A GUIDE TO DEVELOPING A LOCAL GOVERNMENT CORPORATE EMISSIONS INVENTORY

WALGA

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Acknowledgement

WALGA acknowledges the continuing connection of Aboriginal people to Country, culture and community. We embrace the vast Aboriginal cultural diversity throughout Western Australia, including Boorloo (Perth) on the land of the Whadjuk Noongar People where WALGA is located, and we acknowledge and pay respect to Elders past and present.

WALGA is committed to supporting the efforts of WA Local Governments to foster respectful partnerships and strengthen relationships with local Aboriginal communities.

WALGA would like to acknowledge the Cities of Cockburn and Swan for their expertise and contribution in putting this resource together for the sector.

PHOTO CREDITS: Cover photo – Solar array, Cockburn ARC (courtesy City of Cockburn); facing page – recharging the EV (WALGA)

1 INTRODUCTION

WALGA, working with the Cities of Cockburn and Swan, has developed this short guideline for Local Government Officers to develop a basic corporate emissions inventory. It is intended to be an introductory resource for Local Governments looking to undertake their own emissions tracking and reporting.

This document provides an overview of why a Local Government would develop an emissions inventory, and the key steps to the process. The guideline explains the step-by-step process of measuring emissions, collecting data, calculating emissions, and reporting on the organisation's emissions.

Local Governments can follow the steps in this guide to establish a baseline of their corporate emissions; track their emissions over time; monitor the effectiveness of emissions reduction initiatives; enhance their environmental accountability; and/or develop an organisational emissions reduction strategy.

This guideline may be particularly useful for those Local Governments who have limited capacity to engage a consultant to develop an emissions inventory. The guideline aims to present the process in a clear and simple way, to enable Local Governments åto undertake the process in-house.

PHOTO: LED street lighting (WALGA)

2 PURPOSE:
WHY IS YOUR LOCAL GOVERNMENT DEVELOPING A CORPORATE EMISSIONS INVENTORY?

Reasons for developing an emissions inventory could include:

- **Legislative requirement:** for example, National Greenhouse and Energy Reporting.
- **To meet stakeholder expectations:** for example, a Council resolution or extensive community feedback.
- **Accreditation:** for example, Net Zero or Carbon Neutral (see Section 3).
- **Measure impact:** for example, to track the impact of emission reduction initiatives and determine best value for money emission reduction strategies.
- **Data:** for example, to provide data to inform grant applications and funding requests.

A Local Government's reason(s) for developing an inventory will inform the degree of detail and verification required.

PHOTO: Broome Landfill (WALGA)

3 ACCREDITATION: WILL YOUR LOCAL GOVERNMENT BE SEEKING ACCREDITATION OF ITS CORPORATE EMISSIONS INVENTORY?

A Local Government may wish to have its emissions inventory accredited by a third party, which offers credibility that the inventory is accurate, reliable and prepared in accordance with recognised reporting standards and guidelines.

