FY23 GREENHOUSE GAS EMISSIONS AND ENERGY CALCULATION METHODOLOGY

About this document

This document describes the reporting boundaries, methodologies, assumptions and key references used in the preparation of APA's reported inventory of energy (consumption and production) and greenhouse gas (GHG) emissions (Scope 1, Scope 2, Scope 3 and end user) as published in the Energy and GHG Emissions tabs of the APA FY23 Climate Data Book.

GHG emissions from our value chains are calculated in accordance with the Greenhouse Gas Protocol (*GHG Protocol*): A Corporate Accounting and Reporting Standard (*GHG Protocol Corporate Standard*) and its supporting, and integrated, calculation guides; *GHG Protocol* Scope 2 Guidance (*GHG Protocol Scope 2 Guidance*), *GHG Protocol* Corporate Value Chain (Scope 3) Accounting and Reporting Standard (*GHG Protocol Scope 3 Standard*) and Technical Guidance for Calculating Scope 3 Emissions (*GHG Protocol Scope 3 Calculation Guide*).

This document, in combination with our published Climate Report 2023 and our FY23 Climate Data Book aligns with the recommendations of the Financial Stability Board (FSB) Taskforce on Climate-related Financial Disclosures (TCFD).

Verification

External assurance: We engaged Deloitte to undertake limited assurance over selected metrics in APA's FY23 Climate Data Book in accordance with the Australian Standard on Assurance Engagements ASAE 3000 Assurance Engagements other than Audits or Review of Historical Financial information issued by the Australian Auditing and Assurance Standards. The key performance indicators are to be read in conjunction with this FY23 Greenhouse Gas Emissions and Energy Calculation Methodology. Details of the assurance scope, procedures and conclusion are included in the Assurance Report on pages 61 to 63 of APA's Climate Report 2023.

ACKNOWLEDGEMENT OF COUNTRY

At APA, we acknowledge the Traditional Owners of the lands on which we live and work throughout Australia. We acknowledge their connections to land, sea and community.

We pay our respects to their Elders past and present and commit to ensuring APA operates in a fair and ethical manner that respects First Nations peoples' rights and interests.

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Unless noted otherwise, APA calculates energy and GHG emissions consistent with the *GHG Protocol Corporate Standard* definitions for organisational boundary setting to ensure that APA manages the full spectrum of GHG risks and opportunities across its value chains. The organisational boundary for all emissions and energy calculations relates to facilities under APA's operational control, as defined by the *Greenhouse Gas Protocol (GHG Protocol).* The exception is Scope 1 and Scope 2 emissions where, in addition to operational control, we also disclose emissions using an equity share organisational boundary.

For voluntary public disclosures, Scope 1 and Scope 2 emissions and energy are reported for each APA asset class i.e. gas infrastructure, power generation infrastructure and electricity transmission infrastructure. Scope 1 emissions are also reported by GHG emission type (carbon dioxide, methane, nitrous oxide and sulphur hexafluoride)[1]. Scope 3 emissions are reported by relevant *GHG Protocol Scope 3 Standard* categories.

Regulatory reporting is completed in accordance with legislative requirements.

1 The other GHG emission types covered by the *GHG Protocol Corporate Standard* are hydrofluorocarbons, perfluorocarbons and nitrogen trifluoride. Emissions of these gases are not material and therefore not reported by APA.

Operational control organisational boundary

Calculation boundary

APA has a regulatory requirement to report in accordance with the National Greenhouse and Energy Reporting Scheme (NGERS) established by the National Greenhouse and Energy Reporting Act 2007 (NGER Act). The operational control organisational boundary adopted by APA is in accordance with section 11 of the NGER Act which aligns with that provided in the *GHG Protocol Corporate Standard*.

We account for 100% of energy consumed, energy produced, and Scope 1 and Scope 2 emissions for all facilities where APA has operational control within a financial year reporting period. Unless otherwise noted or where there is an NGERS reporting requirement to alter this approach, reported data covers the period that APA has operational control.

Exclusions

In accordance with section 11 of the NGER Act, APA does not have operational control of the Gruyere Power Station, Gruyere Solar Farm, X41 Power Station, North Brown Wind Farm, Victorian Transmission System (except for maintenance emissions), SEA Gas Pipeline, Mortlake Pipeline, and Wallumbilla Gladstone Pipeline[2]. Energy and greenhouse gas emissions for these are captured in Scope 3 reporting (Category 15) and in APA's FY23 Climate Data Book (reported as equity share).

Australian Gas Infrastructure Group (AGIG) facilities are not operated (for emissions reporting purposes) or owned by APA and are excluded from all reporting.

APA has a small ancillary office located in the United States (Houston). This has not been included due to the emissions not being material. There are no other international APA operations.

Energy consumption and energy production

Definition

Energy definition is taken from section 2.03 of the National Greenhouse and Energy Reporting Regulations 2008 (*NGER Regulations*).

Calculation boundary

Energy consumption[3] includes both energy combusted and energy consumed (but not combusted). It includes all fuels and electricity consumed in the operation of APA operated equipment and vehicles, gas flaring, gas storage tank venting, and gas transmission and distribution losses. Energy consumption is reported both as a gross (total) and net consumption amount.

Energy production[4] includes all energy produced at power stations, renewable energy generation facilities, and gas engine alternators (GEAs) under APA's operational control. It also includes transformation of coal seam methane or unprocessed natural gas into natural gas injected into a pipeline through APA's gas processing facilities.

We account for 100% of energy consumption and production from facilities under APA's operational control.

Exclusions

Energy production excludes energy produced by APA and then consumed by APA (this is captured under energy consumption).

2 The Western Outer Ring Main (WORM) and Kurri Kurri Lateral Pipeline (KKLP) are currently under construction. During the construction phase, the principal consultant engaged by APA is responsible for emissions until projects reach practical completion. At completion, WORM and KKLP will be reported under APA's operational control organisational boundary.

