



# CARBON AND ENERGY FOOTPRINT

SOUTHERN COUNCILS SNAPSHOT  
FOR 2019/20 TO 2021/22



# ABOUT THE SOUTHERN TASMANIAN COUNCIL'S CARBON AND ENERGY SNAPSHOT

The Southern Tasmanian Council's Carbon and Energy Snapshot has been developed as part of the Southern Councils Climate Collaboration. The Collaboration is an initiative of the Southern Tasmanian Councils Authority climate program, the Regional Climate Change Initiative. It is supporting the 12 southern councils to build capacity and capability to develop climate responses, to reduce their carbon emissions, and respond to the challenges and opportunities of a changing climate.

The Collaboration uses a common and consistent approach to work with councils to find local solutions. The approaches and resources used in the Collaboration have been developed specifically to meet the role and functions of councils and enable actions to be scaled between councils or regionally resulting in greater efficiencies and avoid duplication and maladaptive responses.

The Snapshot captures energy use and greenhouse gas emissions from operations and services that the councils are directly responsible for and can take action to reduce greenhouse gas emissions and energy use. The Snapshot's data inputs are from sources are from the 12 councils' energy bills: electricity and fuel (petrol, diesel, LPG) and waste tonnages from council kerbside collection services and waste delivered to waste transfer stations or landfills.

The Snapshot is based on national carbon accounting methods set out by the Australian Government in its National Greenhouse and Energy Reporting (Measurement) Determination 2008 legislation.

## **The Southern Tasmanian Council's Carbon and Energy Snapshot has been prepared by:**

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- City of Hobart experiences based on its delivery of corporate energy and greenhouse targets from 2010 to 2020 and its Global Covenant of Mayors reporting commitments.





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# AT A GLANCE

The Southern Tasmanian Councils Carbon and Energy Snapshot shows the 12 councils combined corporate greenhouse gas emissions and energy consumption from 2019 to 2022. Overall, it shows that there was a 24% decrease in greenhouse gas emissions and 1.4% decrease in energy use, across their combined operations, assets and services.

## STCA Councils' Corporate Greenhouse Gas Emissions (tonnes CO<sub>2</sub>-e) T

The biggest decreases in greenhouse gas emissions came from the councils' waste management with improved management of and diversion from landfills. This is also the biggest source of emissions from the 12 councils. The next biggest decrease was across the streetlighting that councils are responsible for, which are progressively being upgraded over time to more efficient lights.

**Table 1: Greenhouse Gas Emissions (in tonnes CO<sub>2</sub>-e)**

Year	Total GHG Emissions	Landfilled Waste	Non-landfill Organic Waste	Metered Electricity	Street Lighting	Fleet Fuel	Other Fuel
2019/20	84,476	73,925	691	2,117	1,132	6,436	132
2020/21	77,050	65,755	991	2,441	1,110	6,539	165
2021/22	64,309	53,270	1,115	2,409	1,008	6,340	168
% change 19/20 to 21/22	-23.9%	-27.9%	61.4%	13.8%	-11.0%	-1.5%	27.0%

## STCA Councils' Corporate Energy Use (in gigajoules)

The energy use of councils shows a very slight decrease which mainly is a result of changeovers of streetlights to more efficient fittings and a slight decrease in fuel mainly used in the fleets of the 12 councils.

**Table 2: Energy Use (in gigajoules)**

Year	Total Energy Use	Mains Electricity	Street Lighting	Fleet Fuel	Other Fuel
2019/20	171,964	50,814	27,159	91,525	2,467
2020/21	171,296	51,683	23,496	92,997	3,120
2021/22	169,631	53,827	22,670	90,161	2,974
% change 19/20 to 21/22	-1.4%	5.9%	-16.5%	-1.5%	20.6%

## STCA Councils' Corporate Solar Data (in gigajoules)

The southern councils have increasingly installed solar arrays across their buildings, depots and halls which is used back into the site or exported to the electricity grid, assisting in reducing both energy use and reducing their emissions.

