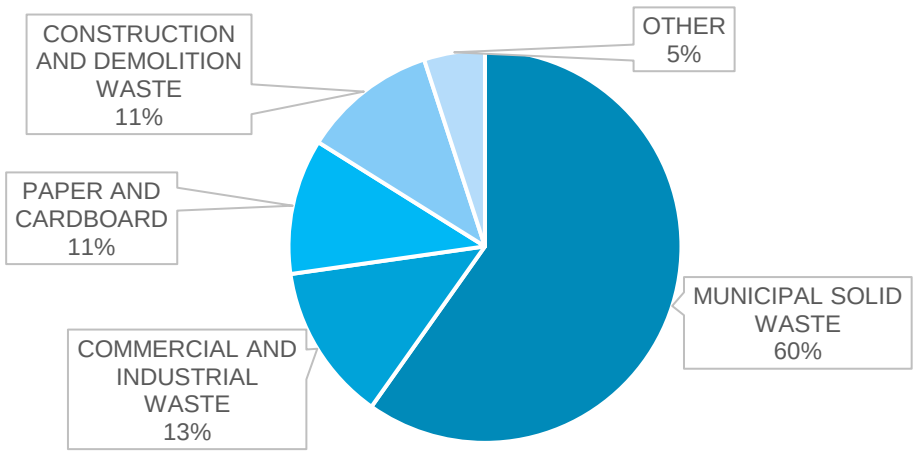


Figure 11: Percentage of emissions by waste stream/type

Table 9: Emissions associated with solid waste disposal by waste stream or type

Waste stream/type	Total mass (t)	Scope 3 emissions (t CO_2-e)
Municipal solid	43,581	71,076
Commercial and industrial waste	11,647	15,383
Construction and demolition waste	64,299	13,188
Food	766	1,622
Paper and cardboard	3,950	13,241
Garden and green	1,621	2,594
Wood	669	468
Textiles	451	901
Sludge	911	365
Nappies	1	6
Rubber and leather	1	4
Inert waste	104	0
Total	**128,001**	**118,848**

Refrigerants

Fugitive emissions from refrigerants occur from the direct leakage of refrigerant gas to the atmosphere from heating ventilation and air conditioning (HVAC) plants or specialist industrial equipment. Refrigerant emissions are scope 1 emissions and will be incorporated into the 2030 Target in future years.

2023-24 was the first year of reporting refrigerant emissions and considerable uplift was required to enable Australian Government reporting. As such, refrigerant reporting was optional and limited to equipment which contained more than 100 kg of a refrigerant that had a global warming potential of 1000 or more. Any equipment that contained SF_6 was required to be reported regardless of the quantity of SF_6 contained. Commonwealth entities and companies could report additional refrigerant data at their discretion.

Mandatory reporting of refrigerant emissions will be phased in from 2024 through to 2027, with the expectation that a baseline for refrigerant emissions will be established in financial year 2026-27. Reporting on refrigerants is expected to improve as Commonwealth entity and company capability uplift continues and emissions reporting mature.

In 2023-24, the Australian Government reported emitting an approximate aggregate sum of 5 kt CO_2-e associated with fugitive emissions from refrigerants (see Figure 12 and Table 10).

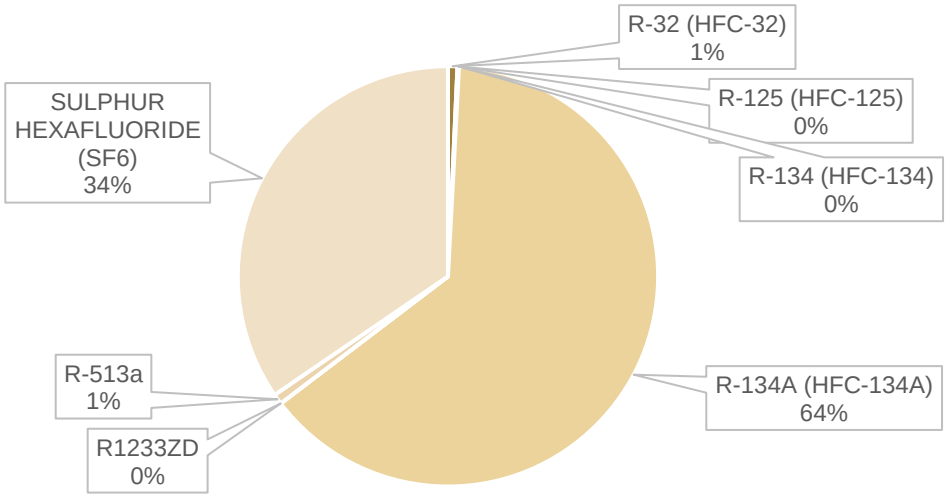


Figure 12: Fugitive emissions from refrigerants as a percentage

Table 10: Fugitive emissions from refrigerants by refrigerant type

Refrigerant Type	Total fugitive losses (kg, estimated)	Scope 1 emissions (t CO_2-e)
R-32 (HFC-32)	47	32
R-125 (HFC-125)	2	5
R-134 (HFC-134)	1	1
R-134a (HFC-134A)	2,170	2,821
R1233zd	86	1
R-513a (Blend)	61	35
Sulphur hexafluoride (SF6)	65	1,527
Total	**2,432**	**4,422**

Fleet and other vehicles

This section reports the emissions from the combustion of fuels used by vehicles owned and/or leased by the Australian Government (scope 1), and indirect emissions associated with the extraction, production and transportation of these fuels or emissions associated with vehicles contracted or chartered by the Commonwealth but operated by a third party (scope 3).

Commonwealth entities and companies were given the discretion of determining which vehicles fall within their operational control, and these were reported as scope 1 emissions. In certain circumstances a Commonwealth entity or company may have determined that their contracting or charter arrangement with a third party resulted in emissions that would not have otherwise been emitted and on that basis, chose to report those emissions as scope 1.

Fleet and other vehicles included in this section are:

- Commonwealth Fleet Vehicles managed under the Whole of Australian Government Vehicle Fleet Management and Leasing Services arrangement.
- Other vehicles operated by the 189 different Commonwealth entities and companies, such as cars, trucks, motorcycles, marine craft, aircraft and other similar vehicles.

In 2023-24, the Australian Government reported emitting an approximate aggregate sum of 268 kt CO_2-e associated with fleet and other vehicles. Emissions have been categorised by fuel type and vehicle type (see Table 11).

Table 11: Fleet and other vehicle emissions by vehicle type, fuel type and scope

Vehicle type	Fuel type	Energy (GJ)	Scope 1 emissions (t CO_2-e)	Scope 3 emissions (t CO_2-e)	Sum of reported emissions (t CO_2-e)
1.A.3.a Civil Aviation		**62,137**	**4,369**	**1,121**	**5,490**
1.A.3.a.i Domestic Aviation		62,137	4,369	1,121	5,490
	Kerosene for use as fuel in an aircraft-aviation*	62,137	4,369	1,121	5,490
1.A.3.b Road transportation		**2,524,343**	**177,104**	**43,633**	**220,737**
1.A.3.b.i Cars		824,655	57,447	14,229	71,676
	Diesel	628,050	44,221	10,865	55,086
	Ethanol mix (ethanol component)	1,047	1	0	1
	Gasoline	195,558	13,225	3,364	16,589
1.A.3.b.ii Light duty trucks		4,875	343	84	427
	Diesel	4,672	329	81	410
	Gasoline	203	14	3	17
1.A.3.b.iii Heavy duty trucks and buses		1,694,584	119,298	29,316	148,614
	Diesel	1,693,986	119,257	29,306	148,563
	Ethanol mix (ethanol component)	6	1	0	1
	Gasoline	592	40	10	50
1.A.3.b.iv Motorcycles		229	16	4	20
	Ethanol mix (ethanol component)	1	1	0	1
	Gasoline	228	15	4	19
1.A.3.d Water-borne navigation		**464,040**	**31,728**	**8,979**	**40,707**
1.A.3.d.ii Domestic marine		464,040	31,728	8,979	40,707
	Other Biofuels	47	1	0	1
	Diesel	456,250	31,262	8,785	40,047
	Ethanol mix (ethanol component)	7	1	0	1
	Gasoline	7,735	463	193	656
	Kerosene	1	1	1	2
1.A.3.e Other transportation		**6,735**	**452**	**137**	**589**
1.A.3.e.ii Other (off road vehicles)		6,735	452	137	589
	Diesel	1,473	87	42	129
	Ethanol mix (ethanol component)	1	1	0	1
	Gasoline	430	29	7	36
	Kerosene	4,343	305	78	383
	Liquid Petroleum Gas (LPG)	488	30	10	40
Total		**3,057,255**	**213,653**	**53,870**	**267,523**

Note:

1. * The category “Kerosene for use as fuel in an aircraft-aviation” contains some scope 1 emissions from contracted or chartered flights which were reported as kilometres travelled rather than fuel consumed. In these cases, emissions were calculated using the same emissions factors and methodology as domestic commercial flights (economy class). The total energy (GJ) reported will not directly correspond to the emissions reported in Table 11.