3 As defined in section 2.26 of the *NGER Regulations*.

4 As defined in section 2.25 of the *NGER Regulations*.

Calculation Methodology

Total energy consumed and produced is calculated in accordance with section 6.2, section 6.3 and section 6.5 and Schedule 1 of the National Greenhouse and Energy Reporting (*Measurement*) Determination 2008 (*NGER Determination*).

Net energy consumption is calculated in accordance with section 5.03 of the *NGER Regulations* by deducting the total amount of energy produced at a facility and then consumed by the facility, from the gross energy consumption total consumed by the facility.

Data sources

Most of our energy consumption data is obtained from internal APA systems, e.g. Historian via PI DataLink, SCADA, APA Grid Portal, with third party data obtained from major service providers that include BID Energy.

Energy production is calculated from third party calibrated meters for facilities connected to the National Energy Market (NEM) or the North West Power System (NWPS) in Queensland and the South-West Interconnected System (SWIS) in Western Australia, from custody transfer meters for APA's gas processing facilities and from internal APA systems for gas transmission pipelines.

Scope 1 emissions

Definition

Direct emissions that occur from sources owned or controlled by a company e.g. combustion of natural gas within a compressor. Reported in metric tonnes carbon dioxide-equivalent (t CO_2-e) and direct emissions (t) by GHG emission type.

Calculation boundary

We account for 100% of Scope 1 emissions that occur from facilities under APA's operational control.

Emissions are calculated for relevant sources including:

- combustion of gas within power stations and compressors on transmission pipelines
- combustion of liquid fuels in site generators and company-owned vehicles
- fugitive methane emissions from gas transmission (pipelines) and gas distribution (gas venting and flaring)
- sulphur hexafluoride emissions from electricity transformers.

Exclusions

None.

Calculation Methodology

Scope 1 emissions are calculated in accordance with methodologies provided in the *NGER Determination* using method 1 except for sulphur hexafluoride emissions and natural gas combustion emissions for electricity generation where method 2 is adopted.

Method 1 calculates emissions based on default, national average based, emission factors[5]. Method 2 for sulphur hexafluoride emissions uses a mass balance accounting approach[6], and natural gas carbon dioxide emissions for electricity generation uses a site-specific emission factor[7].

Scope 1 emissions are calculated by dividing the calculated carbon equivalent emissions (t CO_2-e) by the specific GHG emission type global warming potential current for the reporting period[8].

Data Sources

Energy consumption data.

5 In accordance with section 7.2 of the *NGER Determination*.
6 In accordance with section 4.103 of the *NGER Determination*.
7 Calculated in accordance with section 2.22 of the *NGER Determination*.
8 Global warming potential is obtained from section 2.02 of the *NGER Regulations*.

Scope 2 emissions and % renewable electricity consumed

Definition

Indirect emissions associated with third party generation of electricity consumed at facilities under APA's operational control. Reported in tonnes carbon dioxide-equivalent (t CO_2-e).

Calculation boundary

We account for 100% of Scope 2 emissions associated with electricity consumed at facilities under APA's operational control.

Exclusions

None.

Calculation methodology

Two reporting methods are used to calculate Scope 2 emissions.

Location-based method

Calculates electricity emissions in the context of *location* and reflects the emissions intensity of the electricity grid(s) the electricity is purchased or acquired from. Location-based emissions are calculated using default State/Territory grid electricity emission factors in accordance with method 1 of the *NGER Determination*. This method is a legislative requirement under the *NGER Act*.

Market-based method

Calculates electricity emissions in the context of electricity *choices* based on APA's electricity supplier or product e.g. the purchase of large-scale generation certificates (LGCs).

Market-based emissions are calculated by applying the market-based emissions approach in accordance with method 1a as per the National Greenhouse and Energy Reporting (Measurement) Amendment (2023 Update) Determination 2023 for voluntary market-based Scope 2 emissions reporting.

The exceptions are:

- where APA has not voluntarily surrendered LGCs in any reporting period. In this circumstance, there will be minor differences in the Scope 2 emissions value calculated between the location-based and market-based methods. This is in part due to the residual mix factor being applied at a national level rather than on a State-by-State basis. Where this is the case, i.e. there has been no voluntary surrender of LGCs, we assume the location-based method calculation value also represents the market-based method calculation value[9].
- we apply the renewable power percentage (RPP) on a quarterly rather than full year basis. Our view is that this is a more accurate approach.
- any surplus LGCs will be carried forward and applied to the next financial year reporting period.

LGCs are distributed across all facilities on the basis of an operational control boundary. When applying an equity share boundary, these LGCs are not re-distributed. This means that some facilities which are not operated by APA will not have LGCs (voluntarily purchased) attributed to them.

% of renewable electricity (RE) consumed

% RE = A + B / C, where

- A = voluntary surrender of LGCs within the reporting period or shortly thereafter from our REC registry.
- B = legislated surrender of LGCs due to the large-scale renewable electricity target scheme. This is determined by the volume of electricity covered by the renewable power percentage (RPP) (in MWh).
- The renewable power percentage (RPP) is applied on a quarterly rather than averaged full year basis. Our view is that this is a more accurate approach. The RPP values are obtained from https://www.cleanenergyregulator.gov.au/RET/Scheme-participants-and-industry/the-renewable-power-percentage.
- C = the amount of electricity consumed in APA's facilities under our operational control (in MWh).

Purchased renewable electricity amounts are determined by the volume of LGCs voluntarily surrendered via our renewable energy certificates registry (REC registry) within the reporting period.