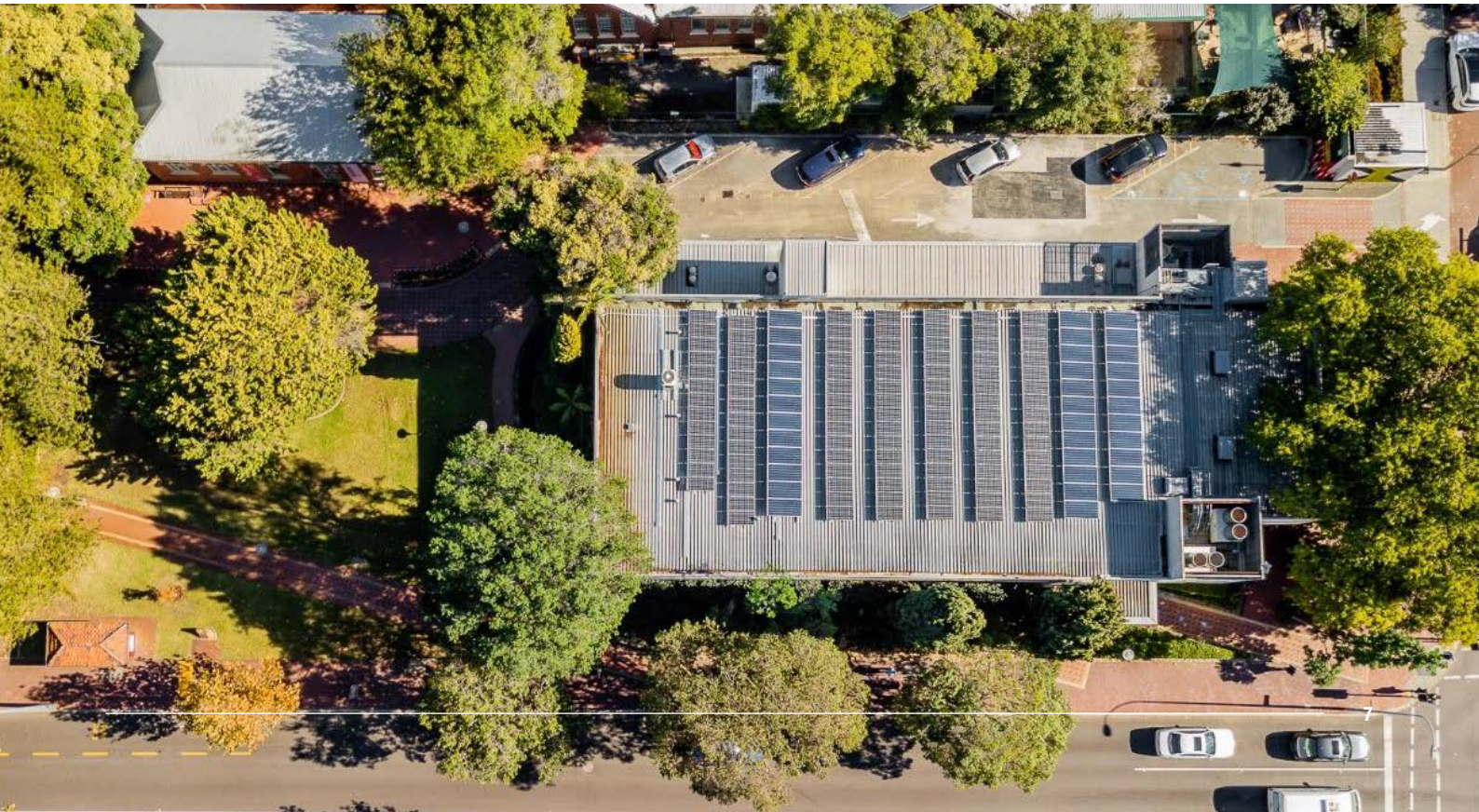
If seeking accreditation, the framework of a reputable standard or accreditation should be used to increase the credibility of the inventory and subsequent report.

Climate Active is a Federal Government initiative that oversees a rigorous accreditation process, and offers one of the most reputable accreditations in Australia. The 'Climate Active Carbon Neutral Standard for Organisations' is a voluntary standard to seek Climate Active certification, and defines the steps of:

- **Measure**: Calculate emissions
- **Reduce**: Develop and implement an emissions reduction strategy
- **Offset**: Purchase offsets to compensate for remaining emissions
- **Validate**: Arrange independent validation
- **Report**: Publish a public statement of the organisation's carbon neutral claim

If a Local Government is not seeking accreditation, it can still follow the above steps of measure, reduce, and offset. The validation process can be costly and is not required if a Local Government is not seeking accreditation.

PHOTO: Solar system, City of Subiaco administration building (Courtesy City of Subiaco)



4 DETERMINING YOUR EMISSION BOUNDARY

This section outlines how a Local Government can measure its emissions. To do so, it is important to understand the source of these emissions and the different types of emissions that the organisation creates in its operations and wider value chain.

In developing its emissions inventory, a Local Government must determine where the greatest reduction opportunities exist. From there, it can begin collecting emissions data from across the organisation.

The following steps outline how to determine which emission sources to include in a corporate inventory, and how to collect/capture emissions data.

a. Emissions Scope: What Scope of emissions will your Local Government report?

Emission Scopes are defined by the National Greenhouse and Energy Reporting Scheme (NGERS):

- **Scope 1:** Direct emissions that occur directly as a result of activity at a facility over which entities have a high level of control (e.g. fuel combustion in vehicles, gas combustion in buildings).
- **Scope 2:** Indirect emissions from a facility's consumption of electricity, heating, cooling or steam that is generated offsite (e.g. purchased electricity from the SWIS).
- **Scope 3**: Indirect emissions not included in Scope 2 occurring in the organisation's value chain. These emissions occur at sources or facilities not owned or controlled by the entity (e.g. Western Power street lighting). These sources have no pre-set boundaries, so when considering which of these to report on appropriate limits must be set (inclusions and exclusions) to obtaining data with regards to effort, time and cost.