Domestic commercial flights

This section reports the emissions associated with the use of domestic commercial airline flights for the purposes of business travel.

Domestic commercial flight emissions are Scope 3 emissions and include:

- indirect emissions associated with the fuels for commercial flights
- indirect emissions associated with the extraction, production and transportation of the fuels for commercial flights.

The emissions from the use of aircraft for purposes other than business travel or the use of non-commercial aircraft are reported in Fleet and other vehicles.

In 2023-24, the Australian Government reported emitting an approximate aggregate sum of 148 kt CO_2-e associated with domestic commercial flights. Table 12 shows emissions sorted by cabin class.

Table 12: Domestic commercial flight emissions by cabin class and emission scope

Emission source	Passenger kilometres (km)	Scope 3 emissions (t CO_2-e)
Gasoline for use as fuel in an aircraft-aviation	Reported in Fleet and Other Vehicles	
Kerosene for use as fuel in an aircraft-aviation		
Economy class	1,030,594,976	137,093
Business class	53,930,614	10,631
Premium economy	352,522	69
First class	41,841	8
Total	**1,084,919,953**	**147,801**

Domestic hire car

Reporting of emissions from use of hire cars for domestic business travel was introduced for the 2023-24 reporting period.

Emissions from domestic hire car are considered indirect (scope 3) emissions.

The availability of data showing the distance travelled during a hire car reservation was inconsistent and presents a barrier to reporting the emissions associated with their use. Therefore, for the current reporting period, hire car emissions reported were sourced only from Hertz Australia Pty Ltd (Hertz) who supplied their own emissions data for hire car use. Data presented here does not reflect the total emissions from hire cars used by the Australian Government and is expected to improve as data availability and collection matures. Data supplied by the Whole of Government Vehicle Rental Provider, Hertz, is only representative of bookings made through the provider.

Table 13: Domestic hire car emissions

Emission source	Number of rentals	Total kilometres (km)	Scope 3 emissions (t CO_2-e)
Domestic hire cars	16,796	8,839,301	4,086

Domestic hotel accommodation

Reporting of accommodation emissions was introduced for the 2023-24 reporting period.

Emissions from domestic hotel accommodation are considered indirect (scope 3) emissions (Table 14).

Domestic hotel accommodation emissions relate to hotel stays by Commonwealth staff for business purposes and are calculated based on the number of rooms booked and the number of nights stayed, multiplied by the relevant emissions factor (see Appendix D Emissions factors).

Table 14: Domestic hotel accommodation emissions

Emission source	Total number of nights	Scope 3 emissions (t CO_2-e)
Domestic hotel accommodations	943,494	52,287

Other energy

Other energy includes scope 1 and scope 3 emissions. Under the Framework, this consists of emissions from the combustion of fuels in stationary (non-transport) sources and a mix of emissions from Defence operations.

During collection, data for all sources listed in Table 15 were collected, however 1.A.4.a.i Stationary fuel combustion – Natural gas has been reported in the Natural gas section to represent the aggregated emissions more accurately from that source.

Data in this table also includes emissions from the Department of Defence, including a mix of Defence operations emissions other than those captured under electricity, natural gas, solid waste, refrigerants, fleet and other vehicles, domestic commercial flights, domestic hire car and domestic hotel accommodation. The 1.a.5.b Defence other energy – Land, marine, aviation category includes petrol, aviation fuel and diesel for use by Defence on land, marine and aviation transport.

Note that 1.A.4 Other sectors - Liquid petroleum gas (LPG) (stationary) includes emissions from Commonwealth entities and companies including Department of Defence.

In 2023-24, the Australian Government reported emitting an approximate aggregate sum of 1.32 Mt CO_2-e as other energy. Emissions have been sorted by source or fuel type in Table 15.

Table 15: Emissions reported as other energy, by source, fuel type and scope

Emission source/fuel type	Energy (GJ)	Scope 1 emissions (t CO_2-e)	Scope 3 emissions (t CO_2-e)	Sum of reported emissions (t CO_2-e)
1.A.1 Energy industries				
1.A.2 Manufacturing industries and construction				
1.A.3 Transport	Reported in Fleet and other vehicles and Domestic commercial flights			
1.A.4 Other sectors				
1.A.4.a. Commercial/institutional				
Automotive gasoline/petrol (used as fuel for stationary energy)	4,654	316	80	396
Compressed natural gas (reverting to standard conditions)	3	1	1	2
Diesel oil	906,128	63,230	15,676	78,906
Gaseous fossil fuels other than those mentioned in the items above	2	1	0	1
Kerosene other than for use as a fuel in an aircraft	7,036	486	127	613
Liquid petroleum gas (LPG) (stationary)	185,832	11,261	3,754	15,015
Other natural gas liquids	5,599	343	0	343
Petroleum based greases	416	1	7	8
Petroleum based oils (other than petroleum-based oil used as fuel), e.g. lubricants	2,094	29	38	67
Petroleum based products other than mentioned in the items above	3	1	1	2
1.A.4.a.i Stationary fuel combustion				
Natural gas	Reported in Natural Gas			
1.A.4.b. Residential				
1.A.4.c.i Agriculture/Forestry/Fishing - Stationary Energy				
Diesel oil	1,069	75	18	93
1.A.5 Non-specified				
1.a.5.b Defence Other Energy – Land, Marine, Aviation	13,825,061	971,783	246,103	1,217,886
Total	**14,937,897**	**1,047,527**	**265,805**	**1,313,332**

Appendix A Commonwealth entities and companies included in the APS Net Zero 2030 Target

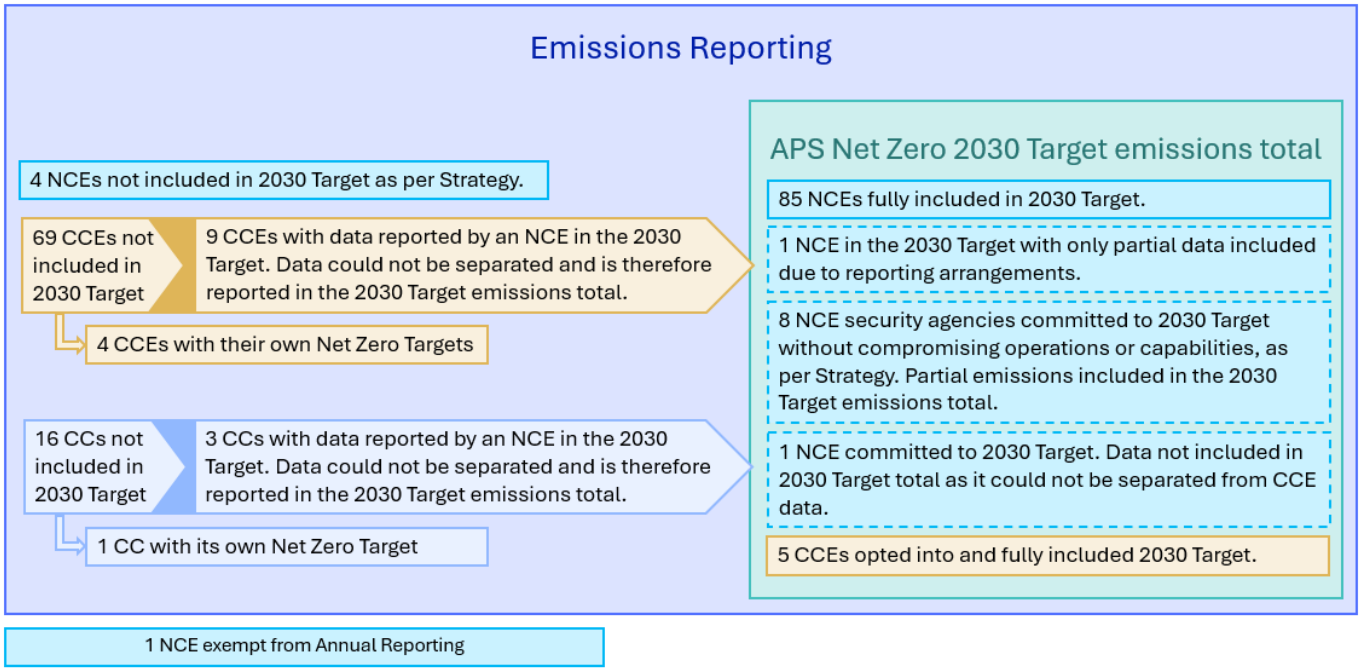


Figure 13: Commonwealth entities and companies included in the APS Net Zero 2030 Target