9 APA has not voluntarily surrendered LGCs for electricity transmission line losses in FY21 to FY23.

LGC purchase requirements are based on a Q3 electricity forecast. A true-up is completed once the assured electricity consumption values are determined. Any differences are carried forward and a reconciliation is completed as part of the next reporting period's LGC requirements. Provided the LGC volume surrendered voluntarily plus that required under the LRET legislation is more than 95% of our total electricity consumption in MWh, our 100% renewable electricity commitment will be taken to have been achieved for the reporting period.

Our LGC eligibility criteria is consistent with section 7.4 (3) of the National Greenhouse and Energy Reporting (Measurement) Amendment (2023 Update) Determination 2023 for voluntary LGC surrenders.

Data Sources

Grid electricity amounts are obtained from APA's grid electricity provider (BID Energy) and manually sourced for some office facilities due to lease arrangements in place. The RPP is obtained from the Clean Energy Regulator website. The voluntary LGC surrender volume is obtained from APA's REC registry.

Line losses

For electricity transmission facilities we report Scope 2 emissions split by grid-consumed electricity and line losses. This is to differentiate between emissions APA can directly control (without line losses) and emissions APA cannot directly influence (with line losses).

Power generation emissions intensity

Definition

Power generation emissions intensity is a measure of the amount of Scope 1 emissions generated per unit of electricity produced.

Calculation boundary

APA calculates a power generation emissions intensity for all power generation facilities under APA's operational control.

Exclusions

None.

Calculation methodology

Power generation emissions intensity is calculated by dividing the gross Scope 1 and Scope 2 emissions (t CO_2-e) by the total electricity (MWh) produced. Reported in t CO_2-e/MWh.

Data sources

Scope 1 and Scope 2 emissions and electricity produced is taken from our NGER and voluntary emissions data.

Equity share organisational boundary

Definition

APA voluntarily discloses Scope 1 and Scope 2 emissions using an equity share boundary. Under this equity share approach, APA accounts for GHG emissions from operations according to its ownership interest of a facility.

Calculation boundary

As per the definition above.

Exclusions

None.

Calculation methodology

Under the equity share approach, APA accounts for emissions from the operation of facilities according to APA's ownership interest. This includes facilities that may or may not be under APA's operational control. Equity share emissions are the total emissions for all facilities according to APA's percentage of ownership calculated by multiplying the total Scope 1 and Scope 2 emissions (t CO_2-e) by APA's ownership interest.

Data sources

NGER and voluntary emissions data where APA has operational control. Where APA has an ownership interest only, from emissions reported under Scope 3 – Category 15 (Investments).

Scope 3 emissions

The *GHG Protocol Scope 3 Standard* divides Scope 3 emissions into 15 categories divided into upstream and downstream emissions:

- **Upstream emissions:** indirect GHG emissions related to purchased or acquired goods and services (Categories 1 to 8 inclusive); and
- **Downstream emissions:** indirect GHG emissions related to products sold and emissions unrelated to products (leased assets, franchises and investments) (Categories 9 to 15 inclusive).

Organisational boundary

APA uses an operational control organisational boundary for emissions reporting.

Inclusions

APA assesses each of the 15 categories based on relevance to determine which emissions are included versus excluded. Where a reporting category is relevant[10] to APA, emissions are calculated and reported regardless of materiality.

Exclusions

Scope 3 emissions excludes upstream Scope 1 and Scope 2 operational control emissions and upstream and downstream categories that are not relevant to APA.

10 When determining relevance, APA considers key stakeholder information requirements, risks and opportunities.

Category 1 – Purchased goods and services (including capital goods) calculation methodology

Scope 3: Category 1 – Purchased goods and services (including capital goods)	
Category description	Upstream (cradle-to-gate) emissions associated with the extraction, production and transportation of goods and services purchased or acquired by the reporting company in the reporting year (not otherwise included in Categories 2 to 8).
Calculation status	Relevant, calculated.

Calculation boundary

This category includes spend recorded in APA's internal financial systems determined to be attributable to the purchase of goods and services, including capital goods[11].

Exclusions

Spend that is not associated with the purchase of goods and services (and capital goods), including:

- internal payroll
- community and charitable donations
- bank fees
- expenses associated with regulatory compliance and taxation
- third party assets where APA operates but does not have ownership interest
- facilities where APA has ownership interest but does not have operational control
- pass-through spend where emissions associated with the pass-through amount are attributable to the third party charged.

Spend which is captured in other reporting categories including:

- fuel and energy consumption (Category 3)
- purchase of sold product (Category 11)
- business travel (Category 6)
- employee commuting (Category 7)
- waste (Category 5).

Calculation methodology

Emissions are estimated by using the spend-based method consistent with *GHG Protocol Scope 3 Calculation Guide*. Spend is categorised according to APA's internal taxonomy codes aligned with emissions factors from the EPiC Database (EPiC). GHG emissions are calculated by multiplying categorised spend by the corresponding EPiC emission factors adjusted for inflation[12] for the reporting period.

Assumptions

Exchange rate at time at which the purchase order was created is consistent for the life of the purchase order and rate specified on invoices submitted against a purchase order is applicable to the GST amount only for tax purposes.

Data sources

Annual purchase order receipt data for goods and services from APA's internal financial systems.

Emission factors source

Crawford, R.H., Stephan, A. and Prideaux, F. (2019) Environmental Performance in Construction (EPiC) Database, The University of Melbourne, Melbourne. http://www.doi.org/10.26188/5dc228ef98c5a.

11 Operating (purchased goods and services) and capital (capital goods) expenditure can be captured together and difficult to segregate. As a result of this, emissions associated with spend on both capital goods and purchased goods and services are reported together in Category 1.

