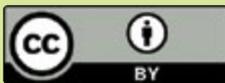


IMPORTANT NOTE & DISCLAIMER

The National Carbon Offset Standard for Organisations (Organisation Standard) is a voluntary standard to manage greenhouse gas emissions and to achieve carbon neutrality. It provides best-practice guidance on how to measure, reduce, offset, report and audit emissions that occur as a result of the operations of an organisation.

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VERSION: This version of the National Carbon Offset Standard for Organisations is effective from 1 November 2017.



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| 1. OVERVIEW AND PRINCIPLES

1.1 Introduction

Businesses and other organisations are managing their greenhouse gas emissions to position themselves for growth and competitiveness in a lower-emissions future. Organisations are also choosing to go one step further and demonstrate leadership and corporate responsibility by becoming carbon neutral.

Carbon neutral means reducing emissions where possible and compensating for the remainder by investing in carbon offset projects to achieve zero emissions (Figure 1). In working towards carbon neutrality, organisations are benefiting from the cost savings resulting from energy efficiency measures, building their capacity for emissions management and are responding to demand for businesses with a minimal impact on our climate.

The *National Carbon Offset Standard for Organisations* (Organisation Standard) is a voluntary standard to manage greenhouse gas emissions and to achieve carbon neutrality. It provides best-practice guidance on how to measure, reduce, offset, report and audit emissions that occur as a result of the operations of an organisation.

The Organisation Standard has been designed to accommodate a wide variety of organisations with operations in Australia. From large-scale organisations with thousands of employees to local businesses, the Organisation Standard can be used to achieve carbon neutrality and showcase climate leadership.

The Organisation Standard can be used in a number of ways. It can be used to better understand and manage carbon emissions, to credibly claim carbon neutrality and to seek carbon neutral certification.

For organisations certified by the Australian Government, the Carbon Neutral Certification Trade Mark (the certification trade mark) is available for use. It provides a legitimate stamp of approval that an organisation has met all the requirements of the Organisation Standard and provides further opportunities to demonstrate climate commitments to stakeholders and customers. Certification against the Organisation Standard is provided through the Australian Government's Carbon Neutral Program, also described in this document (Section 3).

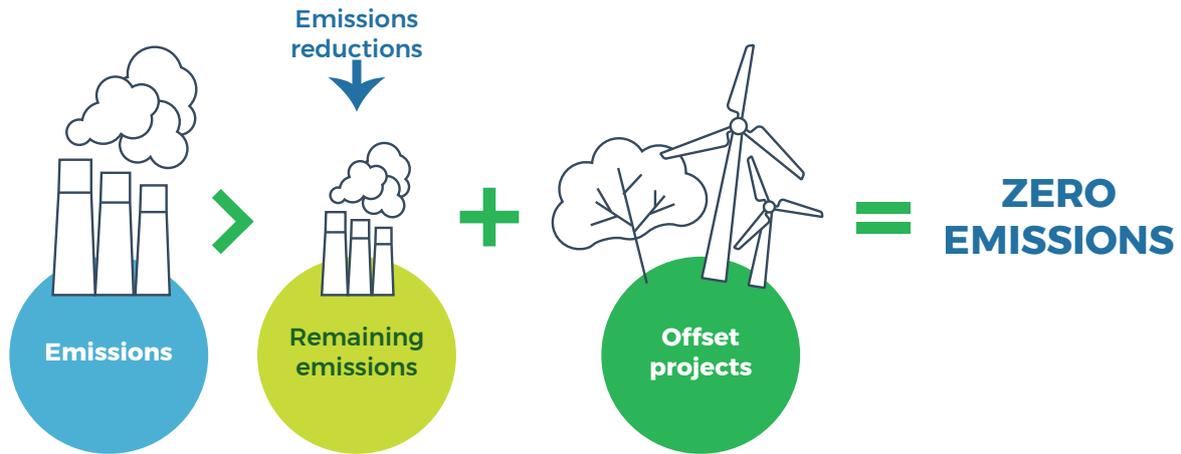


Figure 1: The process of carbon neutrality

1.2 Development of the Organisation Standard

The National Carbon Offset Standard and Carbon Neutral Program were launched by the Australian Government in 2010. Since then, they have provided a credible framework for managing emissions and achieving carbon neutrality. The National Carbon Offset Standard and Carbon Neutral Program were first designed for organisations, products and services.

In 2017, the National Carbon Offset Standard was expanded to include buildings and precincts. In light of the increasing number of carbon neutral categories covered by the National Carbon Offset Standard, separate, stand-alone documents have been created for each of these categories (Box 1). This allows for streamlined and tailored guidance to meet the needs of different users.

Box 1: Categories of the National Carbon Offset Standard

The Organisation Standard complements the broader family of National Carbon Offset Standard categories. A separate document is available for each category of the standard.

- › *National Carbon Offset Standard for Products & Services*
- › *National Carbon Offset Standard for Buildings*
- › *National Carbon Offset Standard for Precincts*
- › *National Carbon Offset Standard for Events*

When considering carbon neutral certification, please contact the Department early to confirm the appropriate choice of certification category.

The Department retains the right to determine the certification category for an application.

1.3 Core principles

The Organisation Standard is based on international standards and tailored to the Australian context. The Australian and international standards that form the basis for the Organisation Standard are listed in Section 4: References.

The requirements of the Organisation Standard (Section 2) are underpinned by carbon accounting and offsets integrity principles.

1.3.1 Carbon accounting principles

The following principles are considered best practice when calculating a carbon account. The carbon account of an organisation must be calculated according to these principles, if seeking to claim carbon neutrality against the Organisation Standard

- › **Relevance:** ensure the greenhouse gas inventory of an organisation appropriately reflects the greenhouse gas emissions attributable to that organisation and serves the decision-making needs of users – both internal and external.
- › **Completeness:** account for and report all greenhouse gas emissions sources and activities within the defined boundary of the organisation. Disclose and justify all exclusions.
- › **Consistency:** use consistent methodologies to allow for meaningful comparisons of greenhouse gas emissions over time. Transparently document any changes to the data, boundary, methods or any other relevant factors in the time series.
- › **Transparency:** compile, analyse and document greenhouse gas information clearly and coherently so that auditors and the public may evaluate its credibility. Disclose any relevant assumptions and make appropriate references to the calculation methodologies and data sources used.
- › **Accuracy:** ensure the quantification of greenhouse gas emissions is unbiased (not systematically over or under actual emissions) and uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information. Where uncertainty is high, use conservative values and assumptions.

These principles are based on those outlined in the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004) and international standards, including the AS ISO 14064 and ISO 14040 series (references in Section 4).

1.3.2 Offsets integrity principles

Organisations can use offset units to support their emissions management activities. For example, organisations seeking to become carbon neutral can use eligible offset units to compensate for emissions that cannot be completely reduced through energy efficiency, the procurement of renewable energy or supply chain management.

The purchase of offset units supports projects that reduce or remove emissions from the atmosphere, such as through reforestation, renewable energy or energy efficiency. Many of these projects also deliver other environmental, social and economic benefits; for example, improved water quality, increased biodiversity and increased Indigenous employment. Organisations often seek offset projects that provide these benefits to align with their organisational or corporate values.



The projects and offset units are verified by independent auditors through internationally recognised standards. These standards ensure the projects are implemented, run and managed properly and the credits they generate represent real and actual emissions sequestered or avoided.

One offset unit is issued for each tonne of emissions avoided or removed from the atmosphere.

The Department reviews the credibility of publicly available offset units. Only offset units that have met the integrity principles below are eligible for use in a carbon neutral claim against the Organisation Standard.

The integrity principles are based on the offsets integrity framework for Australian Carbon Credit Units (ACCU) as set out in the *Carbon Credits (Carbon Farming Initiative) Act 2011*. The offsets integrity principles ensure that any unit used to offset emissions as part of a carbon neutral claim against the Organisation Standard represents a genuine and credible emissions reduction.

For a unit to be eligible for use under the Organisation Standard, it must meet the following requirements:

- › **Additional:** it must result in emissions reductions that are unlikely to occur in the ordinary course of events, including due to any existing commitment or target publicly agreed by the entity responsible for issuing the units. It must represent abatement that has not been double counted.
- › **Permanent:** it must represent permanent reductions in greenhouse gas emissions. In the case of sinks, this requires that the carbon stored is sequestered and will not be released into the atmosphere for a period of 100 years. Where a period of less than 100 years is applied to sequestration units, an appropriate discount must be applied.
- › **Measurable:** methods used to quantify the amount of emissions reductions generated must be supported by clear and convincing evidence.
- › **Transparent:** consumers and other interested stakeholders must have access to information about the offset project that generated the abatement, including the applied methodology and project-monitoring arrangements.
- › **Address leakage:** the system responsible for generating the offset unit must provide deductions for any material increases in emissions elsewhere which nullify or reduce the abatement that would otherwise be represented by the offset unit.
- › **Independently audited:** the circumstances responsible for the generation of the unit must be verified by an independent, appropriately qualified third party and not found to be in contradiction with these integrity principles.
- › **Registered:** the offset unit must be listed and tracked in a publicly transparent registry.

The Department uses a decision framework based on the offsets integrity principles to determine the eligibility of offset units under the Organisation Standard. A list of offset units that have met the integrity principles and are eligible for use under the standard is provided in Appendix A: Eligible offset units.

Appendix A may be updated as new information or different offset units become available. This may result in the addition of new offset units or the removal of existing ones.

1.4 Using the Organisation Standard

The Organisation Standard is a voluntary standard and can be used in a number of ways. Firstly, it can be used to better understand and manage the greenhouse gas emissions that occur as a result of the operations of an organisation. This can be achieved by following the best-practice guidance provided in Section 2 on a range of topics, including how to measure, reduce, offset, report and audit emissions. Secondly, it can be used as a framework to credibly claim carbon neutrality by following all of the requirements outlined in Section 2. Thirdly, it can be used as a pathway to be certified as carbon neutral by the Australian Government. This can be done by following the steps provided in Section 3 of the standard.

1.4.1 Making carbon neutral claims

When making a carbon neutral claim against the Organisation Standard (Box 2), the responsible entity must be mindful of its obligations under Australian Consumer Law. Australian Consumer Law applies to all forms of marketing, including claims on packaging, labelling and in advertising and promotions across all media (print, television, radio and internet).

Consumers and investors are entitled to rely on any carbon neutral claim made in reference to the Organisation Standard and expect these claims to be truthful. The responsible entity must ensure any claim made regarding compliance with the Organisation Standard is accurate and appropriately substantiated.

Box 2: Carbon neutral claims against the Organisation Standard

Where the Organisation Standard is being used as the basis for a claim of carbon neutrality, the user must fully disclose and provide transparency as to the actions behind the carbon neutral claim. This allows the public to develop an informed opinion on the validity of the claim. The requirements detailed in Sections 2.2-2.7 must be followed, regardless of whether or not the claim is certified.

Certification of carbon neutral claims can be sought through the Australian Government's Carbon Neutral Program as described in Section 3.

Important:

- › The certification trade mark can only be used when certification has been granted by the Department (Section 3).



1.4.2 Carbon neutral certification

Carbon neutral certification against the Organisation Standard can be sought through the Australian Government's Carbon Neutral Program by applying to the Department (Section 3). Australian Government certification allows for the use of the certification trade mark, which can be used to showcase the organisation's carbon neutrality.

Organisations considering carbon neutral certification should contact the Department early to confirm the appropriate choice of certification category (organisation, products & services, buildings, precincts or events). The Department retains the right to determine the certification category for an application.

1.4.3 Use of the certification trade mark

The Australian Government has registered the Carbon Neutral Certification Trade Mark (the certification trade mark) with the Australian Competition and Consumer Commission, which can be used under licence to show an organisation complies with the Organisation Standard.

The certification trade mark is only available to entities that are certified by the Australian Government and have executed a Certification Trade Mark Licence (licence agreement) with the Department. The certification trade mark is not available for organisations that self-declare against the Organisation Standard.

The certification trade mark can only be used in direct relationship with the category of certification. For example, an organisation retailing products and services cannot use the certification trade mark on marketing for those products and services or in any other way that suggests the certified claim of carbon neutrality applies to the products or services (unless the products or services are individually certified against the *National Carbon Offset Standard for Products & Services*).



| 2. REQUIREMENTS OF THE ORGANISATION STANDARD

2.1 Context for the requirements

The requirements of the Organisation Standard are written from the perspective of a reader who is seeking to achieve carbon neutrality. Where an organisation chooses to claim carbon neutrality, the standard must be applied consistently and fully.

Throughout this document, the term 'must' is used to signify what is required to make a carbon neutral claim in accordance with the Organisation Standard. The terms 'can' or 'may' are used where an organisation can apply its own discretion and choose from several options, all of which are acceptable under the Organisation Standard. The term 'should' is used to indicate a recommendation by the standard, in line with best practice.

An organisation is a company, corporation, firm, enterprise, authority or institution, or a combination thereof, whether incorporated or not, public or private, that has its own functions and administration. This may also include an organisation that shares functions and/or administration with another organisation.

The responsible entity is the person or organisation that has taken responsibility for making a carbon neutral claim or seeking carbon neutral certification. The responsible entity should be clearly identified and must be able to meet the requirements of the Organisation Standard, including carbon accounting, regular reporting and purchasing of eligible offset units as required to make the carbon neutral claim.

The Organisation Standard only covers greenhouse gas emissions. Other environmental impacts of the organisation do not need to be assessed for the purpose of the standard.

2.2 Achieving and maintaining carbon neutrality

To achieve and maintain a valid and credible carbon neutral claim against the Organisation Standard, the responsible entity must:

- › **Measure:** Prepare a carbon account (Section 2.3).
- › **Reduce:** Reduce emissions where possible (Section 2.4).
- › **Offset:** Cancel eligible offset units to compensate for remaining emissions (Section 2.5).
- › **Report:** Report publicly (Section 2.6).
- › **Audit:** Arrange for an independent audit of the carbon account and public report (Section 2.7).

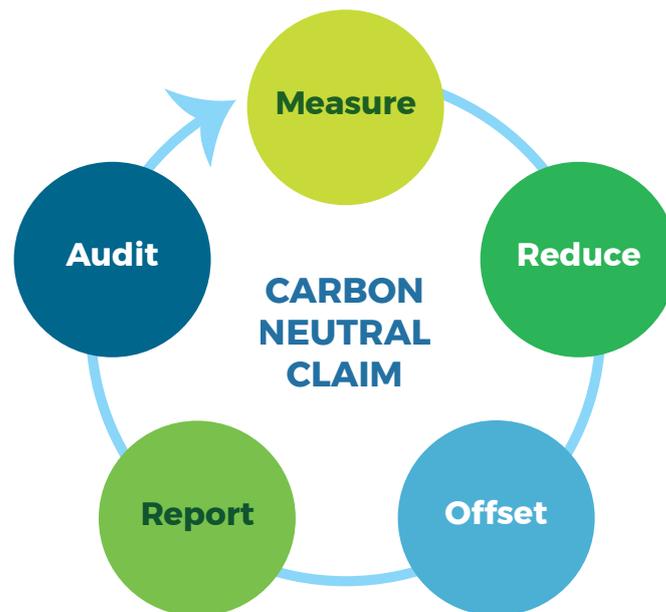


Figure 2: The cycle of activities for carbon neutral claims

A key element of a carbon neutral claim for organisations is investor and customer confidence in the validity of the claim. The requirements of the Organisation Standard have been designed to provide these stakeholders with transparent information on the actions taken to achieve carbon neutral status.

Each of the stages (see Figure 2) must be completed annually (with the exception of the independent audit, which must be completed at least every three years), to support the validity and transparency of the carbon neutral claim.

Sections 2.3–2.7 describe the requirements of the Organisation Standard and provide guidance on how to meet those requirements to achieve carbon neutrality.

Certification against the Organisation Standard can be sought through the Carbon Neutral Program (Section 3).

2.3 MEASURE: Prepare carbon account

Preparing a carbon account involves the following steps:

- Step 1:** Establish the emissions boundary.
- Step 2:** Catalogue emissions sources within the boundary.
- Step 3:** Set a base year.
- Step 4:** Collect data on identified emissions sources.
- Step 5:** Calculate the total carbon account attributable to the organisation.

The responsible entity may choose to prepare its own carbon account, or may engage a consultant to prepare the carbon account or to provide technical advice.

2.3.1 Step 1: Establish the emissions boundary

Defining the emissions boundary is the first step in the carbon accounting process. The emissions boundary refers to the coverage and extent of the carbon account. The boundary is established using a set of criteria to identify emissions sources and decide which of the identified sources are to be included or excluded. Refer to Figure 3 for examples of typical inclusions in an emission boundary.

For an organisation, the emissions boundary includes emissions sources that are part of the organisation boundary as well as emissions sources outside the organisation boundary (scope 3) that are considered relevant. The criteria of materiality can be applied to exclude emissions sources that would not be cost effective to measure relative to their significance to the carbon account.

The organisation's emissions boundary must be transparently documented and disclosed, along with the reasoning for choosing the boundary. Where significant exclusions are made, they must be clearly stated, and the reasons for and implications of the exclusions must be justified. A disclosure statement, including reason and justification for any exclusions, must be published as part of the public report (Section 2.6).

Organisation boundary

The organisation boundary can be established using either a control or equity share approach:

1. The control approach requires an organisation to account for the greenhouse gas emissions from operations over which it has control. This can be based on either:
 - financial control, whereby the organisation reports 100 per cent of operations over which it has 'the ability to direct the financial and operating policies of the latter with a view to gaining economic benefits from its activities' (*GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004)); or
 - operational control, whereby the organisation reports 100 per cent of the operations over which it has 'the full authority to introduce and implement its operating policies' (*GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004)).
2. The equity share approach, which requires an organisation to account for greenhouse gas emissions according to its share of equity in the operations.