**Table 3: Solar Power Generation, Use and Export 2019/20 to 2021/22 (in GJ)**

Year	Solar Generation (GJ)	Solar Power Used on Site (GJ)	Solar Power Export (GJ)
2019/20	5,268	4,279	990
2020/21	5,322	4,291	1,031
2021/22	5,480	4,420	1,059
% change 19/20 to 21/22	4.0%	3.3%	7.1%





# A SNAPSHOT

The Southern Tasmanian Councils Carbon and Energy Snapshot provides a summary of the 12 Southern Tasmanian Councils' combined corporate greenhouse gas emissions and energy consumption over the three financial years 2019/20, 2020/21 and 2021/22.

While the Snapshot is based on the corporate inventories calculated individually for each of the 12 councils, it only provides aggregated data. The reason for this is that the various councils provide different suites of services and facilities to the community and deliver those services in a range of various ways.

Some of factors which influence both emissions and energy use include:

- the range of facilities and services provided by a council, for instance, some councils have caravan parks while others do not and only some councils provide a kerbside organic waste collection service;
- whether services are provided by in-house employees using the council's own fleet and equipment or are contracted out to external providers;
- the population density and area of the municipality, as a more dispersed population can increase the distances that need to be travelled by council employees and length of the council's road network,
- the types and extent of waste and recycling services provided to the community;
- the availability of some forms of energy, for example piped natural gas is only present in a limited area and mains electricity supplies may not be available in more remote locations; and
- the proportion of the council's buildings which are heritage listed, which can limit some types of actions such as the installation of solar panels.

While the individual council inventories have been prepared based on a consistent methodology, comparisons between councils are problematic given these differences in services and how they are delivered. No two of the southern councils provide exactly the same types and levels of service and thus it is not possible to readily compare the emissions generated by different councils.



# GREENHOUSE GAS EMISSIONS BY SOURCE 2021/22

The split up of greenhouse gas emissions between the different sources in the 2021/22 year is shown in Figure 1. The most significant source is from waste being disposed of to landfill comprising 83% of total emissions.

The reasons that this is a large percentage of the total are that the greenhouse gas generated by waste is methane, which has 28 times the global warming potential of carbon dioxide, and that the emissions reflect that quantity of waste which is generated by the community, but is managed by the councils. There is some variance in the percentage of emissions from waste across the councils, but it is the highest source of emissions for all twelve councils.

The next largest source of emissions is that from fuels used in council fleets, with this comprising 10% of total emissions. This is consistent with the range of services and assets typically provided by councils, such as roads, parks, and some waste services, which require trucks and mobile plant to deliver. Generally fleet fuel emissions comprised a greater percentage of emissions for rural councils, where there is more road length per property and greater travel distances involved in providing services.

Mains electricity emissions averaged about 4% of the total across all of the councils. The percentage tended to be somewhat higher at

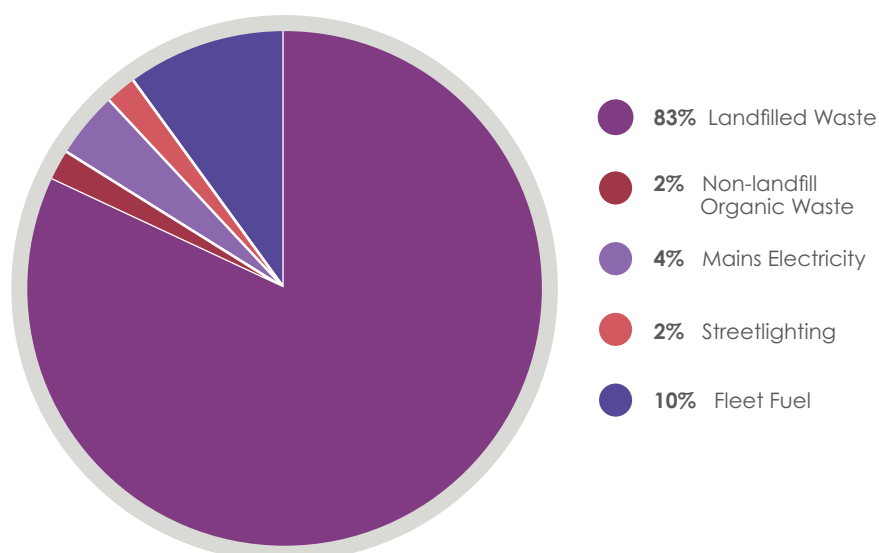
urban councils, which in part due to the type of facilities being managed by those councils, but also reflecting the higher proportion of emissions from fleet operations at rural councils.