12 In accordance with page 28 of the EPiC emissions factor source, the base year for development of EPiC factors is financial year 2014/2015 (FY15). Inflation rates for each reporting period are calculated using the Reserve Bank of Australia's inflation calculator based on value of cost of goods and services in FY15 against cost of goods and services for the reporting period. Emission factors are adjusted for inflation as follows:
[Inflated EPiC Factor] for a reporting FY = [Original EPiC Factor @ FY15] / (100 + inflation for reporting FY) %.

Scope 3 emissions (continued)

Category 2 – Capital goods

Scope 3: Category 2 – Capital goods	
Category description	Upstream (cradle-to-gate) emissions associated with the extraction, production and transportation of capital goods purchased or acquired by the reporting company in the reporting year (not already accounted for in Scope 1 or Scope 2).
Calculation status	Relevant emissions associated with the purchase of capital goods are reported under Category 1.

Category 3 – Fuel and energy related activities

Scope 3: Category 3 – Fuel and energy related activities	
Category description	GHG emissions associated with the extraction, production and transportation of fuels and energy purchased or acquired by the reporting company in the reporting year (not already captured in Scope 1 or Scope 2).
Calculation status	Relevant, calculated.

Calculation boundary

This category covers GHG emissions arising from the extraction, production and transportation of fuels and energy consumed by facilities under APA's operational control. Captured in this category are upstream emissions associated with:

- the consumption of fuels and electricity
- the consumption (loss) of natural gas from gas transmission and distribution systems due to gas transmission pipeline losses (methane emissions), gas vented
- emissions from flaring
- electricity line losses from electricity interconnectors.

Note: for this category we use gross emissions data as reported under NGER legislation.

Exclusions

None.

Calculation methodology

Emissions are calculated using the average-data method consistent with *GHG Protocol Scope 3 Calculation Guide* by multiplying the amount of fuel/energy consumed (GJ or MWh) by the most recent relevant Australian National Greenhouse Accounts (NGA) default emission factors.

Double counting

There is an element of double counting by choosing to report upstream emissions associated with fuel combustion, flaring and gas transmission pipeline emission losses. Upstream emissions for this category are made up of the extraction, production and transportation of fuels and energy and are calculated from a single emission factor that combines emissions from all these sources together. There is no ability to remove emissions associated only with transportation. As a result, there is a double count associated with transport already accounted for by APA through Scope 1 and Scope 2 emissions reporting.

Assumptions

The NGER dataset used for upstream emissions calculations is true and correct as independently validated as part of the Scope 1 and Scope 2 assurance process.

As pipelines are linear infrastructure, the emission factor applied is dependent on the location of the pipeline and location of gas delivery as this is taken to be where the gas is consumed. When a pipeline has exit meters that traverse both non-metro and metro locations, an average emission factor is applied. Where a pipeline and exit meters are only located in non-metro areas, the non-metro emission factor is applied. Similarly, where a pipeline and exit meters are located only in metro areas, the metro emission factor is applied.

For the Northern Territory (NT), there are no published NGA emission factors. In accordance with NGA guidance, the Western Australia emission factors are applied for NT.

Data Sources

Fuel and energy consumption data used to calculate Scope 1 and Scope 2 emissions for NGER.

Emission factors source

National Greenhouse Accounts Factors (NGA) 2021 and 2022; Australian Government Department of Climate Change, Energy, Environment and Water.
https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors

Category 4 – Upstream transportation and distribution

Scope 3: Category 4 – Upstream transportation and distribution	
Category description	GHG emissions from the transportation and distribution of products purchased by the reporting company in the reporting year between a company's tier 1 suppliers and its own operations (in vehicles and facilities not owned or controlled by the reporting company); transportation and distribution services purchased by the reporting company in the reporting year, including inbound logistics, outbound logistics (e.g. of sold products); and transportation and distribution between a company's own facilities (in vehicles and facilities not owned or controlled by the reporting company).
Calculation status	Upstream transportation and distribution emissions captured in Category 1 based on spend data.

Category 5 – Waste generated in operations

Scope 3: Category 5 – Waste generated in operations	
Category description	Emissions from third party disposal and treatment (in facilities not owned or controlled by the reporting company) of waste generated in the reporting company's operations in the reporting year.
Calculation status	Relevant, calculated.

Calculation boundary

This category covers upstream emissions arising from the disposal of waste disposed to landfill from facilities over which APA has operational control.

Exclusions

Waste that has been diverted from landfill, recycled and treated. This includes waste oils and oily wastes, cardboard and paper waste.

Emissions from the transportation of waste.

Calculation methodology

Emissions are calculated using the average-data method consistent with *GHG Protocol Scope 3 Calculation Guide* by multiplying the amount of waste disposed to landfill (tonne) by the most recent relevant Australian National Greenhouse Accounts (NGA) default emission factors.

The steps to estimate waste volumes are:

1. categorise APA facilities into groupings (e.g. power stations, gas transmission pipelines, offices)
2. obtain actual waste data for at least one facility within each group
3. determine a base waste factor applicable for each group, e.g. pipeline length (km) for pipelines, power generation capacity for power stations, employee headcount
4. calculate the % of the group total that the base waste factor represents[13]
5. calculate the extrapolation factor which is 1 divided by the % of the group total that the base waste factor represents[14]
6. multiply the extrapolation factor by the actual waste data to calculate the waste data for the group.

The extrapolation factor is used only where waste data is not available for all facilities within a group.

13 For example, if the base waste factor uses headcount, the headcount for the facility where actual data is available is 100, and the total headcount for facilities within the group is 200, the base waste factor is 50% i.e. 100 divided by 200.

14 For example, if base waste factor data represents 50% of the group total, the extrapolation factor will be 2 (i.e. 1 (100%) divided by 0.5 (50%)).

Scope 3 emissions (continued)

Assumptions

Where there is uncertainty about actual waste disposal, APA assumes the waste goes to landfill.