Once an approach is chosen, it must be applied fully and consistently to determine the organisation boundary of the carbon account. The most common approach for organisations seeking certification through the Australian Government is the operational control approach.

The organisation boundary sets the basis for determining what are considered direct emissions and indirect emissions. See Section 2.3.2 for more information on scopes of emissions.

For further details and case studies on the application of these three approaches, refer to the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004).

Relevance

The criterion of relevance, as adapted from the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004), is about ensuring the carbon account appropriately reflects the emissions of the organisation and meets the expectations of consumers and stakeholders – both internal and external to the organisation.

Emissions sources considered to be relevant, whether or not they fall within the organisation boundary, must be included in the emissions boundary (subject to materiality).



The Organisation Standard deems certain emissions sources to be relevant.

Emissions deemed to be relevant

The following emissions sources are deemed to be relevant to all organisations:

- › All scope 1 emissions (direct emissions).
- › All scope 2 emissions (emissions from the generation of electricity, heat, cooling and steam purchased by the organisation).
- › Scope 3 emissions from electricity consumption and fuel use (indirect emissions from the extraction, production and transport of fuel burned at generation, and the indirect emissions attributable to the electricity lost in delivery in the transmission and distribution network).
- › Scope 3 emissions from waste, business travel and accommodation, base building services (if applicable), office paper and water use.

All other scope 3 emissions sources must be assessed for relevance in accordance with the relevance test, including:

- › Emissions from staff commuting, food and catering, postage and freight, stationery, office printing, cleaning services, IT services (e.g. data centres) and telecommunication services.

Relevance test

Emissions sources are relevant when any two of the following conditions are met (adapted from the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004)):

- › the scope 3 emissions from a particular source are likely to be large relative to the organisation's scope 1 and scope 2 emissions
- › the scope 3 emissions from a particular source contribute to the organisation's greenhouse gas risk exposure
- › the scope 3 emissions from a particular source are deemed relevant by key stakeholders
- › the responsible entity has the potential to influence the reduction of scope 3 emissions from a particular source
- › the scope 3 emissions are from outsourced activities that were previously undertaken within the organisation's boundary or from outsourced activities that are typically undertaken within the boundary for comparable organisations.

Materiality

An emissions source that constitutes 1 per cent or more of the total carbon account is considered to be material under the Organisation Standard.

If a relevant emissions source is estimated to be material, it must be included within the emissions boundary, unless justification can be provided to demonstrate that such quantification would not be technically feasible, practicable or cost effective relative to its significance.

Emissions sources that are relevant but estimated to constitute less than 1 per cent of the total carbon account can be excluded from the emissions boundary.

In applying the 1 per cent materiality threshold, the total amount of emissions to be excluded must not exceed 5 per cent of the total carbon account.

To estimate materiality of these emissions sources, tools based on input-output analysis can be useful.

Responsible entities are encouraged to include, measure and report as many emissions sources as possible, regardless of an emissions source's materiality. Data for emissions sources that are deemed as

immaterial (contributing less than 1 per cent to the carbon account) may still be included in the carbon account. The following methods can be used if primary data cannot be sourced:

- › taking an initial measurement as a basis for projecting emissions for future years of that source; or
- › estimating and projecting an emissions source (e.g. using input-output analysis tools or approximation through extrapolation. See Appendix B Section 3.1.3)

Where a relevant emissions source is estimated to be material, but accurate data is not yet available, a data management plan should be developed to outline how more rigorous quantification can be achieved within a reasonable timeframe. This could include setting in place appropriate data collection processes and negotiating with stakeholders who have access to accurate data.

2.3.2 Step 2: Catalogue emissions sources within the boundary

Once the emissions boundary has been established, the responsible entity must catalogue all emissions sources within the boundary as well as emissions sources that have been excluded from the boundary. When cataloguing an emissions source, the responsible entity must detail the type of greenhouse gas emissions and the scope of the emissions. Emissions sources are usually catalogued in the same document used for recording data and calculating the carbon account (see Appendix B Section 3).

Types of greenhouse gas emissions

The carbon account must include emissions of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃).

Scopes of emissions

To help delineate direct and indirect emissions sources, emissions included within the emissions boundary must be classified into the following scopes (adapted from the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004)):

- › Scope 1 emissions include all direct greenhouse gas emissions from sources that are within the organisation's control boundary. These could be emissions from fuel use, refrigerants and on-site electricity generation.
- › Scope 2 emissions include purchased electricity, heat, cooling and steam (i.e. energy produced outside the organisation's control boundary but used within the organisation).
- › Scope 3 emissions are all indirect emissions that occur as a result of the activities of the organisation, but occur from sources outside the organisation's control boundary.



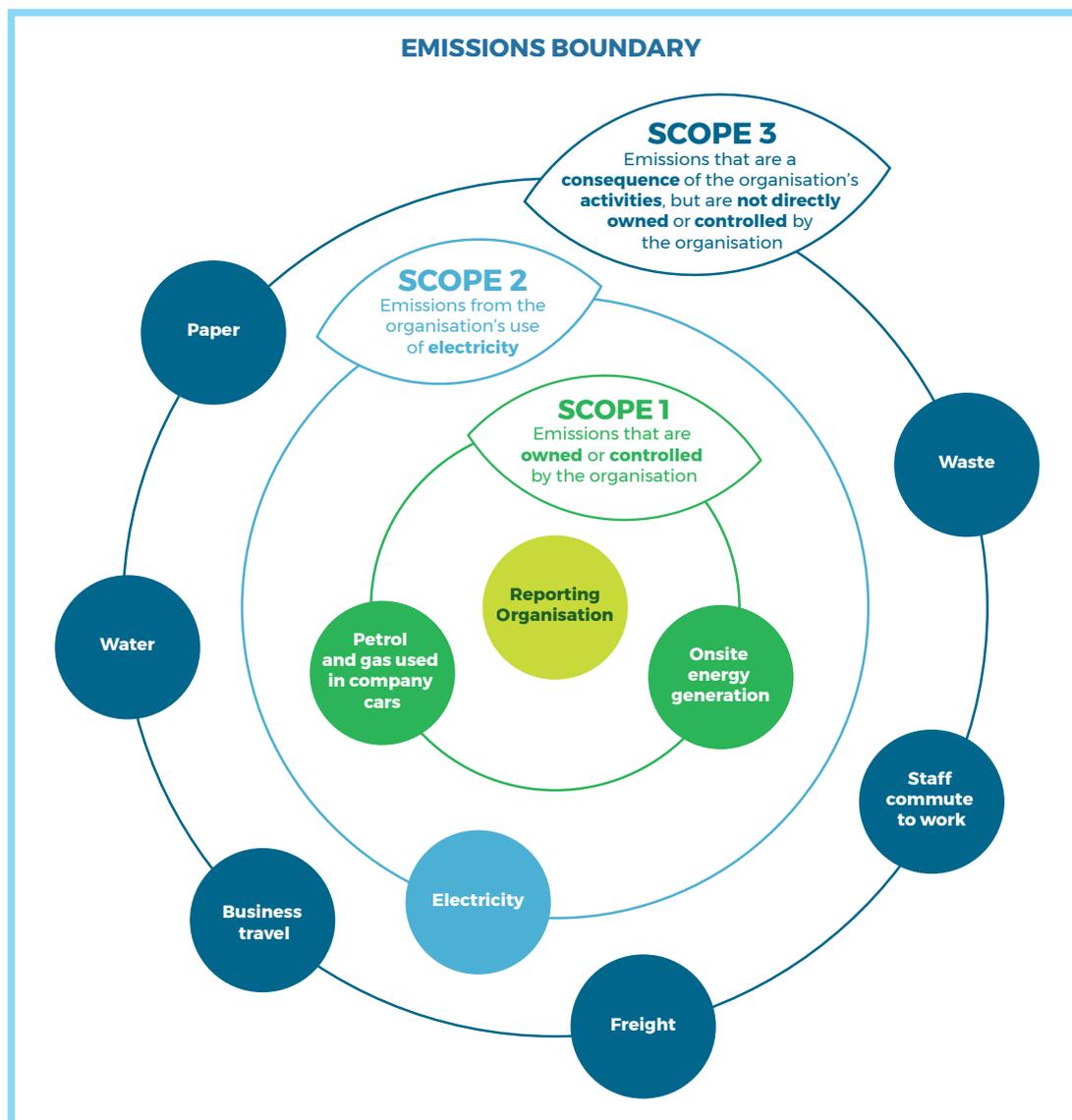


Figure 3: Typical examples of scope 1, scope 2 and scope 3 inclusions in an emissions boundary

Disclosing excluded emissions sources

Emissions sources within the emissions boundary that are excluded on the basis of the organisation boundary, relevance or materiality (including not being technically feasible, practical or cost effective relative to significance) must be disclosed, justified and clearly explained.

A disclosure statement must be published as part of the public report (Section 2.6). The statement should include the justification for the exclusion of the emissions sources.

2.3.3 Step 3: Set a base year

The responsible entity must collect data to calculate the organisation's carbon account for a full calendar or financial year before a carbon neutral claim can be made. This is known as the base year. The base year carbon account must be independently audited.

To establish a base year:

- › Select the most recent year for which verifiable carbon emissions and carbon exclusions data are available, or use a multi-year average if a single year's data is unrepresentative of the typical emissions profile.
- › Explain the selection of the base year.

According to the principle of consistency (Section 1.3.1), the carbon account must allow meaningful comparison of emissions over time. Significant changes (± 5 per cent) in the carbon account between the base year and subsequent reporting years that are not attributed to emissions reduction actions by the organisation's operations must be disclosed as part of the annual public report (Section 2.6).

Factors that may lead to significant changes in the carbon account between the base year and subsequent years might include changes in:

- › operational boundaries
- › ownership and control of greenhouse gas sources and sinks
- › calculation methods
- › changes in emission factors.

Significant errors discovered over time should also be disclosed and their impact on the carbon accounts of the affected years should be calculated.

Transparent documentation of changes and errors is important to allow stakeholders to understand factors driving year-on-year emissions variation. This allows separating emissions reductions attributable to actions taken by the organisation from those caused by other factors.

Chapter 5 of the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004) provides additional guidance on base year recalculation approaches that can be used as a guide for such disclosure.

2.3.4 Step 4: Collect data on emissions sources

Once the responsible entity has established the emissions boundary and catalogued the emissions sources, the type of data available for different emissions sources must be identified, bearing in mind the emissions calculations that it will need to undertake (Section 2.3.5).

When calculating the emissions from identified sources, best endeavours must be used to meet the carbon accounting principles of relevance, completeness, consistency, transparency and accuracy (Section 1.3.1).

Measured data should be used whenever possible, with conservative estimates used only where data is unavailable. For example, operational energy data should be obtained from energy meters such as electricity and gas meters (from utility bills).

Appendix B Section 3.1.1 provides further guidance on data collection.

Data management and record keeping

The responsible entity must ensure appropriate systems are put in place to monitor and record the greenhouse gas emissions within the emissions boundary.

The quality of data is key to the integrity of a carbon account. Quality control practices must be in place when collecting data to ensure a high level of data quality.



The data required to create a carbon account, and the processes for establishing and maintaining those records, must be identified to ensure that the greenhouse gas emissions attributable to the subject of the carbon neutral claim, and any changes in these emissions, are recorded in a timely manner.

In line with the carbon accounting principle of completeness and accuracy (Section 1.3.1), all data collection procedures should be fully documented to ensure appropriate controls are in place and auditable. These procedures should reference the data collection and storage system, including:

- › data collection, report format, reporting frequency and length of time records are archived
- › data transmission, storage, and backup procedures and strategies for identifying and coping with lost or poor-quality data
- › entities responsible for measurement and data collection procedures
- › all quality control procedures to be implemented for measurement and data collection procedures (e.g. central data control, site audits, calibration, site technician reminders, maintenance procedures, service sheets).

The responsible entity must ensure the existence, quality and retention of documentation in order to enable the creation of an audit trail of how the carbon account was created. Records must be kept for seven years after the end of the carbon neutral period. For responsible entities seeking certification against the Organisation Standard, records must be kept for the period of time specified in the licence agreement.

Recommended records include but are not limited to:

- › a list of all emissions sources monitored
- › the data used for calculation of greenhouse gas emissions for each source, categorised by process and fuel or material type
- › documentary evidence relating to calculations (e.g. receipts, invoices and details of payment methods)
- › documentation of the methods used for greenhouse gas emissions and energy estimations
- › documents justifying selection of the monitoring methods chosen
- › documentation of the collection process for data for an activity and its sources
- › records supporting business decisions.

A data management plan may be developed to ensure the collection of high-quality carbon account data and the improvement of data collection procedures. A data management plan or quality management system is also useful in providing transparency when the carbon account is audited.

Appendix B Section 3.1.1 provides examples of recommended practices and tools for data management.

2.3.5 Step 5: Calculate the carbon account

The responsible entity must calculate greenhouse gas emissions attributable to the organisation using the data collected in conjunction with appropriate emission factors (preference should be given to emission factors published by government entities).

The carbon account should be set out to allow for easy interpretation. Emissions sources within the boundary must be grouped according to scope. The calculation methods and the emission factors used must be disclosed clearly and completely.

The use of renewable energy or carbon neutral certified activities must be recorded in the carbon account even if the emissions will be equal to zero (further details below).

Appendix B Section 3.1 provides examples and templates for calculating a carbon account.

Emission factors

The responsible entity must use credible and reliable emission factors when determining the carbon account. Where a factor is available in the *National Greenhouse Accounts Factors* (NGA Factors, Department of the Environment and Energy, 2017) that is applicable to an emissions source, this factor must be used unless more accurate emission factors or calculation methodologies are publicly available.

The NGA Factors is an annual publication by the Department and includes factors for scope 1 and 2 emissions sources and scope 3 emission factors for waste; wastewater; solid, liquid and gaseous fuels; and electricity.

Further guidance on scope 3 factors that are not covered in the NGA Factors is provided in Appendix B Section 1.

Factors used should either be the most up to date available at the time of preparing the carbon account or align with the relevant time period during which the emissions occurred (e.g. a 2015 emission factor should be used to calculate 2015 emissions).

Treatment of renewable energy

The carbon account must include used or generated renewable energy even when considered as zero emissions. The emission factors applied must follow rules depending on various parameters, in particular whether the renewable energy system operates under a market-based certificate scheme.

The requirements when accounting for renewable energy and energy efficiency schemes under the Organisation Standard are explained in Appendix B Section 2. This includes the rules that apply to renewable energy generated and used onsite.

Accounting for carbon neutral supply chains

If the organisation's carbon account includes an activity that has been certified as carbon neutral against any of the other categories of the National Carbon Offset Standard (see Box 1), the activity or product is considered to contribute zero emissions to the organisation's carbon account. This is because the emissions of the activity or product have already been accounted for and offset.

A carbon neutral activity or product in the organisation's supply chain could include:

- › use of products and services (e.g. retail electricity or flights) certified against the *National Carbon Offset Standard for Products & Services*; or
- › accommodation in a carbon neutral building certified against the *National Carbon Offset Standard for Buildings*; or
- › accommodation in a carbon neutral precinct certified against the *National Carbon Offset Standard for Precincts*.

The use of the activity or product must still be reported (in the form of activity data) to ensure transparency and completeness of the carbon account. The activity data should be recorded as having an emission factor of zero.



For example, if carbon neutral retail electricity is used, the carbon account for the organisation would record the amount of electricity used with an associated emission factor of zero. Therefore, the calculated emissions from the use of this electricity would also be zero.

Organisations tenanted in a carbon neutral certified building or precinct will accordingly be entitled to report emissions associated with their tenancy (such as electricity, waste and water) with an associated emission factor of zero.

An activity or product that claims to be carbon neutral but is not certified against any of the National Carbon Offset Standard categories is not considered to have a zero emissions impact for an organisation's carbon account.

2.4 REDUCE: Reduce emissions where possible

2.4.1 *Develop and maintain an emissions reduction strategy*

An organisation seeking to become carbon neutral must develop and maintain an emissions reduction strategy. The emissions reduction strategy must identify the emissions reduction measures to be undertaken and the quantity of emissions expected to be reduced over a specified timeframe, where this can be quantified.

At the end of each reporting year, the responsible entity should review its success in achieving emissions reductions. The emissions reduction strategy should be revised accordingly and plans made for emissions reduction actions for the following year.

In some cases, it may not be possible or practicable to achieve emissions reductions every year. Recognising these circumstances, there is no mandatory requirement for year-on-year reductions or specific targets for reducing emissions. Nevertheless, the responsible entity should aim to achieve emissions reductions wherever possible.

The emissions reduction strategy should be made publicly available, along with details of any activities leading to emissions reductions that have been achieved or have commenced over time. Planned emissions reduction activities may also be included. The emissions reduction strategy may include scope 3 emissions sources that are difficult to quantify, even if they have been excluded from the organisation's emissions boundary.

A summary or outline of the emissions reduction strategy to be included in the annual Public Disclosure Summary or other public report (Section 2.6).

2.4.2 *Emissions reduction activities*

Maintaining a comprehensive carbon account can help an organisation to better understand its sources of greenhouse gas emissions and to identify the most cost-effective opportunities for reducing emissions. Once a carbon account has been measured, reductions in emissions can be calculated by comparing changes in the carbon account over time relative to the base year.

The Organisation Standard requires that emissions reduction activities are undertaken within the organisation where possible, before compensating for emissions through the purchase and cancellation of eligible offset units (Section 2.5).

As such, an organisation seeking carbon neutrality should follow the carbon reduction hierarchy of energy efficiency, onsite renewable energy generation and offsite renewable energy generation before undertaking carbon offsetting.