Organic wastes that were diverted from landfill to be composted made up 1.7% of emissions. These emissions are related to small quantities of methane and nitrous oxide generated in the composting process. These emissions are 90% lower than if the waste had been disposed of to landfill with gas collection. The proportion of emissions from this source varied between councils, largely depending on whether green waste drop off and green waste or FOGO kerbside collection services were provided by the council and, also, whether the green waste that was dropped off was composted or mulched.

Unmetered public streetlighting contributed 1.6% of total emissions. On average the proportion was higher for urban councils, which in part is due to a greater proportion of higher wattage lights, but also that fleet fuel emissions are relatively more significant for rural councils.

The contribution from other fuels used in stationary applications, such as bottled LPG for heating water, was less than 0.3%, reflecting the limited extent of the piped natural gas network and widespread availability of mains electricity as an energy source.

**Figure 1. Greenhouse Gas Emissions Percentage by Category for 2021/22 Year**





## ENERGY USE BY SOURCE IN 2021/22

The make up of energy use by source in 2021/22 is shown in Figure 2. It is noted that while waste generates greenhouse gas emissions, it is not an energy source for councils and thus the chart looks quite different to Figure 1.

The biggest category of energy use is that of fleet fuel with an average of 53% of energy use being from this source. The majority of this fuel is used in heavy trucks and plant such as graders and street sweepers, with smaller amounts used in cars and utility vehicles. This pattern of usage reflects the types of services provided by local government such as road maintenance. The fleet fuel typically comprises a higher proportion of total energy use in rural councils with extensive road networks and significant lengths of unsealed roads. The percentage of total energy use by fleet is over 80% in some rural councils, while is closer to 50% or less in those councils where most of the population is located in urban areas.

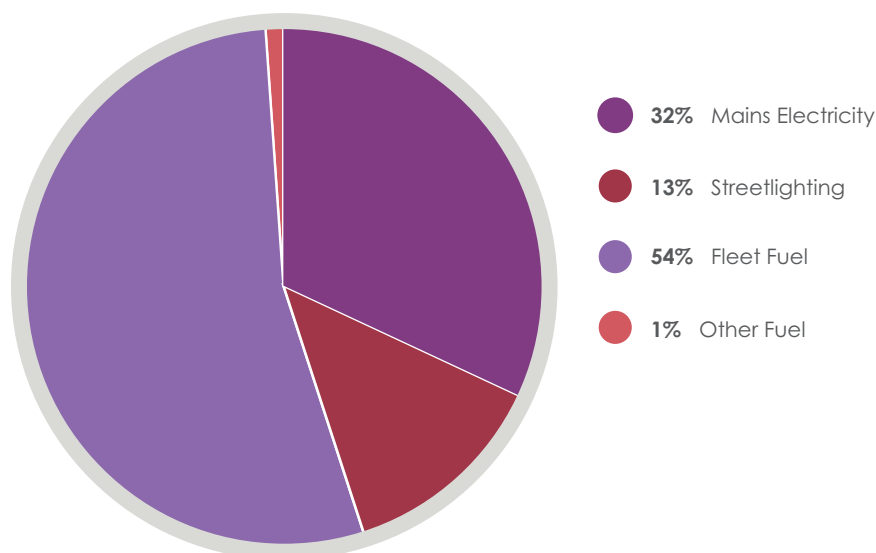
Mains electricity contributes an average of 32% of total energy use across the councils. The council sites with the largest electricity consumption tend to be the offices, depots, well-used community buildings, and some sport

and recreation facilities such as aquatic centres. The mains electricity proportion of energy use tends to be higher at councils with significant urban areas, but this appears to mostly be a result of the relatively lower amount of fleet fuel use by these councils.

The next highest category of energy use is unmetered public streetlighting comprising 13% of total consumption. Streetlighting illumination levels are required to comply with standards and need to be greater where there is more traffic and pedestrian activity. The percentage of total energy use tends to be higher for councils with more significant built up areas, as these have greater lengths of road requiring higher illumination levels, resulting in more electricity use.

