REGIONAL
CLIMATE CHANGE
INITIATIVE

SOUTHERN TASMANIA'S CHANGING ENERGY USE

INFORMATION PAPER: REGIONAL GREENHOUSE GAS AND ENERGY USE TRENDS APRIL 2019

PUBLISHING DETAILS

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The STCA acknowledges organisations that assisted with the development 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

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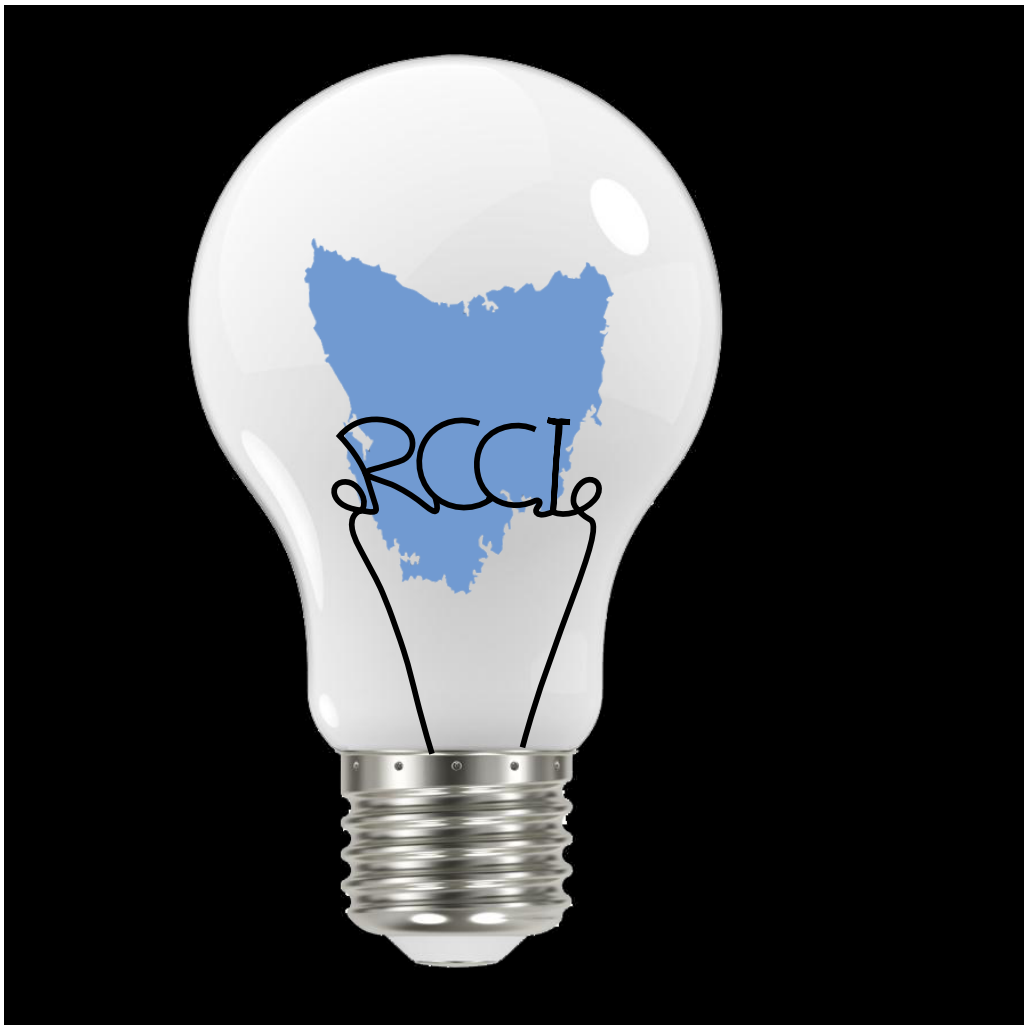


REGIONAL CLIMATE CHANGE INITIATIVE STCA

EXECUTIVE SUMMARY

REGIONAL CLIMATE CHANGE INITIATIVE

Local governments have a key role providing up to date and reliable climate change information.

Southern Tasmanian Greenhouse Gas Footprint

Emissions across the southern region increased by 6%, 147,239 tonnes of carbon dioxide (tCO_2-e) between 2006-07 and 2016-17. Total southern Tasmanian greenhouse gas emissions were 2.6 million tCO_2-e or 9.7 tCO_2-e per person in 2016-17.

In terms of community energy use this increased by 2% from 42 million gigajoules (GJ) in 2006-07 to 43 million GJ in 2016-2017.

Industry energy use contributed the most to community energy use, followed by the agriculture and forestry sector, commercial and residential sectors.

Transport was the only sector which decreased in its energy use over the last decade indicating significant changes are occurring in the transport sector.

Whilst there were savings in the transport sector all other sectors such as industry, agriculture and forestry, residential and commercial sectors, released greater emissions.

Factors include population growth, changing consumer technology preferences, such as from petrol to diesel in the light vehicle sector improved tail pipe emissions, and increased energy savings awareness, price signals and various government programs and incentives.

Understanding what we can do

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.

Providing local insights

Local governments have a key role to provide up to date and reliable climate change information to enable their communities to make informed decisions.

The Regional Greenhouse Gas and Energy Use Trends 2018 aims to provide insights into emissions intensive sectors of the community and changing technology trends across municipal areas. This project was commissioned by the Southern Tasmanian Councils Authority (STCA)'s Regional Climate Change Initiative (RCCI) member councils:

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

Setting the foundations

This project builds on previous work undertaken as part of the Cities for Climate Protection (CCP) local government voluntary reporting scheme and is consistent with National and State Government reporting standards and international reporting programs such as the Carbon Development Program and the Compact of Mayors[1].

Since the CCP ceased to be funded by the Australian Government in 2010 there has been no common standard amongst Australian local governments' for corporate and community energy and greenhouse gas reporting.

[1] The Compact of Mayors is led by Cities Climate Leadership Group (C40), International Councils for Local Environmental Initiatives and United Cities and Local Governments, in close collaboration with the United Nations (UN) Secretary General's Special Envoy for Cities and Climate Change, UN Habitat, and the UN Secretary General's office.