Disclosing emissions reduction initiatives and reporting on achievements contributes to transparency and is in line with carbon management best practices.

Emissions reductions may be achieved in many ways, including by:

- › increasing energy efficiency (e.g. by installing energy efficient lighting and appliances)
- › substituting products or inputs with those that are less emissions intensive (e.g. by switching from conventional vehicle fleets to electric or hybrid vehicle fleets)
- › changing practices to replace emissions intensive activities with those that generate fewer emissions (e.g. reducing flights to business meetings through using teleconferencing, or replacing water and fertiliser intensive gardens with lower-maintenance landscapes)
- › encouraging and optimising the responsible treatment of waste (e.g. through source separation and procurement of waste treatment services with biogas capture).

2.5 OFFSET: Cancel eligible offset units

Any remaining emissions must be compensated each year through cancelling (also known as retiring) an equivalent number of eligible offset units.

Two approaches to offsetting are allowed under the Organisation Standard:

1. Upfront offsetting: this involves estimating emissions for the coming reporting year and cancelling that number of eligible offset units at the start of the year. This must be followed by an annual true-up process to ensure that the number of cancelled eligible offset units is at least equal to actual emissions.
2. Offsetting in arrears: this involves cancelling offset units for the claim period after it has finished.

The responsible entity should develop and maintain a strategy for purchasing and cancelling eligible offset units for each year that is the subject of a claim of carbon neutrality. This strategy may include decisions regarding the types of offset units to be purchased. The strategy should also consider the timing of offset cancellation, especially if seeking certification (see Section 3.4.1).

2.5.1 Eligible offset units

Offset units eligible for use as part of a carbon neutral claim against the Organisation Standard are listed in Appendix A. Only these units can be used as part of a carbon neutral claim under the standard.

These units have met the offset integrity principles of the Organisation Standard (Section 0). Appendix A may be updated as new information or offset units become available. This may result in the addition of new eligible offset units or the removal of existing ones.

The purchase of eligible offset units supports projects that reduce or remove emissions from the atmosphere. Many carbon offset projects deliver positive outcomes in addition to emissions reductions. The responsible entity may choose to purchase units from projects that align with corporate goals or values, those that deliver specific social or environmental outcomes, and/or those that support particular Sustainable Development Goals.

Before choosing to use any units for offsetting purposes, the responsible entity should undertake its own due diligence assessment of the originating projects and underpinning methodologies, as well as consult the Department's website (www.environment.gov.au/climate-change/government/carbon-neutral) for any updates to the eligibility of offset units.



2.5.2 Proof of cancellation of offset units

Eligible offset units must be cancelled via a publicly available registry. The cancellation should be clearly attributed to the carbon neutral claim and the organisation or responsible entity making the claim. The cancellation and attribution of eligible offset units is important to prevent resale or double counting of offset units.

Proof of the cancellation of eligible offset units, including the name of the registry in which the units were cancelled and the serial numbers of the units, must be provided in the annual public report (Section 2.6). Attributing units to the particular carbon neutral claim should be done via a note within the registry explaining that the units have been 'cancelled on behalf of Organisation XYZ to meet its carbon neutral claim against the National Carbon Offset Standard for FY2017-18'.

There are several independently managed registers for offset units, as well as those set up by suppliers and the administrators of the various offset standards. Units may be purchased and cancelled by the responsible entity or by a consultant or carbon service provider.

Eligible offset units may be purchased and cancelled for immediate use or they may be banked for use against a future carbon neutral claim. Early purchase and/or cancellation of units allow the responsible entity to choose the timing of purchase to meet its needs and to obtain a particular type of offset when it is available.

2.6 REPORT: Prepare a public report

An annual report must be made publicly available to communicate progress on emissions reduction activities and offsetting as part of a carbon neutral claim. Annual reporting keeps the public and other interested parties informed in an open and transparent manner and communicates achievements in managing emissions.

The annual public report must include the following:

- › the total gross and net greenhouse gas emissions of the organisation for the base year and current reporting period (taking into account any renewable energy and certified carbon neutral activities) and an explanation of any significant changes that are not attributed to emissions reduction actions
- › disclosure of emissions sources excluded from the emissions boundary (especially from activities that stakeholders would expect to be included) and any plans to improve the consistency and completeness of the carbon account in the future
- › a summary of the emissions reduction activities undertaken in accordance with the emissions reduction strategy and the resulting quantity of emissions reduced (where this can be quantified)
- › records to prove that sufficient eligible offset units have been cancelled to offset the organisation's emissions (e.g. the name of the registry in which the units were cancelled and the project type and serial numbers of the relevant units).

The level of detail and explanation required in a public report must ensure the reader has a clear understanding of what has been done to achieve carbon neutrality in terms of determining the carbon account, the actions to reduce absolute emissions or emissions intensity over time and offsetting of remaining emissions.

The public report should be signed off by senior management (e.g. the appropriate business unit leader or chief executive officer) and must be published on the responsible entity's website.

The public report can be in the format of a Public Disclosure Summary (template is available from the Department's website at www.environment.gov.au/climate-change/government/carbon-neutral) or another document more suitable for communication with organisation stakeholders.

For organisations that are certified against the Organisation Standard through the Carbon Neutral Program (Section 3), the public report will be automatically published on the Department's website when certification has been granted.

2.7 AUDIT: Independent audit

A considered and transparent audit model provides confidence in carbon neutral reporting. Independent auditing validates the accuracy and completeness of carbon calculations, including the appropriateness of emissions boundaries, methodologies and factors.

Carbon account calculations, reductions and offsetting activities must be reported and independently audited on a regular basis. A carbon neutral claim under the Organisation Standard must be subject to an independent audit at least once every three years. The audit report should identify any issues or discrepancies in the carbon account measurement, public report, emissions reduction claims and/or offsetting arrangements against the requirements of the Organisation Standard. The independent auditor's report and/or assurance statement should be made publicly available.

The first audit (of the base year, Section 2.3.3) must include assessment of the adequacy and appropriateness of the emissions boundary setting, emissions methodologies and emission factors.

As appropriate to the carbon account, the auditor may need reasonable access to:

- › facilities, equipment and personnel required for the operations within the organisation's emissions boundary
- › records, including monitoring records, utility bills, test reports, failure reports, internal audit and management review records, customer complaints and statistics related to the activities within the emissions boundary
- › any additional reporting or information source used to develop the carbon account.

If the auditor identifies any Corrective Action Requests (CARs) and/or Observations in the course of the audit, they must provide these to the responsible entity. The responsible entity should be provided with the opportunity to resolve these prior to the closure of the audit activity. The auditor may wish to contact the Department to discuss any issues or interpretations concerning the Organisation Standard.

The responsible entity making a carbon neutral claim is responsible for maintaining appropriate records for auditing and bearing the associated costs.

Audit standards that should be applied are:

- › ASAE 3000 Assurance Engagements other than Audits or Reviews of Historical Financial Information; or
- › ISO 14064-3: Greenhouse gas specification with guidance for the validation and verification of greenhouse gas assertions.

If another auditing standard is to be applied, the auditor must confirm that it is as rigorous as those specified above.



The auditor must provide an assurance statement confirming whether the carbon account and other information relevant to the carbon neutral claim are presented fairly in accordance with the requirements of the Organisation Standard. The minimum level of assurance provided by the statement must be limited assurance for all scopes of emissions.

At the conclusion of the audit, the auditor must also provide the responsible entity with a list of any outstanding Corrective Action Requests and Observations. This can assist the responsible entity to improve its data gathering and management practices over time, and may also be published by the responsible entity alongside the auditor's report and/or assurance statement to provide further transparency to the carbon neutral claim.

An audit of a carbon neutral claim under the Organisation Standard must be undertaken by a suitably qualified auditor. Suitably qualified auditors are individuals or bodies that are:

- › included on the Register of Greenhouse and Energy Auditors, as established under section 75A of the *National Greenhouse and Energy Reporting Act 2007 (NGER Act)* and maintained by the Clean Energy Regulator; or
- › accredited to the international standard ISO 14065:2013 or recognised international standards based on ISO 14040.

Where specialist skills are required that are not possessed by the auditor, the necessary skills can be provided by an independent expert. Such experts must be independent and cannot have been involved in the development of the carbon account that is the subject of the audit.

The responsible entity must keep records that are adequate to enable the independent auditor to ascertain whether activities have been conducted in accordance with requirements under the Organisation Standard. This includes information that can be used to verify the relevance, completeness, consistency, transparency and accuracy of reported data during an external audit. Record keeping requirements are outlined in Section 0.

Records can be kept in electronic or paper form. Records should be stored in a format that is accessible to external auditors if required.



| 3. CERTIFICATION AGAINST THE ORGANISATION STANDARD

Carbon neutral certification against the Organisation Standard can be sought through the Australian Government's Carbon Neutral Program.

Certification may be granted by the Department upon:

- › the Department's approval of an *application* for carbon neutral certification against the requirements of the Organisation Standard (Section 3.1)
- › the responsible entity agreeing to the *obligations* for certification (Section 3.2) and the terms and conditions of the licence to use the certification trade mark, by entering into a licence agreement with the Department (Section 3.3).

The Department will make a decision on the certification of the organisation and will advise the responsible entity of the decision in writing. If certification is granted, the responsible entity will receive a notice of certification.

Details of the certification, including the public report, will be placed on the Department's website.

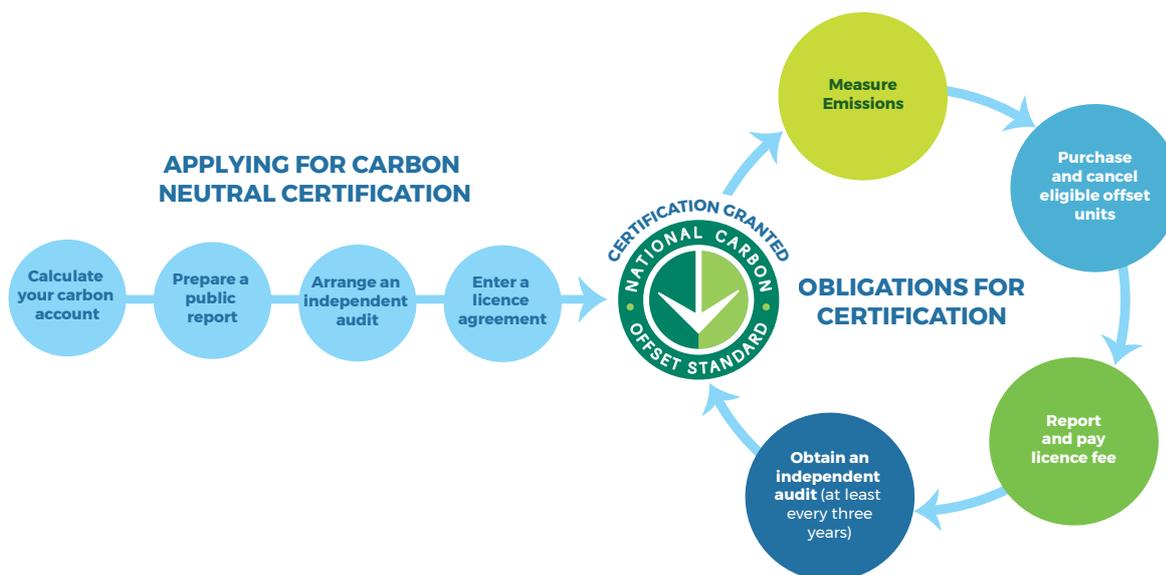


Figure 4: Applying for and maintaining carbon neutral certification

3.1 Application for certification

Responsible entities considering applying for carbon neutral certification should contact the Department (carbonneutral@environment.gov.au) early in the process to discuss the suitability of the Organisation Standard for their circumstances.

An application for carbon neutral certification must be made by contacting the Department. The Department will provide guidance on how to apply. An application must include:

1. a carbon account for the base year (Section 3.1.1)
2. a public report (Section 3.1.2)
3. an independent audit report of the above documents (Section 3.1.3).

Templates for the carbon account and public report (or Public Disclosure Summary) are available on the Department's website at www.environment.gov.au/climate-change/government/carbon-neutral. Other formats for the annual carbon account and public report can also be used.

If an application is unsuccessful, the Department will provide an explanation of the reasons why.

3.1.1 Carbon account for the base year

The responsible entity seeking carbon neutral certification must have all relevant data and must be able to calculate the organisation's carbon account for a full year before applying for carbon neutral certification. This is known as the base year.

The base year carbon account:

- › demonstrates an understanding of what must be included in the organisation's carbon account, and what data must be collected and reported annually to maintain certification
- › sets the timing of the annual reporting obligations (either on a financial or calendar year cycle) that will have to be met to maintain carbon neutral certification.

Either a financial or calendar year can be chosen as the base year, depending on which best suits the timing for carbon account data collection or aligns with business processes.

The requirements for establishing a base year and the process for calculating the carbon account are described in Section 2.3.3 and Section 2.3.5.

Appendix B Section 3.1 provides examples and templates for calculating a carbon account.

Optional certification of the base year

Arrangements can be made to certify the base year.

If an organisation seeks to backdate the timing of certification so that it is certified as having been carbon neutral during its base year, eligible offset units equivalent to the base year emissions must be cancelled before certification is granted.

Please contact the Department to discuss arrangements for base year certification before preparing your application.

3.1.2 Public report

Transparency of information is important for maintaining consumer confidence in carbon neutral claims. An organisation seeking certification through the Carbon Neutral Program must prepare a public report as described in Section 2.6 as part of the application for carbon neutral certification and on an annual basis thereafter.

3.1.3 Independent audit

An organisation applying for carbon neutral certification must have its carbon account (base year) and public report independently audited, as per audit requirements in Section 2.7.

The independent audit must be arranged and paid for by the responsible entity. The responsible entity must submit the audit report and/or assurance statement, plus the list of any outstanding Corrective Action Requests and Observations, to the Department as part of the application. The Department may request clarification or further information from the independent auditor to assist with the assessment of the application.

3.2 Obligations

3.2.1 Agreement with obligations

The Department will only grant certification after the responsible entity has agreed to the obligations for certification, as contained in the licence agreement (Section 3.3.1). The licence agreement also specifies the annual reporting periods, the licence fees and the dates by which these obligations are due.

Once executed, the licence agreement legally binds the responsible entity to the obligations for certification for the agreed duration of the certification (Section 3.3.1).

3.2.2 Obligations for certification

The Organisation Standard requires measuring, reducing, offsetting and reporting of emissions to be conducted annually, and independent auditing every three years (Section 2). Maintaining certification against the Organisation Standard is based on this cycle.

Obligations for certification include:

1. Submission of an annual carbon account

The carbon account must include:

- a detailed inventory of the emissions generated from the certified organisation (as per Section 2.3) during the reporting period
- any changes to the carbon account calculation compared to the previous year
- assumptions or limitations relating to how the carbon account has been calculated
- details of any activities leading to emissions reductions achieved or commenced during the reporting period.

2. Submission and publication of an annual public report

In addition to the requirements of Section 2.6, the annual public report must include:

- a summary of how the carbon neutral certification has been marketed and communicated, including the use of the certification trade mark.



3. *Payment of the licence fee*

The licence fee must be paid at the start of each reporting year.

Information on fees is available on the Department's website at www.environment.gov.au/climate-change/government/carbon-neutral.

4. *Independent auditing of the carbon account and public report*

The auditing must be undertaken at a minimum of every three years (as per Section 2.7 and Section 3.1.3).

The Department may require the entity responsible for a certified carbon neutral organisation to complete an audit in an interim year if circumstances have changed significantly. Examples of significant change include changes in emissions boundary due to construction work, changes in calculation methodologies or improvements in the accuracy of emission factors or activity data that lead to an impact on the base year emissions data.

Templates for the annual carbon account and public report (or Public Disclosure Summary) are available on the Department's website at www.environment.gov.au/climate-change/government/carbon-neutral. Other formats can also be used.

3.2.3 Annual review and granting of continuing certification

The Department reviews and monitors the obligations for certification (Section 3.2.2) and evaluates whether the requirements of the Organisation Standard have been met by the responsible entity.

A notice of continuing certification is issued by the Department when the responsible entity's annual obligations for certification have been met.

Certification and trade mark use may be suspended or terminated by the Department if the obligations for certification are not met. There will be an opportunity to rectify any issues before such action is taken.

3.3 Licence to use the certification trade mark

3.3.1 Licence agreement

The licence agreement is an agreement between the responsible entity and the Department that stipulates the obligations for certification and the terms and conditions for the use of the certification trade mark.

The licence agreement legally binds the responsible entity to the agreed terms for the timeframe specified in the agreement and provides the responsible entity with a licence to use the certification trade mark subject to achieving and maintaining certification.

To be granted certification and licence to use the certification trade mark, the responsible entity must execute the licence agreement.

A copy of the licence agreement can be requested from the Department at any time.

3.3.2 Permission to use the certification trade mark

If certification is granted, the responsible entity will be sent a notice of certification by the Department.

Once the notice of certification has been issued, the carbon neutral certification and permission to use the certification trade mark are valid continually for the time specified in the licence agreement, subject to all obligations being met (Section 3.2.2).

As per Section 3.2.3, a notice of continuing certification will be issued by the Department when the responsible entity's annual obligations for certification have been met.

The licence to use the certification trade mark usually covers a five-year period. If the entity responsible for an organisation wishes to continue using the certification trade mark after the end of the period specified in the licence agreement, it must agree to a new licence with the Department.

Use of the certification trade mark must be in accordance with the User Guide for the Carbon Neutral Certification Trade Mark (User Guide). The User Guide has been approved by the Australian Competition and Consumer Commission. Use of the certification trade mark in accordance with the User Guide minimises risks of challenges in relation to the carbon neutral claim.