Figure 1, below, illustrates the Scope types of different emission sources. Table 1 on the next page identifies some typical emission sources for Local Governments.

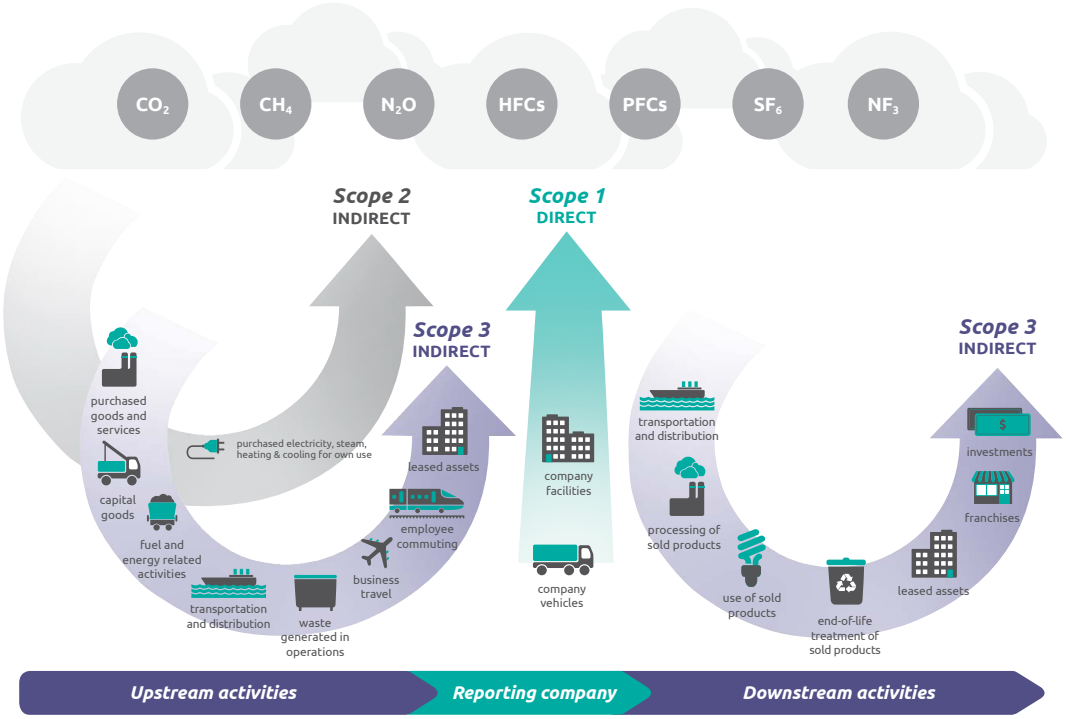


Figure 1 The Scope types of various emission sources (Image source: GHG Protocol)

Scope 1	• Fuel (diesel and petrol) combustion for transport and stationary energy (e.g. fleet, generators, parks equipment)
	• Natural gas combustion in Local Government owned and operated facilities
	• Greenhouse gas emissions from a Local Government owned and operated Landfill
	• Lubricants (Oil and Grease)
	• Fugitive emissions (Refrigerant leakage)
Scope 2	• Purchased electricity for Council owned and operated facilities, including any Council-owned streetlighting
Scope 3	• Purchased electricity for Western Power street lighting (Local Government owned street lighting is Scope 2)
	• Business flights
	• Paper consumption
	• Contractor Fuel usage
	• Water use
	• Corporate waste
	• Transport fuels (downstream)
	• Natural gas (downstream)
	• Lubricants
	• Taxis
	• Accommodation
	• Employee Commuting
	• Asphalt/Concrete

Table 1 Examples of typical Local Government emission sources from different Scope types

The Scope for an emissions source determines how the emissions are to be calculated. Scope inclusions and exclusions should be set in accordance with the intentions (carbon accounting drivers identified in Section 2) of the organisation, and the relevance and materiality of each emissions source.

