GLAMORGAN SPRING BAY COUNCIL COMMUNITY ENERGY USE AND GREENHOUSE GAS FOOTPRINT

SUMMARY REPORT MAY 2019

PUBLISHING DETAILS

The Southern Tasmanian Regional and Municipal Energy and Emissions Project 2018, was endorsed in the Regional Climate Change Initiative (RCCI) Action Plan 2017-2019, by the Board of the Southern Tasmanian Councils Authority (STCA) in June 2017.

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The STCA acknowledges organisations that assisted with the finalisation of the community greenhouse gas and energy profile:

- City of Hobart developed and piloted the initial methodology for community emissions
- TasNetworks provided residential and commercial/industrial sector electricity data
- Australian Government, Clean Energy Regulator for commercial/industrial data to fact check final results

DISCLAIMER

GLAMORGAN SPRING BAY COUNCIL SUMMARY

Our local energy use patterns are changing – disruptive technologies such as electric vehicles and rooftop solar electricity generation systems impact energy use, alongside many other factors such as government programs and incentives. A snapshot of Glamorgan Spring Bay community energy use and greenhouse gas emission trends has been provided by the Southern Tasmanian Councils Authority's Regional Climate Change Initiative**.**

Glamorgan Spring Bay community energy use has increased by 5% from 2006-07 to 2016-17. Greenhouse gas emissions have increased by 9% from 2006-07 to 2016-17. Commercial sector electricity use increases, alongside increasing residential electricity use energy use drove up emissions, while transport sector savings, price signals, greater energy efficiency measures and rooftop solar worked to drive down energy use and greenhouse gas emissions.

Community energy use and associated greenhouse gas emissions footprints

Glamorgan Spring Bay Council municipality 2016-17	0.8 petajoules (PJ)	50,000 tonnes of carbon dioxide (tCO2-e)
Region (across 12 southern Tasmanian municipalities) 2016-17	43 petajoules (PJ)	2,580,000 tonnes of carbon dioxide (tCO2-e)
Tasmania	109 petajoules (PJ) (2016-17)	3,980,000 (tonnes of carbon dioxide (tCO2-e) (2015-16)

Data sources (left to right, top to bottom): Regional Community Energy Use and Greenhouse Gas Footprint, STCA, 2019; Australian Energy Statistics, Australian Government, 2018; Tasmanian Greenhouse Gas Accounts, Tasmanian Climate Change Office 2018

Consumers are increasingly taking local energy generation into their own hands. Over two million units (kilowatt hour) of electricity are returned to the grid annually, generated by

local Glamorgan Spring Bay residential and commercial premises and each year this figure grows.

Harnessing the power of the sun is popular. Over 678 rooftops have solar photovoltaic (PV) and 152 rooftops have solar hot water systems in the Glamorgan Spring Bay municipal area.

Postcodes 7215 and 7190 lead the way in solar PV systems. Coles Bay, Bicheno, Freycinet, Friendly Beaches (suburbs with postcode 7215) have the highest number of residential solar PV systems in the Glamorgan Spring Bay municipal area. Postcode 7190 (including suburbs Triabunna to Swansea) have the most commercial solar PV systems.

Commercial sector solar PV systems have almost doubled from 16 systems in 2013-14 to over 31 systems in 2016-17.

Energy based technology shifts are occurring locally. Petrol vehicles are being replaced with diesel vehicles. A reduction in vehicle fuel use of 21% from 2006-07 to 2016-17 has seen the dominant trend of increasing yearly fuel use turn around.

Transport is a key focus area, encouraging low emission travel. The transport sector is responsible for at least a third of community emissions. Locally predominantly older vehicles are in use, which are generally more emissions intensive.

In the Glamorgan Spring Bay municipal area households and businesses are using more electricity (29%) in 2016-17 than a decade ago.

Recent electricity use has been relatively flat compared to the earlier half of the decade, suggesting consumers have improved the energy efficiency of buildings or are responding to other factors that drive electricity use to find savings. Consumer behaviour in commercial premises and the home are considered influenced by increasing awareness of energy costs and actions as well as factors such as: local weather; price signals; and the use of energy efficient appliances and materials through government programs; in addition to the influence of population growth. Energy efficiency measures, such as insulation, buffer the impact of extreme temperature events reducing the demand for heating and cooling and decreasing electricity use.

INTRODUCTION

As discussions on how to reach zero emissions increase understanding our local community energy and emissions footprint becomes more important. Looking at where and why energy is used, and the resulting greenhouse gas emissions, is the first step to identify opportunities for savings and initiatives that benefit local communities.

Local governments have a key role providing up to date and reliable climate change information. The Southern Tasmanian Regional and Municipal Energy and Emissions Project (the Project) 2018 aims to provide insights into emissions intensive sectors of the community and changing technology trends in the local area. It informs the development of individual municipalities' community profiles. The Project was commissioned by the Southern Tasmanian Councils Authority's Regional Climate Change Initiative member councils:

- City of Hobart
- Brighton Council
- Central Highlands Council
- Clarence City Council
- Derwent Valley Council
- Glamorgan Spring Bay Council
- Glenorchy City Council
- Huon Valley Council
- Kingborough Council
- Sorell Council
- Southern Midlands Council
- Tasman Council

Currently there is no common standard amongst Australian local governments for corporate and community energy and greenhouse gas reporting. The Australian Local Government Association has identified appropriate data and methods as the most common barrier to setting community emissions targets[1]. This project provides a common and transparent methodology with local and national data inputs to construct accurate community energy and greenhouse gas profiles. It builds on the previous local government voluntary reporting scheme Cities for Climate Protection which ran from 2000 – 2010 and is consistent with National and State Government reporting standards and international reporting programs such as the Carbon Development Program, the Compact of Mayors[2] and the Global Protocol for Community Scale Greenhouse Gas Emissions.