The User Guide can be found at www.environment.gov.au/climate-change/government/carbon-neutral.

Digital versions of the certification trade mark are provided by the Department to the responsible entity upon issuance of the notice of certification.

3.4 Other administrative arrangements

3.4.1 Timing of offset unit cancellation

The responsible entity seeking carbon neutral certification is not required to proceed with the purchase and cancellation of eligible offset units until after the application has been accepted by the Department and the licence agreement has been executed.

Timing of eligible offset unit cancellation depends on the approach chosen (either in arrears or up-front).

Offsets cancellation (in arrears)

An organisation offsetting in arrears must cancel eligible offset units for the reporting year that has just finished, starting with the first year of certification.

Details of the cancelled eligible offset units must be included in the annual public report submitted to the Department at a time specified in the licence agreement (usually within four months of the end of the reporting period) (Section 2.6).

Offsets cancellation (upfront and true-up)

Upfront offsetting requires a sufficient quantity of eligible offset units to be purchased and cancelled to offset the total emissions expected to be associated with the certified organisation for the coming reporting year. A true-up is then performed at the end of the reporting year to ensure that a sufficient quantity of units has been cancelled. Guidance on how to record the details of upfront offsetting in the public report is available on the Department's website at www.environment.gov.au/climate-change/government/carbon-neutral.



3.4.2 Review of decisions

If the responsible entity disagrees with a decision of the Department (either in relation to a certification decision or the granting and use of the certification trade mark), it may request an internal review of the decision.

See the Department's service charter for details on the internal review processes. The charter can be found at www.environment.gov.au.

If the responsible entity is dissatisfied with the way in which the Department handles a complaint, it may wish to complain to the Commonwealth Ombudsman. The Ombudsman will usually decline to investigate a complaint unless the matter has been raised directly with the Department first. Details of how to make a complaint to the Commonwealth Ombudsman can be found at www.ombudsman.gov.au.

3.4.3 Confidentiality

Information that is provided to the Department that is confidential will not be disclosed to any third party without the responsible entity's permission, except under limited circumstances that are required for the administration of the Carbon Neutral Program and set out in the licence agreement, or if required by law. This does not apply to the public reports, which are public documents.

Information is regarded as confidential if it is information that:

- › is inherently confidential and not in the public domain: and
- › the responsible entity notifies the Department is to be treated in confidence: and
- › is not in the possession or knowledge of the Department independently of its disclosure by the responsible entity.

Confidentiality conditions are detailed further in the licence agreement. If there are any concerns about disclosure of confidential information, please discuss this with the Department.

4. REFERENCES

4.1 References that form the basis of the Organisation Standard

The following existing Australian and international standards and Australian legislation provide the basis for the Organisation Standard. These documents also provide further detailed information on how to develop a carbon account. For all references see Section 4.2.

- › Australian Standard (AS) ISO 14064 series, including:
 - *AS ISO 14064.1:2006 – Greenhouse gases Part 1: Specification with guidance at the organisation level for the quantification and reporting of greenhouse gas emissions and removals*
 - *AS ISO 14064.2:2006 – Greenhouse gases Part 2: Specification with guidance at the project level for quantification and reporting of greenhouse gas emission reductions and removal enhancements*
 - *AS ISO 14064.3:2006 – Greenhouse gases Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions*
- › International Standard ISO 14040 series, including:
 - *ISO 14040:2006 – Environmental management – Life cycle assessment – Principles and frameworks*
 - *ISO 14044:2006 – Environmental management – Life cycle assessment – Requirements and guidelines*
 - Other international standards that are based on the ISO 14040 series, including *PAS 2050:2011 – Specification for the assessment of the life cycle greenhouse gas emissions of goods and services*
- › *ISO 14065:2013 – Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation of other forms of recognition*
- › The British Standards Institution's (BSI) Specifications, including:
 - *BSI's PAS 2060:2014 – Specification for the demonstration of carbon neutrality*
- › The Greenhouse Gas (GHG) Protocol standards, including:
 - *GHG Protocol – A Corporate Accounting and Reporting Standard (2004)*
 - *The GHG Protocol for Project Accounting (2005)*
 - *GHG Protocol – Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011)*
 - *GHG Protocol – Product Life Cycle Accounting and Reporting Standard (2011)*
 - *GHG Protocol – Scope 2 Guidance (2015)*
- › The *National Greenhouse and Energy Reporting Act 2007* (NGER Act) and supporting legislation and documentation, including:
 - *National Greenhouse and Energy Reporting Regulations 2008*
 - *National Greenhouse and Energy Reporting (Measurement) Determination 2008*
 - *National Greenhouse and Energy Reporting (Audit) Determination 2009*
 - *National Greenhouse and Energy Reporting Technical Guidelines*
 - *National Greenhouse Accounts Factors*

All standards and legislation are subject to revision. Responsible entities must use the most recent version or editions of any listed standards, guidance material or legislation.

4.2 All references

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| 5. GLOSSARY

Activity data

Source data that quantifies an emissions-generating activity, such as fuel usage and electricity consumption, and that can be used to determine greenhouse gas emissions.

Additionality

A requirement that a project or activity results in carbon abatement that is unlikely to occur in the ordinary course of events in the absence of the project or activity, including due to any existing commitment or target publicly agreed by the entity responsible for issuing the units. Abatement must not be double counted under another system.

Australian Carbon Credit Unit (ACCU)

An emissions unit issued under the *Carbon Credits (Carbon Farming Initiative) Act 2011*.

Base year

The reference year (calendar, financial or other) from which changes in emissions can be tracked over time. This is usually a year's worth of emissions data that is audited before certification is granted.

Cancellation

Transfer of a unit to a cancellation account so that it may not be used for any further purpose. Also known in some schemes as 'retirement'.

Carbon account

A measure of the carbon dioxide equivalent emissions attributable to an activity. A carbon account can relate to the emissions of an individual, household, organisation, product, service, event, building or precinct. This can also be known as a carbon footprint or emissions inventory.

Carbon dioxide equivalence (CO₂-e)

A standard measure that takes account of the global warming potential of different greenhouse gases and expresses the effect in a common unit.

Carbon neutral

A situation where the net emissions associated with an activity are equal to zero because emissions have been reduced and offset units cancelled to fully account for all emissions.

Carbon Neutral Certification Trade Mark (certification trade mark)

The National Carbon Offset Standard Certification Trade Mark. IP Australia Reference Number 1369520.

Carbon Neutral Program (or the Australian Government's Carbon Neutral Program)

The program by which an organisation, product & service, building, precinct or event can be certified as carbon neutral against the National Carbon Offset Standards.

Carbon sink

A natural or man-made reservoir, such as a forest, that stores carbon.

Certification trade mark

see Carbon Neutral Certification Trade Mark.

Certified Emission Reduction (CER)

A Kyoto Protocol unit corresponding to one metric tonne of carbon dioxide equivalent emissions, and issued for verified emissions reductions or removals achieved by a project approved under the Clean Development Mechanism (CDM). CDM projects undertaking afforestation and reforestation activities are issued temporary (tCERs) and long-term units (ICERs), which expire and must be replaced after a specified period.

City

Any geographically discernible subnational entity, with a local government, such as a community, town, city or province, and covers all levels of subnational jurisdiction as well as local government as legal entities of public administration.

Clean Development Mechanism (CDM)

A carbon offset mechanism established under Article 12 of the Kyoto Protocol. Countries with emissions targets under the Kyoto Protocol can meet their obligations using credits from greenhouse gas abatement projects established under Article 12 in countries that are party to the Protocol but do not have an emission target.

Decoupled GreenPower provider

A decoupled provider does not retail grid electricity to customers. Instead, a decoupled provider ensures the equivalent amount of GreenPower is added to the grid on the customer's behalf through the purchase and surrender of GreenPower-eligible LGCs.

Department (the)

Australian Government Department of the Environment and Energy.

Eligible offset unit

An offset unit that has been deemed to meet the National Carbon Offset Standard's offsets integrity principles, and is listed in Appendix A to this standard.

Emission factor

A factor that specifies the kilograms of CO₂-e emissions per unit of activity.

Emissions abatement or carbon abatement

Either the removal of one or more greenhouse gases from the atmosphere or the avoidance of emissions of one or more greenhouse gases.

Equity share

One of the approaches described in the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004) for setting an organisational boundary. See Section 2.3.1 for further details.

Event

A planned and organised occasion.

Facility

(a) For any organisation already reporting under the NGER Act, an activity or a series of activities (including ancillary activities) that involves the production of greenhouse gas emissions, the production of energy or the consumption of energy, and that forms a single undertaking or enterprise and meets the requirements of the *National Greenhouse and Energy Reporting (NGER) Regulations*.

(b) For any organisation not currently reporting under the NGER Act, any building or land together with any machinery, plant, appliance, equipment, implement, tool or other item used in connection with any activity carried out at the facility, and includes an offshore facility. The facility may be located on a single site or on adjacent or contiguous sites owned or operated by the same person.

Financial control

One of the control approaches described in the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004) for setting an organisational boundary. See Section 2.3.1 for further details.

Greenhouse gases (GHG)

The atmospheric gases responsible for causing global warming and climate change. The Kyoto Protocol lists six greenhouse gases – carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆) – with the addition of nitrogen trifluoride (NF₃) from the beginning of the protocol's second commitment period.

GreenPower-eligible LGC

An LGC produced by a GreenPower-accredited generator and sold through a GreenPower product.

GreenPower product

Any product or service that enables customers to voluntarily contribute financially to renewable energy generation from GreenPower Generators, and has been accredited under the National GreenPower Accreditation Program.



GreenPower provider

An electricity supplier or decoupled provider offering an accredited GreenPower product.

Input-output analysis

A method of estimating carbon emissions using aggregate economic and emissions data which are categorised into different industry sectors. The analysis takes into account the economic flows between these sectors, and is usually presented in input-out tables (or databases) as an emissions intensity per dollar of economic activity (or business spending) in any given industry sector.

Kyoto Protocol

An international treaty that was created under the United Nations Framework Convention on Climate Change (UNFCCC) in 1997 and entered into force in 2005. The Kyoto Protocol sets binding targets for the reduction of greenhouse gas emissions by developed countries and countries in transition.

Kyoto unit

Emissions units created under the Kyoto Protocol. Kyoto units include Assigned Amount Units (AAUs), Certified Emission Reductions (CERs, including tCERs and ICERs), Emission Reduction Units (ERUs) and Removal Units (RMUs).

Licence agreement

An agreement in place between the responsible entity and the Department which contains terms and conditions for the use of the certification trade mark. The responsible entity must agree to and comply with the obligations and rules contained in the licence agreement in order to use the certification trade mark.

Life cycle assessment (LCA)

The compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its production, use, transport and disposal (the product's 'life cycle').

Limited assurance

A level of assurance defined in the *National Greenhouse and Energy Reporting (Audit) Determination 2009* whereby the auditor finds that there is no evidence to suggest that a report is not accurate. This is a lower level of assurance than 'reasonable assurance'. It is distinguishable from a reasonable level assurance in that there is less emphasis on detailed testing of greenhouse gas data and information supplied to support the greenhouse gas assertion.

Material

The status of an emissions source when it constitutes 1 per cent or more of the total carbon account. Refer to Section 2.3.1 for further details.

Material discrepancy

An error (e.g. from an oversight, omission or miscalculation) that results in the reported quantity being significantly different to the true value to an extent that will influence performance or decisions. This definition is taken from the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004).

Materiality

See Material.

National Carbon Offset Standard

A standard for making carbon neutral claims; maintained by Australian Government Department of the Environment and Energy; sets rules for measuring, reducing, offsetting and reporting emissions. The standard is available for

- › Organisations: *National Carbon Offset Standard for Organisations*
- › Products and Services: *National Carbon Offset Standard for Products & Services*
- › Buildings: *National Carbon Offset Standard for Buildings*
- › Precincts: *National Carbon Offset Standard for Precincts*
- › Events: *National Carbon Offset Standard for Events*

National Carbon Offset Standard for Organisations (Organisation Standard)

A standard for making carbon neutral claims for organisation operations. The Organisation Standard is maintained by the Australian Government Department of the Environment and Energy. It sets the rules for measuring, reducing, offsetting and reporting emissions as required to make a carbon neutral claim for an organisation.

National Greenhouse and Energy Reporting (NGER) Scheme

The national reporting framework for information related to greenhouse gas emissions, energy production and use by corporations operating in Australia. The framework is established under Commonwealth legislation, which makes registration and reporting mandatory for corporations whose greenhouse gas emissions or energy production or use meet certain thresholds.

NGER Act

National Greenhouse and Energy Reporting Act 2007.

Notice of Certification

A formal letter of acknowledgement from the Department to the responsible entity informing it that its application for certification through the Carbon Neutral Program has been successful.

Notice of Continuing Certification

A formal letter of acknowledgement from the Department to the responsible entity informing it that its annual obligations for certification through the Carbon Neutral Program have been met.

Offsetting

The activity of cancelling offset units.

Offset unit

Represents reductions of greenhouse gases or removals of greenhouse gases from the atmosphere by sinks, relative to a business-as-usual baseline. Offset units are tradeable and can be used to negate (or offset) all or part of another entity's emissions.

Operational control

A company has operational control over an operation if it or one of its subsidiaries has the full authority to introduce and implement its operating policies at the operation. See Section 2.3.1 for further details.

Organisation

A company, corporation, firm, enterprise, authority or institution, or a combination thereof, incorporated or not, public or private, that has its own functions and administration. This may also include an organisation that shares functions and/or administration with another organisation.

Organisation boundary

The line between what can be considered direct and indirect emissions associated with an organisation's activities. See Section 3.2.1 for further details.

Organisation Standard

see *National Carbon Offset Standard for Organisations*.

Permanence

A requirement that offset units represent reductions in emissions or an increase in carbon sequestration that is permanently maintained and is not re-released into the atmosphere.

Precinct

A precinct or district is a discernible area 'more than a building and less than a city' and is primarily defined by its geographic boundaries, which, at a minimum, must incorporate public infrastructure beyond a single building.

Product

Physical goods produced for sale.

Reasonable assurance

A level of assurance defined in the *National Greenhouse and Energy Reporting (Audit) Determination 2009* that the report is accurate in all material respects. The auditor provides a high, but not absolute, level of assurance that the responsible party's greenhouse gas assertion is materially correct.



Relevance

Concept adapted from the This definition is taken from the *GHG Protocol – Corporate Standard* (WBCSD and WRI, 2004) for ensuring the carbon account of a subject appropriately reflects the emissions of that subject and meets the expectations of users and stakeholders. See Section 2.3.1 for further details.

Relevance test

Qualitative test for determining whether certain emissions sources are or are not considered relevant. See Section 2.3.1 for further details.

Removal Unit (RMU)

A unit created under the Kyoto Protocol corresponding to one metric tonne of carbon dioxide equivalent emissions sequestered and issued for removals of carbon dioxide from the atmosphere by eligible land use, land-use change and forestry activities.

Responsible entity

The organisation or person (with appropriate delegation to sign on behalf of the organisation) that has taken responsibility for making a carbon neutral claim or seeking carbon neutral certification.

Scope

The categorising of emissions sources into direct and indirect sources. See individual definitions for scope 1 emissions, scope 2 emissions and scope 3 emissions. Further details in Section 2.3.2.

Scope 1 emissions

The release of greenhouse gases into the atmosphere as a direct result of activities occurring within a responsible entity's control (or geographic boundary).

Scope 2 emissions

The release of greenhouse gases into the atmosphere from the consumption of electricity, heating, cooling or steam that is generated outside of a responsible entity's control (or geographic boundary).

Scope 3 emissions

Greenhouse gases emitted as a consequence of a responsible entity's activities but emitted outside the responsible entity's control (or geographic boundary).

Sequestration

The removal of atmospheric carbon dioxide, either through biological processes (e.g. photosynthesis in plants and trees) or geological processes (e.g. storage of carbon dioxide in underground reservoirs).

Service

A type of economic activity that is intangible, is not stored and does not result in ownership.

Sink

See definition for carbon sink.

Sustainable Development Goals

Refers to the 17 goals that form part of the United Nations' 2030 Agenda for Sustainable Development.

User Guide for the Carbon Neutral Certification Trade Mark (User Guide)

Sets out the rules that govern how and when the certification trade mark can be used.

Verified Carbon Unit (VCU)

A unit corresponding to one metric tonne of carbon dioxide equivalent emissions reduced or avoided, as certified and issued under the Verified Carbon Standard.

Verified Emissions Reduction (VER)

A unit corresponding to one metric tonne of carbon dioxide equivalent emissions reduced or avoided, as certified and issued under the Gold Standard, a global standard for projects that deliver carbon abatement and other social and environmental benefits.

Vintage

Refers to the date of issuance of an offset unit.

APPENDIX A: ELIGIBLE OFFSET UNITS

Eligible offset units

As of 1 November 2018, all units must have a vintage year later than 2012.

The following offset units are eligible under the National Carbon Offset Standard:

- › Australian Carbon Credit Units (ACCU) issued by the Clean Energy Regulator in accordance with the framework established by the *Carbon Credits (Carbon Farming Initiative) Act 2011*.
- › Certified Emissions Reductions (CERs) issued as per the rules of the Kyoto Protocol from Clean Development Mechanism projects, with the exception of:
 - long-term (ICERs) and temporary (tCERs); and
 - CERs from nuclear projects, the destruction of trifluoromethane, the destruction of nitrous oxide from adipic acid plants or from large-scale hydro-electric projects not consistent with criteria adopted by the EU (based on the World Commission on Dams guidelines).
- › Removal Units (RMUs) issued by a Kyoto Protocol country on the basis of land use, land-use change and forestry activities under Article 3.3 or Article 3.4 of the Kyoto Protocol.
- › Verified Emissions Reductions (VERs) issued by the Gold Standard.
 - Abatement recognised by the Gold Standard may be subject to the possibility of double counting; for example, where the abatement occurs in a host country or region that is affected by international or national emissions trading, cap and trade or carbon tax mechanisms. Please see the Gold Standard's Double Counting Guideline for full details.
 - Where the additionality of a VER is ensured through the cancellation of an Eligible Cancellation Unit (as defined by the Gold Standard), that VER is only eligible for use under the National Carbon Offset Standard where the applicable Eligible Cancellation Unit would also have been eligible under the National Carbon Offset Standard.
- › Verified Carbon Units (VCUs) issued by the Verified Carbon Standard.