When extrapolating waste data for a group, all facilities within the group generate the same types of wastes consistent with the facility from which the base waste factor was derived.

Where waste data is not provided in tonnes, conversion from liquid waste (in litres) assumes 1 litre is equal to 1 kilogram (kg), and for solid waste, cubic metre (m^3) is extrapolated from a conversion factor calculated by taking an average of tonne per m^3 from actual data based on FY21 data.

Data sources

Waste contractor supplied data and invoices.

Emission factors sources

National Greenhouse Accounts Factors (NGA) 2021 and 2022; Australian Government Department of Climate Change, Energy, Environment and Water.
https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors

Category 6 – Business travel

Scope 3: Category 6 – Business travel	
Category description	Emissions from the transportation of employees for business-related activities during the reporting year (in vehicles not owned or operated by the reporting company).
Calculation status	Relevant, calculated.

Calculation boundary

This category covers both upstream and downstream emissions that occur from transport carriers using their vehicles to transport APA employees and contingent workers for business travel purposes. Additionally, APA has elected to include accommodation emissions associated with business travel where employees and contingent workers are required to stay away from their normal place of residence (home).

Exclusions

Transportation of employees and contingent workers between their homes and their regular worksites in personal vehicles and by using public transport (this is captured in Category 7 – employee commuting).

Calculation methodology

Emissions are calculated consistent with *GHG Protocol Scope 3 Calculation Guide* by multiplying the input quantity by the adopted emission factor:

- **flight emissions:** distance-based method using travelled (km) for each flight category (long or short flight, and either business, economy, first class or premium economy class) multiplied by the most recent relevant UK Department for Environment, Food and Rural Affairs (DEFRA) emission factors. Calculations include radiative forcing (RF) emissions that measure the additional environmental impacts from emissions of nitrous oxide and water vapour at high altitudes.
- **fuel hire car emissions:** fuel-based method using amount of fuel consumed (GJ) multiplied by the Australian National Greenhouse Accounts (NGA) default factors for each fuel type.
- **electric hire car emissions:** distance-based method using travelled (km) per car hire converted into electricity consumed (kWh) by multiplying distance travelled by the DEFRA conversion factor (kWh/km travelled for an average car). Estimated kWh of electricity consumed multiplied by the most recent NGA full-cycle electricity consumption default factors specific to the State/Territory of the car hire.
- **taxi emissions:** spend-based method using dollars spent on taxis converted to kilometres (km) based on assumed Australian average taxi spend per km travelled multiplied by the most recent DEFRA emission factors for taxi hire.
- **accommodation emissions:** average-based method using number of nights per accommodation stay multiplied by the relevant country-specific accommodation emission factors (DEFRA or New Zealand Ministry for the Environment (MfE)). No allowance is made for accommodation star rating, or accommodation type.

Assumptions

When applying relevant emission factors for emissions calculations, business travel flight emissions are categorised according to distances travelled (defined as long flight (>3,700 km), short flight (>400 km, ≤3,700 km), and very short flight (≤ 400 km), and flight category (class of travel, e.g. economy, business class). As there are no published DEFRA emission factors for short first class flights, or short premium-economy flights, they are classified as short business class flights or short economy class flights respectively.

Data sources

APA's corporate travel management provider (CTM) for accommodation and flight data; car hire information from Hertz; and dollar spend for taxi hire from APA's internal financial system.

Emission factors sources

- National Greenhouse Accounts Factors (NGA) 2021 and 2022; Australian Government Department of Climate Change, Energy, Environment and Water. https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors
- UK Department for Environment, Food and Rural Affairs (DEFRA) 2020, 2021, 2022, 2023. https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting
- New Zealand Ministry for the Environment (MfE) Measuring emissions: A guide for organisations: 2023 summary of emission factors. Wellington: Ministry for the Environment. https://environment.govt.nz/publications/measuring-emissions-a-guide-for-organisations-2023-emission-factors-summary/

Category 7 – Employee commuting

Scope 3: Category 7 – Employee commuting	
Category description	Emissions from the transportation of employees between their homes and their worksites during the reporting year (in vehicles not owned or operated by the reporting company).
Calculation status	Relevant, calculated.

Calculation boundary

This category covers emissions arising from the transportation of employees and contingent workers between their home and regular APA worksites not included in Category 6. APA does not currently remove emissions associated with employee and contingent worker commutes in company-owned vehicles.

Exclusions

Employees commuting to regular work locations not under the operational control of APA and days working from home.

Calculation methodology

Emissions are calculated using the distance-based method consistent with *GHG Protocol Scope 3 Calculation Guide* by multiplying distance (km) travelled by employees and contingent workers commuting to work by the adopted emission factor.

APA adopts a blanket approach, with assumed mode of transport for employee commuting used to calculate emissions based on Australian commuting patterns. ABS census data outlining the typical method of travel (employee commute) by geographical location and typical distance travelled (km) is applied to the quarterly employee and contingent worker average headcount over the reporting period. Emissions are calculated by multiplying the estimated km travelled per travel mode for each worksite location by the most recent UK Department for Environment, Food and Rural Affairs (DEFRA) emission factors. Calculations include well-to-tank (WTT) emissions resulting from the production, transportation and distribution of fuels consumed during employee and contingent worker commute. Future improvement for reporting of this category is planned to replace assumed data with actual data based on employee survey.

Double counting

There is an element of double counting by choosing not to remove employees and contingent workers who commute to work in company-owned vehicles as these emissions have already been captured in Category 3. The double count is immaterial and occurs due to the blanket approach adopted for calculating employee commuting emissions.

Scope 3 emissions (continued)

Assumptions

Annual working days for employee commute excludes public holidays that fall on weekends and assumes a five (5) day working week, 20 days of annual leave and all employees commute to regular work location on working days.