[1] Australian Local Government Climate Review – 2018 Report p. 3.

[2] led by C40, ICLEI and United Cities and Local Governments, in close collaboration with the UN Secretary General's Special Envoy for Cities and Climate Change, UN Habitat, and the UN Secretary General's office

The methodology uses public and government information that is reliable, credible and updated regularly, and involved the following:

1. Accessing Australian Energy Statistics to establish a baseline energy snapshot, which was then tailored to a local level.
2. Accurate metered data provided by energy service providers was used, where available.
3. Australian Government National Greenhouse Accounts Factors were then applied to each energy use type to determine total greenhouse gas emissions.
4. Additional records such as the Australian Bureau of Statistics, and Australian PV Institute (APVI) provided more detailed insights into local technology trends.

The scope of community data is limited to:

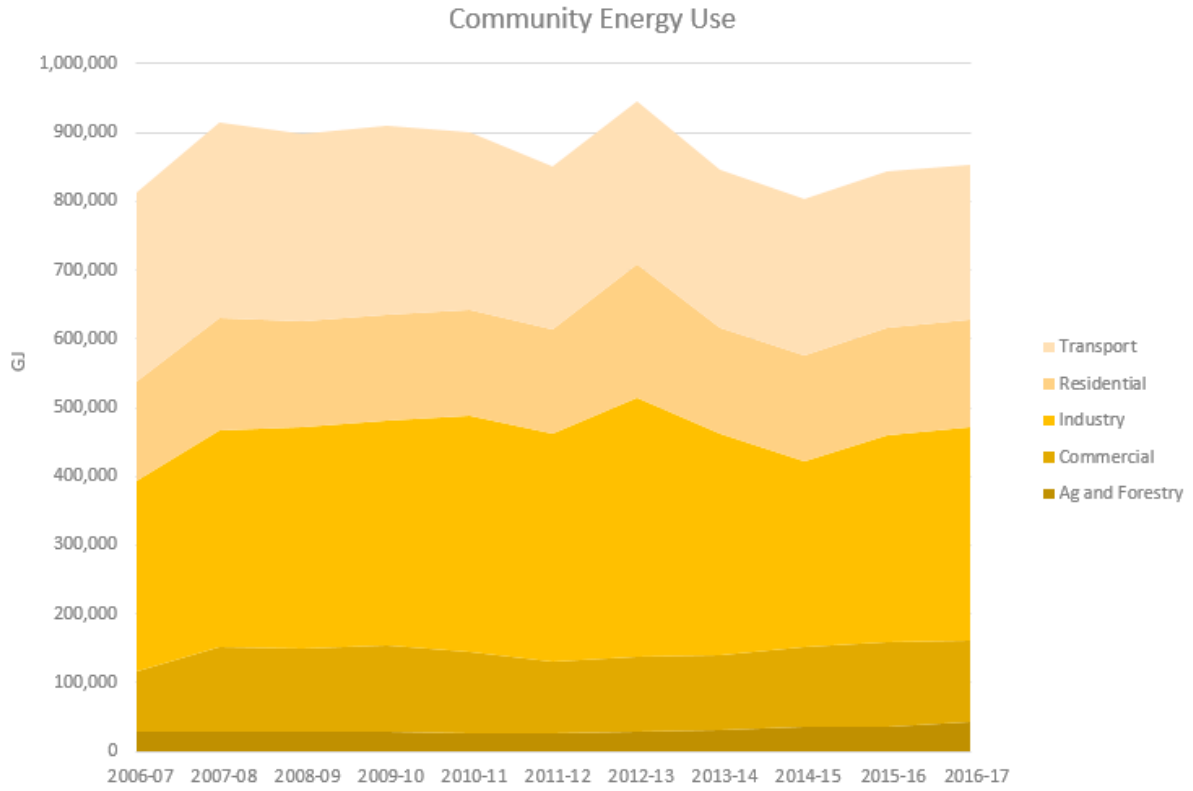
- a base year, 2006-07, when detailed electricity data is available, the transfer of water and sewerage assets to a regional body occurred and Tasmania joined the National Electricity Market[3].
- current data as of 2016-17, as up to date as the latest Australian Government, Australian Energy Statistics.
- energy based emissions only, excluding methane from agriculture/wastewater and carbon emissions from land clearing currently – as the greenhouse accounting for forest and agricultural emissions is not available in a format for local government reporting. This can be added retrospectively.
- highlights data from the residential, commercial, transport sectors at a municipal level and industrial, agriculture and forestry sectors at a regional level

GLAMORGAN SPRING BAY COUNCIL

Community energy use has increased by 5% from 2006-07 to 2016-17, from 812,000 gigajoules to 852,000(GJ) in the Glamorgan Spring Bay Council municipal area. A typical southern Tasmania household uses 25 GJ (7,000 kWh) per annum.

[3] Data estimates for electricity and all energy uses are available from 2004-05 to align with the international reporting period stated in the Paris Agreement if preferred.

Figure 1: Glamorgan Spring Bay Municipal Area Community Energy Use.



Source: Southern Tasmanian Councils Authority, 2018. Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018. NB: All energy use is presented in gigajoules (GJ) as an industry standard and a format that is easy to convert with other energy values. The TasNetworks data is sourced from legacy business systems and includes a variation between 2006/07 and 2007/08 for reasons unknown. The increase in 2012-13 is due to an increase in electricity use data provided by TasNetworks, due to additional Pay As You Go data being measured and added in that single year (with some historic data included).

Energy reductions occurred in Glamorgan Spring Bay's transport sector (-2,949GJ). State-wide trends have contributed to decreasing transport sector energy use such as price signals, greater energy efficiency measures in newer vehicles and consumer technology preferences.

