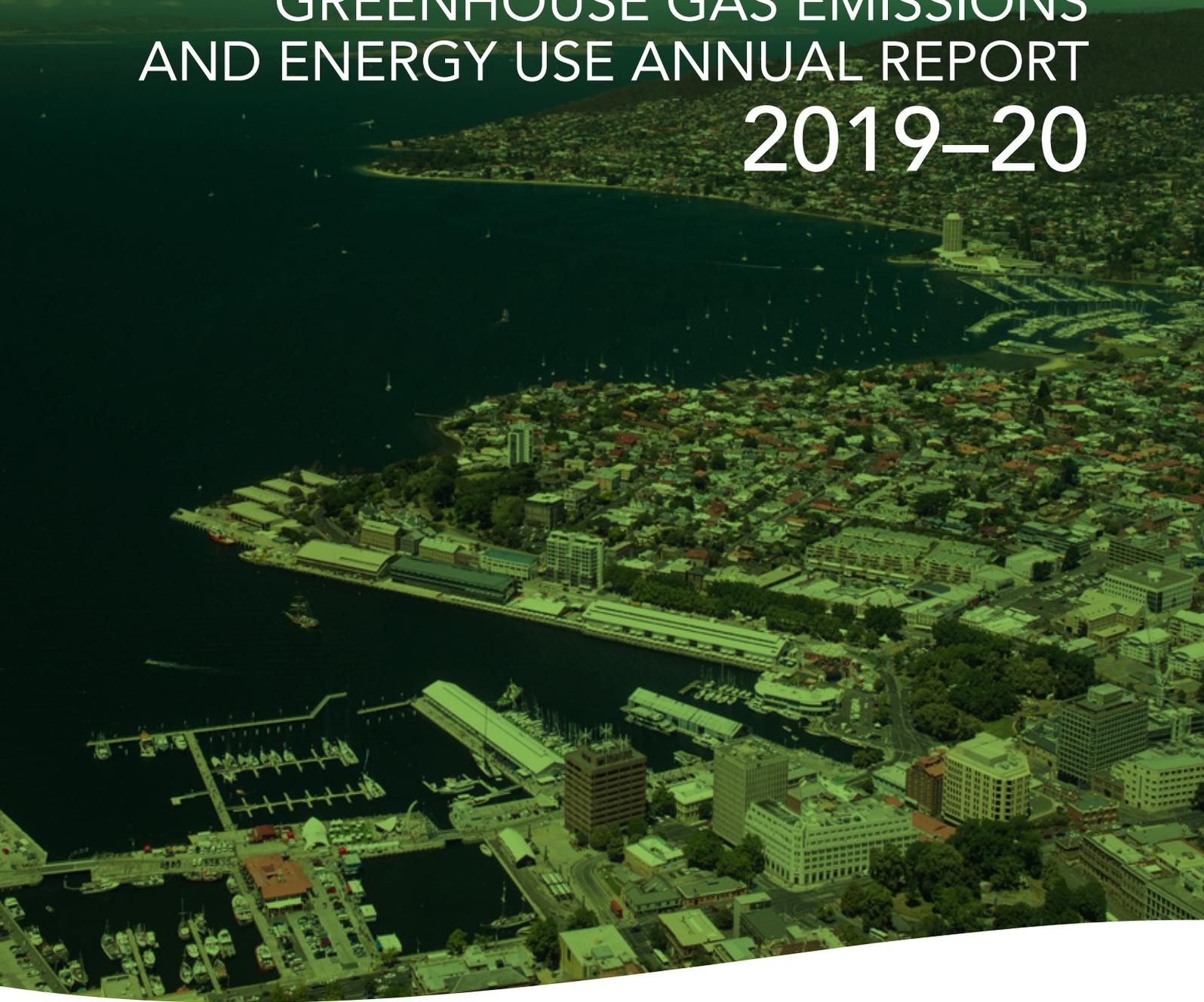


GREENHOUSE GAS EMISSIONS AND ENERGY USE ANNUAL REPORT 2019–20



City of **HOBART**

This is the final report in the City's Corporate Energy and Greenhouse Gas Program. It identifies that the City achieved its corporate energy and greenhouse gas emissions targets, from 2010 levels by 2020, reducing its:

- energy use by 40.4 per cent, exceeding its 35 per cent target
- greenhouse gas emissions by 19.9 per cent exceeding its 17 per cent target.