Table 16: Detailed list of Commonwealth entity and company inclusions and exclusions from APS Net Zero 2030 Target emissions data

	Commonwealth entity or company name	Details
85 NCEs fully included	A full list of NCEs can be found in the PGPA Act Flipchart and List.	
1 NCE exempt from reporting	Australian Secret Intelligence Service (NCE)	Exempt from publishing Annual Reports and is therefore not included in the 2030 Target.
8 NCE security agencies who are aligned with the NZGO Strategy, where this does not compromise	Security agencies, as defined in the Net Zero in Government Operations Strategy, who will take action to reduce their emissions aligned with the NZGO Strategy, and will set emissions reduction targets where this does not compromise operational and capability requirements.	
	Australian Criminal Intelligence Commission (NCE)	Electricity, natural gas, LPG, fleet and other vehicles and other energy, included in the 2030 Target.

operational and capability requirements.	Australian Federal Police (NCE)	Electricity, natural gas and LPG, included in the 2030 Target.
	Australian Security Intelligence Organisation (NCE)	Electricity, natural gas and LPG included in the 2030 Target.
	Australian Signals Directorate (NCE)	Electricity only included in the 2030 Target. Australian Signals Directorate and all emissions are reported under Department of Defence. Targets in line with the Department of Defence Net Zero Strategy
	Australian Transaction Reports and Analysis Centre (NCE)	Electricity, natural gas, LPG, fleet and other vehicles, and other energy included in the 2030 Target. More details: AUSTRAC Emissions Reduction Plan 2024
	Department of Defence (NCE)	2030 Target includes electricity only. Consistent with the *Climate Change Act 2022* and NZGO Strategy, Defence has set its own targets which are a 43% reduction by 2030 on 2005 levels, and to be net zero by 2050. More details: Defence Net Zero Strategy
	Department of Home Affairs (NCE)	2030 Target includes electricity only. More details: Department of Home Affairs Emissions Reduction Plan
	Office of National Intelligence (NCE)	Electricity, natural gas, LPG, fleet and other vehicles and other energy included in the 2030 Target.
1 NCE partially included due to reporting arrangements	Australian Submarine Agency (NCE) (2023-24 only)	For emissions reporting purposes Australian Submarine Agency's emissions data was reported by Defence and could not be separated. This has resulted in only their electricity emissions being included in the 2030 Target as per Department of Defence's 2030 Target inclusions.
4 NCE Parliamentary Departments not included in the 2030 Target as per NZGO Strategy	Department of Parliamentary Services (NCE)	The Government will work with the Presiding Officers to determine the appropriate consideration of Australian Parliament House for the NZGO Strategy.
	Department of the House of Representatives (NCE)	
	Department of the Senate (NCE)	

	Parliamentary Budget Office (NCE)	
1 NCE committed to the 2030 Target, without data being included in the 2030 Target emissions total.	Seafarer's Safety, Rehabilitation and Compensation Authority (Seacare Authority) (NCE)	Data could not be separated from Comcare (CCE). The Seacare Authority is classed as small by the PGPA Act and is estimated to have minimal associated emissions.
5 CCEs who have opted to participate in the 2030 Target	CCEs and CCs may choose to participate in the 2030 Target. The following made commitments in their emissions reduction plans submitted by December 2024.	
	Murray-Darling Basin Authority (CCE)	Murray–Darling Basin Authority Emissions Reduction Plan 2024
	National Library of Australia (CCE)	National Library of Australia Emissions Reduction Plan 2024
	Regional Investment Corporation (CCE)	Regional Investment Corporation Emissions Reduction Plan FY2024/25
	Sydney Harbour Federation Trust (CCE)	Harbour Trust Emissions Reduction Plan 2024
	Tourism Australia (CCE)	Tourism Australia Emissions Reduction Plan FY2023-24
9 CCEs and 3 CCs not included in the 2030 Target with data reported in the 2030 Target emissions totals, as data is reported by an NCE and could not be separated.	For the purposes of the 2030 Target, 9 CCEs and 3 CCs are unable to separate their emissions from those of an NCE due to shared services arrangements. In these cases, the emissions for both Commonwealth entities and companies have been reported by the primary NCE that holds the data. This has resulted in some CCEs and CCs being included into the 2030 Target emissions totals, while being exempt from the other parts of the 2030 Target.	
	Australian Digital Health Agency (CCE)	Some of their electricity and natural gas was reported by Department of Health and Aged Care (NCE) and could not be separated and therefore have been partially included in the 2030 Target.
	High Speed Rail Authority (CCE)	All of their data was reported by Department of Infrastructure, Transport, Regional Development, Communications and the Arts (NCE) and could not be separated and therefore have been partially included in the 2030 Target.

	Army and Airforce Canteen Service (CCE)	In the 2022-23 and 2023-24 reporting periods these Commonwealth entities and companies reported some or all their electricity emissions under the Department of Defence, and as such, some or all emissions from electricity for these Commonwealth entities and companies have been partially included in the 2030 Target.
	Australian Military Forces Relief Trust Fund (CCE)	
	Defence Housing Australia (CCE)	
	Royal Australian Air Force Veterans' Residences Trust Fund (CCE)	
	Royal Australian Air Force Welfare Trust Fund (CCE)	
	Royal Australian Navy Central Canteens Board (Royal Australian Navy Central Canteens Fund) (CCE)	
	Royal Australian Navy Relief Trust Fund (CCE)	
	AAF Company (CC)	
	ASC Pty Ltd (CC)	
	RAAF Welfare Recreational Company (CC)	
69 CCEs and 16 CCs not included in the APS Net Zero 2030 Target	69 CCEs not included in the 2030 Target, including 9 CCEs with data which cannot be separated and are reported in the 2030 Target emissions total. 16 CCs not included in the 2030 Target, including 3 CCs with data which cannot be separated and are reported in the 2030 Target emissions total. A full list of Commonwealth entities and companies can be found in the PGPA Act Flipchart and List.	

Appendix B Caveats

Annual report differences

Data in the NZGO Annual Progress Report may vary from that in individual Commonwealth entity and company annual reports due to variations in internal deadlines to finalise annual reports for each Commonwealth entity or company. Data cleansing may have occurred after Commonwealth entity or company annual report deadlines, and, as such, data in the Annual Progress Report has been updated to better reflect actual emission data. Where this is the case, an updated Emissions Reporting Tool will be provided to Commonwealth entities and companies with the expectation that updates and amendments will be reported the future.

Commonwealth entity and company specific caveats

Commonwealth entity and company specific caveats are included in the 2024 NZGO Annual Progress Report Workbook, in the 2023-2024 Entity Emissions sheet, column ‘Notes on Reporting’, to maintain transparency and accountability. These caveats may also be a factor in explaining discrepancies with future reporting. Commonwealth entities and companies are encouraged to include further information in their annual reports related to greenhouse gas emissions to assist in interpretation of the information provided.

Machinery of Government changes

Domestic flights

Following Machinery of Government changes that took effect from 1 July 2022, a number of domestic travel bookings were booked during the 2022-2023 financial year using the systems of the Department of Agriculture, Fisheries and Forestry (DAFF) and the Department of Industry, Science and Resources (DISR) for flights, hotel accommodation and hire cars on behalf of the Department of Climate Change, the Environment and Water (DCCEEW) during the period July 2023 to September 2023. Whilst attempts were made to separately identify and extract DCCEEW forward travel bookings, domestic travel emissions data reported by DAFF and DISR may contain some forward travel bookings that belonged DCCEEW.