Other fuels such as bottled LPG and natural gas make up only 1% of total energy use. Piped natural gas is only available in a relatively small area of southern Tasmania and only two councils have connections to this system. Bottled LPG is used more widely, but it is mostly used at sites where mains electricity is not available or where there is low or intermittent use of the facilities.

**Figure 2. Energy Use Percentage by Category for 2021/22 Year**

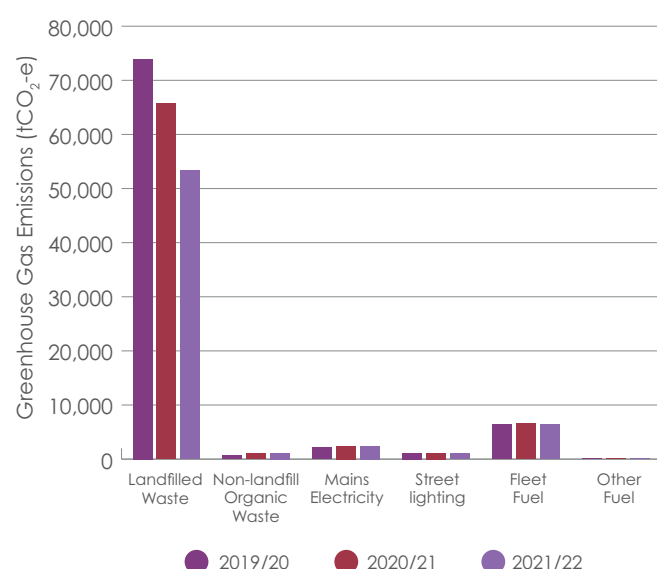


# GREENHOUSE GAS EMISSIONS – 2019/20 TO 2021/22

The total greenhouse gas emissions for the 12 southern councils decreased from about 84,500 tonnes carbon dioxide equivalent (tCO<sub>2</sub>-e) in 2019/20 to about 64,300 tCO<sub>2</sub>-e in 2021/22. The data for each source across the three years are shown in Figure 3.

Waste to landfill is the largest component of the emissions across the three years. It is also the component which contributed almost all of the reduction in emissions during the period, with a decrease of about 20,650 tCO<sub>2</sub>-e. The drop in emissions was a result of several factors. Some waste which was being disposed of to a landfill without landfill gas collection in 2019/20 was transferred to a landfill with gas collection in the following years. Some councils introduced food and organic waste kerbside collection services during the period, which increased the diversion of this waste type from landfilling. There was also a policy change at one council which resulted in less commercial and industrial waste being received at its facility, and while this waste was still being generated it was no longer being managed by that council.

**Figure 3. Annual Greenhouse Gas Emissions from 2019/20 to 2021/22**



Emissions from organic waste being composted increased from 691 tCO<sub>2</sub>-e to 1,115 tCO<sub>2</sub>-e over the period. This was largely a result of the introduction of organic waste kerbside collection services diverting green and food waste. While the increase in the associated emissions was a little over 400 tCO<sub>2</sub>-e, if this waste had gone to a landfill with gas collection it would have generated emissions closer to 4,000 tCO<sub>2</sub>-e.

Emissions from mains electricity increased by about 300 tCO<sub>2</sub>-e or about 14%. It is considered that electricity usage in 2019/20 was likely lower than usual due to COVID restrictions affecting use of some facilities in that year. About 6% of the increase was due to the higher Tasmanian greenhouse gas coefficient for electricity in 2021/22 compared to that in 2019/20.

Unmetered public streetlighting emissions dropped by about 120 tCO<sub>2</sub>-e (or 11%) over the period despite an increase in the state's electricity coefficient and higher numbers of lights, due to the upgrade of numerous existing lights to more energy efficient LED technology.

Emissions from fleet fuel use were relatively stable over the period with a reduction of about 100 tCO<sub>2</sub>-e or 1.5%. It appears that there was a negligible impact from COVID on fleet fuel emissions when compared to the effect on mains electricity usage.

Other fuel use made only a minor contribution to emissions, but it increased by about 500 GJ due the effect of removing COVID restrictions and usage at some new facilities.