Overall the energy and greenhouse program resulted in cost savings of \$1 million in 2019–20 across the City's energy bills.

Over the last decade City of Hobart has achieved:

- 85 major energy efficiency/fuel saving projects, now saving 18 391 GJ of energy each year
- \$1.2 million in cost savings (per year by 2020)¹
- 1209 tonnes of carbon dioxide saved each year
- Halving energy use (per square meter) of its building assets
- 2691 solar panels (742 kW) installed across 13 rooftops generating 2.4 million units of electricity since 2016
- 61 per cent waste reduction to landfill, reducing/diverting 232 000 tonnes over 10 years²

Significant achievements across Council managed assets include a:

- 45 per cent reduction in Doone Kennedy Hobart Aquatic Centre energy use
- 42 per cent reduction in vehicle and plant fuel use
- 33 per cent reduction in street lighting energy use
- 68 per cent reduction in Nursery and depots' energy use
- 47 per cent reduction in civic and administration buildings energy use
- 23 per cent reduction in car park energy use
- 8 per cent reduction in sporting and recreation energy use
- 7 per cent reduction in public space lighting and fountain energy use

¹ Including maintenance savings since 2014

² Compared to a baseline year of 2010 and 50 000 tonnes of landfill



Cost Savings from Greenhouse Gas Emission and Energy Reduction Projects – Summary List 2010 to 2020

FINANCIAL YEAR	NUMBER OF MAJOR PROJECTS (MINOR NOT INCLUDED)	SAVINGS*/ YR	GHG SAVINGS TCO ₂ -E/YR (EST)	ENERGY SAVINGS GJ/YR (EST)
2014–15	13	\$459 000	468	6906
2015–16	15	\$194 200	218	3185
2016–17	18	\$230 900	238	3627
2017–18	20	\$120 300	136	2287
2018–19	13	\$205 055	71	1134
2019–20	6	\$55 900	78	1252
Total savings	85	\$1 265 355	1209	18 391

Table 1: City of Hobart cost saving measures 2010 to 2020. Source: City of Hobart greenhouse accounts 2020

***NB:** Cost savings include maintenance savings as well as energy bill savings

Corporate energy efficiency and greenhouse gas reduction efforts in 2019–20 resulted in further energy and financial savings, building on a decade of smart energy management.

Energy saving activities resulted in an overall 8.1 per cent reduction or 5149 gigajoules (GJ) in 2019–20 from 2018–19. Energy savings from the City’s streetlights, parks, sports facilities and the corporate vehicle fleet, in 2019–20 are equivalent to powering 117 homes for a year.

Over the same year this resulted in emissions savings of 592 tonnes of carbon dioxide equivalent (tCO₂e), the equivalent of burning 1371 barrels of oil.

City of Hobart’s energy bills were \$1 million less in 2019–20 than in 2018–19.

The Covid-19 crisis shutdown played a minor part in reducing energy use across City of Hobart’s buildings, and contributed to a 3.7 per cent reduction in vehicle fleet fuel use (see Appendix A).

City of Hobart was on track to meet its energy and greenhouse gas emission targets before Covid-19, and has since achieved the final targets set for 2020 as savings continued to accrue from previous energy investments.

City of Hobart achieved the target set in 2010 to reduce GHG emissions by 17 per cent (down to 18 497 tCO₂e annually) in 2020, recording an all-time low Corporate greenhouse gas emission level of 17 861 tCO₂e in 2019–20.