Contingent workers are considered as full-time employees of APA. Employee and contingent worker headcount for a reporting period is the quarterly average.

Data sources

Quarterly employee and contingent worker headcount from APA's internal enterprise human resources system and ABS census data.

Emission factors source

UK Department for Environment, Food and Rural Affairs (DEFRA) 2020, 2021, 2022, 2023.
https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

References

ABS: Australian Bureau of Statistics (ABS), 2071.0.55.001 Census of Population and Housing: Commuting to Work – More Stories from the Census, 2016.

Category 8 – Upstream leased assets

Scope 3: Category 8 – Upstream leased assets	
Category description	Operation of assets leased by the reporting company (lessee) in the reporting year and not included in Scope 1 and Scope 2 – reported by lessee.
Calculation status	Scope 1 and Scope 2 emissions associated with APA leased offices are captured as part of APA's NGERS reporting. Upstream emissions are included in Category 3. For ownership interest only assets, both upstream and downstream emissions are captured in Category 15.

Category 9 – Downstream transportation and distribution

Scope 3: Category 9 – Downstream transportation and distribution	
Category description	Transportation and distribution of products sold by the reporting company in the reporting year between the reporting company's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the reporting company).
Calculation status	Emissions associated with the transportation and distribution of products sold by APA are captured in Category 11.

Category 10 – Processing of sold product

Scope 3: Category 10 – Processing of sold product	
Category description	Processing of intermediate products sold in the reporting year by downstream companies (e.g. manufacture).
Calculation status	Not relevant, there is no intermediate product processing of sold product.

Category 11 – Use of sold product

Scope 3: Category 11 – Use of sold product	
Category description	End use of goods and services sold by the reporting company in the reporting year.
Calculation status	Relevant, calculated.

Calculation boundary

This category covers upstream and downstream emissions arising from the production, transportation and distribution of natural gas sold to customers.

Exclusions

None.

Calculation methodology

Emissions are calculated based on 'direct use-phase' method for 'Fuels and feedstocks' described in the *GHG Protocol Scope 3 Calculation Guide* by multiplying the amount of product (gas) sold (GJ) by the most recent Australian National Greenhouse Accounts (NGA) default emission factors to capture both upstream and downstream emissions.

Assumptions

All natural gas sold is combusted.

Data sources

Internal sales data.

Emission factors sources

National Greenhouse Accounts Factors (NGA) 2021 and 2022; Australian Government Department of Climate Change, Energy, Environment and Water.
https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors

Category 12 – End-of-life treatment of sold products

Scope 3: Category 12 – End-of-life treatment of sold products	
Category description	Waste disposal and treatment of products sold by the reporting company (in the reporting year) at the end of their life.
Calculation status	Not relevant, the end use of APA sold product (natural gas) is combustion (end of life).

Category 13 – Downstream leased assets

Scope 3: Category 13 – Downstream leased assets	
Category description	Operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in Scope 1 and Scope 2 – reported by lessor.
Calculation status	Not relevant, APA does not lease assets to other entities.

Category 14 – Franchises

Scope 3: Category 14 – Franchises	
Category description	Operation of franchises in the reporting year, not included in Scope 1 and Scope 2 – reported by franchisor.
Calculation status	Not relevant, APA does not have franchises.

Scope 3 emissions (continued)

Category 15 – Investments

Scope 3: Category 15 – Investments	
Category description	Operation of investments (including equity and debt investments and project finance) in the reporting year not included in Scope 1 or Scope 2.
Calculation status	Relevant, calculated.

Calculation boundary

This category covers downstream emissions for facilities and activities where APA does not have operational control but does have an ownership interest.

Exclusions

None.

Calculation methodology

Where APA calculates emissions, emissions are calculated using the average-data method consistent with the *GHG Protocol Scope 3 Calculation Guide* by multiplying the amount of energy consumed (GJ) by the most recent Australian National Greenhouse (NGA) default emission factors where APA has control of the data source for emissions calculations.

Where energy emissions data is provided by the ownership interest partner in operational control, emissions are calculated by the ownership interest partner in accordance with their legislative NGERS reporting obligation[15].

At a minimum, all energy and emissions data provided by ownership interest partner is checked by APA with variances investigated to confirm that no material omissions have been made or there is no material error in information provided. Some ownership partners subject their NGER reporting data to external audit prior to NGER submission.

Ownership interest emissions are calculated by multiplying total (100%) emissions by APA's ownership interest (percentage).

Assumptions

None.

Data sources

APA internal data sources (including APA Grid Portal) and information maintained by APA Contracts and Commercial, and Operation and Maintenance Teams. External data is obtained from the equity share partner in operational control of the equity ownership asset.

Emission factors sources

National Greenhouse Accounts Factors (NGA) 2021 and 2022; Australian Government Department of Climate Change, Energy, Environment and Water.
https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors

15 Exception is North Brown Hill Wind Farm where emissions are calculated by determining an emission per generation capacity factor from APA's Badgingarra Wind Farm and multiplying this factor by North Brown Hill Wind Farm's generation capacity.

End user emissions

End user emissions are emissions (upstream and downstream) that result from the end use consumption (combustion) of natural gas that APA transports through its wholly- or partially-owned pipelines but does not take ownership of and therefore does not sell to the end user. The exception is comparatively minor volumes of gas sold to customers which is included in Scope 3 – Category 11.

Calculation boundary

When reporting end user emissions, APA reports emissions based on ownership interest of the pipeline.

Exclusions

None.

Calculation methodology

While the natural gas APA transports may have differing downstream applications i.e. either as a feedstock or for combustion purposes, our emissions estimates assume that the product is combusted. In doing so, APA adopts a conservative approach to the calculation of these emissions.