Glamorgan Spring Bay's industry (34,353GJ) sectors (includes manufacturing, mining and construction) use the most energy, followed by commercial (29,662GJ), residential (14,368GJ) and agriculture and forestry (13,818GJ) sectors.

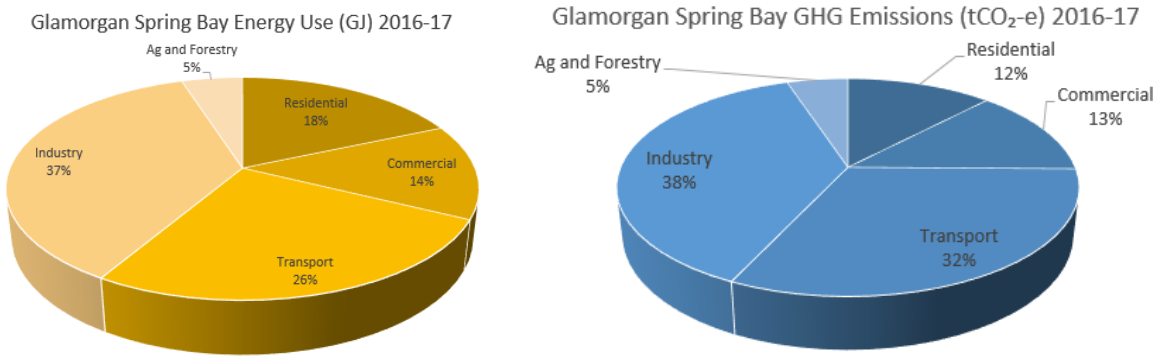
Table 1: Glamorgan Spring Bay Municipal Area Community Energy Use Gigajoules (GJ)

Energy use (GJ)	2006-07	2016-17	Growth %	Total difference between 2006-07 and 2016-17
Residential	**143,126**	**157,494**	**10**	**10,368**
Commercial	**88,194**	**117,856**	**29**	**29,662**
Transport	**275,432**	**223,815**	**-21**	**-51,617**
Subtotal	***506,753***	***499,165***	**-2**	**-7,587**
Industry	276,952	311,305	12	34,353
Agriculture and Forestry	28,577	42,395	39	13,818
Grand Total	**812,282**	**852,865**	**5**	**40,584**

Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018. NB: All energy use is presented in gigajoules (GJ) as an industry standard and a format that is easy to convert with other energy values. The Midpoint method for determining growth rates is used. The transport, industrial and agriculture and forestry sectors all use State-wide data, with results indicating general trends, while the residential and commercial sectors are mainly derived from metered data.

Glamorgan Spring Bay's industrial and transport sectors use roughly a third each of total community energy use and the greatest share of community greenhouse gas emissions.

Figure 2: Glamorgan Spring Bay Community Energy Use and Greenhouse Gas Emissions by Sector

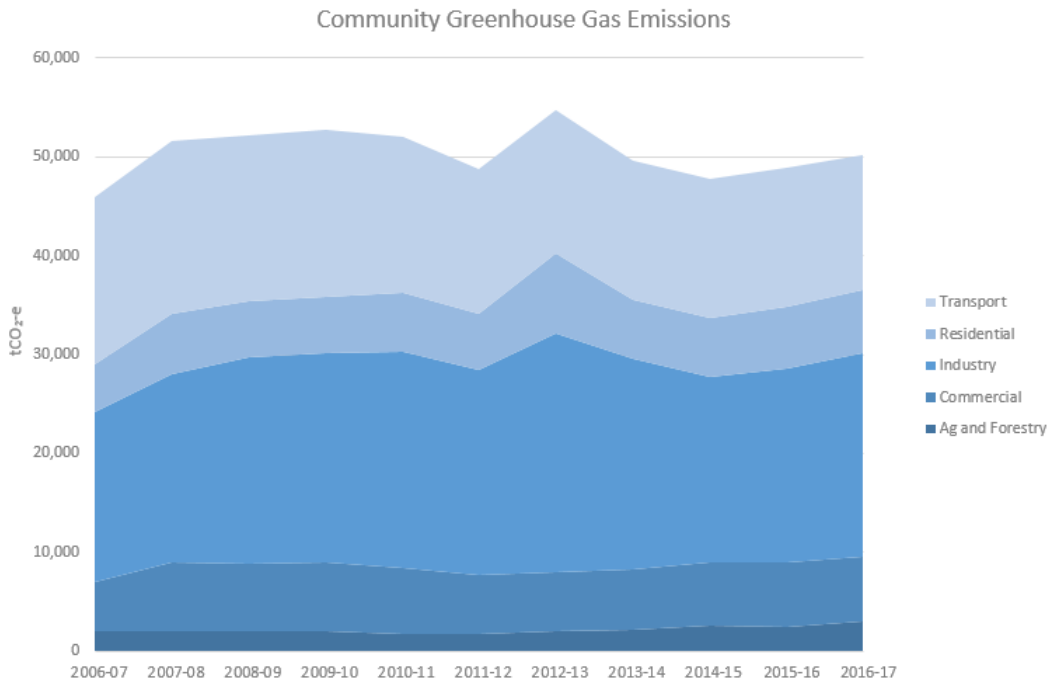


Source: Southern Tasmanian Councils Authority, 2018. Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018, National Greenhouse Accounts Factors, 2016.

Greenhouse gas emissions have increased by 9% from 45,696 tCO_2-e 2006-07 to 50,238 tCO_2-e (the equivalent of 10,000 vehicles driven for one year) in 2016-17. Increasing energy use in the industry, commercial, residential and agriculture and forestry sectors has contributed to higher emissions, working against reductions achieved in the transport sector.