Commonwealth entities and companies reporting to the National Greenhouse and Energy Reporting (NGER) Scheme

The following seven Commonwealth entities and companies are obligated to report under the NGER Scheme. In most cases, emissions reported under the APS Net Zero Framework will match the entities' NGER reports, in the same year, for scope 1 and scope 2 emissions. Some variations to emissions reported may occur due to differences in emissions boundaries under the two schemes. The table below details which year of data is included in this Annual Progress Report.

Commonwealth entity or company	Year of data reported
Airservices Australia	2023-24
Australian National University	2023-24
Australian Nuclear Science and Technology Organisation	2023-24
Australian Postal Corporation	2023-24 (Scope 1 and 2 data) 2022-23 (Scope 3 data)
Australian Rail Track Corporation	2023-24
Commonwealth Scientific and Industrial Research Organisation	2023-24
Snowy Hydro Limited	2023-24
NBN Co Limited	2023-24

Appendix C Methods

This section outlines the methods used to calculate emissions and other metrics contained in this Report. It includes brief descriptions of the responsibilities of the Department of Finance (Finance) and Commonwealth entities and companies, provisions for data accuracy and time series consistency, the data collection process, data post-processing and emissions calculation methods.

Responsibilities

Responsibilities of Commonwealth entities and companies

Commonwealth entities and companies are responsible for ensuring the data that is collected and collated to calculate their emissions is accurate and complete as possible. Commonwealth entities and companies are ultimately responsible for their own data and its verification.

Responsibilities of the Department of Finance

Finance is responsible for final collation, ensuring data meets adequate standards for use (data validation), analysing calculated emissions data from Commonwealth entities and companies and producing and publishing the NZGO Annual Progress Report each year.

Provisions for data accuracy and time series consistency

Although best efforts have been made to report with accuracy, some factors are beyond the control of Finance and the individual Commonwealth entities and companies reporting within this document. Commonwealth entities and companies may have to rely upon assumptions and estimates to calculate some emissions, although this is not encouraged.

Emissions reporting for 2023-24 has been disclosed in good faith, noting best efforts have been made to present accurate and complete data. Further efforts are underway to identify and disclose any uncertainty, inaccuracy or other issues. Processes are being developed to mitigate these issues in the future to the best extent possible.

In addition to identifying and mitigating inaccuracies, Finance and the reporting Commonwealth entities and companies collectively practice continuous improvement in climate-related data reporting. The quality of data is expected to improve over time as emissions reporting matures, and as future expansions to the APS Net Zero Emissions Reporting Framework are developed to capture data from additional emission sources.

NZGO Annual Progress Reports will continue to expand reporting over time to track emissions trends and the effects of emission reduction strategies. Time series will show these historical trends. To ensure confidence in time-series consistency, that is, to ensure methods are traceable and equivalent over the years, approaches to emission calculation methodologies, data sources and caveats have been documented in this report.

Finance will continue to support further capability uplift across Commonwealth entities and companies by providing advice, guidance, tools, case studies and training programs. The Finance website and GovTEAMS community include general information and guidance to assist Commonwealth entities and companies.

Data collection process

For Commonwealth entities and companies that participate in Whole of Australian Government procurement arrangements led by the Department of Finance, data was sourced from the following, where available:

- Natural gas, electricity, and solid waste from Property Service Providers.
- Fleet vehicle fuel usage from the Motor Vehicle Fleet Management and Leasing Services provider.
- Flights, accommodation and hire cars from Whole of Australian Government Travel Arrangements.

Where Machinery of Government changes occurred or Commonwealth entities or companies ceased operations within the reporting period, advice was sought from the appropriate Commonwealth entities or companies to ensure that data was being attributed to the appropriate Commonwealth entity or company. Although best efforts were made to cleanse and correctly assign the data to the relevant Commonwealth entity or company, it is possible that some errors remain. Efforts are underway to identify and disclose these issues (see Appendix B Caveats), and processes are being developed to mitigate them in the future, to the best extent possible.

The full 2023-24 data collection process is outlined in Figure 14.

Data post-processing

Post-processing in the 2023-24 reporting period included removal of activity data outside the scope of the APS Emissions Reporting Framework across all emissions sources, where possible. This included removal of data outside of:

- the reporting period (1 July 2023 to 30 June 2024)
- Australia and its external territories (such as Norfolk Island, Christmas Island, Australian Antarctic Territory etc.)
- Hertz Australia Pty Ltd (Hire car data only)
- flown domestic commercial flights (see Changes in Emissions Reporting)

The data in this Report has been presented as whole numbers. Emission totals less than one t CO_2-e were rounded up to ensure emissions were not under reported.

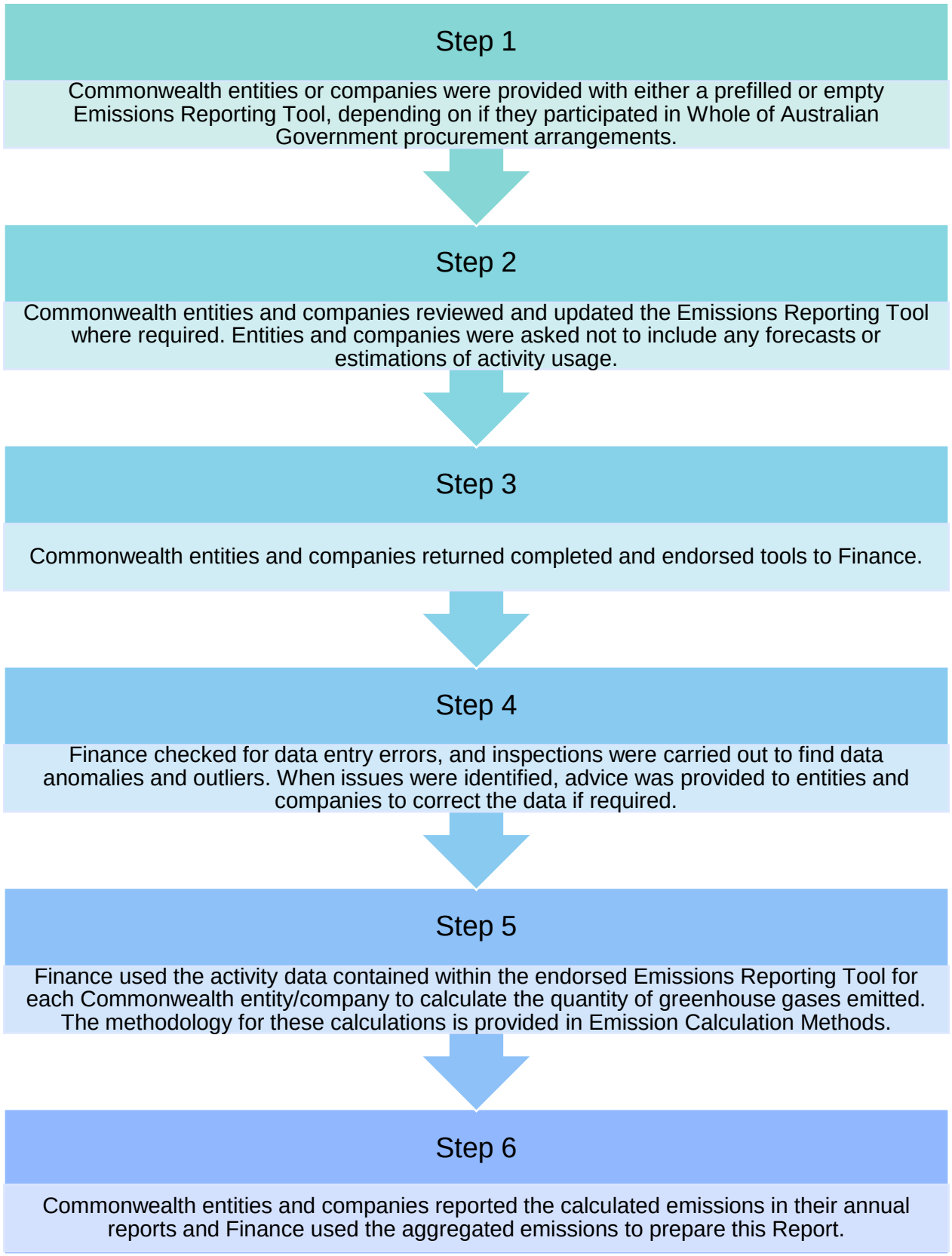


Figure 14: 2023-24 Data collection process

Emission calculation methods

The emissions data provided in this Report have been calculated using reported activity data. The number of emissions produced is dependent on the use, consumption and production of the following emissions sources:

- Electricity imported from the grid.
- Fuel that is used onsite, such as the combustion of natural gas for building heating or use of diesel in an on-site generator.
- Solid waste that is sent to landfill.
- Refrigerants leaked during the operation of central air conditioning or other large equipment.
- Fuel that is combusted during the operation of Commonwealth owned or leased vehicles.
- Fuel used for domestic travel such as commercial flights.
- Kilometres travelled by hire car.
- Number of rooms used and number of nights stayed at a hotel.