Emissions are calculated using the fuel-based method consistent with *GHG Protocol Scope 3 Calculation Guide* using pipeline exit meter natural gas volume (GJ) data multiplied by the most recent relevant Australian National Greenhouse (NGA) emission factors for both upstream and downstream emissions. Calculated emissions are then multiplied by APA's pipeline ownership interest percentage.

Assumptions

As pipelines are linear infrastructure, the emission factor applied is dependent on the location of the pipeline and location of gas delivery as this is taken to be where the gas is consumed. When a pipeline has exit meters that traverse both non-metro and metro locations, an average emission factor is applied. Where a pipeline and exit meters are only located in non-metro areas, the non-metro emission factor is applied. Similarly, where a pipeline and exit meters are located only in metro areas, the metro emission factor is applied.

For the Northern Territory (NT), there are no published NGA emission factors. In accordance with NGA guidance, the Western Australia emission factors are applied for NT.

Data sources

For APA operated pipelines, internal meter data for APA operated pipelines. For pipelines that APA owns (either wholly or partially) but does not operate, data is obtained from internal systems supplemented by information provided by the entity who has operational control.

Emission factors sources

National Greenhouse Accounts Factors (NGA) 2021 and 2022; Australian Government Department of Climate Change, Energy, Environment and Water.
https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors

Re-baselining

Our GHG emissions re-baselining principles are consistent with the *GHG Protocol*. We review and reset APA's base year inventory and targets where:

- there are changes in company structure and activities such as acquisitions, divestments, mergers, insourcing or outsourcing
- emissions from exclusions in the base year inventory or reporting boundary change significantly, e.g. shift to an equity share reporting boundary
- there are adjustments in the base year inventory due to emission calculation methodology changes or changes in the data used to set targets, e.g. we discover significant errors or several cumulative errors that are collectively significant)[16].

We do not re-baseline for minor changes in emissions of <1,000 t CO_2-e.

The review of targets or goals will only occur when the base year inventory changes by more than 10% due to re-baselining. Re-baselining will not occur for strategic acquisitions or facility closures to support climate targets or goals, e.g. renewables investment.

For transparency, the impact of any re-baseline is presented in the APA's FY23 Climate Data Book shown as adjusted total Scope 1 and Scope 2 emissions.

Carbon offsets

We take the number of carbon offsets surrendered from our ANREU account for ACCUs, our suppliers who surrender offsets on our behalf or other relevant sources, e.g. Verra registry. When APA surrenders carbon offsets, each unit surrendered is equivalent to one t CO_2-e.

Our gas infrastructure asset class has a 30% net emission reduction target by 2030 compared with a FY21 base year. This amounts to an annual net 3.3% reduction. Where there is a performance gap between our gross emissions (adjusted) and our target, quality offsets will be surrendered to meet our target requirement.

This has determined our offset requirements for FY22 and FY23.

16 APA will make the adjustment for the full reporting period rather than only for the remainder of the reporting period after the change occurred.

% of Scope 1 emissions covered by emissions limiting regulations

Assets covered by emissions limiting regulations are those assets covered by a facility specific or sectoral baseline as legislated by the Safeguard Mechanism under the NGER Act. We take the Scope 1 emissions from those facilities covered by the Safeguard Mechanism and divide by the total Scope 1 emissions under APA's operational control.

Performance against targets and goals

Progress against APA's targets and goals[17] is disclosed based on:

- Gross emissions reductions (% and t CO_2-e) that represent comparison of emissions from the current reporting period (including any re-baselining adjustments) against the base year inventory. This does not consider reductions associated with offsets.
- Net emissions reductions (% and t CO_2-e) that represent comparison of emissions from the current reporting period (including any re-baselining adjustments) against the base year inventory deducting offsets from the gross emissions value.

Zero direct emissions vehicles

The number of zero direct emission vehicles (ZDEV) within APA's vehicle fleet is determined based on the number of vehicles leased or owned at the end of the reporting period.

17 All targets and goals and calculations are based on market-based method for Scope 2 except where indicated otherwise.

Glossary

Australian Carbon Credit Unit (ACCU)	An ACCU is a unit issued to a person by the Clean Energy Regulator (Regulator) by making an entry for the unit in an account kept by the person in the electronic Australian National Registry of Emissions Units (ANREU). Each ACCU issued represents one tonne of carbon dioxide equivalent (t CO_2-e) stored or avoided by a project.
Australian National Registry of Emissions Units (ANREU)	ANREU supports the issuance, holding, transfer and acquisition of Australian ACCUs issued under the Australian Government's Emissions Reduction Fund.
Baseline	A hypothetical scenario for what GHG emissions, removals or storage would have been in the absence of the GHG project or project activity.
Base year	A historic datum (a specific year or an average over multiple years) against which a company's emissions are tracked over time.
Base year emissions	GHG emissions in the base year.
Base year emissions recalculation (re-baselining)	Recalculation of emissions in the base year to reflect a change in the structure of the company, or to reflect a change in the accounting methodology used. This ensures data consistency over time, i.e. comparisons of like with like over time.
Carbon offsets (Carbon credits, Offsets)	Broadly refers to a reduction in GHG emissions – or an increase in carbon storage (e.g. through land restoration or the planting of trees) – used to compensate for emissions that occur elsewhere.
Clean Energy Regulator (CER)	An Australian independent statutory authority responsible for implementing legislation to reduce carbon emissions and increase the use of clean energy.
CO_2-e (carbon dioxide equivalent)	The universal unit of measurement to indicate the global warming potential (GWP) of each GHG, expressed in terms of the GWP of one unit of carbon dioxide (CO_2). It is used to evaluate releasing (or avoiding releasing) different GHGs against a common basis.
DEFRA emission factors	GHG emission factors published by the UK Department for Environment, Food, and Rural Affairs (DEFRA).
Emission factor	A factor that is applied to activity data to determine GHG emissions (e.g. kilograms (kg) of CO_2-e emitted per gigajoule (GJ) of fuel consumed, kg of CO_2-e emitted per kilowatt hour (kWh) of electricity used).
Emissions (GHG emissions)	Known as greenhouse gas (GHG) emissions. These are the aggregate anthropogenic carbon dioxide equivalent emissions of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). All are expressed in carbon dioxide equivalent (CO_2-e).
End user emissions	End user emissions are emissions (upstream and downstream) that result from the end use consumption (combustion) of natural gas that APA transports through its wholly- or partially-owned pipelines but does not take ownership of and therefore does not sell to the end user.