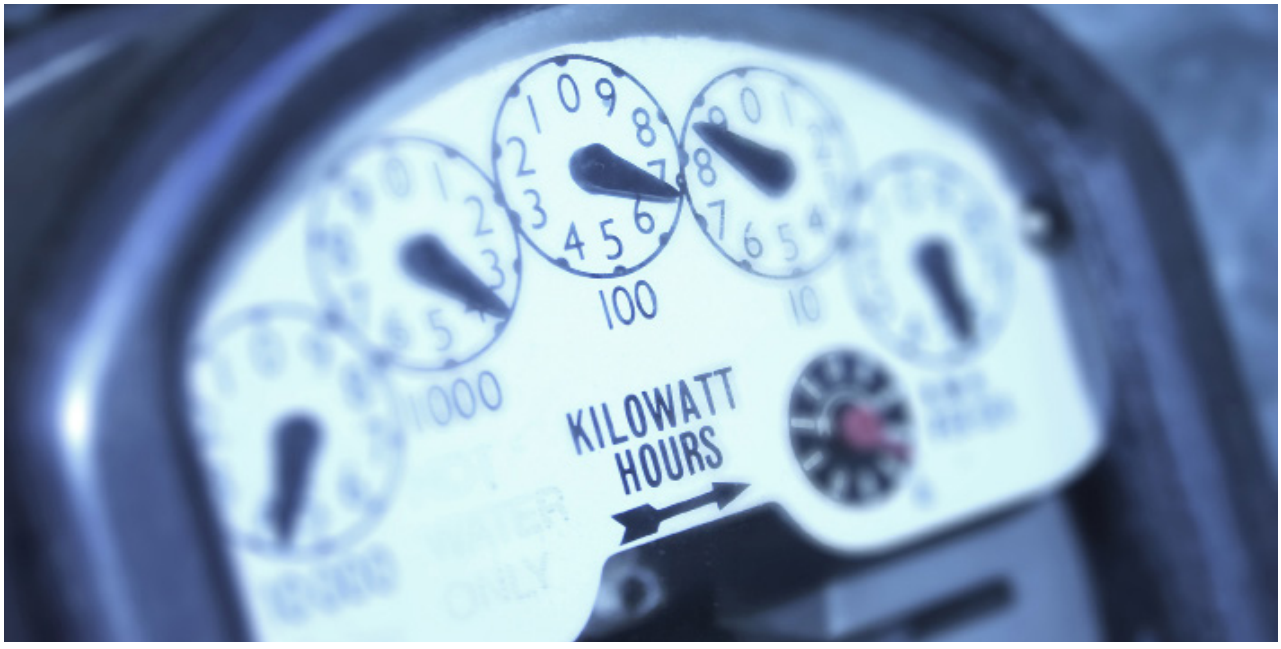
Recognising this gap, the STCA developed a standardised methodology to guide and support councils to align with international, national and state reporting frameworks.

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 and tailoring to a local level.
2. Sourcing accurate metered data provided by energy service providers where available.
3. Application of Australian Government National Greenhouse Accounts Factors to each energy use type to determine total greenhouse gas emissions
4. Value adding of additional data-sets such as the Australian Bureau of Statistics, and Australian PV Institute (APVI) statistics to provide more detailed insights into local technology trends.

The scope of community data is limited to:

- 2006-07 was selected as a base year following on from the transfer of water and sewerage assets from councils to a regional body and Tasmania joined the National Electricity Market[2].
- Current data as of 2016-17, as up to date as the latest Australian Government, Australian Energy Statistics[3].
- 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.



[2] 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.

[3] The Australian Energy Statistics are based on historical data with information collected from a range of sources including industry and the Clean Energy Regulator(CER), which requires large energy users in Australia to report energy and greenhouse gas emissions via the National Greenhouse Energy Reporting Scheme (NGERS)

KEY MESSAGES

REGIONAL CLIMATE CHANGE INITIATIVE

For the first time, local communities can access energy and greenhouse information for their local area in an open and user-friendly way. The impact of our energy choices are changing energy use over time.

LOCAL ENERGY USE PATTERNS ARE CHANGING

Locally emerging and disruptive technologies such as electric vehicles and solar impact energy use, alongside many other factors such as government programs and incentives are changing energy usage. A snapshot of each of the 12 southern Tasmanian councils' community energy use and greenhouse gas emission trends has been provided in separate reports as part of this project.

ENERGY STATISTICS

Energy and greenhouse gas information has been made easier to understand. By applying statewide statistics at a local level and presenting each municipal area's data through comparable benchmarks, key information has been made more accessible. For the first time highly accurate metered electricity data shows the contribution of small to medium scale renewable electricity generation. It also provides new insights into the residential and commercial sectors, as average household and average business electricity use provides a clearer picture of what's happening at a business or household level.

GREENHOUSE GAS EMISSIONS

Greenhouse gas emissions have increased by 6% or 147,231 tonnes of carbon dioxide (tCO_2-e), comparing 2006-07 results with 2016-17 results. Savings occurred in the transport sector, however, all other sectors released greater emissions.

COMMUNITY ENERGY USE

Community energy use has increased by 2% from 2006-07 to 2016-17. Increasing industry energy use contributed the most to rising community energy use, followed by the agriculture and forestry sector, commercial and residential sectors. Transport was the only sector which decreased energy use over the last decade indicating significant changes are occurring in the transport sector. Factors include population growth, changing consumer technology preferences, such as from petrol to diesel in the light vehicle sector and improved tail pipe emissions, and increased energy savings awareness, price signals and various government programs and incentives. Electric vehicles are gaining in popularity with 117 registered in the southern region.

LOCAL COMMUNITIES LEADING

Many local communities and the private sector are leading the way, whether it be high amounts of rooftop solar, overall emissions savings, or the shift to electric vehicles. The commercial sector has demonstrated leadership, across the region, doubling the amount of commercial solar photovoltaic (PV) installations since 2013-14.

CONSUMERS ENERGY-GENERATION

Consumers are increasingly taking local energy generation into their own hands. There are 14,000 more onsite renewable energy electricity generation systems than there were a decade ago in southern Tasmania, including solar photovoltaic, micro wind and hydro. Over 39 million electricity units (kilowatt hour – kWh) are returned to the grid annually, generated by local residential and commercial premises, the vast majority of this electricity generation comes from rooftop solar PV.

POWER OF THE SUN

Harnessing the power of the sun is popular. Solar photovoltaic (PV) are the most popular renewable energy technology. Solar hot water systems are also a common technology with over 3,500 systems across the southern region.

ELECTRICITY USE INCREASING

Electricity use has increased across southern Tasmania over the last decade, due to factors such as population growth, technology preference changes (from heating fuels to electrically powered heat pumps) and heating level preferences. Commercial sector electricity use across southern Tasmania has grown by 27% from 2006-07 to 2016-17, while the number of commercial meter connections has remained relatively similar, suggesting each business is using more, while residential sector electricity use grew by 21% with 20,000 new residential meter connections across the region, and each household uses roughly the same amount of electricity as a decade ago.

ENERGY EFFICIENCY MEASURES

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 have been influenced by increasing awareness of energy costs and actions as well as factors such as the weather, price signals and the use of energy efficient appliances and materials. Energy efficiency measures, such as insulation, buffer the impact of extreme temperature events, reducing the demand for heating and cooling and decreasing electricity use.

FOSSIL FUELS

Such as petrol, diesel and coal create more greenhouse gas emissions for every unit of energy used compared to zero or low emissions from renewable energy sources, such as hydro, solar and wind.