For example, if an organisation is reporting its emissions to comply with Australian regulations, it may choose not to include any emissions under Scope 3. Climate Active's 'Technical Guidance' resource offers further advice on determining the relevance of different emission sources for inclusion in the emissions boundary.

b. Setting the Emissions Boundary: What is your Local Government's emissions boundary?

A Local Government must determine its emissions boundary. This outlines what emissions the organisation wants to (or needs to) measure. An inventory should aim to represent major emissions under the organisation's operational control. The emissions created by some sources may be so small that they are not worth calculating, given they will not be the focus of any mitigation action and the emission estimates are too small to be reliable.

Councils will need to research the specific needs of their own organisation, as typical emission sources and their operational control can differ between Local Governments. For example, some local governments own and operate a landfill facility while others use a facility run by others, and some local governments operate a mechanical workshop to maintain their fleet while others have their fleet serviced at a business. With each of these examples, the local government could decide that a significant emissions source not under their operation control is within their emission boundary.

5 DEVELOPING A REPORTING STANDARD

It is strongly recommended that once the decisions above have been resolved, the resulting information is captured in a Reporting Standard for your local government. This enables consistency in calculation methodology such that annual comparison of emission data can occur. It also ensures that this information is elevated from officer knowledge to corporate knowledge. This is good practise for all local authorities but of particular importance to local authorities with adopted emission targets with timeframes spanning multiple decades.

Ideally, it is also recommended that this standard should be endorsed by senior management such that there is corporate agreement of the methodology and agreement on where the responsibility for data collection lies. This can assist in ensuring a smooth process of emission data collation.

It is important to keep a reporting standard as succinct as possible so it may be useful to consider supporting the standard with reporting guidelines that carry further details.

A Reporting Standard should include the following;

- **Purpose**
- **Objective**
- **Scope/Boundary**
- **Data required** including form of data, when required and responsibility for collection of data
- **Emission factor sources** particularly for Scope 3 emission factors not found in the National Greenhouse Account Factors.
- **Calculation methodologies** particularly when estimation or uplift has been used

An abridged version of a reporting standard is attached as Appendix 1 to this document. In the interest of brevity, the content of this standard has been reduced to provide the minimum information required for a corporate operating policy. This policy is supported by an emission reporting guideline that provides additional information to officers undertaking an emission inventory.

a. Collecting Data

i. Baseline: What is your baseline year?

A baseline year is a reference point in time against which future emission reductions are measured. In creating a corporate emissions inventory, a Local Government will need to determine a baseline year to compare the organisation's emissions reduction progress over time, and to set emissions reduction targets against. To ensure it is a relevant baseline, select a year that is 'typical', or the most recent year for which verifiable carbon emissions data is available. If this is the first year that the organisation is collecting inventory data, this year can be the baseline.

ii. Data Sources: Who are your data sources and stakeholders?

Staff responsible for developing the emissions inventory will need to work across the organisation to liaise with the right people to access the required emissions data, including areas such as finance, fleet, asset/building management, waste services, and recreation. These staff should clearly explain why they are requesting the data, and the time period that they require data for. This can be the most time-consuming part of the process, especially if the organisation doesn't have an existing data management system for this purpose. A reporting standard, protocol, or procedure is a valuable way to document and gain corporate acceptance of the agreed process.

Some typical sources of data are:

- **kL of Fuel** – fuel cards, onsite bowser measurement
- **kWh of Electricity** – supplier invoices
- **GJ of Gas** – supplier invoices
- **Tonnes of waste deposited in landfill** – weighbridge data

The following section outlines how to collate the data that has been received from across the organisation.

iii. Data Capture: How will you organise your data?

Depending on a Local Government's available resources and size, it may choose to purchase a data management software platform, or collate the data in an Excel spreadsheet.

Having a basic understanding of greenhouse gas accounting is a valuable skill, not only for calculating emissions, but also to understand what's happening in the background of a data management platform and understanding the output. If using a data management platform, the step to allocate asset names and categories will also be required.