Industrial sector emissions have increased by 3,339tCO2e mainly due to an increase in the use of emissions intensive fuels in the manufacturing sector such as coke, black coal, petroluem, diesel and natural gas. These fuel use trends are mainly based on per capita Statewide results.

Figure 3: Glamorgan Spring Bay Community Greenhouse Gas Emissions



Source: Southern Tasmanian Councils Authority, 2018. Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018, National Greenhouse Accounts Factors, 2016. NB: All greenhouse gas emissions are presented in tonnes of carbon dioxide equivalent (tCO_2e) as an industry standard and a format that is easy to convert other values. The TasNetworks data is sourced from legacy business systems and includes a variation between 2006/07 and 2007/08 for reasons unknown. The increase in 2012-13 is due to an increase in electricity use data provided by TasNetworks, due to additional Pay As You Go data being measured and added in that single year (with some historic data included).

Table 2: Glamorgan Spring Bay Municipal Areas Community Greenhouse Gas (GHG) Emissions

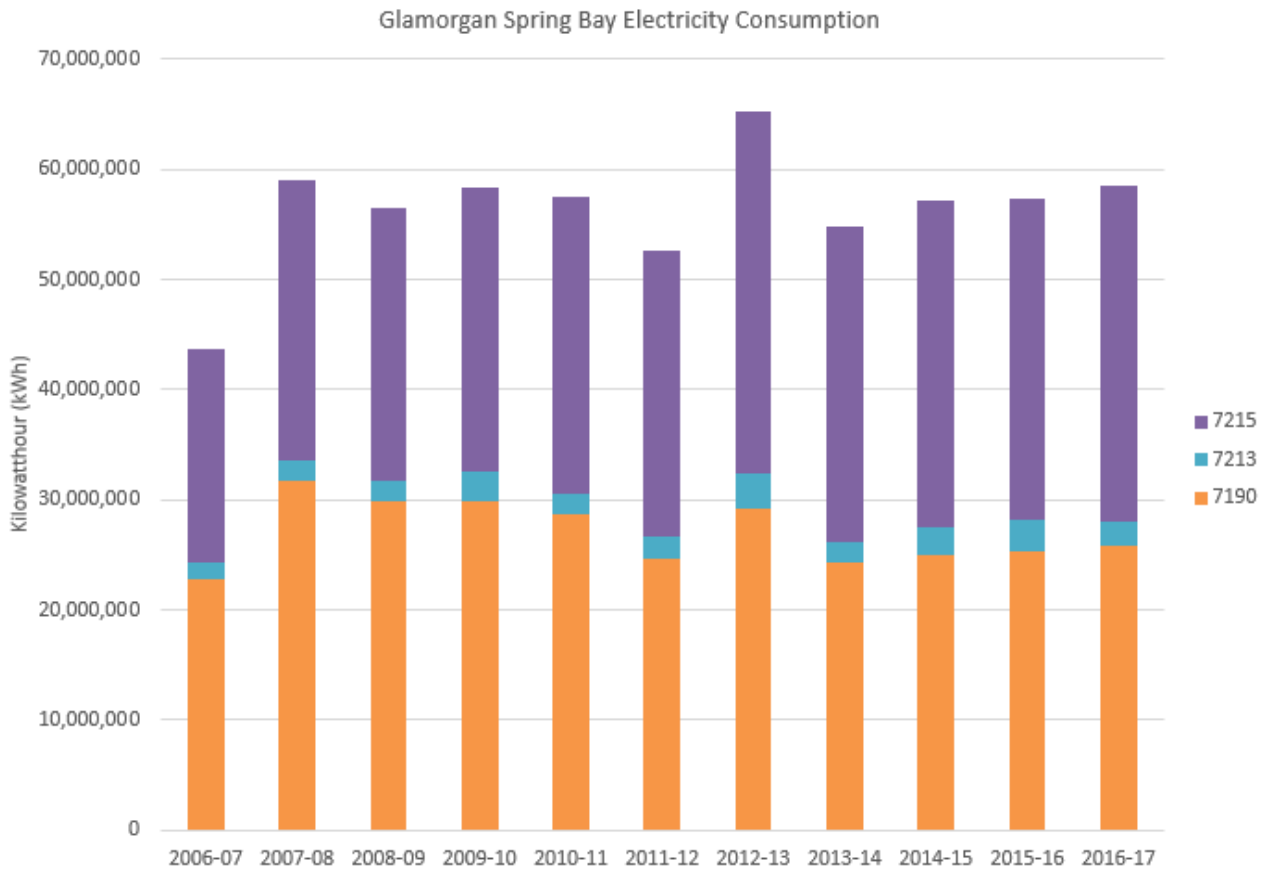
GHG emissions tonnes of CO2 equivalent (tCO_2-e)	2006-07	2016-17	Growth %	Total difference between 2006-07 to 2016-17
Residential	**4,808**	**6,366**	**28**	**1,558**
Commercial	**4,979**	**6,575**	**28**	**1,596**
Transport	**16,939**	**13,765**	**-21**	**-3,174**
Subtotal	***26,726***	***26,706***	***0***	***-20***
Industry	17,242	20,581	8	1,497
Ag and Forestry	2,001	2,951	38	950
Grand Total	**45,696**	**50,238**	**9**	**4,269**

Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018 and National Greenhouse Accounts, 2016. NB: Greenhouse gas emissions presented in tonnes of carbon dioxide equivalent as an industry standard. The Midpoint method for determining growth rates is used. The transport, industrial and agriculture and forestry sectors all use State-wide data, with results indicating general trends, while the residential and commercial sectors are mainly derived from metered data.