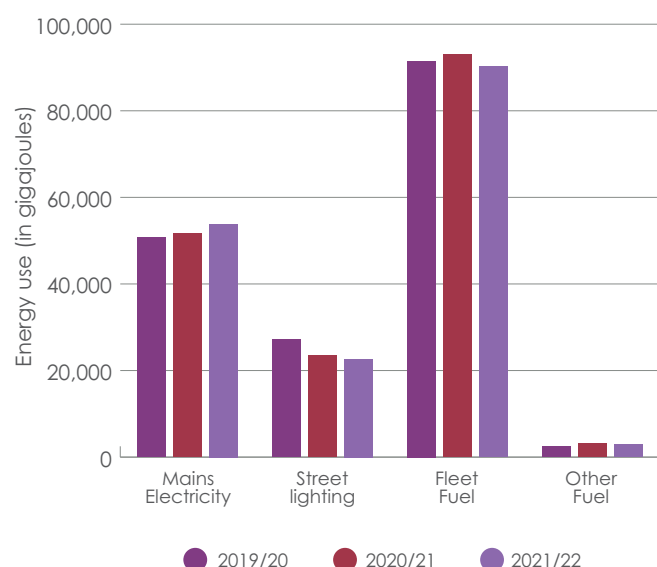
# ENERGY USE – 2019/20 TO 2021/22

The total energy use for the 12 southern councils reduced from about 172,000 gigajoules (GJ) in 2019/20 to about 169,500 GJ in 2021/22, equivalent to a 1.4% drop in usage. The split up of energy use by source across the three years is shown in Figure 4.

The largest category of energy use is fleet fuel which comprised 53%–54% of total energy across the three years. There was a reduction of about 1,350 GJ between 2019/20 and 2021/22, though there was higher usage in 2020/21 (about 1.5% higher than 2019/20). There were no obvious patterns in the changes to fuel use amongst the councils. The main fuels used were diesel and petrol, apart from a small amount of LPG used in plant such as forklifts. Diesel comprised an average of 92% of total fleet fuel use across the councils.

Mains electricity contributed about 30–32% of total energy use across the period. Energy consumption from this source increased from about 50,800 GJ to 53,800 GJ or about 6%.

**Figure 4. Annual Energy Use from 2019/20 to 2021/22**



It appears that a significant portion of this increase resulted from greater usage of facilities following the lifting of COVID restrictions that occurred in 2020, but also due to usage at some new facilities constructed during the period.

Over the three years there were several additional solar panel systems installed at council facilities, but due to lower than usual sunshine in 2021/22 (about 3–5% below the long-term average) the 4% increase in electricity produced was less than the percentage increase in installed capacity. Across the three years electricity produced from solar averaged about 5,350 GJ with about 20% being exported to the grid. Overall solar generation provided about 10% of electricity use at metered sites.

Unmetered public streetlighting energy use declined from about 27,150 GJ to 22,650 GJ between 2019/20 and 2021/22, or about 17%. The reduction in usage was due to the upgrade of thousands of streetlights to LED from less energy efficient technologies during the period. The drop was achieved even while the total numbers of streetlights increased slightly as new subdivisions were completed and handed over to councils. Most of the minor category lights (such as those on suburban streets) have now been changed over to LED across the 12 councils, however there is still a significant proportion of higher wattage lights that have not yet been upgraded.

The energy use from other fuels contributed only 1–2% to the total during the three years. The total for other fuels rose from about 2,450 GJ to about 2,950 GJ. This was primarily due some new facilities having commenced use during the period, but also in part due to the lifting of COVID restrictions, which reduced consumption in the 2019/20 year.



## Southern Tasmanian Councils

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**The Southern Councils Snapshot for 2019/20 to 2021/22** was prepared by the Southern Tasmanian Councils Authority's, Regional Climate Change Initiative and is supported by the 12 Councils of southern Tasmania: Brighton, Clarence City, Central Highlands, Derwent Valley, Glamorgan Spring Bay, Glenorchy City, City of Hobart, Huon Valley, Kingborough, Sorell, Southern Midlands and Tasman.



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Photography unless otherwise indicated: Katrina Graham, Senior Climate Change Officer, City of Hobart.

#### **DISCLAIMER**

*While reasonable efforts have been made to ensure that the contents of the Report are correct, the Southern Tasmanian Councils Authority does not accept responsibility for the accuracy or completeness of its contents and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the report.*



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