This list of eligible offset units will be updated as new information or new offset units become available. This may result in the addition of new offset units or the removal of existing ones.

A decision framework based on the offset integrity principles (Section 1.3.1) is used to determine the eligibility of new offset units and to review the eligibility of existing units.



APPENDIX B: CARBON ACCOUNTING REQUIREMENTS AND GUIDANCE

This document (Appendix B) provides information on common emissions sources and the treatment of renewable energy use when preparing a carbon account under one of the categories of the National Carbon Offset Standard.

The National Carbon Offset Standard is available for organisations, products & services, buildings, precincts and events:

- › *National Carbon Offset Standard for Organisations*
- › *National Carbon Offset Standard for Products & Services*
- › *National Carbon Offset Standard for Buildings*
- › *National Carbon Offset Standard for Precincts*
- › *National Carbon Offset Standard for Events.*

Appendix B should be read in conjunction with the category of the National Carbon Offset Standard relevant to the carbon neutral claim being made.

References in this appendix to sections, made in the form 'Section XY', mean the sections in any category of the National Carbon Offset Standard. References in this appendix to other sections within the appendix itself are made in the form 'Appendix B: Section XY'.

The information contained in this appendix is not intended to be a comprehensive guide and may be more relevant to particular categories of the National Carbon Offset Standard than others. Some additional guidance on scope 3 emissions sources and emission factors is available in Guidance on Scope 3 Calculations at www.environment.gov.au/climate-change/government/carbon-neutral.

Some of the information in this document is likely to change over time as practices evolve and improved estimation techniques become available. The Department will use its best endeavour to update the information.

For more information, please refer to the carbon neutral website at www.environment.gov.au/climate-change/government/carbon-neutral or contact the Department:

- › via email to carbonneutral@environment.gov.au; or
- › phone 1800 057 590 and ask to talk to the Carbon Neutral Team.

1. Calculations for typical emissions sources

1.1. Transport

Transport vehicles and mobile equipment or machinery generate greenhouse gas emissions either directly by combusting fuel or indirectly by consuming grid-delivered electricity.

This section has been written with reference to the *Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories* (WRI and ICLEI, 2014).

1.1.1. Emissions sources

The relevance and completeness principles (Section 1.3.1) apply to the identification of the transport activities falling within the emissions boundary.

Any mode of transport may be relevant. Different modes of transportation link back to specific sources of emissions, mostly fuels and grid-distributed electricity (for public transport). Modes of transport may include:

- › *on-road transportation*: fuel- and electricity-powered automobiles (e.g. cars, trucks, taxis, buses)
- › *railway*: trams, urban railway subway systems, regional (inter-city) commuter rail transport, national rail system
- › *marine navigation*: domestic inter-city vessels, international water-borne vessels, sightseeing ferries
- › *air travel*: domestic inter-city flights, international flights, helicopters
- › *off-road transportation*: airport ground support equipment, agricultural tractors, forklifts.

Emissions by scope

Under the control approach:

Scope 1 emissions arise from the consumption of transport fuels in vehicles and machinery directly controlled by the responsible entity or affiliated entities.

Scope 2 emissions arise from the use of electricity from the grid for vehicles and machinery either directly controlled by the responsible entity or directly operating within the geographic boundary of the certification category (where applicable).

When a transport service or activity is outsourced to, purchased from or leased from a third party then it falls under scope 3 emissions.

Under the geographic boundary approach (buildings and precincts):

Scope 1 emissions arise from the combustion of transport fuels in vehicles and machinery occurring within the geographic boundary of the certification category.

Scope 2 emissions arise from the use of electricity from the grid for vehicles and machinery operating within the geographic boundary of the certification category.

Scope 3 emissions arise from either the combustion of transport fuels or the use of electricity from the grid for vehicles and machinery operating outside the geographic boundary of the certification category but are induced by activities within the geographic boundary.



For geographic boundaries, the induced activity method as outlined in the *Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories* (WRI and ICLEI, 2014) may be used. To reflect the responsibility shared by different geographic areas inducing these trips, and to avoid double counting of transportation emissions, responsible entities can allocate emissions by reporting 50 per cent of transboundary trips and excluding pass-through trips.

Upstream scope 3 emissions:

Scope 1 and scope 2 emissions will also have an additional component of upstream scope 3 emissions, which are the indirect emissions from the extraction, production and transport of fuel burned at generation, and the indirect emissions attributable to the electricity lost in delivery in the transmission and distribution network.

Upstream scope 3 emissions are required to be included when calculating emissions for scope 1 and scope 2.

Examples of transport activities

These examples are provided to illustrate potential transport activities that should be included. They are not intended to be exhaustive.

For an organisation, examples of transport activities include:

- › fleet operation (scope 1 or scope 2 and scope 3), including the reimbursement of private vehicle use to employees
- › transport of goods and products manufactured by the organisation (scope 1 or 2 or 3)
- › transport service purchased from a third party: flights, taxi and train trips (scope 3)
- › employee commuting (scope 3).

For a product or service, examples of transport activities include:

- › fleet operation (scope 1 and/or 3) for the distribution of product or supply of materials
- › transport service purchased from a third party: freight (scope 3).

For a precinct, examples of transport activities include:

- › intra-precinct public transport (scope 1 or 2 and 2 and 3)
- › transport induced by precinct maintenance or management activities (scope 1 and 2, or possibly 3)
- › transport generated by the activities of the tenants/occupants of the precinct (scope 3)
- › transport from the portion of transboundary journeys occurring outside the precinct (scope 3). See *Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories* (WRI and ICLEI, 2014) for examples of the types of typical transboundary journeys.

For a building, examples of transport activities include:

- › transport induced by building maintenance or management activities (scope 1 or 2, and 3)
- › transport generated by the activities of the tenants/occupants of the building (scope 3).

For an event, examples of transport activities include:

- › fleet operation (scope 1 and 2), including the reimbursement of private vehicle use to employees
- › public transport to event, arranged by event organisers (scope 1 and 2)
- › intra-event public transport (scope 1 and 2)
- › employee and attendee transport to event: car, train, taxi and flight trips (scope 3).

1.1.2. Collecting activity data

Information and data collection will depend on the type of transport activity considered for inclusion and the mode of transport.

- › For scope 1 and scope 2 emissions, it is usually possible to collect data on the units of energy (amount and type of fuel or electricity) consumed by the transport activities directly controlled.
- › For scope 3 emissions, while the exact units of energy are not known, it is usually possible to estimate emissions from the distances and the mode of transport, or the split between modes of transport for an activity. It may also be possible to ask for a report from the service provider.
 - For example, when assessing commuting in a metropolitan city, an estimation of the proportion of people commuting by train, road or active transport (walking or cycling) can be obtained through specific surveys or derived from existing surveys.

In looking for appropriate data for transport such as commuting or freight or material transport, the order of preference is as follows:

1. specific (measured) data, such as fuel consumption, can be obtained through direct reporting or staff or site surveys.
2. national/state statistics
3. research papers.

Available data for travel and transport includes the following:

- › The EPA Victoria provides a calculator aimed at households, but valid Australia-wide, which contains a section on public transport. <http://www.epa.vic.gov.au/agc/home.html>
- › The EPA Victoria report provides estimates of commuters' travel mode and travel distance in metropolitan areas. http://economicdevelopment.vic.gov.au/__data/assets/pdf_file/0003/1269291/VISTA-2013-Travel-in-metropolitan-Melbourne.PDF
- › Sydney Trains provides a carbon calculator for specific trips. <http://www.sydneytrains.info/about/environment/index.htm>
- › The NSW Bureau of Transport Statistics provides information based on surveys on the modes of travel and frequency of travel in NSW. <https://www.transport.nsw.gov.au/performance-and-analytics/passenger-travel/surveys/household-travel-survey>
- › The SA Department of Environment, Water and Natural Resources provides transport GHG emissions for Adelaide Transport Carbon Emissions – Projections as well as current data (pp. 23, 31, 34). https://www.adelaidecitycouncil.com/assets/FINAL_REPORT_-_CARBON_NEUTRAL_ADELAIDE_-_FOUNDATION_REPORT_-_27_November_2015.pdf
- › Aurizon (Australia's largest rail freight operator) provides an emissions calculator for long-distance freight. <http://www.aurizon.com.au/sustainability/environmental-management#carbon-tool>
- › The Climate Change Authority provides data on emissions intensity by mode of transport, currently and projected over time. <http://climatechangeauthority.gov.au/reviews/light-vehicle-emissions-standards-australia/opportunities-reduce-light-vehicle-emissions>
- › Qantas provides a calculator for calculating emissions between different Qantas-operated or codeshare flight routes. <https://www.qantasfutureplanet.com.au/>

Note that in some cases (e.g. air travel) the transport service provider is able to provide a carbon neutral certified service or a calculation of emissions related to a specific trip (through a calculator). If such a carbon neutral service is certified against one of the categories of the National Carbon Offset Standard, then the emissions for the trip can be directly considered as zero emissions (see Section 2.3.5). For emissions calculators, the methodology must be transparent and able to be interrogated during the course of the independent audit (with the exception of calculators for transport services already certified against a category of the National Carbon Offset Standard).



1.1.3. Emission factors

For scope 1 and scope 2 emissions, the fuel's emission factors can be directly sourced from the latest *National Greenhouse Accounts (NGA) Factors* (Department of the Environment and Energy, 2017).

For scope 3 emissions, the quantity of fuel consumed may not be known. It is possible to convert transport activity (e.g. distance travelled or tonne-km or passenger-km) to a quantity of fuel, from which the NGA Factors can then be applied. Emission factors for different modes of travel can also be used.

Note that wherever possible, the 'full fuel cycle' emission factors should be used. 'Full fuel cycle' emission factors incorporate the extraction, production and transportation of the transport fuel that are added to the total emissions from the combustion process. Refer to the table in the NGA Factors document for 'Scope 3 emission factors – liquid fuels and certain petroleum based products'.

When fuel quantity data is not available, generic emission factors exist based on distance travelled and vehicle type. The emission factors come from the UK Government's Department for Business, Energy & Industrial Strategy (Department for Business Energy & Industrial Strategy, 2017) which covers the following modes of travel:

- › passenger vehicles
- › business travel – air
- › business travel – sea
- › freighting goods
- › managed assets – vehicles.

1.1.4. Emissions calculation

When the quantities of fuel (or electricity) used in transport vehicles are collected to account for scope 1 or 2 emissions, a direct emissions calculation can be done using the relevant NGA emission factor:

$$\text{Fuel quantity (kL/yr)} \times \text{emission factor for relevant fuel (tonne CO}_2\text{-e/kL)}$$

In cases where various modes of transport can be used, the ASIF (Activity, mode Share, Intensity, Fuel factor) framework (Figure 4) can be used. See *Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories* (WRI and ICLEI, 2014).

This bottom-up approach must begin with detailed activity data in order to develop a carbon account for transport. It can be simplified, in particular by sourcing emission factors that are a mix of energy intensity for the mode of transport considered and fuel factor.

The ASIF framework for determining total emissions is as follows:

$$\text{Emissions} = \text{Activity} \times \text{Mode Share} \times \text{Intensity} \times \text{Fuel}$$



Where:

- › *Activity (A)* is measured as VKT (vehicle kilometres travelled), which reflects the number and length of trips.
- › *Mode Share (S)* describes the proportion of trips taken by different transport modes (e.g. public transport, private car) and vehicle types (e.g. car, bus, truck, motorcycle). As mentioned above, the Mode Share for an activity can be measured directly, estimated through surveys undertaken directly for that purpose or estimated by reference to secondary sources (surveys undertaken for other purposes but publicly available).
- › *Energy Intensity (I)* is the energy consumed per VKT. This is a function of vehicle type, characteristics (e.g. the occupancy or load factor, represented as passenger-kilometres or tonnes-kilometres) and driving conditions.
- › *Fuel factor (F)* is the carbon content of the fuel, and is based on the composition of the fuel stock.

Figure 5 was adapted from Figure 7.1 in the *Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories* (WRI and ICLEI, 2014) and shows how on-road transport emissions should be calculated under the standard for all categories.

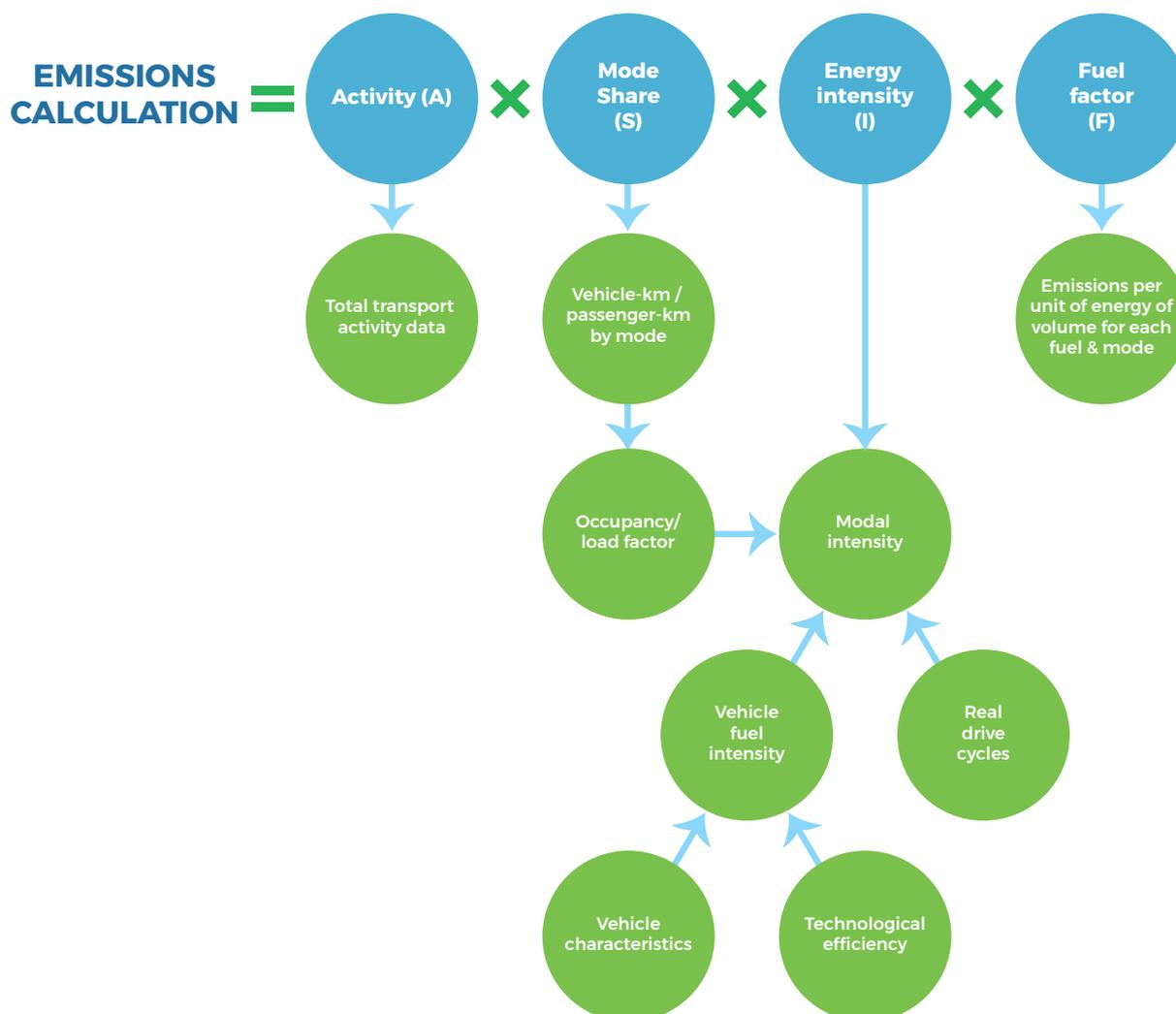


Figure 5. ASIF framework showing data and calculations to determine transport emissions



1.1.5. Worked example

To estimate transport emissions from staff travel to work (scope 3) in a precinct (one specific site, 1,000 employees), company ABC organised a simple staff survey, asking staff to provide their usual mode of transport from home to work (active/car/train) and the estimated number of kilometres travelled (one way).

The staff commute is a transboundary trip, where the trip originates outside the precinct and terminates in the precinct. The portion of the trip that occurs within the precinct boundary is 70 per cent, while the portion that occurs outside the precinct boundary is 30 per cent. The induced activity method is used and the precinct reports 50 per cent of transboundary trips.

Combined with the number of employees, this provided input for the Activity (A) and Mode Share (S) in the diagram above.

The results were as follows:

- › 75 per cent of employees used the train, with a one-way trip averaging 25 km
- › 15 per cent of employees travelled by car, with a one-way trip averaging 40 km
- › 10 per cent of employees walked or cycled (average trip irrelevant)

Assuming all the trips were for a Melbourne site, the GHG calculations are as follows (for a year):

Assumptions:

- › 1,000 employees
- › Metropolitan train transport emission factor: 0.150 kg CO₂-e per passenger-km (EPA Victoria)
- › Car transport emission factor: 0.210 kg CO₂-e per km for a medium car (EPA Victoria)
- › No car sharing takes place
- › No emissions for active transport
- › 45 weeks and 5 days a week work period (excluding holidays, professional trips interstate, sick leave, etc.)