Data management platforms vary in cost and the services they provide. Many Local Governments that are already tracking their emissions use a variety of platforms; WALGA has a preferred supplier panel with expertise on these. Some services will request data directly from utilities on a Local Government's behalf and produce graphs to meet requirements. However, if staff are confident using Excel this can be done in-house.

iv. Using MS Excel

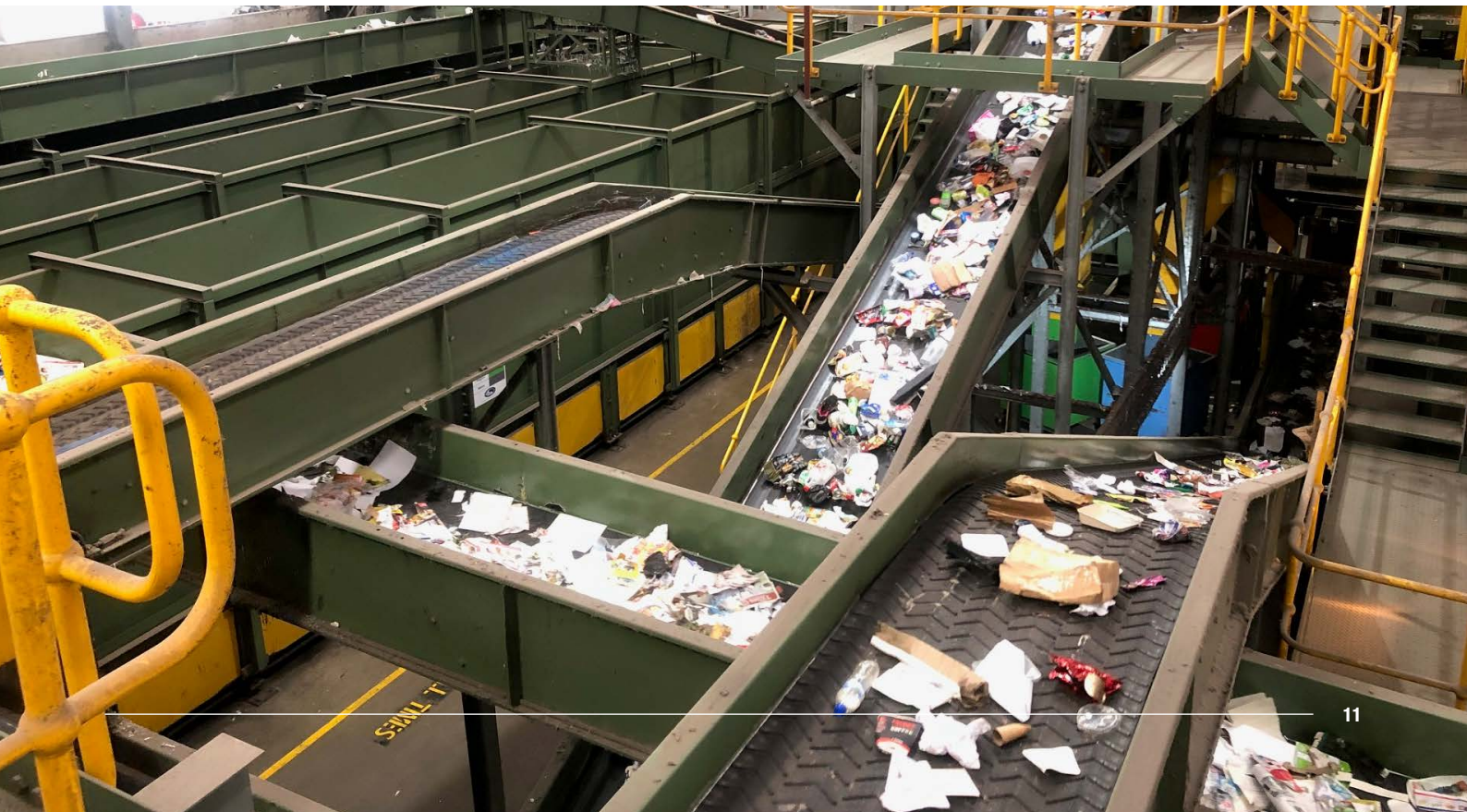
Excel offers the option of collating emissions data in-house and free of charge. If using Excel, it is suggested to use a separate Excel workbook for each year. The raw data that has been collected for each emissions source (e.g. electricity, gas, fuel) should be placed in separate worksheet tabs. A copy of each worksheet should be made so that additional information can be added to one, and raw data kept intact.

To make sense of your data, you will likely need to add asset names and categories (e.g. recreation, civic, parks, heavy fleet, light fleet).

Once the data is organised, manual equations or Excel's 'Pivot Tables' function might be used to summarise and graph your data.