Greenhouse gas emissions are calculated by multiplying the quantity of the activity by the relevant source-specific emission factor. These emissions are aggregated into carbon dioxide equivalents (CO_2-e), which include several different greenhouse gases. Emissions are reported as the mass (measured in either kilograms or tonnes) of CO_2-e emitted.

Greenhouse gases are converted to their CO_2-e using the global warming potential of the gas being converted. As greenhouse gases vary in their radiative forcing and in their atmospheric residence time, converting emissions into a carbon dioxide equivalent over a 100-year horizon allows the integrated effect of emissions of the various gases to be compared on an equivalent basis.

Throughout this work, emissions have been calculated using the methods and formulas as published in the 2023 Australian National Greenhouse Accounts Factors, published by the Department of Climate Change, Energy, the Environment and Water. Emissions factors and sources are listed in Appendix D Emissions factors.

Some emissions sources required emissions factors sourced from additional sources. These are also listed in Appendix D Emissions factors.

Emissions reported by Finance have been calculated using the following methods:

1. **Greenhouse gas emissions calculation method**: for emissions factors directly applied to activity data.
2. **Greenhouse gas emissions calculation method using energy content factors**: for activity data that requires a conversion factor to convert the units to gigajoules. Conversion factors are outlined in Appendix E Energy content factors.
3. **Market-based emissions calculation method**: for calculating market-based electricity emissions.
4. **Refrigerant emissions calculation method**: for calculating emissions from fugitive refrigerant gases as annual emissions using estimated leakage rates.
5. **Hire car emissions calculation method**: emissions were sourced directly from Hertz Australia Pty Ltd, where available.

1. Greenhouse gas emissions calculation method

$$t\ CO_2\text{-}e = \frac{Q \times EF}{1000}$$

Where:
$\boldsymbol{t\ CO_2e}$ is the greenhouse gas emissions, in t CO_2-e
$\boldsymbol{Q}$ is the activity data, in gigajoules (GJ)
$\boldsymbol{EF}$ is the source specific emissions factor, in kg CO_2-e per GJ, as in Appendix D
To convert from kilograms (kg) to tonnes (t), divide by 1000. Conversely, to convert from t to kg, multiply by 1000.

2. Greenhouse gas emissions calculation method using energy content factors

$$t\ CO_2\text{-}e = \frac{Q \times\ EC \times EF}{1000}$$

Where:
$\boldsymbol{t\ CO_2e}$ is the greenhouse gas emissions, in t CO_2-e
$\boldsymbol{Q}$ is the activity data, in units other than gigajoules (e.g., kL)
$\boldsymbol{EC}$ is the energy content factor of the fuel, e.g., GJ/kL, as in Appendix E
$\boldsymbol{EF}$ is the source specific emissions factor, in kg CO_2-e per GJ, as in Appendix D
To convert from kilograms (kg) to tonnes (t), divide by 1000. Conversely, to convert from t to kg, multiply by 1000.

3. Market-based emissions calculation method

The following method is used for estimating scope 2 and scope 3 emissions released from electricity purchased or acquired and consumed using the market-based method.

$$t\ CO_2\text{-}e\ = \Big(\big(Q - Q_{exempt}\big) \times \big(1 - (RPP + JRPP)\big) + \Big(Q_{exempt} \times (1 - JRPP)\Big) - (REC_{surr} - REC_{onsite}) \times 1{,}000\Big) \times \frac{RMF1 + RMF2}{1{,}000}$$

Where:
$\boldsymbol{t\ CO_2e}$ is the greenhouse gas emissions, in t CO_2-e
$\boldsymbol{Q}$ is the quantity of electricity purchased or acquired, and consumed from the operation of the facility during the year, measured in kilowatt hours (kWh)
$\boldsymbol{Q_{exempt}}$ is the quantity of electricity exempt from Renewable Energy Target (RET) liability, measured in kWh
$\boldsymbol{RPP}$ is the RET Renewable Power Percentage for the applicable period, averaged across the previous and current calendar years, e.g., calendar years 2023 and 2024 are used for the calculation of the financial year 2024 RPP, see Appendix D
$\boldsymbol{JRPP}$ is the jurisdictional RRP for the applicable period and activity state and is calculated as the number of eligible Renewable Energy Certificates (RECs) surrendered by or on behalf of the jurisdictional authority divided by total electricity consumption in the jurisdiction, see Appendix D
$\boldsymbol{REC_{surr}}$ is the number of eligible RECs voluntarily surrendered in the reporting year, equivalent to megawatt hours (MWh).

$\boldsymbol{REC_{onsite}}$ is the number of eligible RECs that have been or will be issued for electricity produced on-site during the year and consumed from the operation of the facility, equivalent to MWh
$\boldsymbol{RMF1}$ is the scope 2 residual mix factor (RMF), in kg CO_2-e emissions per kWh or GJ, see Appendix D
$\boldsymbol{RMF2}$ is the scope 3 RMF, in kg CO_2-e emissions per kWh or GJ, see Appendix D
Notes

- As the sum of $RMF1$ and $RMF2$ is given in kg CO_2-e emissions per kWh, it is necessary to divide by 1000 to convert to t CO_2-e
- An eligible Renewable Energy Certificate (REC) is:
  - a Large-scale Generation Certificate (LGC) that is voluntarily surrendered through the renewable Energy Certificate Registry in the reporting year; or
  - a purchase of GreenPower electricity from an accredited GreenPower Provider.

4. Refrigerant emissions calculation method

Under the APS Emissions Reporting Framework, emissions from fugitive refrigerant gases are calculated as annual emissions from estimated leakage rates. Leakage is estimated using rates published by the Australian National Greenhouse Accounts Factors, the National Inventory Report or provided by reporting entity or equipment owner (see Appendix E Energy content factors).

$$t\ CO_2\text{-}e = \frac{GWP\ \times charge\ \times leakage\ rate}{1000}$$

Where:
$\boldsymbol{t\ CO_2e}$ is the greenhouse gas emissions, in t CO_2-e
$\boldsymbol{GWP}$ is the global warming potential of the refrigerant gas
$\boldsymbol{Charge}$ is the amount of refrigerant gas contained within the appliance
$\boldsymbol{Leakage\ rate}$ is the percentage of the refrigerant gas leaked from the appliance each year, see Appendix E

Appendix D Emissions factors

Emission factors for the APS Net Zero Emissions Reporting Framework have been derived from the following sources, noting that all except flight emissions factors and hotel emissions factors are from an Australian source:

1. *Australian National Greenhouse Accounts Factors: 2023* document published by the Department of Climate Change, Energy, the Environment and Water (DCCEEW): National Greenhouse Accounts Factors 2023 - DCCEEW
2. *Greenhouse Gas Reporting: Conversion Factors 2023* published by the government of the United Kingdom (UK) (28 June 2023): Conversion factors 2023: full set (for advanced users)
3. *Hotel Sustainability Benchmarking Index 2023* published by Cornell University: Hotel sustainability Benchmarking Index 2023
4. *Renewable power percentage* published by the Clean Energy Regulator (CER) (2 May 2024): Renewable power percentage

Natural gas emission factors

Natural gas distributed in a pipeline	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
Natural gas NSW/ACT (metro)	51.53	-	13.1
Natural gas NSW/ACT (non-metro)	51.53	-	14.0
Natural gas QLD (metro)	51.53	-	8.8
Natural gas QLD (non-metro)	51.53	-	7.9
Natural gas SA (metro)	51.53	-	10.7
Natural gas SA (non-metro)	51.53	-	10.6
Natural gas VIC (metro)	51.53	-	4.0
Natural gas VIC (non-metro)	51.53	-	4.0
Natural gas WA (metro)	51.53	-	4.1
Natural gas WA (non-metro)	51.53	-	4.0
Natural gas Tasmania *	51.53	-	4.0
Natural gas Northern Territory †	51.53	-	4.1

Sources:

- Scope 1 - Natural gas distributed in a pipeline - The Australian National Greenhouse Accounts Factors: 2023; table 5, pp 16-17.
- Scope 3 - The Australian National Greenhouse Accounts Factors 2023; table 6, p 17.