Table 1: Energy intensity and greenhouse gas emissions by energy type across southern Tasmania 2016 - 2017

Fuel type	Energy (Gigajoules GJ)	Greenhouse gas emissions (tonnes of carbon dioxide equivalent - tCO_2-e)	Emissions kilograms of carbon dioxide ($kgCO_2$-e)per unit of energy used (Gigajoules GJ)
Automotive diesel oil	9,900,000	690,000	70.2
Aviation turbine fuel	400,000	20,000	67
Black coal	4,400,000	390,000	90.2
Coke	2,000,000	190,000	93.5
Electricity	7,000,000	380,000	55.2
Liquid petroleum gas	800,000	50,000	60.6
Natural gas	6,600,000	340,000	51.5
Onsite renewable energy	200,000	0	0
Petroleum products	2,400,000	160,000	70
Wood, wood waste	3,500,000	4,000	1.3
Petrol - auto gasoline	6,200,000	410,000	67.8
Liquid/biofuels	1,000	<100	0.9
Southern Tasmania total	**43,400,000**	**2,600,000**	**N/A**

Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018, National Greenhouse Accounts Factors, 2018

GREENHOUSE GAS FOOTPRINTS

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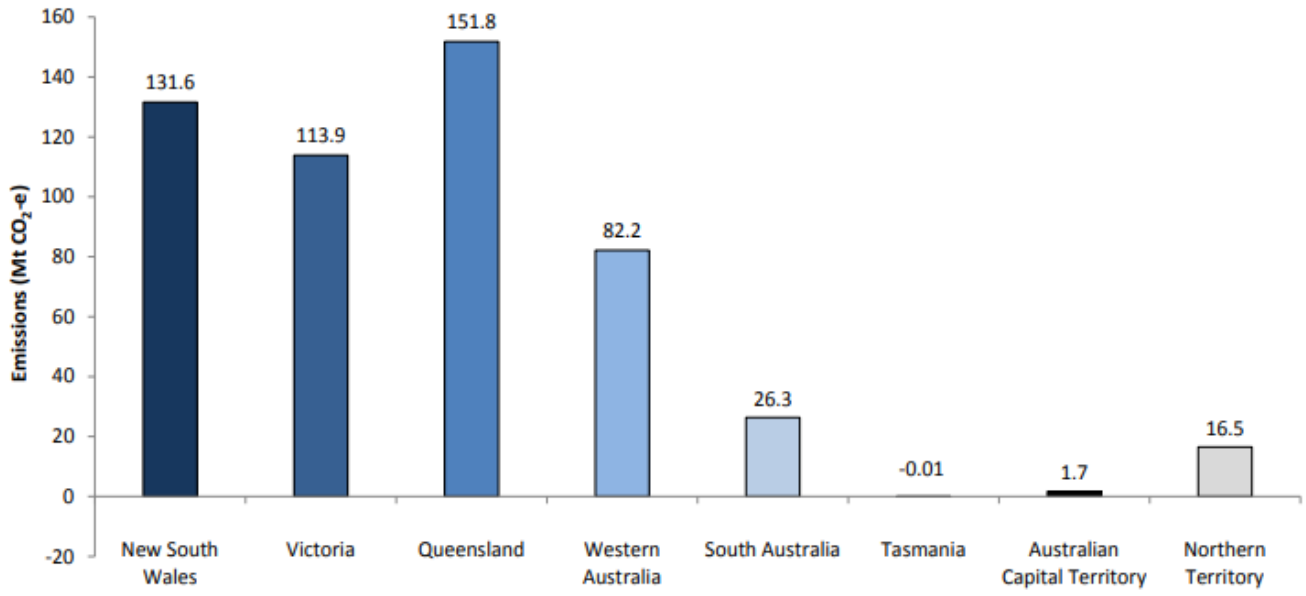
The Regional Energy Use and Greenhouse Gas Paper and Energy Use Trends 2018 focuses solely on energy use (such as petrol, diesel, wood, electricity) and their associated emissions.

Overall Australia's energy sector greenhouse gas emissions were 428.9 million tCO_2-e in 2016[4] and Tasmania's were 3.98 million tCO_2-e in 2015-16[5] or - 0.01%.

Figure 1: Total (all sectors) greenhouse gas emissions across Australia



Source: Department of Environment, Australian Government, 2018. Retrieved from: http://www.environment.gov.au/system/files/resources/a97b89a6-d103-4355-8044-3b1123e8bab6/files/state-territory-inventories-2016.pdf

[4] Megatonne (Mt), standard metrix used as outlined pg 50. Including energy sub sectors; electricity, stationary energy excluding electricity, transport, fugitive emissions pg 7. Department of Environment, Australian Government. Retrieved from: http://www.environment.gov.au/system/files/resources/c2af8dab-b4cf-40a4-85bc-3a09657d9284/files/nggi-quarterly-update-december-2016.pdf

[5]Tasmanian Climate Change Office, Department of Premier and Cabinet, Tasmanian Greenhouse Gas Accounts State Greenhouse Gas Inventory 2015-16. Retrieved from: http://www.dpac.tas.gov.au/__data/assets/pdf_file/0009/375858/Tasmanian_Greenhouse_Gas_Accounts_2016_Report.pdf pg 9 State and Territory total emissions (including those from Land Use, Land Use Change and Forestry) Financial Year 2016, mega tonnes of carbon dioxide equivalent ($MtCO_2$-e)

GREENHOUSE GAS FOOTPRINTS CONT...

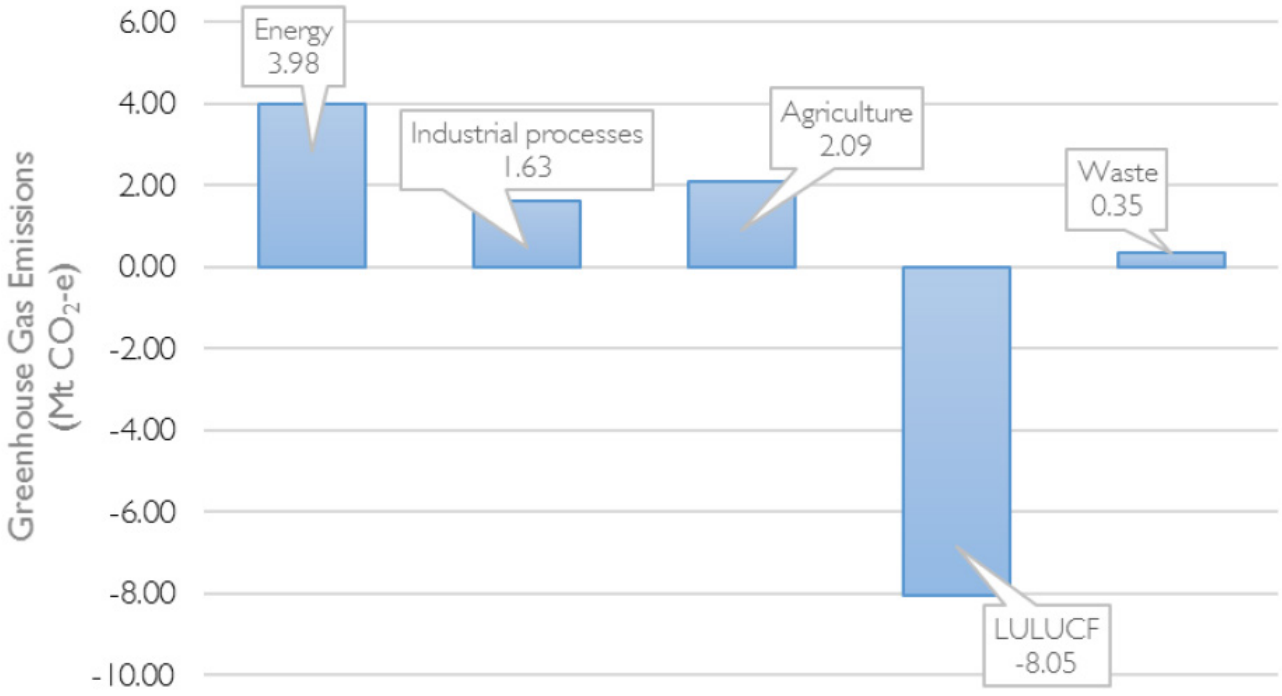
REGIONAL CLIMATE CHANGE INITIATIVE

Overall Tasmania's electricity use per capita is higher than other states[6].