Annual electricity use has increased by 29%[4] over the last decade from 43 to 58 million units or kilowatt hour (kWh) in 2016-17. Electricity use trends have a large impact on overall community energy use, particularly in the residential and commercial sectors where electricity use is responsible for more than half of all energy used.

[4] Midpoint method used for estimating growth

Figure 4: Glamorgan Spring Bay Municipal Area Community Total Electricity Use

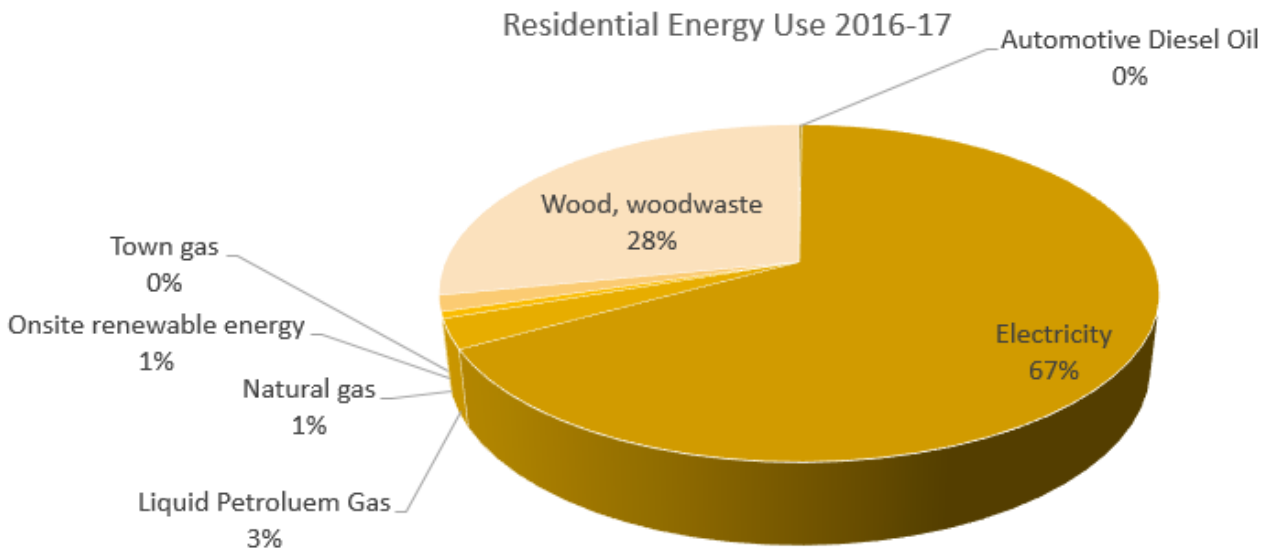


Data sources: TasNetworks, 2018. NB: The TasNetworks data is sourced from legacy business systems and includes a variation between 2006/07 and 2007/08 for reasons unknown. The increase in 2012-13 is due to an increase in electricity use data provided by TasNetworks, due to additional Pay As You Go data being measured and added in that single year (with some historic data included).

Glamorgan Spring Bay Council households are using more electricity in 2016-17 than a decade ago in 2006-07. The postcodes with a larger population have consumed more electricity and have a higher total energy consumption.

Wood use has decreased by 32% from 2004-05 to 2016-17 and constitutes less than a third of all residential energy use.

Figure 5: Glamorgan Spring Bay Municipal Area Residential Energy Use



Source: Southern Tasmanian Councils Authority, 2018. Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018

More consumers are generating and using their own solar rooftop power, decreasing electricity use from the electricity grid. Over 152 rooftops use solar energy to heat hot water[5] in the local area. In the Glamorgan Spring Bay municipal area, there are over 678 solar photovoltaic (PV) systems[6], which means 1-in-every-10 premises have access to solar[7].

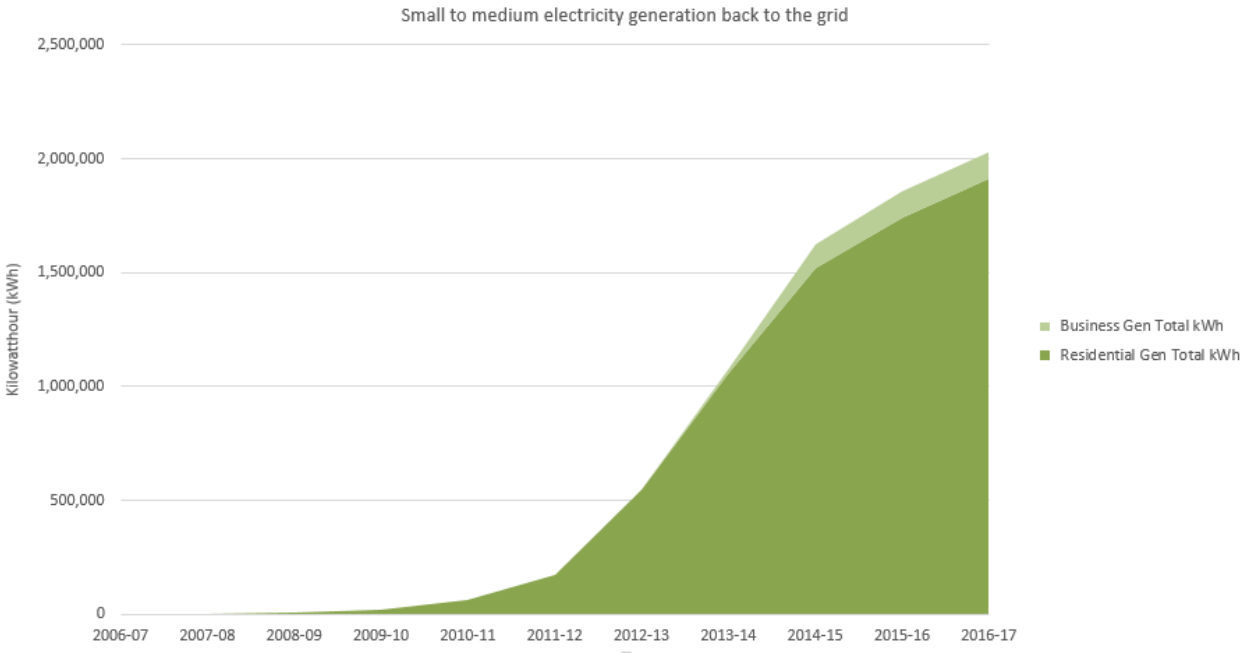
A key change in the commercial sector is the popularity of solar PV systems, which have almost doubled from 16 systems in 2013-14 to 31 systems in 2016-17.