An example Excel spreadsheet template can be found here. Please note that this is only an example, intended to illustrate a basic layout for calculating emissions. Local Governments may need to make adjustments to this based on their individual needs.

PHOTO Southern Metropolitan Regional Council – Regional Resource Recovery Centre (WALGA)



6 CALCULATING EMISSIONS

Once data has been collated, emissions can be calculated. Using the data that has been collected, the emissions in tonnes of carbon dioxide equivalent (t CO_2-e) can be calculated according to the NGERS Measurement Determination and National Greenhouse Account Factors (emission factors).

These documents include instructions, equations, and helpful examples. Local Governments should:

- **Download the most recent emission factors** (National Greenhouse Account Factors) document from the website. Follow the instructions and examples within this document for calculating the emissions of different sources. Download the Excel workbook of tables from the same website; this consolidates all data tables that are included in the relevant Account Factors document and is helpful to use when making calculations.

  Tip: *Keep the tables that are relevant to the Local Government's inventory, and paste the relevant equations from the Account Factors document onto each worksheet to help you create the correct equations in Excel. Use the data in the tables with the equations to complete the calculations.*

- Ensure **units of measurement** (e.g., kWh, kL, GJ), and **order of magnitude** (e.g., kilograms vs tonnes, MWh vs kWh) are correct.

- Where required, ensure **unit conversions** are correct (e.g., GJ to kW).

  Tip: *A unit conversion table is included in the National Greenhouse Account Factors document.*

- Ensure **equations** are followed correctly (e.g., aggregation of emission factors).

  Tip: *Work through the examples first to ensure you understand the equations correctly.*

  Tip: *Make sure that you have selected the correct emission factors for the emission source. This is particularly relevant for Stationary fuel usage vs Transport fuel usage.*

Commonly required calculations for Local Governments and the related tables (for 2022 Account Factors) include:

- **Section 2.2 Estimating emissions from stationary energy sources**
  - Electricity (Table 1) – Use WA/SWIS data values.
  - Stationary combustion of gaseous fuels (Table 3) – e.g. Natural gas distributed in a pipeline.
  - Stationary combustion of liquid fuels (Table 6) – e.g. Automotive gasoline/petrol, diesel, LPG. (Note: stationary use includes generators, unlicensed machinery, etc.).

- **Section 2.3 Estimating emissions from transport fuels**
  - Transport fuel emissions (Table 7) – e.g. Gasoline, diesel, LPG.

- **Section 4 Waste Emissions** – This is more complicated. Follow the relevant section in the NGERS Account Factors or engage a consultant.

7 REPORTING

Once the organisation's emissions have been calculated, findings should then be reported on. The structure of the report depends on the Local Government's purpose and intentions, and on what level of detail the organisation is comfortable releasing (if to be made public).

Reports should be written for the intended reader (internal or external), and graphs and tables should be used to enhance readability. The report may be published on the organisation's website for public access and accountability, or may be kept as an internal document for Council to review and track progress against. Some suggested report sections include:

- **Executive Summary**: Summary, overview, or key points
- **Methodology and Data Sources:**
  - » Overview of the emissions boundary, with justifications for any excluded sources that stakeholders might expect to be included.
  - » Outline the methodology, data sources and data capture systems used.
- **Corporate Emissions Summary/Profile:**
  - » Summary of total organisation emissions from the baseline year to current. If reporting on the baseline year, provide a summary of this.
  - » Explanation of any significant changes not attributed to emissions reduction actions.
  - » Total annual emissions organised by source type (e.g. petrol, diesel, electricity, gas).
  - » Total annual emissions organised by activity or department (e.g. fleet, recreation, community buildings, parks).
  - » Top 10 highest emitting sites (individual locations e.g. depot, pool, Council office).
  - » Emissions by source in greater detail (e.g. top 10 electricity and/or gas consuming sites).
  - » Break down any areas of particular interest.
- **Recommendations:** Depending on the purpose of the inventory, reporting can be used to make recommendations (e.g. future emissions reduction strategies, actions or targets).