Whilst Tasmania comprises -0.01 $MtCO_2$-e, its emissions need to be considered in the context of:

- Tasmania's population is 2% of the Australian population,
- Most of Tasmania's baseload electricity is hydro renewable energy, and
- The inclusion of offsetting from the forestry sector (Land Use, Land Use Change and Forestry (LULUCF))[7].

Figure 2: Total (all sectors) greenhouse gas emissions across Tasmania



Source: Department of Environment, Australian Government, 2018. Retrieved from: http://www.environment.gov.au/system/files/resources/a97b89a6-d103-4355-8044-3b1123e8bab6/files/state-territory-inventories-2016.pdf

[6] Electricity use in Tasmania is 7,975kWh/annum by DNSP compared to 4,627kWh/annum in Victoria or 5,910/kWh/annum in ACT. Retrieved from Table 3.7 : https://www.aer.gov.au/system/files/ACIL%20Allen%20Energy%20benchmarks%20report%202017%20-%20updated%205%20June%202018.pdf, Tasmania's energy sector – an Overview, retrieved: http://www.dpac.tas.gov.au/__data/assets/pdf_file/0017/141803/Tasmania_s_Energy_Sector_-_an_Overview.PDF

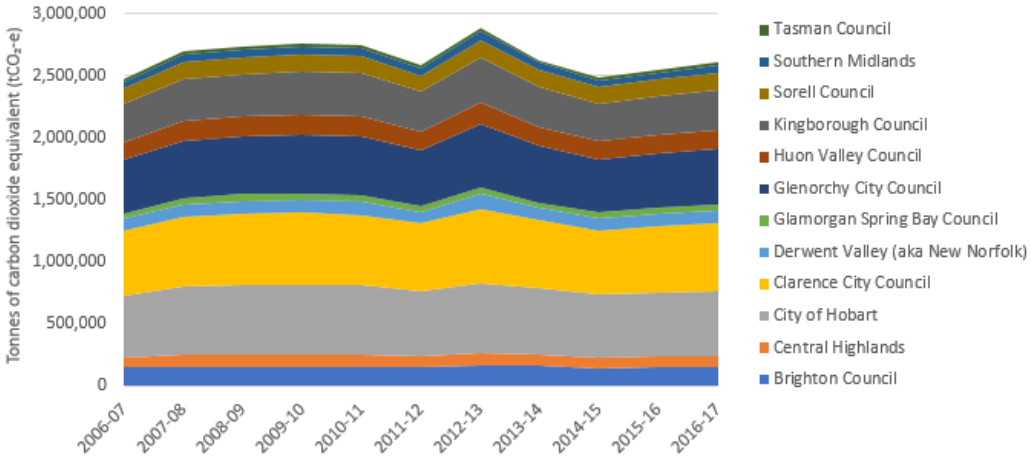
[7] The majority of Tasmania's greenhouse gas emissions reduction can be attributed to the State's forestry industry and the resulting decrease in emissions from activities in the LULUCF sector. It is noted that this sector is highly complex and there are evolving understandings of the nature and characteristics of carbon sinks and the variables that affect these.

GREENHOUSE GAS EMISSIONS

REGIONAL CLIMATE CHANGE INITIATIVE

Southern Tasmanian community greenhouse gas emissions[8] increased by 6% or 147,231 tonnes of carbon dioxide equivalent (tCO_2-e), from 2.4 million tCO_2-e to 2.6 million tCO_2-e, from 2006-07 to 2016-17. These emissions make up almost 70% of the total energy emissions for Tasmania.

Figure 3: Community greenhouse gas emissions across the southern Tasmania



Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018. NB: All greenhouse gas emissions are presented in tonnes of carbon dioxide equivalent (tCO_2-e) as an industry standard. Source: Southern Tasmanian Councils Authority, 2018.

The industrial sector has seen the greatest emissions increase (189,872tCO_2-e), followed by the agriculture and forestry sector (54,003tCO_2-e), commercial (39,025tCO_2-e) and residential sectors (44,842 tCO_2-e). This report focuses on emissions in the community domestic sector (transport, commercial and residential) as this is where councils have the greatest influence and jurisdiction to encourage and support change to low carbon economies.

Table 2: Southern Tasmanian municipal sector community greenhouse gas emissions (tCO2-e)

Municipal area/community	2006-07 (tCO2-e)	2016-17 (tCO2-e)	Growth (%)	Total difference between 2006-07 and 2016-17 (tCO2-e)
Brighton Council	148,503	154,986	4	6,482
Central Highlands Council	84,284	90,204	7	5,920
* **City of Hobart**	495,185	525,775	6	30,591
Clarence City Council	484,214	516,458	6	32,244
Derwent Valley (aka New Norfolk) Council	98,117	100,617	3	2,500
Glamorgan Spring Bay Council	45,969	50,238	9	4,269
Glenorchy City Council	425,594	446,325	5	20,731
Huon Valley Council	142,832	156,481	9	13,648
Kingborough Council	309,549	327,726	6	18,177
Sorell Council	125,425	132,928	6	7,504
Southern Midlands Council	56,776	60,615	7	3,839
Tasman Council	21,083	22,411	6	1,328
Total	**2,437,532**	**2,584,763**	**6**	**147,231**

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.* City of Hobart is constantly reviewing and updating its emissions profile as part of its international reporting obligations

[8] Covers electricity, gas, wood use, coal, petrol, diesel use across the residential, commercial, transport, agriculture and forestry and industry sectors, and does not include emissions from waste or land use change.

GREENHOUSE GAS EMISSIONS CONT...

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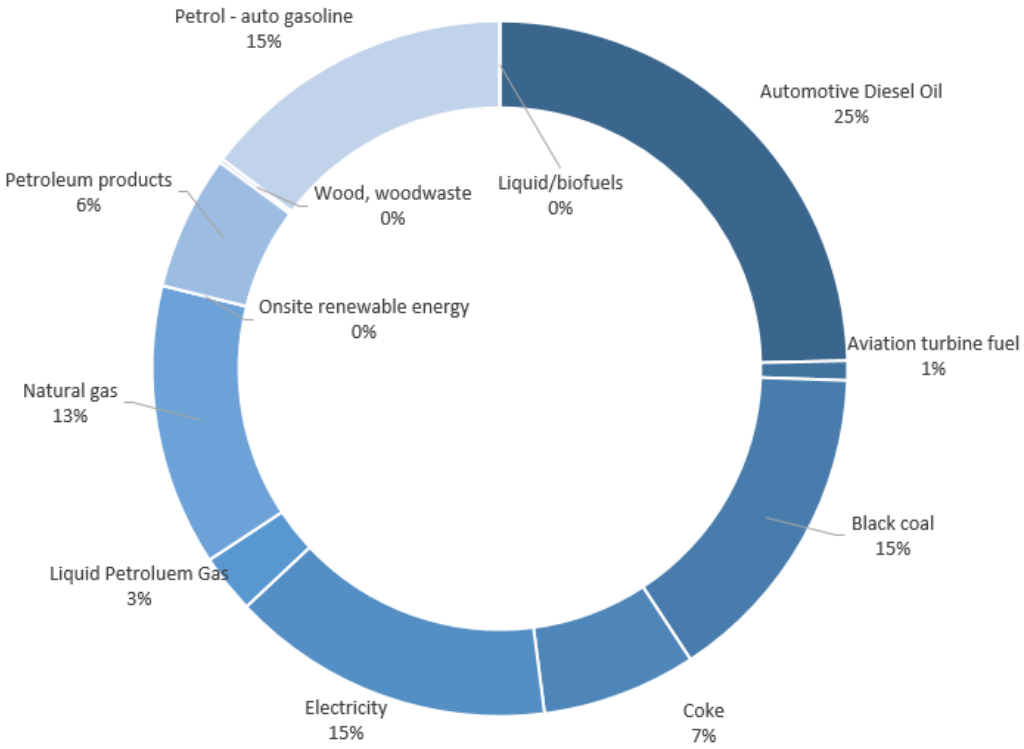
Greenhouse gas emission reductions have only occurred in the transport (-21%) sector. Australian Energy Statistics for Tasmanian transport data shows decreasing fuel consumption in the road transport sector, despite the number of vehicles remaining relatively similar. This decrease is considered to be due to improved vehicles and tail pipe emissions standards.