GHG Protocol Corporate Standard	*GHG Protocol*: A Corporate Accounting and Reporting Standard is the overarching *GHG Protocol* standard that provides standards and guidance for companies and other organisations preparing a greenhouse gas emissions inventory.
GHG Protocol Scope 2 Guidance	The *GHG Protocol* Scope 2 Guidance acts as an amendment to the *GHG Protocol* Standard providing updated requirements and best practices on Scope 2 accounting and reporting.
GHG Protocol Scope 3 Calculation Guide	The *GHG Protocol* Technical Guidance for Calculating Scope 3 Emissions serves as a companion to the *GHG Protocol* Scope 3 Standard to offer companies practical guidance on calculating their Scope 3 emissions. It provides information not contained in the Scope 3 Standard, such as methods for calculating GHG emissions for each of the 15 Scope 3 categories, data sources and worked examples.
GHG Protocol Scope 3 Standard	*GHG Protocol* Corporate Value Chain (Scope 3) Accounting and Reporting Standard provides a standardised step-by-step approach that allows assessment of entire value chain emissions impact and identifies where to focus reduction activities.
Global warming potential (GWP)	Global warming potentials (GWPs) are values that allow direct comparison of the impact of different greenhouse gases in the atmosphere by comparing how much energy one tonne of a gas will absorb compared to one tonne of carbon dioxide.
Greenhouse gas (GHG)	Gas that can trap heat when emitted within the atmosphere. The greenhouse gases included under the *GHG Protocol* are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PCFs), sulphur hexafluoride (SF_6), and nitrogen trifluoride (NF_3).
Greenhouse Gas Protocol (GHG Protocol)	The Greenhouse Gas Protocol establishes comprehensive global standardised frameworks to measure and manage greenhouse gas emissions from private and public sector operations, value chains and mitigation actions.
Grid Portal	APA's Grid Portal manages contractual relationships with APA's customers, develops a schedule to ensure that customer transportation and storage needs are met at applicable receipt and delivery points, and generates invoices.
Gross emissions	Total GHG emissions for a reporting period with no adjustment due to the application of offsets surrendered.
Historian	A software package that records data from APA's control system (SCADA) and PI DataLink.
Large-scale Generation Certificate (LGC)	A large-scale generation certificate (LGC) represents 1 MWh of electricity generated from an eligible renewable electricity source.
MfE emission factors	GHG emission factors published by the New Zealand Ministry for the Environment.
Net emissions	Gross GHG emissions for a reporting period reduced by the number of carbon offsets surrendered.
NGA emission factors	Australian National Greenhouse Gas Accounts Factors (NGA) are emission factors published by the Australian Government Department of Industry, Science, Energy and Resources, National Greenhouse Accounts (NGA).

FY23 Greenhouse Gas Emissions and Energy Calculation Methodology

Glossary (continued)

NGER, NGER Act	National Greenhouse and Energy Reporting Act 2007, and associated legislation/regulations.
NGER Determination	National Greenhouse and Energy Reporting (Measurement) Determination 2008.
NGER Regulations	National Greenhouse and Energy Reporting Regulations 2008 (NGER Regulations).
NGERS	National Greenhouse and Energy Reporting Scheme.
Offsets	Refer to Carbon offset.
Operational control	A company has operational control over an operation if [the company] or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation. This aligns with the definition of operational control provided in both the *GHG Protocol* and section 11 of the NGER Act.
Organisational boundary	Relates to assets under APA's operational control.
PI DataLink	PI DataLink is a Microsoft Excel add-in that enables APA to retrieve information from Historian directly.
Re-baselining	See Base year emissions recalculation (re-baselining).
REC Registry	The Renewable energy certificate (REC) Registry is the Australian Government's system for all transactions under the Renewable Energy Target (RET). It is administered by the Clean Energy Regulator (CER).
RET	The Renewable Energy Target is an Australian Government scheme designed to reduce emissions of greenhouse gases in the electricity sector and encourage additional generation of electricity from sustainable and renewable sources.
SCADA	Acronym for Supervisory Control and Data Acquisition. SCADA is a computer-based system for gathering and analysing real-time data to monitor and control equipment that deals with critical and time-sensitive materials or events. SCADA data is used where PI DataLink is unavailable.
Scope 1 emissions	Direct emissions that occur from sources owned or controlled by a company e.g. combustion of natural gas within a compressor.
Scope 2 emissions	Indirect emissions not directly generated by the reporting organisation but used due to its operations, such as consumption of purchased electricity/fuel or electricity line loss.
Scope 3 emissions	All indirect emissions (not included in Scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.
t CO_2-e	Tonne (t) CO_2-e (carbon dioxide equivalent).
Verra	A company who facilitates the transparent listing of information on certified projects, issued and retired units, and enables the trading of units.
ZDEV (Zero direct emissions vehicle)	Zero direct emission vehicles are vehicles which don't use petrol or diesel, have no tailpipe, and therefore do not directly emit greenhouse gas (GHG) emissions. There are two types of ZDEVs – battery electric vehicles (BEVs) and Hydrogen Fuel Cell Electric Vehicles (HCEVs).

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