The inventory could also include:

- **Renewable energy production:** If a Local Government produces its own renewable energy, it is important to track this information. This allows the Local Government to capture the quantity of their renewable energy percentages. If a Local Government knows what fuel source their renewable energy product has replaced, they can state this as 'estimated avoided emissions'. Alternatively, renewable energy generation can simply be stated as the percentage of energy provided by renewables (e.g. 10% of the City of Stirling's total energy demand is supplied by geothermal heating).
- **Water use:** If using a data management software platform, the organisation might include water in the data collection process for efficiency, and report separately (e.g. via Waterwise Councils).
- **Community emissions estimate from Climate Snapshot:** Providing an estimate of community emissions can help to justify the need for emissions reduction efforts. It can identify key emission sources within the community, and help to build collective momentum towards achieving emissions targets.
- **Summary** of current or completed emissions reduction projects.

8 FURTHER RESOURCES

Sustainability Victoria - Organisational Carbon Accounting for Local Governments

Climate Active – Tools and resources

Australian Photovoltaic Institute – Solar PV density and capacity map by postcode and LGA

Cities Power Partnership

Examples of Local Government corporate emissions reduction strategies:

- Town of Bassendean Corporate Emissions Reduction Strategy 2022-24
- City of Stirling Corporate Sustainable Energy Action Plan 2020-2030
- City of Subiaco Corporate Carbon Reduction Plan 2020-2030
- Banyule City Council Corporate Emissions Reduction Plan
- City of Melville Community Outcome Reporting Dashboard – An example of an innovative method of presenting data from a variety of sources (including emissions data), along with the goals and targets that the City is working towards.

9 APPENDIX 1 Sample Reporting Standard

Please note that the following template is an actual example and is tailored to the operations of the Local Government it originated from. Adapting it to your local authority will require further amendment.

1. PURPOSE

The purpose of this management practise is to provide clear guidance to (City/Town/Shire) staff to allow consistent calculation of the (City/Town/Shire's) corporate greenhouse emission profile and to allow reporting of this emission profile to our community in a transparent and replicable manner. This guideline forms part of a commitment by the (insert name) to account for its greenhouse emissions with transparency and in line with community expectation.

2. OBJECTIVE

The objectives of this management practise are to;

- Ensure the (City/Town/Shire) is able to provide relevant annual emission data to our community.
- Support the (City/Town/Shire) in pursuing a commitment to emission reduction over an extended timeframe by providing a consistent and clear measurement process that can be undertaken by any officer with sufficient knowledge ensuring useful comparison between years can occur within the duration of the commitment period.
- Prepare the (City/Town/Shire) for any future obligations that may arise in this policy area.

3. SCOPE

The scope of this management practise is limited to (City/Town/Shire) corporate emissions only. These emissions arise as a direct or indirect result of Council operations only and do not include other emissions arising within the Swan community and/or the (City/Town/Shire) municipal boundary.

This management practise and accompanying guideline have been developed in compliance with relevant industry standards. As a result, while the (City/Town/Shire) is not currently seeking accreditation against these industry standards, this reporting guideline would provide evidence if the (City/Town/Shire) chose to seek accreditation in the future.

4. PRACTICE

To ensure that the (City/Town/Shire) is able to meet the objectives listed in clause 2 above, the following management and reporting practices are required to be undertaken by relevant (City/Town/Shire) staff.

4.1 Emission data to be collected.

The emission sources for which data is to be collected annually are listed in column 1 of table 1 of this management practice.

4.2 Form of data required

The recommended and agreed collection methods and activity data units required are listed in column 2 of table 1 of this management practice.

4.3 Responsible Business unit

Responsibility for data collection and submission rests with the relevant manager of the business units identified in column 3 of Table 1. This responsibility can be delegated to specific staff and should be periodically reviewed (particularly following any future restructuring exercises), to ensure ongoing continuity of data provision.

4.4 When is data required to be provided

In order to meet the (City/Town/Shire)'s objective of annual emission reporting in a timely manner, the officer responsible for collating (City/Town/Shire) emission data will request data for the previous financial year via an email request to the responsible business unit managers listed in column 3 of Table 1 in July of each calendar year.

4.5 Responsibility for collation

The responsibility for collating annual emission data for the (City/Town/Shire) rests with the (insert name) business unit. This business unit is also responsible for periodic review of the (City/Town/Shire)'s Emission Reporting Guideline including calculation and estimation methodologies, review of exclusion rationale and for ensuring that all relevant emission factors required for this process are updated on an annual basis.

4.6 Responsibility for publishing annual emission data

The responsibility for publishing annual emission data for the (City/Town/Shire) rests with the (insert name) business unit in consultation with Executive and Council.