Coal and diesel fuel use are responsible for the greatest share of greenhouse gas emissions across Southern Tasmania. Coal and associated products (including coke, which is made from coal) are mainly used in the manufacturing sector principally for the production of cement, lime and plaster[9]. They are included in the community profiles as energy use in the mining, manufacturing, wood paper, printing, non-metallic mineral products subsectors under the 'industry' sector. Diesel is predominantly used in the transport sector, however, some is used as energy production for onsite generators for electricity production and to power other machinery on farms in the agricultural sector as well as in manufacturing and mining processes.

Figure 4: Regional greenhouse gas emissions by fuel types 2016-17



Source: Southern Tasmanian Councils Authority, 2018. Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018, australian Australian Government, National Greenhouse Accounts, 2019

[9] Data sources: Clean Energy Regulator (CER) data, collected via the National Greenhouse Energy Reporting Scheme (NGERS)

INCREASE IN ENERGY USE

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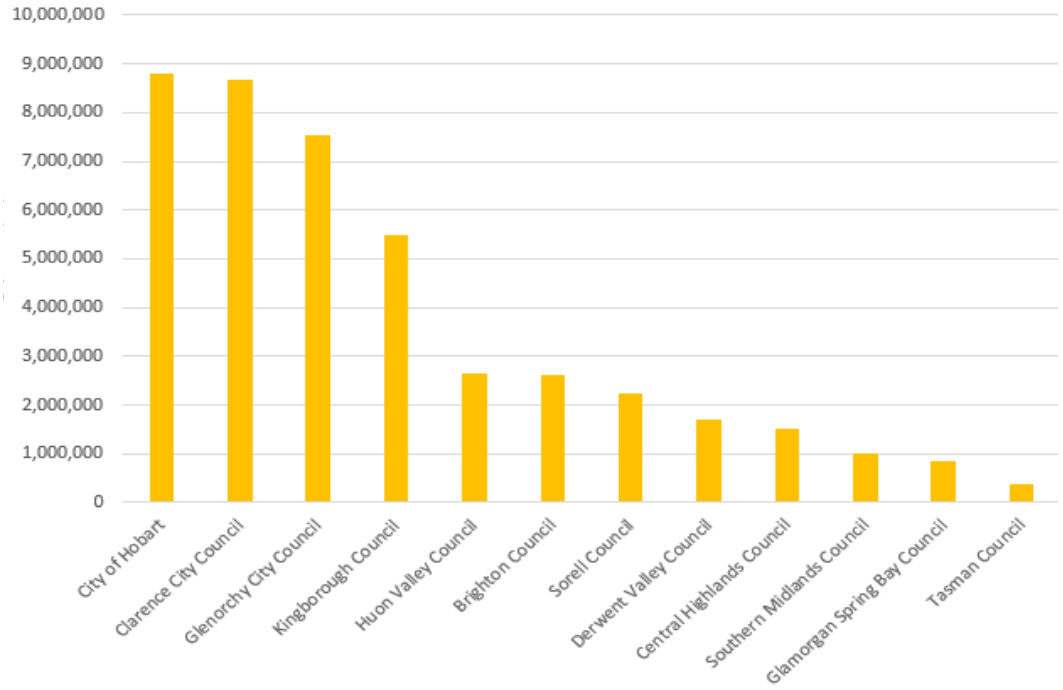
Across Southern Tasmania community energy use increased by 2% from 42 million GJ to 43 million GJ, from 2006-07 to 2016-17. Though electricity use increased in the industry sector, the rise in greenhouse gas emissions was mostly attributed to an increase in other fuel sources (such as coke, coal etc). Energy reductions were made in the transport (-21%) sector, all other sectors increased their energy consumption from 2006-07 to 2016-17.

Figure 5a: Community energy use across southern Tasmania



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. Source: Southern Tasmanian Councils Authority, 2018.

Figure 5b: Southern Tasmania regional energy use growth 2006-07 to 2016-17

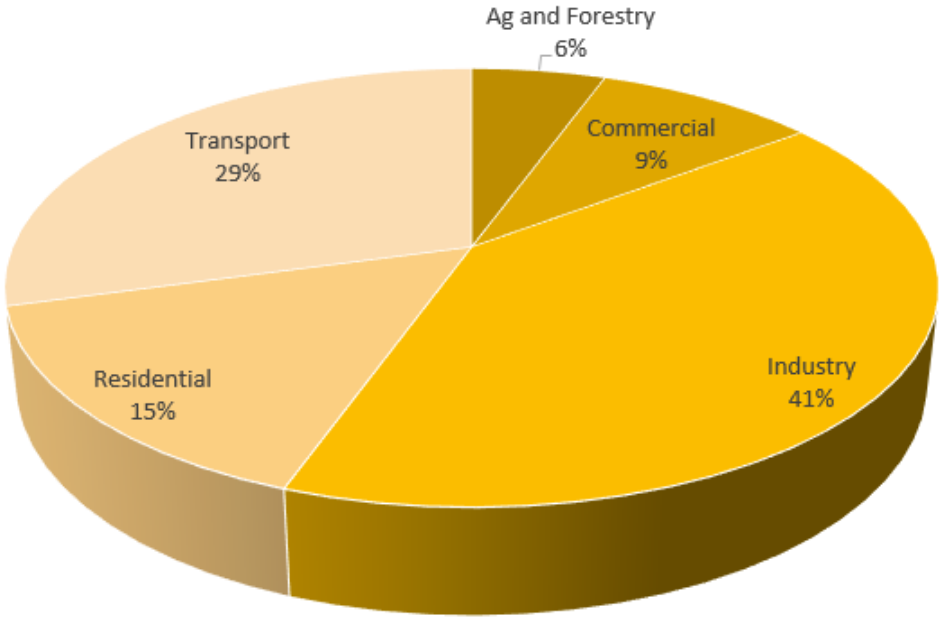
Data sources: Australian Energy Statistics, 2018, TasNetworks, 2018. NB: All energy use is presented in gigajoules (GJ) as an industry standard and a format that is easy to convert with other energy values. Source: Southern Tasmanian Councils Authority, 2018.

INCREASE IN ENERGY USE CONT..