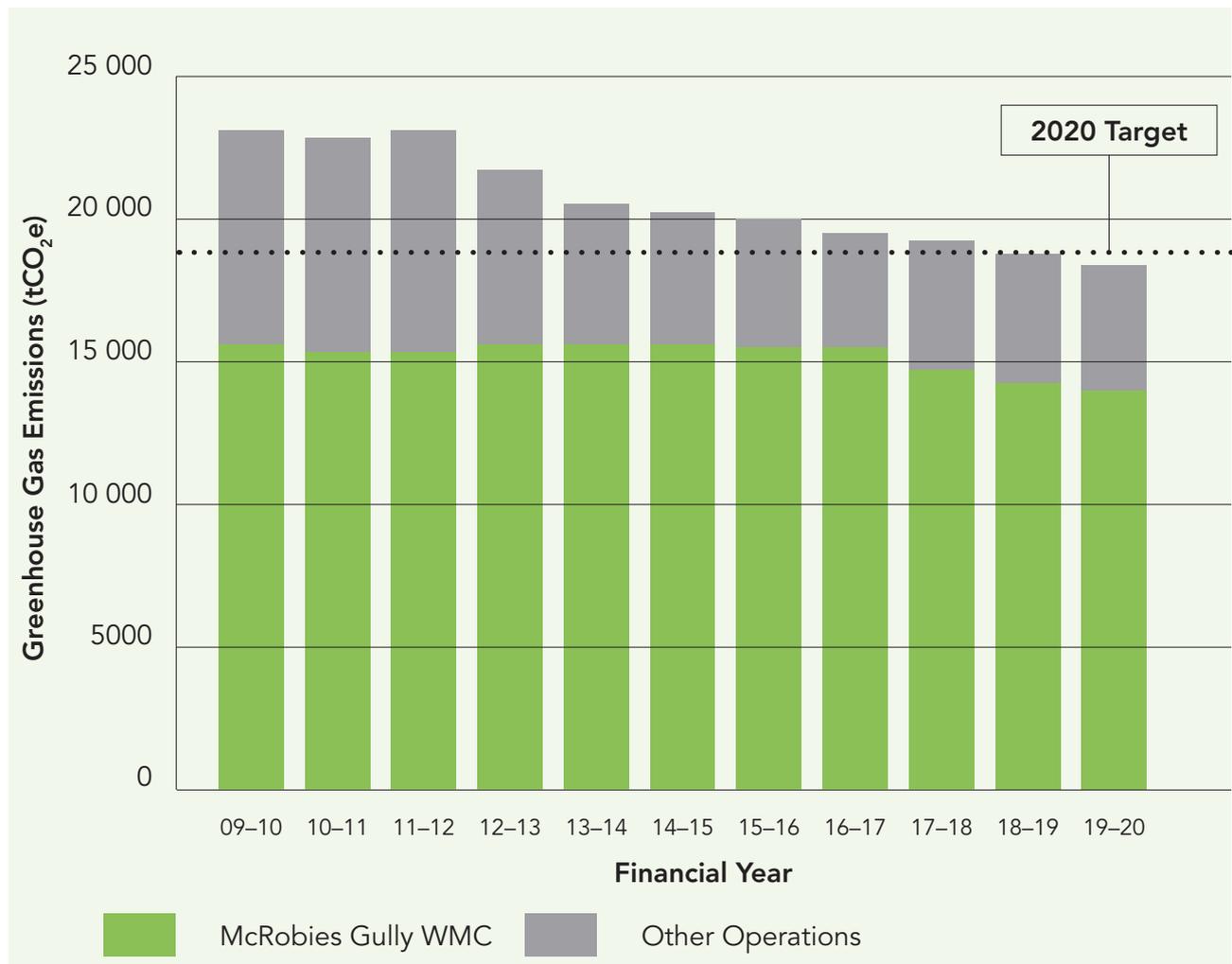


Figure 1: City of Hobart greenhouse gas reductions 2010 to 2020. Source: City of Hobart greenhouse accounts 2020

***NB:** Waste releases emissions over 30 years, so some emissions from landfill remain due to historical waste to landfill

In addition, the City of Hobart achieved the energy reduction target of a 35 per cent reduction in 2020, down to 58 235 GJ in 2019–20. See Appendix B for further details.