Calculations:

- › Number of days per employee per year: $45 \times 5 = 225$
- › Number of commuting trips overall per year: $1,000 \times 225 \times 2 = 450,000$
- › Emissions from train commuting: $75\% \times 450,000$ (trip number) $\times 25$ (km) $\times 0.150$ (emission factor)/1,000 (conversion into tonnes) = 1,266 tonnes
- › Emissions from car commuting: $15\% \times 450,000$ (trip number) $\times 40$ (km) $\times 0.210$ (emission factor)/1,000 (conversion into tonnes) = 567 tonnes
- › Overall commuting emissions = 1,833 tonnes CO₂-e per year
- › Commuting emissions induced by the precinct = 1,833 tonnes CO₂-e per year $\times 50\% = 916$ tonnes CO₂-e per year
- › Scope 1 emissions = 916 tonnes CO₂-e per year $\times 70\% = 642$ tonnes CO₂-e per year
- › Scope 3 emissions = 916 tonnes CO₂-e per year $\times 30\% = 275$ tonnes CO₂-e per year

1.2. Stationary energy: co- and tri-generation

1.2.1. Emissions sources

This section addresses emissions from:

- › *co-generation*: emissions from production of both heat and electrical power from main activity producers for sale to the public at a single Combined Heat and Power (CHP) facility
- › *tri-generation*: emissions from the simultaneous generation of electricity, heat and cooling.

In a co- or tri-generation system, multiple forms of energy (most often electricity and steam) are generated simultaneously in an integrated system from the same input fuel supply. Emissions from these systems occur from the combustion of fossil fuels such as natural gas in the plant to generate the different energy streams. The greenhouse gas emissions produced are CO₂, CH₄ and N₂O. The most popular type of fossil fuel used for co- or tri-generation in Australia is natural gas.

Emissions by scope

Scope 1 emissions arise from the consumption of fossil fuels in the co- or tri-generation system directly controlled by the responsible entity or affiliated entities.

Scope 2 emissions arise from the use of electricity from the grid or steam supplied to the responsible entity or affiliated entities.

Scope 1 and scope 2 emissions will also have an additional component of upstream scope 3 emissions, which are the indirect emissions from the extraction, production and transport of fuel burned at generation, and the indirect emissions attributable to the electricity lost in delivery in the transmission and distribution network.

Upstream Scope 3 emissions are required to be included when calculating emissions for scope 1 and scope 2.

Co- or tri-generation scenarios

Table 1. Co- or tri-generation scenarios provides an overview of the methods used for accounting for import/export of electricity or other energy products.

Table 1. Co- or tri-generation scenarios

No.	Generation scenario	Approach
1	Self-consumption scenario: Co- or tri-generation system is located <i>within</i> a precinct, building or organisation, and all usable energy generated is consumed <i>within</i> that precinct, building or organisation.	Include all emissions in the carbon account as scope 1 (for fuels) and/or scope 2 (for electricity, if and where ancillary electricity is used), and scope 3 (for upstream emissions of fuels).
2	Exported energy scenario for precincts and organisations: Co- or tri-generation system is located within a precinct or organisation's boundaries and usable energy generated is exported outside the precinct or organisation's boundaries.	Same as for Scenario 1.



No.	Generation scenario	Approach
3	<p>Exported energy scenario for buildings:</p> <p>Co- or tri-generation system is located within a building's boundary, and thermal energy or electricity is exported outside the building's boundary.</p>	<p>Same as for Scenario 1, but allow the deduction from the carbon account of emissions corresponding to the energy exported to users outside the building's boundary.</p>
4	<p>Imported energy scenario:</p> <p>Co- or tri-generation system is located outside a precinct, building or organisation's emissions boundaries and thermal energy and/or electricity is imported into the precinct, building or organisation's boundaries.</p>	<p>Use grid scope 2 and 3 emission factors for electricity consumption unless a strong case can be made to use a different emission factor (e.g. audited carbon accounts for the co- or tri-generation plant).</p> <p>For steam or other thermal energy (hot or chilled water, consumption), the vendor must provide a site-specific scope 2 emission factor (e.g. 400 kg CO₂-e/GJ).</p>

1.2.2. Collecting activity data

Data to be collected includes:

- › the quantity of fuel combusted on a volume, mass or energy basis. This can come in the form of fuel receipts, purchase records or metered amounts of fuel entering the combustion system.
- › fuel characteristics such as density, calorific value, heating values and moisture content.

1.2.3. Emission factors

The emission factors for fuel combusted and electricity consumed can be directly sourced from the latest National Greenhouse Accounts' (NGA) publication.

1.2.4. Emissions calculation

Generation scenario 1

If the responsible entity is consuming all the usable energy generated from a co- or tri-generation system within its boundary (Generation Scenario 1 in Table 1. Co- or tri-generation scenarios), then GHG emissions should be calculated based on the quantity of fuel combusted and the specific emission factors given in the NGA. Emissions from this combustion are reported as scope 1 emissions. Upstream emissions for fuel combustion should also be reported as scope 3 emissions. For added transparency, reporting entities should identify the proportion of these scope 1 and 3 emissions attributable to heat/steam vs scope 2 and 3 emissions attributable to electricity production. The equation used to calculate emissions is:

$$\text{GHG emissions of gas type} = [\text{fuel use (kL)}] \times [\text{energy content factor of fuel type (GJ/kL)}] \times [\text{emission factor for each GHG type e.g. CO}_2, \text{CH}_4, \text{N}_2\text{O (kg CO}_2\text{-e/GJ)}]$$

Generation scenario 2

In cases where a portion of the electricity and steam outputs are exported outside the boundaries of the precinct or organisation, then GHG emissions should be calculated using the same method as for

Generation Scenario 1. This is the preferred approach as reported in the *Global Protocol for Community-Scale Greenhouse Gas Emission Inventories* (WRI and ICLEI, 2014).

Generation scenario 3

In cases where a portion of the electricity and steam outputs is exported outside the boundaries of the building (Generation Scenario 3 in Table 1. Co- or tri-generation scenarios), then it is necessary to allocate total emissions to each output stream. This is done by determining separate emission factors for the electricity and steam outputs and multiplying those emission factors by the output sold from their respective energy streams. In order to do this, the efficiency method as outlined in the GHG Protocol's *Allocation of GHG Emissions from a CHP Plant* (WRI/WBCSD, 2006) is used. Specifically, the energy efficiency method allocates GHG emissions to energy inputs based on the relative steam and electricity generation efficiencies. This method assumes that conversion of fuel energy to steam energy is more efficient than converting fuel to electricity, and assumed efficiency values are used for both outputs.

There are six main steps for calculating emissions under Generation Scenario 3 using the efficiency method:

1. Determine the total direct emissions (ET) from fuel combustion and the total steam and electricity outputs (GJ) for the co- or tri-generation system.
2. Estimate the efficiencies of steam and electricity production. The use of source-specific efficiency factors is recommended. However, if source-specific factors are unavailable, default values can be used.
3. Conduct a check to ensure the energy balance constraints have not been violated, using the following equation:

$$\text{Assumed energy input} = \frac{H}{e_H} + \frac{P}{e_P}$$

Where:

H = steam output (energy – GJ)

e_H = assumed efficiency of steam production

P = delivered electricity production (GJ)

e_P = assumed efficiency of electricity generation

The assumed energy input should be less than the total fuel energy (LHV GJ) used to fire the plant.

4. Determine the fraction of total emissions to allocate to steam and electricity production using the following equation:

$$E_H = \left(\frac{\frac{H}{e_H}}{\frac{H}{e_H} + \frac{P}{e_P}} \right) \times E_T \text{ and } E_P = E_T - E_H$$

Where:

E_H = emissions allocated to steam production (tonnes CO₂-e)

H = steam output (energy – GJ)

e_H = assumed efficiency of steam production (%)

P = delivered electricity production (GJ)

e_P = assumed efficiency of electricity generation (%)

EP = emissions allocated to electricity production (tonnes CO₂-e)

ET = Total direct emissions of the co-generation system (determined from Step 1) (tonnes CO₂-e)



5. Calculate emission rates for steam and electricity production. This is done by dividing the total emissions from steam production (E_H – tonnes CO₂-e) by the total amount of steam produced (H – GJ) to get an emissions rate (t CO₂-e/GJ). This is also done for electricity production.
6. Estimate emissions from sales. This is calculated by multiplying the total amount of electricity or steam sold/exported outside the system boundaries by the electricity emissions rate determined in Step 5. This is also done for steam production.

The worked example below shows how to use the efficiency method to allocate emissions correctly to allow the deductions of emissions relating to exported energy from the responsible entity's carbon footprint.

It should be noted that for buildings, the NABERS co-generation calculator can be used to determine the allocation of emissions from the operation of the plant between the various output streams of energy.

Generation scenario 4

If the responsible entity is consuming electricity and steam imported from outside its boundaries (Generation Scenario 3 in Table 1. Co- or tri-generation scenarios), then GHG emissions from electricity should be calculated based on the quantity of grid-derived electricity consumed and the specific emission factors given in the NGA Factors, while GHG emissions from steam consumption should be calculated based on the quantity of steam consumed and the vendor's steam emission factor.

1.2.5. Worked examples

This worked example is based on the Generation Scenario 2 described in Table 1

Consider the co-generation plant XYZ, which consumes 10,000 GJ (LHV) of natural gas to produce electricity and steam as shown in the table below.

	Total energy produced (GJ)	Total energy exported outside boundaries (GJ)	Steam temp. (°C)
Electricity	490	441	n/a
Steam	6,410	5,128	400
Total	6,900	5,569	

The plant exports approximately 90 per cent of the electricity produced and 80 per cent of the steam produced onsite outside its boundaries. It *does not* allocate its GHG emissions from the co-gen plant based on the sale of energy. The plant operates at 30 per cent efficiency for electricity production and 85 per cent efficiency for steam production.

Step 1. Determine the total direct emissions from the system:

Direct emissions = Energy content of natural gas x NGA Emission Factors for natural gas

$$\text{Direct emissions} = \frac{(\text{GJ} \times \text{CO}_2 \text{ EF}) + (\text{GJ} \times \text{CH}_4 \text{ EF}) + (\text{GJ} \times \text{N}_2\text{O} \text{ EF})}{1000}$$

$$\text{Direct emissions} = \frac{(10,000 \text{ GJ} \times 51.4 \text{ kg} \frac{\text{CO}_2\text{-e}}{\text{GJ}}) + (10,000 \text{ GJ} \times 0.1 \text{ kg} \frac{\text{CO}_2\text{-e}}{\text{GJ}}) + (10,000 \text{ GJ} \times 0.03 \text{ kg} \frac{\text{CO}_2\text{-e}}{\text{GJ}})}{1000}$$

$$\text{Direct emissions} = 515.3 \text{ t CO}_2\text{-e}$$



This worked example is based on the Generation Scenario 3 described in Table 1

Consider the cogeneration plant XYZ, which consumes 10,000 GJ (LHV) of natural gas to produce electricity and steam as shown in the table below.

	Total energy produced (GJ)	Total energy exported outside boundaries (GJ)	Steam temp. (°C)
Electricity	490	441	n/a
Steam	6,410	5,128	400
Total	6,900	5,569	

The plant exports approximately 90 per cent of the electricity produced and 80 per cent of the steam produced onsite outside its boundaries. It allocates its GHG emissions from the co-gen plant based on the sale of energy using the Efficiency Method. The plant operates at 30 per cent efficiency for electricity production and 85 per cent efficiency for steam production.

Step 1. Determine the total direct emissions from the system:

Direct emissions = Energy content of natural gas x NGA Emission Factors for natural gas

$$\text{Direct emissions} = \frac{(\text{GJ} \times \text{CO}_2 \text{ EF}) + (\text{GJ} \times \text{CH}_4 \text{ EF}) + (\text{GJ} \times \text{N}_2\text{O} \text{ EF})}{1000}$$

$$\text{Direct emissions} = \frac{(10,000 \text{ GJ} \times 51.4 \text{ kg} \frac{\text{CO}_2\text{-e}}{\text{GJ}}) + (10,000 \text{ GJ} \times 0.1 \text{ kg} \frac{\text{CO}_2\text{-e}}{\text{GJ}}) + (10,000 \text{ GJ} \times 0.03 \text{ kg} \frac{\text{CO}_2\text{-e}}{\text{GJ}})}{1000}$$

$$\text{Direct emissions} = 515.3 \text{ t CO}_2\text{-e}$$

Step 2. Estimate the efficiencies of steam and electricity production:

$$e_H = 85\%, e_p = 30\%$$

Step 3. Conduct a check to ensure the energy balance constraints have not been violated:

$$\text{Assumed energy input} = \frac{6410}{0.85} + \frac{490}{0.30}$$

$$\text{Assumed energy input} = 9175 \text{ GJ}$$

This is ok as 9175 GJ < 10,000 GJ.

Step 4. Determine the fraction of total emissions to allocate to steam and electricity production:

$$E_H = \left(\frac{\frac{6410}{0.85}}{\frac{6410}{0.85} + \frac{490}{0.30}} \right) \times 515.3$$

$$E_H = 423.6 \text{ t CO}_2\text{-e}$$

$$E_p = 515.3 - 423.6 = 91.7 \text{ t CO}_2\text{-e}$$

1.3. Water supply

1.3.1. Emissions sources

This section describes the calculation of emissions associated with the consumption of reticulated water.

Emissions arise from processes such as the extraction, storage, treatment and distribution of freshwater through the reticulated system: services typically provided by a water authority or corporation. While there are a range of emissions sources associated with these treatments and processes, they can typically be captured under the carbon account of the water authority or corporation and summarised into a single emission factor.

The water consumed within a building or precinct, in the manufacture of a product or associated with the activities of an organisation typically carries these embodied scope 3 emissions.

Note that water supply and wastewater are treated separately in this document, but a large number of water authorities are typically responsible for both functions. The carbon accounts of these water authorities will then take into account the emissions embodied in both the supply of water as well as its treatment.



1.3.2. Collecting activity data

The key activity data to be collected is the volume of reticulated water consumed by activities or processes within the emissions boundary.

Water usage data can be measured directly (preferred option) or estimated using robust data sources. These data sources could include the average water consumption of a piece of equipment as detailed in the technical specifications for the product. Direct measurement includes:

- › data logging from water meters (e.g. for a production chain for a specific product);
- › the invoices from water retailers (e.g. for a building or specific site); and
- › reporting from tenants, corporate sustainability managers, property managers (for precincts) or landlords (for organisations renting premises).

All water usage data obtained should be converted to a volumetric unit (e.g. kL) to which an emission factor can then be applied.

1.3.3. Emission factors

Some water supply authorities calculate their own emission factors (kg CO₂-e/kL reticulated water) and include them in their annual report or make them available on their websites. Another way to obtain this information is by requesting it directly from the authority. It is recommended that these emission factors are used when available.

Otherwise, it is recommended to use the emission factors provided in the *Bureau of Meteorology's National Performance Report 2015–16: Urban water utilities* (Bureau of Meteorology, 2017), Table 2.6, to develop emission factors with the correct format (e.g. kg CO₂-e/kL reticulated water). These emission factors are reported as net tonnes CO₂-e per 1,000 connected water properties for the major urban centres across Australia and correspond to both distributed reticulated water and wastewater collection, all in one factor. Table 2.3 of the same report also provides the median annual consumption of water per household. In order to determine the kg CO₂-e per kL of reticulated water consumption, divide the net tonnes CO₂-e per 1,000 connected water properties by the median water consumption value:

$$\text{Emission factor (kg CO}_2\text{-e per kL)} = [\text{net greenhouse gas emissions (t CO}_2\text{-e/kL) for 1,000 connected properties} \times 1,000^{(1)} / 1,000^{(2)}] / \text{average annual residential water supplied (kL/property)}$$

⁽¹⁾ to obtain kg instead of tonnes

⁽²⁾ to obtain a value per property rather than 1,000 properties

Other sources are also available that may allow benchmarks and comparisons:

- › Emission factors from Victoria can be also obtained from the EPA Victoria's greenhouse gas inventory management plan: 2012–13. www.epa.vic.gov.au/~media/Publications/1562.pdf
- › Melbourne Water emission factors (for water and wastewater) were used by the City of Melbourne and are reported on page 7 of the following document. <https://www.melbourne.vic.gov.au/SiteCollectionDocuments/climate-neutral-water-saving-schemes.pdf>

The two sources listed above provide emission factors that take into account emissions from both water supply and wastewater treatment. Other references may use separate emissions from the supply of water and the treatment of wastewater. Separated emission factors for supply and wastewater may be more appropriate if a user's water is supplied and treated by different water companies (or treated onsite).

1.3.4. Emissions calculation

The use of the following formula allows for the estimation of emissions associated with the use of reticulated water (in kg CO₂-e/year):

Reticulated water use (kL/yr) x water treatment & pumping emission factor (kg CO₂-e/kL)

Note that to convert the emissions in tonnes of CO₂-e/year, the result of the previous formula must be divided by 1,000.

1.3.5. Worked example

This example is based on a hypothetical site located in WA that uses 89,000 kL/year. Out of the amount of water consumed, 15,000 kL are collected onsite through a rain harvesting system, and the rest is supplied by a local water provider.