Most municipalities in the southern region experienced increases in energy use. The exceptions to this were Derwent Valley (-33,052GJ) and Brighton (-11,725GJ) councils, who experience a decrease in energy use.

Industry fuel use is over a third (41%) of total community energy use, with the transport sector also responsible for a third (29%), residential sector 15%, commercial sector 9% and agriculture and forestry sector 6%.

Figure 6: Community energy across southern Tasmania (GJ) 2016-17



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

In every sector electricity use comprises the largest amount of energy use, with the exception of the transport and industry sectors where diesel and coal, are respectively, the predominant fuel source.

It is considered that increasing consumer awareness, price signals, solar photovoltaic (PV) uptake and government incentives are encouraging energy savings in businesses and the home.

INCREASE IN ELECTRICITY USE

REGIONAL CLIMATE CHANGE INITIATIVE

Electricity use increased by 24% in the last decade form 2006-07 to 2016-17 across southern Tasmania.

Increasing commercial sector electricity use (221 million units or kWh[10]) contributed to most of this growth. The residential sector increased demand by 193 million units (kWh) of electricity during this period with contributing factors such as population growth.

Figure 7: Regional electricity use southern Tasmania

Data source: TasNetworks, 2018. NB: Electricity meter connections are based on National Meter Identifier (NMI) data. 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 increase in residential electricity use 2012-13 is due to an increase in electricity use data provided by TasNetworks, due additional Pay As You Go data being measured and added in that single year. The TasNetworks data sourced from legacy business systems includes a variation between 2006-07 and 2007/08 for unknown reasons.

Average household electricity use has remained relatively constant from 2013-14 to 2016-17, indicating that despite strong growth in the number of households, each households electricity use remains relatively similar.

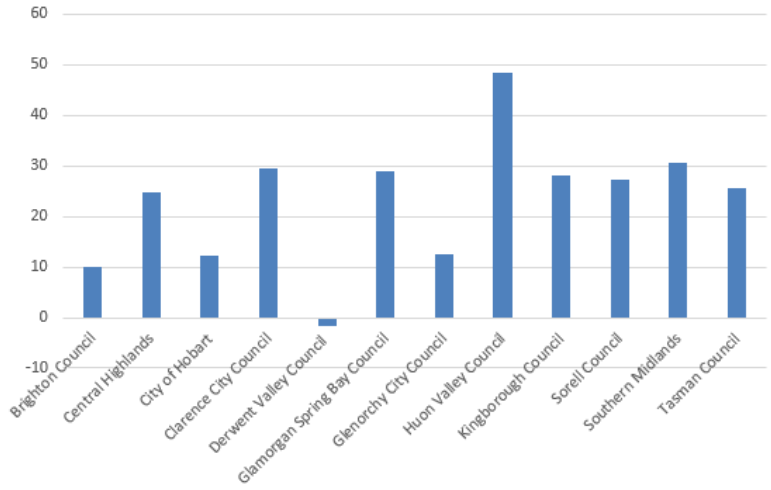
Average commercial electricity use has risen from 2011-12 to 2015-16, whilst the commercial sector had 56 less business in the region in 2016-17 than in 2006-07.

[10] Kilowatt hour (kWh) is the primary way of measuring electricity use

INCREASE IN ELECTRICITY USE CONT...

REGIONAL CLIMATE CHANGE INITIATIVE

Figure 8: Southern Tasmanian electricity use growth by municipality 2006-07 to 2016-17



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.

Table 3: Commercial and residential electricity consumption per person for 2016-17

Municipal area community	Business electricity use per capita (kWh/pp/day)	Residential electricity use per capita (kWh/pp/day)
Brighton Council	5.4	10.7
Central Highlands	13.0	10.0
City of Hobart	18.1	10.7
Clarence City Council	6.0	10.6
Derwent Valley Council	14.3	10.8
Glamorgan Spring Bay Council	17.1	17.0
Glenorchy City Council	9.3	10.4
Huon Valley Council	10.2	9.7
Kingborough Council	3.8	8.9
Sorell Council	3.9	9.9
Southern Midlands	6.6	9.8
Tasman Council	6.7	10.3
Average	**9.5**	**10.7**

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.

Other factors such as socio-economic demographics influence electricity use, alongside behavioural factors, for example:

- Older people and families tend to be at home more often.
- Areas with a high percentage of holiday homes are likely to experience greater electricity use in peak seasons and lower than average use when homes are vacant.
- Rural and remote areas are likely to have a higher reliance on wood and other non-electric forms of heating.

SOLAR PHOTOVOLTAIC

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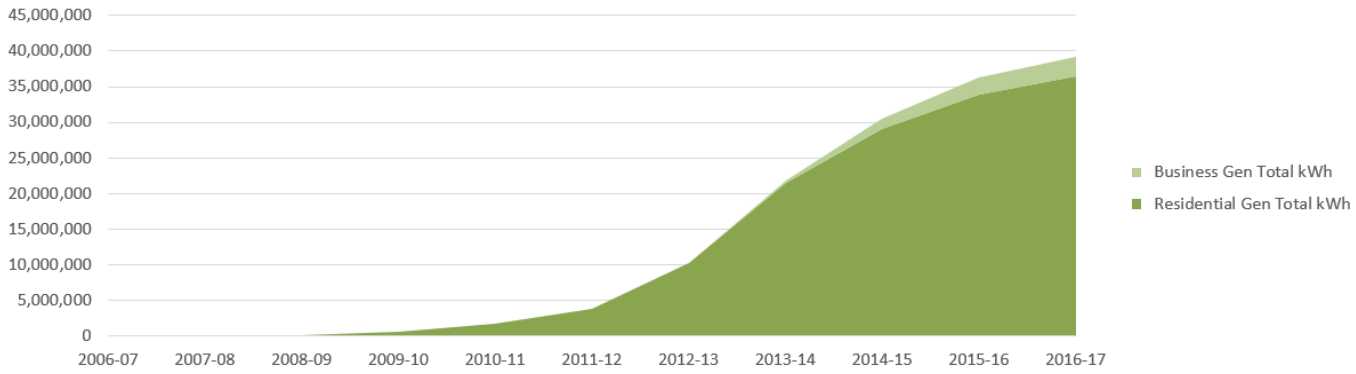
More than 14,000 Solar photovoltaics (PV) renewable energy systems have been installed over the last 10 years (2006-07 to 2016-17) across southern Tasmania.

Consumers are taking power generation into their own hands. Over 39 million electricity units (kWh) are returned to the grid annually (in 2016-17), generated by renewable energy technologies from local residential and commercial premises.

Commercial renewable energy systems have doubled in the last four years to over 500 systems across the Southern region.

Figure 9: Community renewable electricity generation across southern Tasmania



Source: TasNetworks, 2018. NB: Electricity use is represented as kilowatt hour (kWh). One kWh is equal to one unit on electricity bills.

Solar photovoltaic (PV) systems are the most dominant technology and solar hot water systems are also commonplace, with over 3,500[11] systems. The STCA's Home Energy Bulk Buy in 2018 saw 148 households install 637 kW of solar panels and 54 solar hot water systems across southern Tasmania.

Over 40 small scale wind and hydro systems are also registered in the southern Tasmania.