[5] Based on CER small scale technology data, accessed May 2018. There are shared postcodes with neighbouring councils so a conservative estimate has been used.

[6] Based on TasNetworks meters that generate back to the electricity grid, 2018 data.

[7] Total buildings based on number of meters (commercial and residential) in 2016-17, 6,932 NMIs divided by 678 renewable electricity generation NMIs

Figure 6: Glamorgan Spring Bay Municipal Area Renewable Electricity Generation Exported Electricity



Source: TasNetworks, 2018. NB: Electricity use is represented as kilowatt hour (kWh). One kWh is equal to one unit on electricity bills. This includes both commercial and industrial facilities to protect the identification of facilities at a local level.

Solar PV systems are the dominant renewable energy technology in the region. Residential and commercial solar PV installations **export over two million units (kWh) of emission free electricity back to grid each year from the Glamorgan Spring Bay municipal area**[8].

Postcode 7215 (Coles Bay, Bicheno, Freycinet, Friendly Beaches) have the highest number of residential solar PV systems in the Glamorgan Spring Bay municipal area. Postcode 7190 (Triabunna, Orford, Little Swanport, Spring Beach, Apslawn, Rheban, Cranbrook, Dolphin Sands, Pontypool, Buckland, Tasmania, Swansea) has the highest commercial solar PV systems.

Table 3: Glamorgan Spring Bay municipal area renewable energy systems by postcode in 2016-17

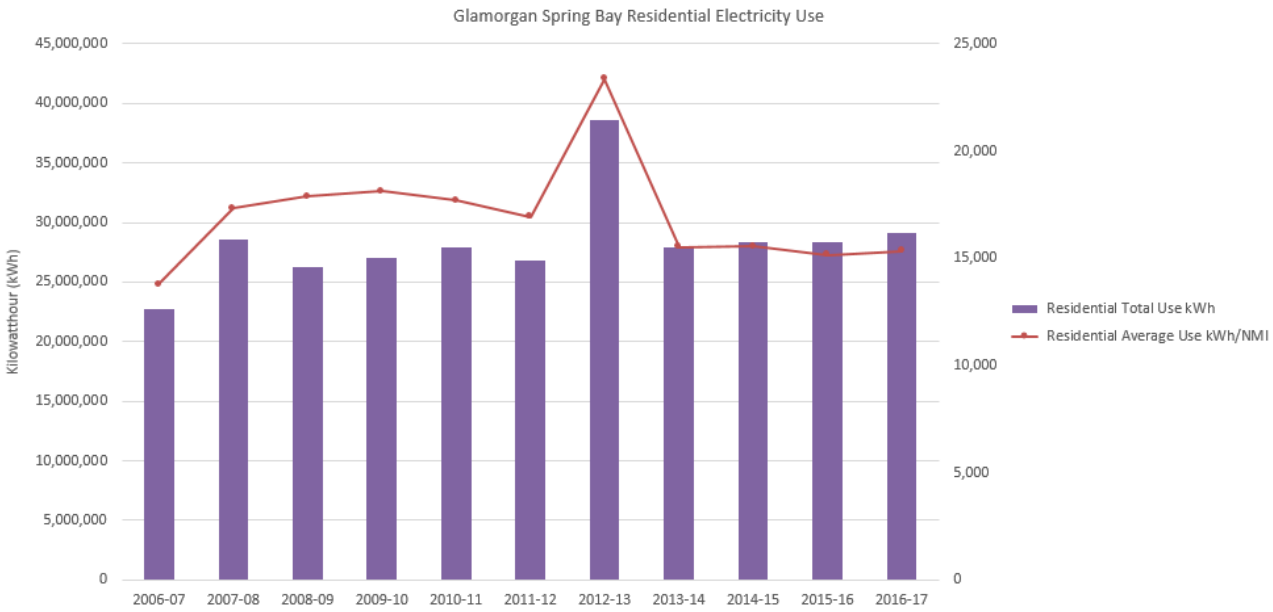
[8] As of end of 2016-17

Postcodes	Business meters (NMIs) that generate electricity	Residential meters (NMIs) that generate electricity	Total number of meter connections generating electricity (NMIs)
7190	17	299	316
7213	2	17	19
7215	12	331	343
Grand Total	**31**	**647**	**678**

Data sources: TasNetworks, 2018

Overall, residential electricity use has increased by 28% over the last decade, from 2006-07 to 2016-17. Average electricity use per household has levelled out over the last four years, as has total consumption, despite 275 new residential connections from 2013-4 to 2016-17. This follows a period of high electricity consumption variability, from 2006-07 to 2012-13.

Figure 7: Glamorgan Spring Bay Municipal Area Residential Electricity Use.