4.7 Further Information

For further information on the (City/Town/Shire)'s approach to the collection and calculation of corporate emission data, please refer to the Emission Reporting Guideline.

TABLE 1

GHG Emission Source	Activity data to be collected	Source for the activity data
Scope 1		
Vehicle Transport Fuels (Gasoline)	Litres of Fuel used annually	Consumption data derived annually from the (City/Town/Shire)'s Fleet Management system **(Insert Business Unit Name)**
Vehicle Transport Fuels (Diesel)		
Small engine ULP usage		Annual Fuel purchase to tank **(Insert Business Unit Name)**
Small engine diesel usage		Annual Fuel purchase to tank **(Insert Business Unit Name)**
Natural Gas	• Total Consumption [MJ] used annually	Billing Data captured into the Energy Management Platform **(Insert Business Unit Name)**
Lubricants (Oil)	• Volume (L) of oil used in the reporting period	Stocked item (City/Town/Shire) maintenance stores **(Insert Business Unit Name)**
Lubricants (Grease)	• Weight (Kg) of grease used in the reporting period	Stocked item (City/Town/Shire) maintenance stores **(Insert Business Unit Name)**
Scope 2		
Electricity (Council) *Emissions produced through the electricity used by buildings that Council owns and occupies*	• Total Consumption (kWh)	Billing Data captured into the Energy Management Platform **(Insert Business Unit Name)**
Scope 3		
Street Lighting[1] *Emissions produced through the electricity used by street lights that Council pays the bills for*	• Total Consumption (kWh) arising from unmetered supply	Billing Data captured into the Energy Management Platform **(Insert Business Unit Name)**
Contractor Fuels *Where council contracts other companies to undertake works for them that use large amounts of fuel, Council should report the emissions for the fuel use as their Scope 3 emissions.*	Largest three suppliers to be sampled **Traffic management** Days onsite **Gravel delivery** Tonnage **Tree Pruning** Days onsite	**(Insert Business Unit Name)**
Water use *Emissions produced through the processes associated with delivery of water to Council facilities, and disposal of wastewater*	• Water volume consumed (kL)	Utility bills from the water retailer provided through the (City/Town/Shire)'s Waterwise Council Program **(Insert Business Unit Name)**

1. Street lighting can be reported as a Scope 2 or 3 emission for councils depending on if they fall under council's operation control. Any metered open space lighting that Council own and maintain is to be included as scope 2; however, all other streetlights are scope 3.

GHG Emission Source	Activity data to be collected	Source for the activity data
Corporate Waste *Emissions created from the waste produced at Councils' sites*	Total quantities of waste going to landfill per week/average number of employees on site Kg per person x 50 weeks per year.	**(Insert Business Unit Name)**
Transport Fuels	Litres of Fuel used annually	Activity data sourced from Scope 1 entries
Natural Gas	Total Consumption [MJ] used annually	Activity data sourced from Scope 1 entries
Lubricants	Volume (L) of oil used in the reporting period	Activity data sourced from Scope 1 entries
Grease	Weight (Kg) of grease used in the reporting period	Activity data sourced from Scope 1 entries
Flights *All flights taken by Councillors and (City/Town/Shire) staff when travelling on business.*	• No. of (City/Town/Shire) passengers • Date of travel • Departure and arrival location	**(Insert Business Unit Name)**
Taxis	Estimate kilometres travelled in Taxi from monthly billing data	**(Insert Business Unit Name)**
Employee commuting (vehicle)	Survey to provide a snapshot of how staff commutes to and from Council office locations over a defined period. This should include modes of transport, distance travelled, vehicle fuel efficiencies and fuel types (including electricity).	Annual Employee travel survey **(Insert Business Unit Name)**
Employee commuting (public transport)	Data required is km travelled for each mode of travel. Typically, surveys ask for main mode of travel, days/week used and estimate of km travelled. For e.g. • Travel card # • Date/Time • Transaction type: touch on / off • Service: Tram, Bus, Train • Zone • Cost	Annual Employee travel survey **(Insert Business Unit Name)**
Asphalt/Concrete (vehicle)	Tonnes of Asphalt laid m_3 of concrete laid	**(Insert Business Unit Name)**
Accommodation *Accommodation used by Councillors and (City/Town/Shire) staff when travelling on business.*	• The location of the accommodation. • Number of nights stayed	**(Insert Business Unit Name)**

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