[11] Source: Clean Energy Regulator, Small Scale Data, accessed April 2018

SOLAR PHOTOVOLTAIC

REGIONAL CLIMATE CHANGE INITIATIVE

Renewable Energy Leader Board

Clarence community exports the greatest residential electricity generation back to the grid, followed by Kingborough, Hobart and Glenorchy.

Brighton municipality's commercial sector, in 2016-17, exported the most renewable electricity back to the grid, followed by Clarence, Glenorchy and the Central Highlands.

Table 4: Community renewable electricity system statistics across southern Tasmania in 2016-17

Municipal area community	Total generation (kWh)	Number of renewable energy systems	Premises(residential or commercial) with access to rooftop solar PV in the population
Brighton Council	3,594,719	944	1 in 9
Central Highlands	1,818,003	566	1 in 10
City of Hobart	5,377,914	2,175	1 in 13
Clarence City Council	7,863,266	2,821	1 in 9
Derwent Valley Council	1,357,238	470	1 in 13
Glamorgan Spring Bay Council	2,029,274	678	1 in 10
Glenorchy City Council	4,723,781	1,823	1 in 13
Huon Valley Council	2,973,364	1,205	1 in 8
Kingborough Council	5,614,044	2,064	1 in 7
Sorell Council	2,305,804	929	1 in 9
Southern Midlands	1,153,328	338	1 in 12
Tasman Council	413,723	179	1 in 14
Total	**39,224,458**	**14,191**	**Average - 1 in 10**

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

ENERGY & EMISSION DATA

REGIONAL CLIMATE CHANGE INITIATIVE

Population: Population growth is lower in Tasmania compared to other parts of Australia. It is anticipated that as more people move to the State energy use is expected to increase. Fixed Census 2016 figures have been used. The use of electricity data at a household level provides a means for comparing energy use from year to year, however, analysis of population growth is an area for further research.

Seasonal change: Heating Degree Days indicate whether there have been seasonal changes to heating needs. Project data is received on an annual basis, which does not not allow for more detailed analysis of the impact of seasonal changes from year to year. It is a significant challenge to identify a single factor influencing yearly electricity use results - this is an area for further research.

Emerging technologies: Electric vehicles and solar photovoltaic (PV) technology are changing energy use. As consumers use more electric vehicles, electricity becomes another energy type in the transport sector. Rooftop solar photovoltaic (PV) is enabling consumers to use electricity onsite and ultimately reduce total demand on the electricity network.

Transport choices: The southern Tasmanian region has predominantly older vehicle stock. Australian Government regulations require greater fuel efficiency in newer vehicles. There is a clear shift from petrol to diesel vehicles, the price of fuel, popularity of vehicle brands and their associated efficiency and reduced fuel costs are all influencing consumer preferences. Commuter choices such as public transport, walking or cycling reduce energy use.

Industry: Statewide energy statistics have been used for sectors such as industry, suggesting any change in large industry stakeholder energy use impacts results in all communities.

Energy mix: Tasmania's emissions factors fluctuate due to variations in our energy mix (for example an increase in natural gas due to the Basslink failure saw an increase in the emissions factor for Tasmania) so a fixed emissions factor has been used for estimating greenhouse gas emissions. It is based on the average emissions factor over the last 10 years.

WHO DOES WHAT

REGIONAL CLIMATE CHANGE INITIATIVE

All levels of government, the community and private sector have roles in the progression of emission reductions and the realisation of the co-benefits of energy savings, as we transition to a low carbon economy. Key to enabling this is the establishment of baseline greenhouse gas and energy footprints and the measurement of energy savings and emission reductions against this.

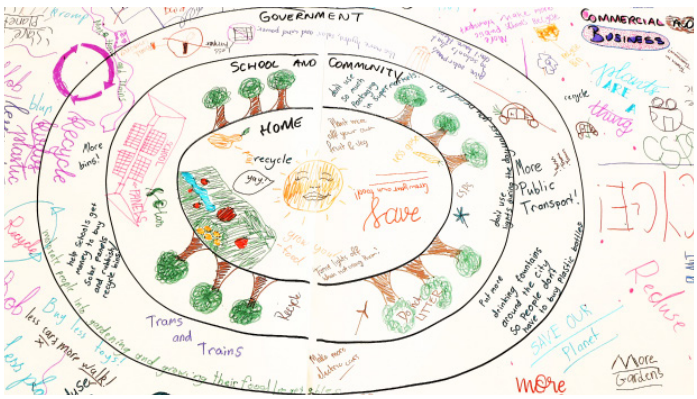
The Australian Government's emissions reduction target of 26-28% on 2005 levels by 2030 is part of its global commitment to the International Panel on Climate Change's (IPCC) 'Paris Agreement' to limit climate warming to 1.5C. To support and monitor progress against these goals it has established energy and greenhouse gas reporting agencies to provide state-by-state data through the National Greenhouse Accounts, the Clean Energy Regulator and the Australian Energy Statistics. It has also developed policy settings for nationwide market mechanisms and schemes, and manages the Renewable Energy Target and Australian Renewable Energy Agency to increase renewable energy generation and the Emission Reduction Fund to support the community and private sector to reduce greenhouse gas emissions.

The Tasmanian Government, through the Tasmanian Climate Change Office, uses the Australian Government greenhouse statistics and reports annual state-wide results: Tasmanian Greenhouse Gas Accounts. This supports the State Government's legislated target to achieve the zero emissions by 2050 target.

Local governments, the closest level of government to communities, and Tasmanian councils have a responsibility under the Local Government Act 1993 to provide for community health, safety and welfare. This unquestionably includes action on climate change and reduction of greenhouse gas emissions and associated energy use. Councils not only have a responsibility to reduce emissions from council managed buildings and assets, but also to work with their communities and business sectors through the provision of accurate energy and greenhouse gas emissions information to support informed decision making.

Local government groups, such as the STCA, also have a key role to play providing appropriate data and methods for councils to set corporate and community targets and support effective and efficient emissions monitoring and evaluation programs.

The community sector, businesses and households are responsible for their actions to reduce energy use and increase the installation of renewable energy technology such as solar and wind. Local information on changing technology preferences, and the greenhouse footprint of our energy choices, supports the community to make well founded decisions and realise the co-benefits of savings from doing so.



FREQUENTLY ASKED QUESTIONS

REGIONAL CLIMATE CHANGE INITIATIVE

Why is the Regional Energy and Greenhouse Gas Emissions Project 2018 important?

For the first time communities across the southern region of Tasmania can access energy and greenhouse gas information compiled at a local level. This includes detailed and accurate electricity data measured at the meter by TasNetworks which provides insights into electricity use and onsite renewable energy generation trends at a household and business level.

Completing an initial energy and greenhouse gas snapshot provides a starting point whereby targets can be set, plans developed and community projects can be evaluated over time. This reflects a well-established international framework for driving and documenting community climate change action to reduce greenhouse gas emissions.

What do the changes identified mean for our communities?

The results show common ground and unique energy and greenhouse trends across communities. Common findings across municipalities show:

- Energy use has increased slightly with 0-5% growth (though -2% growth occured in Derwent Valley Council) from 2006-07 to 2016-17 across most municipalities.

- Emissions across the soutern region increased by 6% or 147,239 tonnes of carbon dioxide between 2006-07 and 2016-17.