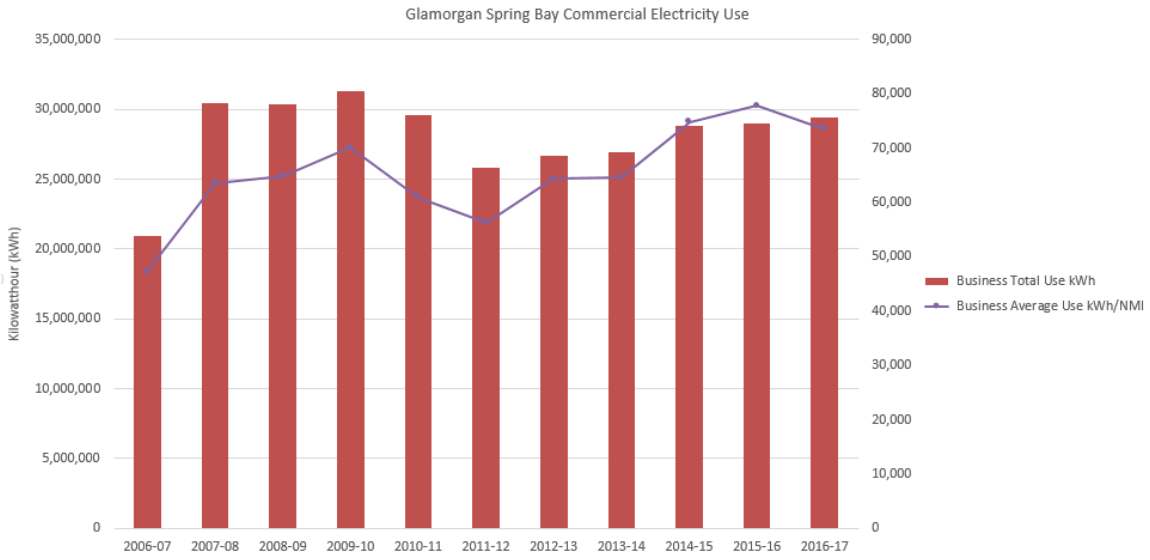


Source: Southern Tasmanian Councils Authority, 2018. Data sources: TasNetworks, 2018. NB: Electricity use is represented as kilowatt hour (kWh). One kWh is equal to one unit on electricity bills. This includes both commercial and industrial facilities to protect the identification of facilities at a local level. NB: The TasNetworks data is sourced from legacy business systems and includes a variation between 2006/07 and 2007/08 for reasons unknown. The increase in 2012-13 is due to an increase in electricity use data provided by TasNetworks, due to additional Pay As You Go data being measured and added in that single year (with some historic data included).

Residential average electricity use per meter decreases from 2014-15 to 2015-16 are likely to be influenced by factors such as price signals, the implementation of the carbon price (2012 to 2015) and increasing electricity costs, as well as the use of more energy efficient appliances and materials through government programs. These drivers increase consumer awareness of energy costs and energy actions to drive energy savings in commercial premises and the home.

Total commercial annual electricity use has increased by 34%[9] from 20 million to 29 million units (kWh) over the decade 2016-07 to 2016-17. Average electricity use per meter and total electricity consumption increased in the commercial sector from 2011-12 to 2016-17. New commercial sector meter connections reached a peak in 2011-12 and then decreased to 2016-17, to be less than 2006-07 levels.

Figure 8: Glamorgan Spring Bay Municipal Area Commercial Electricity Use



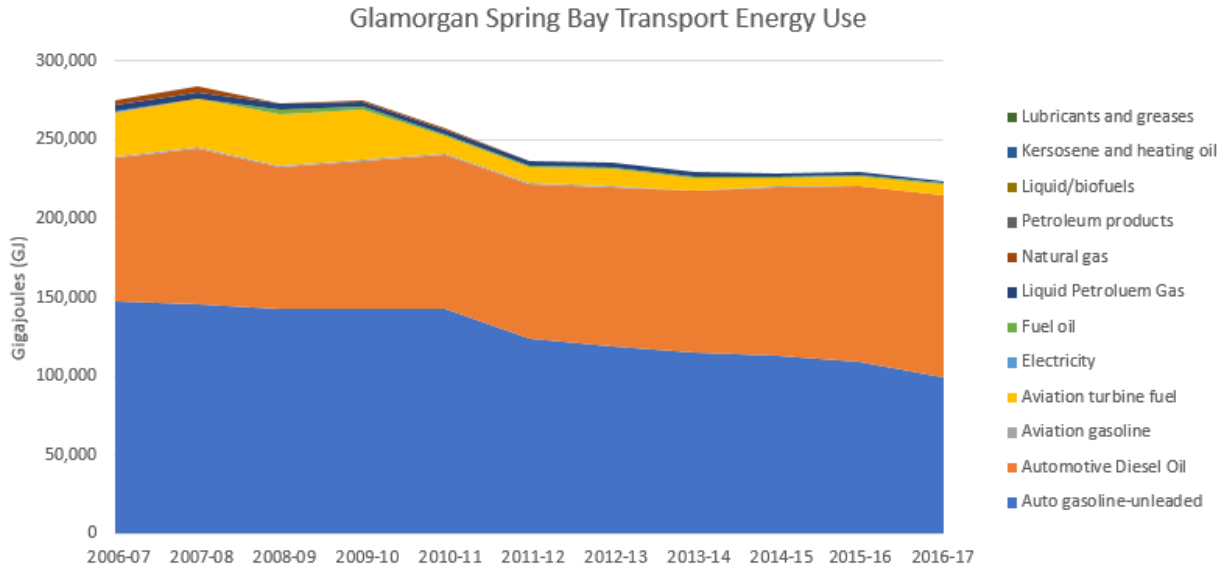
Source: Southern Tasmanian Councils Authority, 2018. Data sources: TasNetworks, 2018. NB: Electricity use is represented as kilowatt hour (kWh). One kWh is equal to one unit on electricity bills. This includes both commercial and industrial facilities to protect the identification of facilities at a local level. The TasNetworks data is sourced from legacy business systems and includes a variation between

[9] Midpoint method used for estimating growth

2006/07 and 2007/08 for reasons unknown. The increase in 2012-13 is due to an increase in electricity use data provided by TasNetworks, due to additional Pay As You Go data being measured and added in that single year (with some historic data included).