- › Possible source of data: invoices from the water supply provider
- › Activity data: 89,000 kL – 15,000 kL = 74,000 kL/year

Emission factor estimation:

- › Net greenhouse gas emissions 2014–15 for Perth: 738 t CO₂-e/year for 1,000 connected properties
- › Average annual residential water supplied (kL/property): 244

Calculation: $738/244 \times (1,000/1,000) = 3.024 \text{ kg CO}_2\text{-e/kL}$

- › Emission factor: 3.024

GHG emissions (t CO₂-e/year): $74,000 \times 3.024/1,000 = 224 \text{ tonnes of CO}_2\text{-e/year}$

It is recommended that the following information be kept for auditing purposes:

- › invoices from the water supply company; and
- › emission factors for wastewater supply and treatment, including the source of data (e.g. information directly requested from the water supplier or found on the invoice or website, and emission factors from a local authority found on an official website/report).

Note that any electricity used in pumping and treating water collected onsite will be included through site energy use collection.



1.4. Wastewater

1.4.1. Emissions sources

Greenhouse gas emissions are produced from the treatment of wastewater before returning it to the environment. Wastewater includes effluent generated by a site or organisation or during the manufacturing of a product. The emissions produced from wastewater treatment plants come from the use of energy or electricity, and from the biological or chemical activities undertaken during the treatment process.

The wastewater generated from a building or precinct, in the manufacture of a product or associated with the activities of an organisation typically carries embodied scope 3 emissions.

The range of emissions sources associated with these treatments and processes is typically captured under the carbon account of the water authority and summarised into a single emission factor, including both water supply and treatment. Where this is applicable to the user's supply and treatment situation, and emissions information is available from the user's water authority, the calculation guidance in Appendix B Section 3.1 should be used instead of this section.

This section is relevant if a user's water is supplied and treated by different water companies, or otherwise treated onsite. In some cases, for trade waste for example, when the effluent is considered unsuitable for discharge to sewer, a specialised contractor may be taking charge of the wastewater to treat it appropriately before discharge to sewer.

1.4.2. Collecting activity data

The main activity data to be collected is the quantity of wastewater generated by activities or processes within the emissions boundary.

Wastewater quantity data can be measured directly or estimated. Direct measurement includes:

- › data provided on the invoices or the service provider
- › measurement through a meter data logging for a specific process
- › data provided by a contractor, when the wastewater needs to go through such a process (e.g. for an industrial site).

Estimations or calculations may be required in some cases; if the activity data reported corresponds to activities both within and outside the emissions boundary, it will need to be apportioned. For example:

- › For an organisation sharing premises with other tenants, wastewater data for a complete building should be divided by the number of occupants and then multiplied by the number of people employed by the reporting organisation (alternatively, the floor space occupied by the organisation as a proportion of the building's overall tenanted floor space can also be used).
- › For a product made on a production line in a factory that also manufactures other products, the best allocation method must be determined through analysis of the process. If it is not practical to determine, and the overall significance of the emissions is likely to be low, it is acceptable to use a conservative allocation of the whole site's wastewater into the product's carbon account.
- › If it is not feasible to obtain the amount of wastewater produced, the activity data of the water consumed can be used as a proxy along with an estimated sewerage discharge factor, based on the analysis of the activities onsite.

If wastewater is treated onsite, the energy used in the process must be accounted for and other emissions sources (fugitive emissions) from the wastewater treatment plant must be estimated as best as possible (e.g. by using industry benchmarks).

1.4.3. Emission factors

As in the case for water supply, some wastewater treatment operators calculate specific emission factors from their processes and make them available on their website, in annual reports or on request.

If it is not possible to obtain emission factors from the provider or the operator of the wastewater treatment plant, it is recommended to look for emission factors calculated by local water or environmental authorities as a benchmark.

When the emissions boundary includes an industrial process that produces highly concentrated wastewater (e.g. distillation, refining), it is suggested that the emissions are calculated using a methodology that includes the BOD (Biological Oxygen Demand) and/or COD (Chemical Oxygen Demand); for example, one of the methodologies under Part 5.3 or Part 5.4 of the *National Greenhouse and Energy Reporting (Measurement) Determination 2008*.

As indicated for reticulated water supply, the emission factor available sometimes covers the whole water distribution and wastewater treatment processes, in which case it is acceptable to join both calculations, on the assumption that reticulated water used is also treated by the same water company after disposal through the sewer system.

1.4.4. Emissions calculation

The following formulas should be used to estimate the emissions from treating wastewater.

$$\text{Wastewater discharge (ML/yr)} \times [\text{wastewater treatment \& pumping emission factor (kg CO}_2\text{-e/ML)/1000}]$$

or

$$\text{Water use (ML/yr)} \times \text{sewerage usage discharge factor (\%)} \times [\text{wastewater treatment \& pumping emission factor (kg CO}_2\text{-e/ML)/1000}]$$

The sewerage usage discharge factor is the ratio of wastewater discharged to water used, based on the way water is used at a particular site. For example, water used for watering plants or in water features will not make its way to the sewerage system.



1.4.5. Worked example

A company located in Melbourne that has only administrative activities, discharging 110,000 kL of wastewater per year.

- › Possible sources of data: invoices from the wastewater treatment provider and data collected from the property manager
- › Activity data: 110,000 kL/year
- › Emission factor: 0.875 kg/kL (based on Melbourne Water 2004–05 emission factor)

Greenhouse gas emissions (t CO₂-e/year): $110,000 \times 0.875/1,000 = 96$ tonnes of CO₂-e/year.

It is recommended that the following information be kept for auditing purposes:

- › invoices with amount of wastewater treated from the wastewater company; and
- › emission factors for wastewater treatment, including the source of data (e.g. information directly requested from the wastewater supplier or found on the invoice or website, and emission factors from a local authority found on an official website/report).

1.5. Waste

1.5.1. Emissions sources

The following waste management activities are likely to be the main types of waste management processes:

- › disposal to landfills
- › recovery for recycling
- › biological treatment or composting.

Typically, all these activities occur offsite, the waste being collected and transported to the treatment site by a private operator or as part of a service provided by the municipality.

When occurring offsite, the waste management process is considered as scope 3 emissions. These should be accounted for if they are relevant and material.

If occurring onsite, energy input into the treatment process and fugitive emissions must be accounted for in the carbon account (as scope 1, 2 or 3 emissions), if they are relevant and material.

There are different methods for calculating emissions from waste management. If possible, it is recommended to use the waste-type specific method, which is based on the emissions produced by the process of disposal or treatment of each type of waste.

1.5.2. Collecting activity data

Reporting entities should identify specific waste composition and waste generation data if possible. The key activity data required to produce the most accurate emissions calculations are:

- › amount of waste produced (kg, m³, tonnes) (Note: the mass/volume of waste produced is generally not available to waste contractors as they do not have calibrated weighing scales to measure the waste. The charges are usually based on 'bin lift' or 'bin volume' multiplied by an industry-accepted density (kg/m³), which has a large uncertainty margin); and
- › breakdown of these amounts by type of waste management activity (disposed, recycled, treated, composted).

Typically, different waste management providers will deal with specific types of waste. These waste managers are usually able to provide the amount of waste collected and treated over a period, and sometimes also the emission factors for the treatment.

Should the information not be available from the contractors, the responsible entity can estimate the amount of various types of waste by undertaking waste surveys or audits throughout the year. Data from these audits can be extrapolated to provide annual waste quantities for each waste type. For a product, measurements can be taken onsite over a specific production cycle and then extrapolated appropriately.

If none of the previous methods are available, some estimates can be made; for example:

- › typical amount of office waste per employee (for an organisation or a building)
- › estimated food and packaging waste for an event based on sales of food and beverages
- › estimated waste based on the manufacturing process for a product.

If it proves impossible to account separately for the different types of waste, it should be assumed that all the waste is going to landfill and it should be accounted for using the most conservative emission factor.

1.5.3. Emission factors

Reporting entities should find emission factors for each type of waste that is generated. As mentioned above, emission factors may be available from waste management contractors, in which case they can be used, once the rigour of the calculations has been assessed.

If this is the case, reporting entities that have estimated their own emission factors from their waste streams and waste mix should use that data.

Otherwise, NGA Factors (Department of the Environment and Energy, 2017) reported in Table 42 and Table 44 are available for various categories of waste, including a generic municipal waste emission factor that can be used as a default factor.

For waste sent to recycling or combustion (at a waste-to-energy facility), the benefits of recycling and energy recovery are attributed to the user of the recycled materials or to the waste-to-energy facility, not the producer of the waste, in line with the *GHC Protocol – Scope 3 Standard* (WBCSD and WRI, 2011a). For these waste streams, the emission factor should consider transport to an energy recovery or materials reclamation facility only. Default factors based on UK data can be found at www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2017.



1.5.4. Emissions calculation

The following formula should be used to estimate the emissions from each type of waste:

$$[\text{Waste produced (t/year)}] \times [\text{waste emission factor (t CO}_2\text{-e/t waste)}]$$

Overall emissions from waste are calculated as shown in Figure 6.

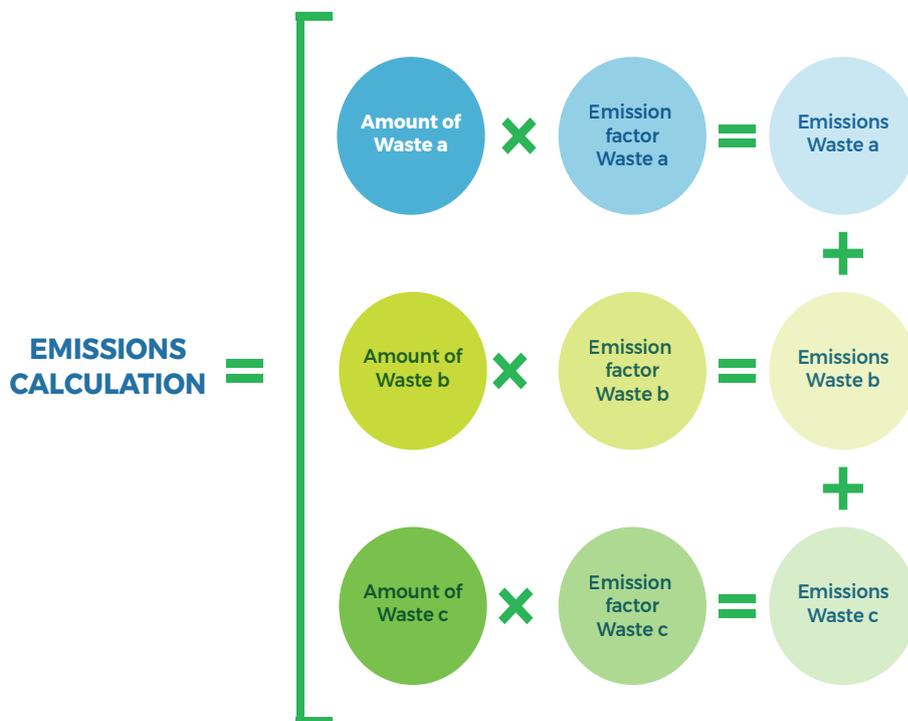


Figure 6: Emissions from waste

When an industrial process that produces waste with special characteristics is included within the emissions boundary, it is suggested that the emissions are calculated using a methodology that includes the Degradable Organic Carbon (DOC) and methane emissions from possible anaerobic reactions coming from the waste treatment activity.

1.5.5. Worked example

A higher-education facility produces a total solid waste stream of 240 tonnes. This waste comprises 180 tonnes of mixed waste disposed, 50 tonnes of paper and 10 tonnes of garden and park waste, all disposed of in the local landfill as municipal waste.

- › Possible sources of activity data: invoices from providers for municipal waste and paper recycling, and the operator of the composting facility

Emission factors (from 'Waste mix methane conversion factors' table and 'Waste emission factors for total waste disposed to landfill by broad waste stream category' table in NGA Factors (Department of Environment and Energy, 2017):

- › Municipal waste - 1.4 t CO₂-e/t waste
- › Paper - 2.9 t CO₂-e/t waste
- › Garden - 1.4 t CO₂-e/t waste

As each waste stream needs to be treated separately, greenhouse gas emissions (GHG) are calculated as follows:

GHG emissions (t CO₂-e/year) = [waste produced (t/year)] x [waste emission factor (t CO₂-e/t waste)]

Municipal waste = 180 x 1.4 = 252 tonnes CO₂-e

Paper = 50 x 2.9 = 145 tonnes CO₂-e

Garden = 10 x 1.4 = 14 tonnes CO₂-e

Total waste GHG emissions = 411 tonnes CO₂-e

Recycling: if the 50 tonnes of paper were recycled instead then a default factor of 0.02t CO₂-e/t paper (from <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2017>) would be applied to take into account only transport to the recycling facility.

It is recommended that the following information be kept for auditing purposes:

- › invoices with amount of waste collected/disposed of by different providers;
- › data management system from the composting facility with the amount of compost produced; and
- › emission factors for waste, including the source of data (e.g. information directly requested from the provider and emission factors from a local authority found on an official website/report).



1.6. Other emissions sources

Scope 3 emissions from other typical activities or products consumed must be included in the carbon account if relevant and material (Section 2.3.1: Establish the emissions boundary).

For organisations that are preparing a carbon account for use under the *National Carbon Offset Standard for Organisations*, additional guidance on scope 3 emissions sources and emission factors is available in *Guidance for calculating Scope 3* (www.environment.gov.au/climate-change/publications/guidance-scope-3). Some of the emissions sources and activities described may also be relevant to other carbon neutral categories, such as products and precincts.

2. Accounting for renewable energy and energy efficiency schemes

2.1. Context

The approach adopted for the treatment of renewable electricity has been developed with consideration of the mechanics of the *Renewable Energy (Electricity) Act 2000*, and specifically, the interaction between the Renewable Energy Target (RET), Large-scale Generation Certificates (LGCs) and Small-scale Technology Certificates (STCs).

The approach has been designed to eliminate, where possible, the risk of double counting emissions abatements. Double counting may occur if the carbon emissions reduction impact of certain actions (or pieces of equipment) can be claimed by both the generator of the reduction and a third party to whom the generator may have sold an emissions reduction certificate.

The accounting treatment described below (Section 2.2) must be applied in all carbon accounts when making a carbon neutral claim against any category of the National Carbon Offset Standard.

2.2. Treatment

A description of the different types of renewable energy certificates and their treatment under the National Carbon Offset Standard is provided in . Worked examples are provided in the next section.



Table 2. Treatment of renewable energy certificates under the National Carbon Offset Standard

Scheme and certificates	Description	Treatment under the National Carbon Offset Standard
Renewable Energy Target (RET) Small-scale Renewable Energy Scheme (SRES) <i>Small-scale Technology Certificates (STCs)</i>	The Small-scale Renewable Energy Scheme creates a financial incentive for individuals and small businesses to install eligible small-scale renewable energy systems. STCs can be created following the installation of an eligible system, and are issued upfront (on a once-off basis) based on an estimation of the amount of electricity a system produces or displaces over a set time period.	Behind-the-meter energy usage originating from small-scale onsite generation systems can be treated as zero-emissions energy, regardless of whether any STCs have been created, sold or transferred to any other party.
Renewable Energy Target (RET) Large-scale renewable energy target (LRET) <i>Large-scale Generation Certificates (LGCs)</i>	LGCs are created based on the amount of eligible renewable electricity produced by a power generator. They can be sold or traded to the voluntary market, for example GreenPower, or to Renewable Energy Target liable entities to assist them in meeting their obligations.	<p>Behind-the-meter energy usage originating from large-scale onsite generation systems that have been issued LGCs can be treated as zero-emissions energy <i>only</i> if the equivalent amount of LGCs are voluntarily retired by the responsible entity (or energy user).</p> <p>Behind-the-meter energy usage that is not matched by an equivalent amount of voluntarily retired LGCs must be accounted for in the same way as grid-based energy, and offset accordingly.</p> <p>LGCs do not have to be retired for energy generated by the system that is exported into the grid, as the exported energy is not being accounted as zero-emissions energy as part of the responsible entity's carbon account.</p>



Scheme and certificates	Description	Treatment under the National Carbon Offset Standard
Renewable Energy Target <i>GreenPower</i>	GreenPower is a voluntary government-accredited program that enables electricity providers to purchase renewable energy on behalf of households or businesses using the same mechanism of voluntary LGC retirement, as described above.	The purchase of GreenPower is considered to be equivalent to the direct use of renewable energy. GreenPower uses the same mechanism of voluntary retirement of LGCs described above.
The Emission Reduction Fund (ERF) <i>Australian Carbon Credit Units (ACCUs)</i>	<p>The ERF is a voluntary scheme that aims to provide incentives for a range of organisations and individuals to adopt new practices and technologies to reduce their emissions. Participants can earn ACCUs for emissions reductions.</p> <p>The ACCUs can be sold to the Commonwealth under a carbon abatement contract with the Clean Energy Regulator, or they can be sold on the voluntary market and are eligible as offset units under the National Carbon Offset Standard.</p>	<p>Responsible entities generating ACCUs from emissions reduction projects occurring within their boundary can claim the reduction as part of their carbon account <i>only</i> if the ACCUs from the projects are voluntarily retired.</p> <p>If the ACCUs are not retired, responsible entities are required to account for their emissions without the reductions associated with the projects (i.e. as though the projects had never occurred).</p>
State-based energy efficiency schemes, including the Victorian Energy Efficiency Target (VEET), the New South Wales Energy Savings Scheme (ESS) and the South Australian Retailer Energy Efficiency Scheme. <i>Energy Efficiency Certificates</i>	<p>These energy savings schemes reduce electricity consumption by creating financial incentives for organisations to invest in energy savings projects. Energy savings are achieved by installing, improving or replacing energy savings equipment. This generates tradable white certificates.</p>	Responsible entities are not required to account for state-based energy efficiency schemes. Emissions reductions resulting from activities supported by these schemes can be counted towards the carbon account regardless of whether any associated certificates have been created, sold or transferred to any other party.