- 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 have been influenced by increasing awareness of energy costs and actions as well as factors such as the weather, price signals and the use of energy efficient appliances and materials, through government programs. Energy efficiency measures, such as insulation buffer the impact of extreme temperature events reducing the demand for heating and cooling and decreasing electricity use.

- Renewable energy is expanding in every municipality, with solar photovoltaics (PV) the most popular technology.

- Electric vehicles are gaining in popularity with 117 registered in the southern region

For unique trends in each municipality see the individual summary papers or regional summary document.

FREQUENTLY ASKED QUESTIONS CONT...

REGIONAL CLIMATE CHANGE INITIATIVE

How does our situation compare with other communities in Tasmania and Australia ?

Tasmanians generally consume more energy for heating, due to the colder climate, technology and fuel choices, than other parts of Australia. However, the emissions from our electricity use is lower. Tasmania's southern region has a higher per capita electricity demand than the northern regions. A factor that contributes to varying regional results is the higher wood use for heating in northern regional areas, which means less demand for electricity as the households energy needs are being met by other energy sources.

How else can this information be used?

Each municipality has been provided with more detailed information and data. Data can only be shared publically that does not identify specific households and entities for privacy reasons. Postcode level data and information can be used to develop better programs and services, for example if some postcodes are out performing the rest in terms of energy use and renewable energy generation then they might not require the same level of program support to deliver further savings.

How else can this information be used? (cont)

Electricity use data is metered, so it can be used to measure the effectiveness of programs following the installation of energy saving measures such as insulation, efficient heating and draught proofing. This evidence can then be used to justify program priorities or the development of improved programs. By outlining how energy and greenhouse estimates are made, and providing a clear methodology, the energy and greenhouse gas footprints can be repeated over time. This is a nationally and internationally accepted process. Developing a baseline energy and greenhouse summary is one of the first steps to taking effective mitigation action.

Why are local governments involved in providing climate change information?

Tasmanian councils are required by the Local Government Act to provide for the health, safety and welfare of their communities. Although not specifically detailed, it is self-evident that climate change impacts on communities not only in terms of increased temperatures and weather related events but also in terms of efforts to reduce energy use and greenhouse gas emissions as we transition to low carbon future.

Therefore councils, as well as considering climate matters in their programs and services, also have a key role in supporting communities to ensure relevant information is available to enable informed decision making. The provision of current and accurate energy and greenhouse data by councils helps the community to know where they can most effectively act as society transitions to a low carbon future such as whether to invest in an energy upgrade or renewable energy technologies or participate in activities within their communities to facilitate change.

FREQUENTLY ASKED QUESTIONS CONT...

REGIONAL CLIMATE CHANGE INITIATIVE

And what roles do the State and Commonwealth have?

Whilst there is a clear role for local government to provide trustworthy climate change information at the community level, the same is also true of State and National Governments at their relevant levels of governance. The Australian Government has responsibility for the provision of energy and greenhouse gas statistics at a national and state level, available at: Department of Environment, Australian Government: http://www.environment.gov.au/system/files/resources/c2af8dab-b4cf-40a4-85bc-3a09657d9284/files/nggi-quarterly-update-december-2016.pdf.

These inform broader national policies and regulatory settings as well as providing 'market signals' for investments that effect our national economy and support our transition to a low carbon society. It also has a core responsibility to fund the science that enables the necessary understanding and creation of solutions to achieve low carbon transitions.

The Tasmanian Government similarly provides energy and greenhouse gas statistics at a statewide level to inform statewide policies and local regulatory settings. It has a key role in making information available that can be used by local councils in its service delivery and decision making processes. The State provides a summary of state-wide greenhouse gas emission trends as an annual Greenhouse Gas Inventory and is available from: http://www.dpac.tas.gov.au/divisions/climatechange/climate_change_in_tasmania/tasmanias_emissions

And what is the role of STCA?

Whilst national and statewide statistics are available this information is not currently provided at a municipal level in Tasmania. There is no consistent standard of reporting available for local government. To this end the STCA RCCI developed the Regional Energy and Greenhouse Gas Project 2018 to provide assistance to southern Tasmanian councils and to ensure transparent, easily understood information was available to local southern communities.

How accurate are the results using this method?

This method is a robust and sound approach as it relies on government verified energy statistics and substitutes estimates with more accurate local data, where available. The accuracy of the results has been significantly increased by using the metered electricity data from TasNetworks. In the residential and commercial sectors this means around half of the energy information provided is very accurate, as electricity use is a large portion of the results.

Standard government determined emissions factors for all energy uses, such as electricity, diesel and petrol have been used to calculate greenhouse gas emissions. As with any method for estimating energy use and greenhouse gas emissions there are areas that can be improved over time. These include estimates for wood use and non-energy related emissions such as industrial chemical emissions, forestry and agricultural emissions.

FREQUENTLY ASKED QUESTIONS CONT...

REGIONAL CLIMATE CHANGE INITIATIVE

Why do some results show a decrease in energy use, yet an increase in greenhouse gas emissions?

Statewide energy statistics have been used as an estimate for the industry and transport sectors (as there is no comprehensive municipal level data on this, only bits and pieces of the picture). The State results are allocated by population. In some of the smaller municipalities the portion allocated from the State for the bigger energy using sectors (transport and industry) was greater than the local electricity results, for example.

Slight increases in the industrial sector ended up increasing emissions overall. In the industry sector there have been increases in fuels such as coal, which have a big greenhouse footprint associated with every unit of energy used. Energy and greenhouse gas emission results in 2016-17 in some areas are also very similar to the results reported for 2006-07, which has led to growth figures that are slight increases or decreases.

What are the next steps?

Developing an energy and greenhouse footprint is the first step in the process of developing a climate change strategy. The STCA RCCI has committed to the development of a Regional Climate Change Strategy and corporate and community action plan templates, to be delivered in 2019.

What is meant by ‘energy use’?

Energy is power derived from the utilisation of physical or chemical resources, such as providing heat to work machines.

Community energy use is made up of all the different fuels used to keep us warm, cook with, burn in vehicles and drive machinery such as farm equipment and lawn mowers. A variety of fuels are burnt including coal, LPG (Liquid Petroleum Gas), wood, petrol, diesel and kerosene.

In Tasmania, fuels such as natural gas are burnt to create electricity, alongside high amounts of zero emission energy sources such as hydro, wind and solar in Tasmania, creating low greenhouse gas emissions from every unit of electricity used.

Energy can be measured in electricity units known as kilowatt hour (kWh) or in joules, a universal system of measuring and comparing energy use.

FREQUENTLY ASKED QUESTIONS

CONT...

REGIONAL CLIMATE CHANGE INITIATIVE

What are ‘greenhouse gas emissions’?

A greenhouse gas is a gas that absorbs and emits radiant energy within the thermal infrared range. Greenhouse gases cause the greenhouse effect, which act like a blanket to stop heat escaping into space and keep the earth warm. Greenhouse gases include carbon dioxide, methane, nitrous oxide, ozone and water vapour.

The universal unit for comparing and combining different emissions is the weight (in kilograms or tonnes) of carbon dioxide emissions equivalent denoted by the following sign (-e).

To work out our greenhouse footprint we firstly need to know what energy we use and the associated emissions released from each fuel. For example, LPG creates 60.6 kilograms of greenhouse gases equivalent for every unit of energy (gigajoule) burnt.

For further information visit http://stca.tas.gov.au/cc/