Notes:

- * - The scope 3 emissions factor for Tasmania uses the Victorian emissions factor as recommended by The Australian National Greenhouse Accounts Factors: 2023.
- † - The scope 3 emissions factor for Northern Territory uses the Western Australian emissions factor as recommended by The Australian National Greenhouse Accounts Factors: 2023.
- Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.
- Scope 3 emission factors for most states and territories are different, therefore a compulsory drop down was added to the emissions reporting tool for the following:
    - State or territory and,
    - Metro or non-metro location.

Electricity emission factors

Location-based method emission factors

Location	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
ACT - Australian Capital Territory	-	188	15
NSW - New South Wales	-	188	15
NT - Darwin Katherine Interconnected System (DKIS) in the Northern Territory	-	149	19
QLD - Queensland	-	204	42
SA - South Australia	-	71	21
TAS - Tasmania	-	32	2
VIC - Victoria	-	220	18
WA - South West Interconnected System (SWIS) in Western Australia	-	147	11
WA - North Western Interconnected System (NWIS) in Western Australia	-	173	20
National	-	179	23

Source: The Australian National Greenhouse Accounts Factors: 2023; table 1, pp 7-8.
Notes:

- Location-based electricity emissions were calculated using the GJ of electricity imported from the grid. This was done by multiplying the electricity consumption in kWh by 0.0036 GJ/kWh.
- Emissions factors for most states and territories are different, therefore a compulsory drop down was added to the emissions reporting tool for State or Territory and electricity use.

Market-based method factors

The following factors are required to calculate the scope 2 and scope 3 emissions released from electricity purchased or acquired and consumed using the market-based method.

Residual mix factor (RMF)

Location	Scope 2 residual mix factor kg CO_2-e/kWh	Scope 3 residual mix factor kg CO_2-e/kWh
National	0.81	0.10

Source: The Australian National Greenhouse Accounts Factors: 2023; Table 2a, p 8.

Renewable power percentage (RPP)

Year	Renewable power percentage %
2023 Calendar year	18.96
2024 Calendar year	18.48
2023-24 Financial year average	18.72

Source: Clean Energy Regulator.

Jurisdictional renewable power percentage (JRPP)

Location	Year	Jurisdictional renewable power percentage %
ACT	2023	74.13

Source: The Australian National Greenhouse Accounts Factors 2023, p 10.
Note: As of 2023 reporting period, the ACT is the only jurisdiction with a JRPP.

Fleet emission factors

Fuel types	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
Diesel – Heavy trucks and buses	70.50	-	17.3
Diesel – All other vehicles as per notes below	70.41	-	17.3
Biodiesel	2.5	-	Not available
Ethanol mix (gasoline component)*	67.62	-	17.2
Ethanol mix (ethanol component)*	0.40	-	Not available
Gasoline	67.62	-	17.2
Liquid petroleum gas (LPG)	61.00	-	20.2
Other biofuels	2.5	-	Not available

Source: The Australian National Greenhouse Accounts Factors 2023; table 9, pp 24-25.
Notes:

- Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.
- Emission factors are based on drop downs for Asset Class and Fuel Use.
- * - Fuels reported as ‘Ethanol Mix’ are assumed to contain 90% Gasoline and 10% Ethanol.
- These emission factors were used for the following vehicle types:
    - Cars, Light Duty Vehicles, Other Off-Road Vehicles, Domestic Marine, Motorcycles, Heavy Duty Trucks and Buses, with exceptions for:
        - Motorcycles, which do not use LPG, biodiesel, or diesel.
        - LPG which is not applicable domestic marine.
        - Diesel use in heavy trucks and buses, which uses the emission factor for Heavy duty vehicles - Diesel oil - Euro i.

Flights emission factors

Emission type	Location in Greenhouse Gas Reporting: Conversion Factors 2023	Net scope 3 - indirect emission sources emission factor kg CO_2-e/passenger km	Net scope 3 supply chain emission factor kg CO_2-e/passenger km
Long business class flights (>3,700km)	Tab: business travel – air Table: without RF- Cell: I30	0.34253	
	Tab: WTT - business travel – air Table: without RF- Cell: F27		0.07137
Long economy class flights (>3,700km)	Tab: Business travel – air Table: without RF - Cell: I28	0.11812	
	Tab: WTT - business travel – air Table: without RF-Cell: F25		0.02461
Long first class flights (>3,700km)	Tab: Business travel – air Table: without RF-Cell: I31	0.47246	
	Tab: WTT - business travel – air Table: without RF-Cell: F28		0.09844
Long premium economy class flights (>3,700km)	Tab: Business travel – air Table: without RF-Cells: I29	0.18898	
	Tab: WTT - business travel – air Table: without RF-Cell: F26		0.03937
Short business/ first/ premium economy class flights (>400km, ≤3,700km)	Tab: Business travel – air Table: without RF-Cell: I26	0.16191	
	Tab: WTT - business travel – air Table: without RF-Cell: F23		0.03373
Short economy class flights (>400km, ≤3,700km)	Tab: business travel – air Table: without RF-Cell: I25	0.10794	
	Tab: WTT - business travel – air Table: without RF-Cell: F22		0.02249
Very short flights all classes (≤400km)	Tab: business travel – air Table: without RF-Cells: I23	0.16099	
	Tab: WTT - business travel – air Table: without RF-Cell: F20		0.03350

Source: Greenhouse Gas Reporting: Conversion Factors 2023, Government of the United Kingdom. Greenhouse gas reporting: conversion factors 2023 - GOV.UK (www.gov.uk).

Notes:

- Net scope 3 - indirect emission sources emission factor is in CO_2-e and represents CO_2, CH_4 and N_2O.
- WTT is Well-to-Tank emission factors are an average of all the emissions released into the atmosphere from the production, processing and delivery of a fuel to the point where it is put into an aircraft.
- RF is Radiative Forcing, which is not included in the emission factors used by the APS Net Zero Emissions Reporting Framework.
- These emission factors are used for both International and Domestic flights.
- Compulsory drop downs for the flight emissions were Cabin Class, Passenger Kms, Departure and Arrival City, Departure and Arrival Country.

Other energy category

Stationary combustion - solid fuels

	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
Biomass, municipal and industrial materials, if combusted to produce heat or electricity	1.8	-	-
Dry wood	1.2	-	-
Green and air-dried wood	1.2	-	-
Primary solid biomass fuels other than those mentioned in the items above	1.8	-	-

Source: The Australian National Greenhouse Accounts Factors: 2023; table 4, pp 13-14.
Notes: Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.

Stationary combustion - gaseous fuels

	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
A biogas that is captured for combustion, other than those mentioned.	6.43	-	-
Biomethane	0.13	-	-
Compressed natural gas (reverting to standard conditions)	51.53	-	-
Gaseous fossil fuels other than those mentioned in the items above	51.53	-	-
Landfill biogas that is captured for combustion (methane only)	6.43	-	-

Source: The Australian National Greenhouse Accounts Factors: 2023; table 5, pp 16-17.
Notes: Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.

Stationary combustion - liquid fuels

	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
Automotive gasoline/petrol (used as fuel for stationary energy)	67.80	-	17.2
Biodiesel (used as fuel for stationary energy)	0.28	-	Not available
Diesel oil	70.20	-	17.3
Other natural gas liquids	61.28	-	Not available
Petroleum based greases	3.5	-	18.0
Petroleum based oils (other than petroleum-based oil used as fuel), e.g., lubricants	13.9	-	18.0
Petroleum based products other than mentioned in the items above	69.92	-	18.0

Source: The Australian National Greenhouse Accounts Factors: 2023; table 8, pp 20-21.
Notes: Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.