A key change in the transport sector has been the turnaround from increasing energy use to a decreasing trend over the last decade (2006-07 to 2016-17). Transport energy use has decreased by 21% from 2006-07 to 2016-17, as a result greenhouse gas emissions have reduced by 21% for the same period.

Figure 9: Glamorgan Spring Bay Municipal Area Transport Energy Use.



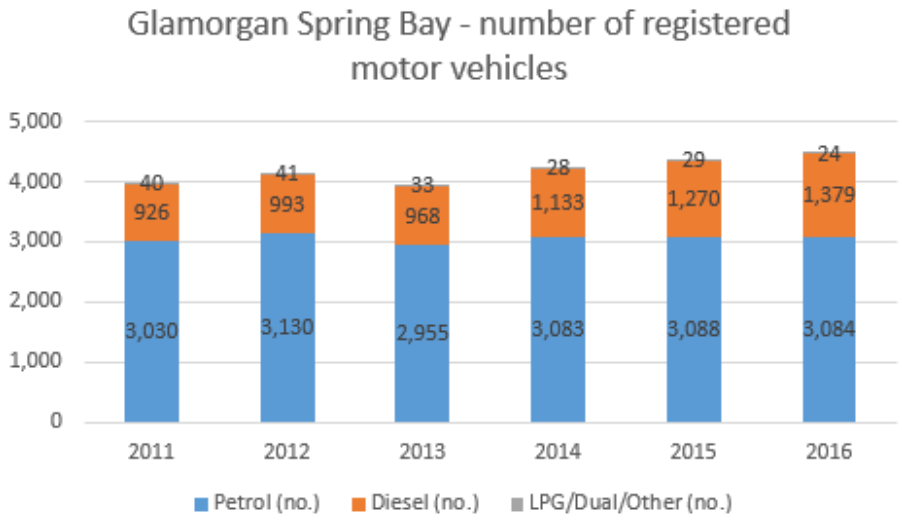
Source: Southern Tasmanian Councils Authority, 2018. Data sources: Australian Energy Statistics 2017, TasNetworks, 2018.

Passenger vehicle petrol and diesel fuel use are the primary source of energy use and greenhouse gas emissions in the transport sector[10].

The main technology shift occurring is a consumer preference for diesel light vehicles over petrol light vehicles, as shown by an increase of 109 diesel vehicles versus a decrease of 4 petrol vehicles between 2015 to 2016. No electric vehicles are registered in the area.

[10] Road transport is the largest energy user and ABS motor vehicle registrations (Table 12) indicate predominantly 61% passenger vehicles and 30% light commercial vehicles in Glamorgan Spring Bay LGA, Regional Statistics by LGA2016, Annual (2010-11 to 2015-16)

Figure 10: Glamorgan Spring Bay Municipal Area Motor Vehicle Registrations

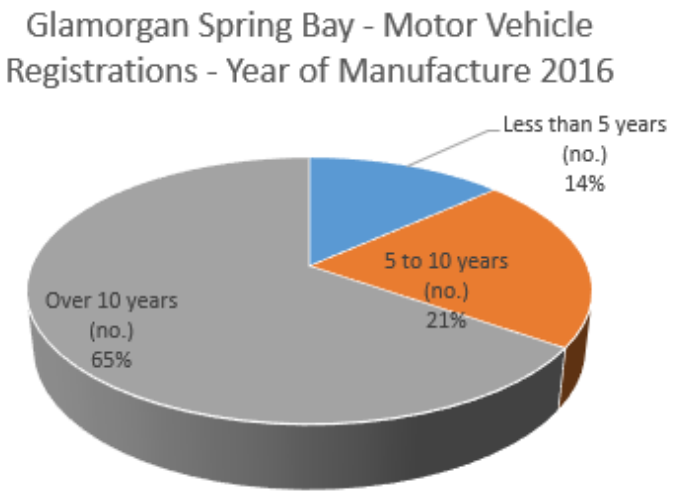


Source: Southern Tasmanian Councils Authority, 2018. Data source: Australian Bureau of Statistics, 2016.

One of the challenges in Glamorgan Spring Bay's community profile is the high percentage of older (over 10 years), more emissions intensive vehicles and relatively low use of newer vehicles (less than 5 years), which are generally more fuel efficient[11].

[11] Depending on the make and model of vehicle.

Figure 11: Glamorgan Spring Bay Municipal Area Motor Vehicle Registrations – Year of Manufacture



Source: Southern Tasmanian Councils Authority, 2018. Data source: Australian Bureau of Statistics, 2016

FURTHER INFORMATION

A regional summary paper, titled *Southern Tasmania's Changing Energy Use: Information Paper: Regional Greenhouse Gas and Energy Use Trends*, provides a snapshot of national, state and regional greenhouse footprints as well as energy trends across the region, representing 12 southern Tasmanian municipalities.

Each council has been provided with detailed data, some of which is subject to strict confidentiality terms of use to address privacy concerns and commercial sensitivities.

In addition, a step by step guide provides additional support to explain the methodology further, increase transparency and facilitate future updates.

This guide and the regional paper outlines the scope of the methodology, with consideration for time and resources available to councils and includes consideration for other factors influencing the final results.