2.3. Worked examples

Note that the following notations and assumptions have been used in the examples presented below:

1. BTMuse = Behind the meter electricity consumed
2. Grid factor (scope 2) – simplified to 1t CO₂-e/MWh

2.3.1. Onsite generation (LGCs)

Scenario: LGCs are created and retired by the responsible entity

Data

Scope 1: 40 t CO₂-e
 Scope 2: 15 MWh
 Scope 3: 40 t CO₂-e
 LGCs: 10
 BTMuse: 5 MWh

Calculation Total = Scope 1 + scope 3 + [scope 2 (in MWh) + BTMuse – LGCs] x grid factor

Result Total = 40 t + 40 t + [15 MWh + 5 MWh – 10 LGCs] x 1 t/MWh
 = 80 t + [20 MWh – (10 MWh)] x 1 t/MWh
 = 80 t + 10 t
 = 90 t

Note Behind-the-meter use is added to the amount of electricity supplied by the grid.

 Any LGCs voluntarily retired by the user can then be used to ‘zero’ (or subtract) the corresponding amount of electricity (in MWh), whether it is electricity from behind the meter or electricity that is supplied by the grid.

Scenario: LGCs are created and sold or traded by the responsible entity

Data

Scope 1: 40 t CO₂-e
 Scope 2: 15 MWh
 Scope 3: 40 t CO₂-e
 LGCs: 10
 BTMuse: 5 MWh

Calculation Total = Scope 1 + scope 3 + [scope 2 (in MWh) + BTMuse] x grid factor

Result Total = 40 t + 40 t + (15 + 5 MWh) x 1 t/MWh
 = 80 t + 20 t
 = 100 t

Note Electricity from behind-the-meter use is added on top of the electricity supplied by the grid.

 LGCs sold or traded may *not* be used to ‘zero’ (or subtract) either electricity from behind the meter or electricity that is supplied by the grid. Effectively, the LGCs are not taken into account in the equation.



2.3.2. Onsite generation (STCs)

Scenario: Irrespective of whether or not STCs are sold by the responsible entity	
Data	Scope 1: 40 t CO ₂ -e Scope 2: 15 MWh Scope 3: 40 t CO ₂ -e STCs: 10 BTMuse: 5 MWh
Calculation	Total = Scope 1 + scope 3 + [scope 2 (in MWh)] x grid factor + BTMuse x 0
Result	Total = 40 t + 40 t + [15 x 1 t/MWh] = 80 t + 15 = 95 t
Note	Behind-the-meter use of electricity is considered to be zero emissions. If the responsible entity does not have an onsite renewable energy system capable of producing STCs, they cannot retire STCs from another system in order to 'zero' (or subtract) the emissions associated with grid-supplied electricity.

2.3.3. GreenPower

Scenario: An organisation purchases 100 per cent GreenPower or voluntarily cancels GreenPower-eligible RECs equivalent to all its electricity consumption	
Electricity consumption	50 MWh
GreenPower-eligible RECs	100 per cent GreenPower or 50 RECs
Scope 2 electricity emissions included in carbon account	0 t CO ₂ -e
Note	GreenPower use is considered to be zero emissions.

2.3.4. Emissions Reduction Fund

Scenario: An organisation generates and retires 50 ACCUs from onsite ERF activities	
Emissions	Scope 1 (with ERF project): 30 t CO ₂ -e Scope 2: 15 t CO ₂ -e Scope 3: 5 t CO ₂ -e Total = 50 t CO ₂ -e
ACCUs	50 ACCUs
Total emissions	50 t CO ₂ -e
Note	Emissions reductions from the ERF activity may be counted if the corresponding amount of ACCUs generated by that activity has been voluntarily retired. The voluntary retirement of ACCUs must not be double counted as a further offset.

Scenario: An organisation generates and sells or trades 50 ACCUs from onsite ERF activities

Emissions	Scope 1 (with ERF project): 30 t CO ₂ -e Scope 2: 15 t CO ₂ -e Scope 3: 5 t CO ₂ -e Total = 50 t CO ₂ -e
ACCUs	50 ACCUs
Total emissions	100 t CO ₂ -e
Note	The corresponding amount of emissions represented by the ACCUs sold must be added back to the carbon account.

3. Recommended practices and tools

3.1. Additional guidance for preparing a carbon account

Requirements for preparing a carbon account against any category of the National Carbon Offset Standard are detailed in Section 2.3. Additional guidance below relates to Step 4 (Collect data) and Step 5 (Calculate the carbon account) in Section 2.3.

3.1.1. Data collection

In most cases, primary data should be collected for all relevant processes included within the defined emissions boundary. Section 2.3.4 provides a detailed description of the requirements for collecting data relevant to identified emissions sources.

Steps to preparing a carbon account:

Step 1: Establish the emissions boundary

Step 2: Identify greenhouse gas emissions sources within the boundary

Step 3: Set a base year

Step 4: Collect data on identified emissions sources

Step 5: Calculate the carbon account

Examples of primary data include:

- › Scope 1 emissions: direct emissions data determined through direct monitoring, stoichiometry, mass balance or similar methods, or modelled emissions data based on purchased quantities (invoices) of commercial fuels such as natural gas, diesel, unleaded petrol and LPG.
- › Scope 2 emissions: metered electricity or steam consumption, or data based on purchased quantities (invoices).
- › Scope 3 emissions: invoiced contractor fuel use, employee air travel reports, invoices for the purchase of paper.



Data collection can be one of the most resource intensive steps in the development of the carbon account. In addition, the robustness of the data collection process can have a significant impact on the overall carbon account quality. Knowledge of the responsible entity's data management systems and discussion with appropriate internal data custodians are important to ensure efficient and successful data collection.

The responsible entity should consider what methodologies and emission factors are available, and choose the type of data based on the expected accuracy of the results and the ease of calculation. Consideration should be given to whether the data would need to be converted, and if so, how many times this would need to be done, as this would likely decrease the accuracy of the carbon account.

For example, if the chosen emission factor relates to weight of product consumed but the only available data is financial data, the entity would need to find a means to convert its data from financial to weight based. This conversion could decrease the accuracy of the final figures.

Figure 7 shows an example of a simple layout for collecting and presenting data on emissions sources. This is a basic example, and most carbon account data sheets will be more detailed (it is recommended to include a field to document the origin of the data; i.e. which system it is taken from and who provided it).

Data collection for scope 3

Primary data is often not available for upstream or downstream processes. For further guidance on collecting data for scope 3 emissions sources, see Figure 1.1 in the *GHG Protocol – Technical Guidance for Calculating Scope 3 Emissions* (WBCSD and WRI, 2013).

Carbon account – Data collection sheet

General information			
Data collection period			
Entity/Process Covered			
Scope 1 emissions		Units	Data source
On-site stationary fuel use diesel		Units	
On-site stationary fuel use (LPG)		L	
Transport unleaded (petrol) use		L	
Transport fuel (diesel) use		L	
Natural gas use		m ³	
Scope 2 emissions			
Electricity consumption		kWh	
Scope 3 emissions			
Employee commuting - Car		km	
Employee commuting - Bus		km	
Employee commuting - Train		km	
Business travel (flights)		km	
Waste (organised by streams)		tonnes	
Water		ML	
Wastewater		ML	
Comments			

Figure 7. Data collection sheet*

* This is based on an example from a module for undertaking and interpreting greenhouse gas inventories developed by Local Government New South Wales.

Recommended actions for data collection:

- › Explain to data providers the purpose of why the data is being collected. This gives the data providers an appreciation for the importance of the data that they are collecting and an understanding of where the priorities should be placed. Such engagement can also lead to improvements in data collection processes and paves the way for including other sources as data becomes available.
- › Give data providers a data collection form or tool (a spreadsheet laid out as in Figure 6) that specifies the data required and the preferred reporting units. This collection tool should be relatively simple to fill out, and it should be designed so that data can be easily transferred to the final carbon account. The collection tool should be designed in collaboration with data providers to ensure layout and units are suitable for accurate input of data.
- › Negotiate a timeline for data delivery with data providers.
- › Where applicable, include data collection requirement as part of supply contracts.



3.1.2. Carbon account calculation

Calculating the greenhouse gas emissions within the emissions boundary to determine the total carbon account requires:

- › the data collected on emissions sources
- › appropriate emission factors
- › approved methodologies.

An emissions calculation sheet should be used to assist with the emissions calculations. The sheet should be set out for easy interpretation and should group emissions according to scope.

An example of an emissions calculation sheet is shown in Figure 8. This sheet includes a cell for entering the data and a cell for the emission factor, and these two are multiplied to produce the emissions for each input in a separate cell.

A calculation sheet clearly documents the calculations undertaken to determine the total carbon account. It allows for identification of potential savings and comparison between years of the same sources.

Carbon account – Emissions calculations sheet					
	Data Input		Emission Factor	Emissions factor source	Emissions
Inventory period	<input type="text"/>		<input type="text"/>		<input type="text"/>
Scope 1 emissions		Units		Units	Units
On-site stationary fuel use diesel	<input type="text"/>	L	<input type="text"/>	tCO ₂ -e <small>e.g. NGA 2016</small>	<input type="text"/>
On-site stationary fuel use (LPG)	<input type="text"/>	L	<input type="text"/>	tCO ₂ -e <small>e.g. NGA 2016</small>	<input type="text"/>
Transport unleaded (petrol) use	<input type="text"/>	L	<input type="text"/>	tCO ₂ -e <small>e.g. NGA 2016</small>	<input type="text"/>
Transport fuel (diesel) use	<input type="text"/>	L	<input type="text"/>	tCO ₂ -e <small>e.g. NGA 2016</small>	<input type="text"/>
Natural gas use	<input type="text"/>	m ³	<input type="text"/>	tCO ₂ -e <small>e.g. NGA 2016</small>	<input type="text"/>
Total					<input type="text"/>
Scope 2 emissions					
Electricity consumption	<input type="text"/>	kWh	<input type="text"/>	tCO ₂ -e/kWh	<input type="text"/>
Total					<input type="text"/>
Scope 3 emissions					
Employee commuting - Car	<input type="text"/>	km	<input type="text"/>	tCO ₂ -e/km	<input type="text"/>
Employee commuting - Bus	<input type="text"/>	km	<input type="text"/>	tCO ₂ -e/km	<input type="text"/>
Employee commuting - Bus	<input type="text"/>	km	<input type="text"/>	tCO ₂ -e/km	<input type="text"/>
Employee commuting - Train	<input type="text"/>	km	<input type="text"/>	tCO ₂ -e/km	<input type="text"/>
Business travel (flights)	<input type="text"/>	km	<input type="text"/>	tCO ₂ -e/km	<input type="text"/>
Waste (organised by streams)	<input type="text"/>	tonnes	<input type="text"/>	tCO ₂ -e/km	<input type="text"/>
Water	<input type="text"/>	ML	<input type="text"/>	tCO ₂ -e/km	<input type="text"/>
Wastewater	<input type="text"/>	ML	<input type="text"/>	tCO ₂ -e/km	<input type="text"/>
Total					<input type="text"/>
Comments	<input type="text"/>				

Figure 8: Emissions calculation sheet*

* This calculation sheet is based on a similar example in a module for undertaking and interpreting greenhouse gas inventories developed by Local Government New South Wales (Local Government New South Wales, 2010).

3.1.3. Methodology and emission factor hierarchy for products and services

When completing a carbon account under the *National Carbon Offset Standard for Products & Services*, there may be multiple methodologies and emissions factors for calculating emissions from the same source. In this situation, the following hierarchy of methodologies and emissions factors should be applied:

1. Latest NGA Factors or other Australian Government publications.
2. AusLCI (<http://auslci.com.au/>) and the AusLCI shadow database, which form the national life cycle inventory database managed by the Australian Life Cycle Assessment Society (ALCAS).
3. Other process-based Life Cycle Inventory (LCI) or carbon footprint data. Australian data are generally preferred above overseas data, unless the Australian data are of lesser quality or relevance. It may be possible to adjust process-based data to improve their quality and relevance (e.g. by correcting the emission factor for electricity used in a process). Any adjustments made to original data must be recorded for auditing purposes.
4. Economic Input-Output (I/O) life cycle data. The Economic Input-Output LCA method estimates GHG emissions resulting from economic activity. I/O data express emission factors as an amount of greenhouse gases emitted to produce one dollar of output from an economic sector (kg CO₂-e/\$i).
5. Approximation through extrapolation. If no reliable emission factor is available for an emission source, it can be appropriate to estimate emissions by extrapolating factors from similar emission sources. For example, company ABC has identified electronic equipment as an emissions source. It has bought 15-inch laptops, but the manufacturer only reports the carbon footprint (10 kg CO₂-e) for a 14-inch model from the same product range. Based on respective area size of the laptops, the purchased model is 15 per cent larger than the model for which the emission factor is available. The company applies this size factor to estimate the emission factor for the purchased laptops at 10 kg CO₂-e x 1.15 = 11.5 kg CO₂-e.
6. Approximation through conservative estimates. If no reliable emission factor is available for an emissions source, it can be appropriate to estimate emissions by making conservative assumptions. For example, company ABC has identified electronic equipment as an emissions source. It has bought 15-inch laptops, but cannot find an emission factor for this or similar products. As the weight of the product is available from product specifications, the company decides to estimate the emission factor for the purchased laptops based on their weight (2 kg) and a high GHG intensity material. Assuming the laptop is constructed from aluminium (with an emission factor of 20 kg CO₂-e per kg), the emissions per laptop are conservatively estimated at 2 kg x 20 kg CO₂-e/kg = 40 kg CO₂-e.

The approach using conservative estimates is suitable for non-material emissions sources. If an emissions source is found to be material when applying conservative estimates, additional effort should be undertaken to improve the emissions estimate.

3.1.4. Validity period of emission factors

Emission factors used for material emissions sources should be reviewed and, where relevant, updated annually. Emission factors used for non-material emissions sources should be reviewed periodically to ensure the carbon account is in line with the latest knowledge on emissions. However, to reduce the administrative burden on responsible entities, emission factors used for non-material emissions sources may also be used for up to five years without revision.

When emission factors used for non-material emissions sources have not been updated since the previous audit, they do not have to be audited again until they are revised.



3.2. Additional guidance for reporting on emissions reductions

The National Carbon Offset Standard requires that an emissions reduction strategy is developed (Section 2.4), and that emissions reduction activities and the resulting quantity of emissions reduced are reported annually via a public report (Section 2.6).

Table 3 provides an example for reporting on emissions reduction activities. A table similar to this should be provided as part of the Public Disclosure Summary or public report at the end of the reporting period, with the status updated to 'Implemented' and the actual emissions reductions communicated, if applicable.

Table 3. Emissions reduction measures to be implemented for the 2016 Reporting Period (1 July 2015 to 30 June 2016) - example only

Emissions reduction activity type	Reduction measure	Emissions source and scope	Status	Expected annual GHG reduction tCO ₂ -e
Low carbon energy installation	Installation of solar PV panels at offices to generate renewable electricity and reduce reliance on grid-derived electricity	Electricity consumption Scope 2 and 3	Proposed	300
Low carbon fuel alternatives	Requesting that facilities use biodiesel where feasible	Diesel consumption Scope 1	Proposed	120
Energy efficiency: building services	Implementation of various energy efficiency works across network sites including measures such as timer controls, motion sensors and fan upgrades.	Electricity consumption Scope 2 and 3	Proposed	270
Energy efficiency: building services	Tender to replace the most energy inefficient lighting luminaires to reduce energy and emissions consumption	Electricity consumption Scope 2 and 3	Installation in progress, negotiations completed and contract was executed. Three-year roll out of program covering 5,000 luminaires.	320
Vehicle fleet	A three-year program to replace 50 per cent the organisation's fleet with hybrid and plug-in hybrid vehicles.	Petroleum consumption Scope 1	Completed in May 2016 and replacement target of 50 per cent exceeded (62 per cent)	190
Total expected emissions reduction in this reporting period				1,200
Total expected emissions reduction in future reporting periods from currently identified opportunities				780

3.3. Additional guidance for incorporating NGER data in a carbon account

In Australia, large greenhouse gas emitters are required to report their scope 1 and 2 emissions under the *National Greenhouse and Energy Reporting Act 2007* (NGER Act). When energy production and consumption and greenhouse gas emissions reported under the NGER Act already have been audited, there could be potential duplication in efforts and costs if this data needs to be audited again for the purposes of the National Carbon Offset Standard. The following guidance aims to streamline the acceptance within the National Carbon Offset Standard of greenhouse and energy data audited under the NGER Act (here referred to as 'NGER data').

Audited NGER data does not have to undergo an audit under the National Carbon Offset Standard when the scope of reported NGER data matches the scope of the carbon account under the standard. In this situation, the auditor can simply confirm that the data used for the standard matches the data reported to NGER. For example:

- › If NGER data have been reported at facility level, then the National Carbon Offset Standard carbon account needs to cover this facility as a whole.
- › If a product is manufactured at a site where other products are being manufactured as well, the NGER data at facility level first need to be attributed (split) to the relevant product(s). The rules and formulas used for attributing energy and emissions need to be audited by the auditor of the National Carbon Offset Standard carbon account.
- › If a responsible entity aims to achieve carbon neutral status for its organisation, using the *National Carbon Offset Standard for Organisations*, audited NGER data can be used if they match the organisation's boundaries.

In all other situations, when relying on data that has been reported under the NGER Act, this data will still need to be audited for the purposes of preparing a National Carbon Offset Standard carbon account.

Please contact the Department early to confirm whether NGER data needs to be audited for the purposes of meeting the requirements of the National Carbon Offset Standard. The Department retains the right to determine the applicable procedure.