Stationary combustion - liquid petroleum gas

	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
Liquid petroleum gas (LPG) (stationary)	60.60	-	18.0

Source: The Australian National Greenhouse Accounts Factors: 2023; table 8, p 21.
Notes: Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.

Mobile combustion - aviation

	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
Gasoline for use as fuel in an aircraft-aviation	67.66	-	18.0
Kerosene for use as fuel in an aircraft-aviation	70.21	-	18.0

Source: The Australian National Greenhouse Accounts Factors: 2023; table 9, p 25.
Notes: Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.

Mobile combustion - cars and light commercial vehicles

	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
Biodiesel-cars and light commercial vehicles	2.5	-	Not available
Diesel oil-cars and light commercial vehicles	70.41	-	17.3
Ethanol-cars and light commercial vehicles	0.4	-	Not available
Fuel oil-cars and light commercial vehicles	74.18	-	18.0
Gasoline-cars and light commercial vehicles	67.62	-	17.2
Liquid petroleum gas (LPG)-cars and light commercial vehicles	61.00	-	20.2
Other biofuels-cars and light commercial vehicles	2.5	-	Not available

Source: The Australian National Greenhouse Accounts Factors: 2023; table 9, pp 24-25.
Notes: Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.

Mobile combustion - heavy duty vehicles

	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
Compressed natural gas-heavy duty vehicles	54.5	-	18.0
Diesel oil - Euro i-heavy duty vehicles	70.5	-	17.3

Diesel oil - Euro iii-heavy duty vehicles	70.4	-	17.3
Diesel oil - Euro iv or higher-heavy duty vehicles	70.37	-	17.3

Source: The Australian National Greenhouse Accounts Factors: 2023; table 9, p 25.
Notes: Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.

Mobile combustion - light duty vehicles

	Net scope 1 emission factor kg CO_2-e/GJ	Net scope 2 emission factor kg CO_2-e/GJ	Net scope 3 supply chain emission factor kg CO_2-e/GJ
Compressed natural gas-light duty vehicles	59.0	-	18.0
Liquefied natural gas-heavy duty vehicles	54.5	-	18.0
Liquefied natural gas-light duty vehicles	59.0	-	18.0

Source: The Australian National Greenhouse Accounts Factors: 2023; table 9, p 25
Notes: Scope 1 emission factors are in CO_2-e and represents CO_2, CH_4 and N_2O.

Solid waste emission factors

Solid waste disposal – Waste type

Waste Type	Net scope 1 emission factor t CO_2-e/t	Net scope 2 emission factor t CO_2-e/t	Net scope 3 emission factor t CO_2-e/t
Food	-	-	2.1
Paper and cardboard	-	-	3.3
Garden and green	-	-	1.6
Wood	-	-	0.7
Textiles	-	-	2.0
Sludge	-	-	0.4
Nappies	-	-	2.0
Rubber and leather	-	-	3.3
Inert waste (including concrete/metal/ plastics/glass)	-	-	-

Source: The Australian National Greenhouse Accounts Factors: 2023; table 15, pp 33-34.

Solid waste disposal – Waste stream

Waste stream	Net scope 1 emission factor t CO_2-e/t	Net scope 2 emission factor t CO_2-e/t	Scope 3 emission factor t CO_2-e/t
Municipal solid waste	-	-	1.6
Commercial and industrial waste	-	-	1.3
Construction and demolition waste	-	-	0.2

Source: The Australian National Greenhouse Accounts Factors: 2023; table 16, p 34.

Refrigerant global warming potentials

Refrigerant – Global warming potentials

Refrigerant	Global Warming Potential
Sulphur hexafluoride (SF_6)	23,500
Hydrofluorocarbons (HCFs)	
R-23 (HFC-23)	12,400
R-32 (HFC-32)	677
R-125 (HFC-125)	3,170
R-134 (HFC-134)	1,120
R-134a (HFC-134a)	1,300
R-143a (HFC-143a)	4,800
R-227ea (HFC-227ea)	3,350
R-236fa (HFC-236fa)	8,060
R-4310mee (HFC-43-10mee)	1,650
Hydrochlorofluorocarbons HCFCs	
R-22 (HCFC-22)	1,760
R-142b (HCFC-142b)	1,980
Blends	
R-404a (44% HFC-125, 52% HFC-143a, 4% HFC-134a)	3,943
R-410a (50% HFC-32, 50% HFC-125)	1,924
Perfluorocarbons PFCs	
PFC-14	6,630
PFC-116	11,100
PFC-218	8,900
PFC-31-10	9,200
PFC-318	9,540
PFC-41-12	8,550
PFC-51-14	7,910
PFC-91-18	7,190
Hydrofluoroolefins (HFOs)	
R-1233zd*	1

Source: The Australian National Greenhouse Accounts Factors: 2023; table 11, p 29 and table 23, pp 46-47.

Note: * - R-1233zd is a replacement for R-123 in chillers. The global warming potential was sourced from the manufacturer, Honeywell, which uses the brand name Solstice® zd.

Domestic travel accommodation emission factor

Travel accommodation – emission factors

Accommodation type	kg CO_2-e per room, per night
Australia – all hotels (mean)	55.40

Source: Hotel Sustainability Benchmarking Index 2023, Cornell University; sheet M1.

Appendix E Energy content factors

Energy content factors for the APS Net Zero Emissions Reporting Framework have been derived from the following:

1. *Australian National Greenhouse Accounts Factors: 2023* document published by the Department of Climate Change, Energy, the Environment and Water (DCCEEW): Australian National Greenhouse Accounts Factors (dcceew.gov.au)
2. *Volume 2: National Inventory Report 2022 Annexes*, document published by the Department of Climate Change, Energy, the Environment and Water (DCCEEW): National Inventory Report 2022 (dcceew.gov.au)

Energy content factors

Emission source detail	Energy Content Factor	Unit
Electricity Generation	0.0036	GJ/kWh
Ethanol mix - Gasoline component*	34.2	GJ/kL
Ethanol mix - Ethanol component*	23.4	GJ/kL
Liquid Petroleum Gas (LPG) -stationary combustion	25.7	GJ/kL
Liquid Petroleum Gas (LPG) – transport fuels	26.2	GJ/kL
Diesel	38.6	GJ/kL
Biodiesel	34.6	GJ/kL
Gasoline	34.2	GJ/kL
Natural Gas	0.0393	GJ/ m^3
Biodiesel-Cars and light commercial vehicles	34.6	GJ/kL
Compressed natural gas-Heavy duty vehicles	0.0393	m^3/GJ
Compressed natural gas-Light duty vehicles	0.0393	GJ/ m^3
Diesel oil - Euro i-Heavy duty vehicles	38.6	GJ/kL
Diesel oil - Euro iii-Heavy duty vehicles	38.6	GJ/kL
Diesel oil - Euro iv or higher-Heavy duty vehicles	38.6	GJ/kL
Diesel oil-Cars and light commercial vehicles	38.6	GJ/kL
Ethanol-Cars and light commercial vehicles	23.4	GJ/kL
Fuel oil-Cars and light commercial vehicles	39.7	GJ/kL
Gasoline for use as fuel in an aircraft-Aviation	33.1	GJ/kL
Gasoline-Cars and light commercial vehicles	34.2	GJ/kL
Kerosene for use as fuel in an aircraft-Aviation	36.8	GJ/kL
Liquefied natural gas-Heavy duty vehicles	25.3	GJ/kL
Liquefied natural gas-Light duty vehicles	25.3	GJ/kL
Liquid Petroleum Gas (LPG)-Cars and light commercial vehicles	26.2	GJ/kL
Other biofuels-Cars and light commercial vehicles	23.4	GJ/kL
A biogas that is captured for combustion, other than those mentioned in the items above	0.0370	GJ/ m^3
Biomethane	0.0393	GJ/m^3
Compressed natural gas (reverting to standard conditions)	0.0393	GJ/ m^3
Gaseous fossil fuels other than those mentioned in the items above	0.0390	GJ/ m^3
Landfill biogas that is captured for combustion (methane only)	0.0377	GJ/ m^3
Automotive gasoline/petrol (used as fuel for stationary energy)	34.2	GJ/kL
Biodiesel (used as fuel for stationary energy)	34.6	GJ/kL
Diesel oil	38.6	GJ/kL
Liquid petroleum gas (LPG) (stationary)	25.7	GJ/kL
Other natural gas liquids	46.5	GJ/t
Petroleum based greases	38.8	GJ/kL

Emission source detail	Energy Content Factor	Unit
Petroleum based oils (other than petroleum-based oil used as fuel), e.g., lubricants	38.8	GJ/kL
Petroleum based products other than mentioned in the items above	34.4	GJ/kL
Biomass, municipal and industrial materials, if combusted to produce heat or electricity	12.2	GJ/t
Dry wood	16.2	GJ/t
Green and air-dried wood	10.4	GJ/t
Primary solid biomass fuels other than those mentioned in the items above	12.2	GJ/t

Notes:

* - Fuels reported as 'Ethanol Mix' are assumed to contain 90% Gasoline and 10% Ethanol.

Other conversion and leakage factors

Solid waste – volume to mass conversion factors

Waste categories	Volume to mass conversion factor t/m³
Municipal solid waste	0.36
Commercial and industrial waste	0.33
Construction and demolition waste	0.39
Food	0.50
Paper and cardboard	0.09
Garden and green	0.24
Wood	0.15
Textiles	0.14
Sludge	0.72
Nappies	0.39
Rubber and leather	0.14
Inert waste (including concrete/metal/ plastics/glass)	0.42

Source: The Australian National Greenhouse Accounts Factors: 2023; table 15, pp 15-16.

Refrigerants – equipment leakage rates

Equipment type	Leakage rates %
Domestic refrigerators*	1.7
Transport refrigeration*	15.7
Domestic A/C portable*	2.5
Domestic A/C split*	3.5
Domestic A/C packaged*	2.5
Large commercial refrigeration†	13.0
Industrial refrigeration†	17.5
Chiller†	6.0
Maritime mobile air conditioning†	10.8
Insulated switchgear and circuit breakers‡	Various
Specialist scientific equipment‡	Various

Sources:
* - The Australian National Greenhouse Accounts Factors: 2023; table 10, p 29.
† - National Inventory Report 2022 Volume 2, Table A5.4.1.9, p 111.
‡ - Provided by reporting entity or equipment owner.

Appendix F Corrections to previous annual progress report

The following are corrections to errors made within the 2022-23 NZGO Annual Progress Report.

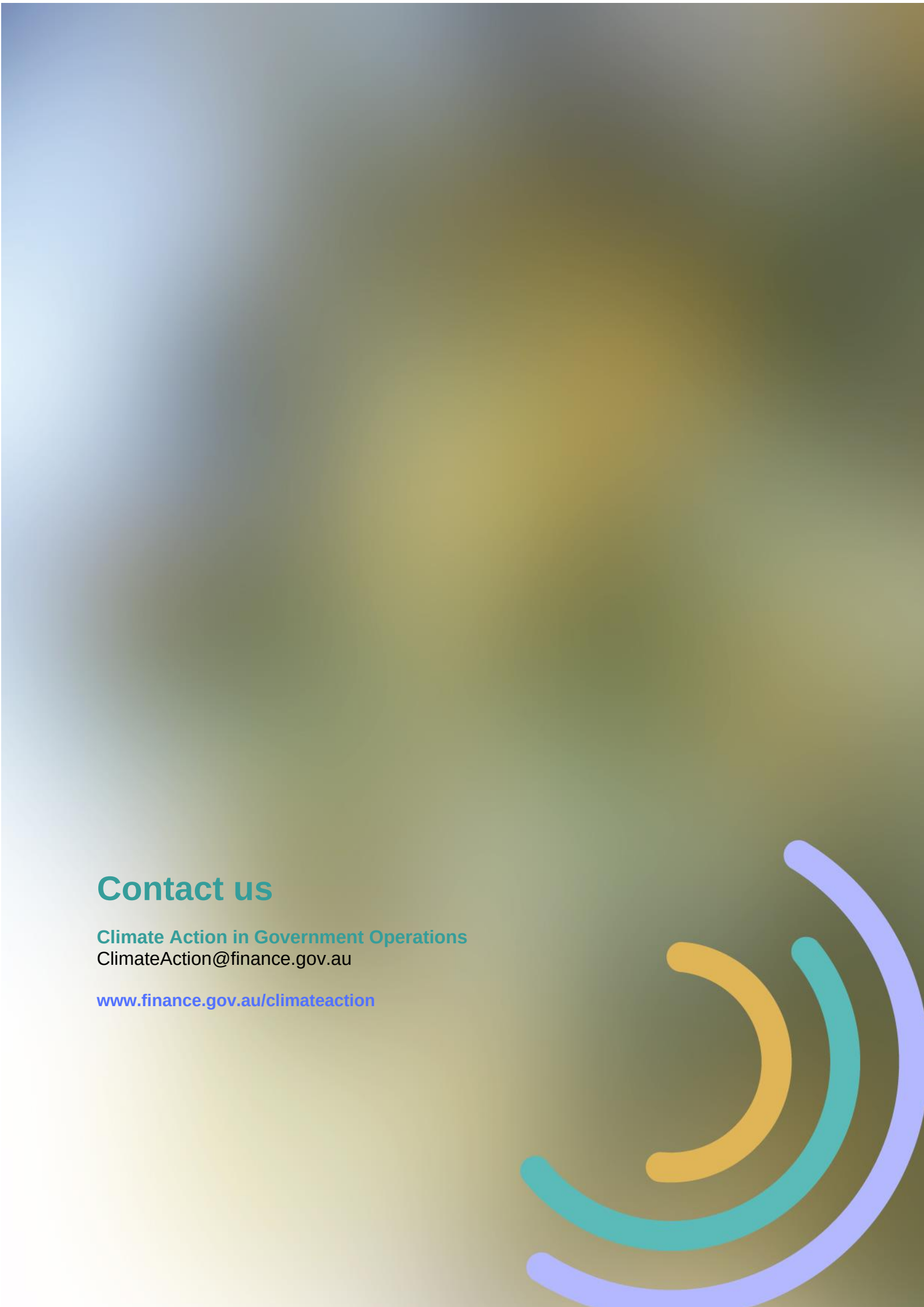
On pages 5 to 13, the total electricity usage in kWh for the whole-of-Australian-Government was incorrectly reported as 1,788,788,355 kWh. The corrected electricity usage is 1,789,227,287 kWh. As a result, the emissions reported required a correction. The corrected emissions calculated with the location-based method are reported in Table 17 and the corrected emissions calculated with the market-based method reported in Table 18.

Table 17: 2022-23 Electricity emissions by state/territory and scope (location-based method)

State/Territory	Electricity usage (kWh)	Electricity usage (GJ)	Scope 2 emissions (t CO_2-e)	Scope 3 emissions (t CO_2-e)	Sum of reported Emissions (t CO_2-e)
NSW	455,369,097	1,639,329	332,781	27,383	360,164
ACT	390,053,070	1,404,191	284,817	23,416	308,233
NT	124,033,796	446,522	67,008	8,653	75,661
QLD	277,943,464	1,000,596	204,282	41,100	245,382
SA	113,825,604	409,772	28,754	9,076	37,830
TAS	22,759,345	81,934	3,856	241	4,097
VIC	288,134,472	1,037,284	245,880	20,432	266,312
WA	117,108,439	421,590	68,171	4,596	72,767
Total	**1,789,227,287**	**6,441,218**	**1,235,549**	**134,897**	**1,370,446**

Table 18: 2022-23 Electricity emissions and renewable percentages (market-based method)

Market-based approach	Electricity usage (kWh)	Emissions (t CO_2-e)	Renewable percentage of total
Large-scale generation certificates (LGCs) purchased and retired (kWh) (including Power Purchase Agreements (PPAs))	59,453,989	-	3.32%
Greenpower	53,836,029	-	3.01%
Jurisdictional renewables (LGCs surrendered)	289,237,512	-	16.17%
Jurisdictional renewables (Large-scale Renewable Energy Target) (applied to ACT grid electricity)	73,318,662	-	4.10%
Large-scale Renewable Energy Target (applied to grid electricity only)	261,824,865	-	14.63%
Total renewable electricity from grid	737,671,056	-	41.23%
Total non-renewable electricity from grid	1,051,556,231	1,004,237	
Total grid electricity	**1,789,227,287**	**1,004,237**	
Scope 2		899,081	
Scope 3		105,156	



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