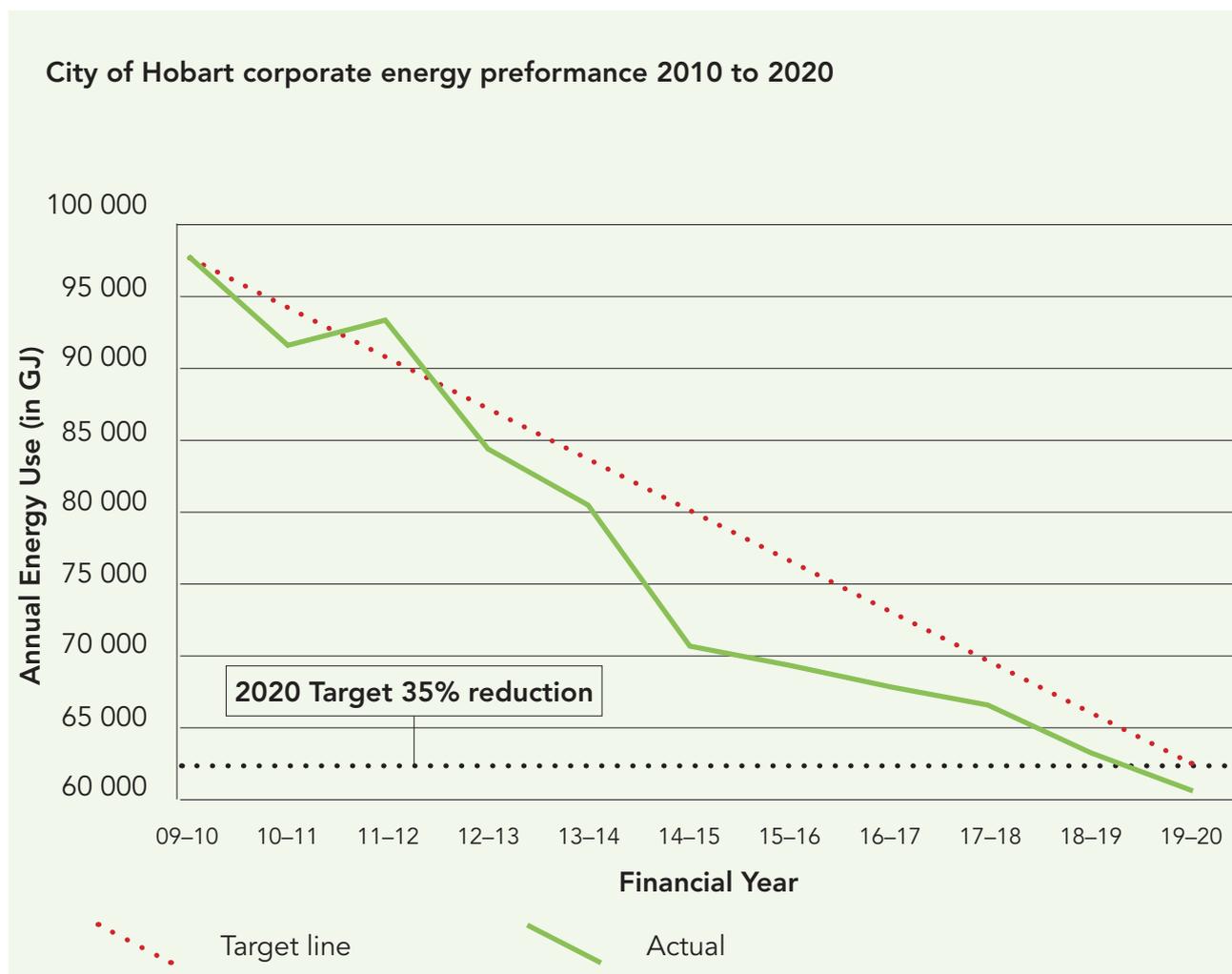


Figure 2: City of Hobart energy reductions 2010 to 2020. Source: City of Hobart greenhouse accounts 2020

City of Hobart’s overall aim of the emission reduction program has been to make the greatest emissions savings per dollar investment through improved waste management.

Waste is the source of 80 per cent of the City of Hobart emissions footprint, while burning fuels such as petrol, diesel, gas and using electricity represent 20 per cent.

Waste to landfill, which was over 50 000 tonnes in 2010 dropped to 19 997 tonnes in 2020. Waste emissions from landfill decreased by 2 per cent from 2018–19, from 14 579 tCO₂e down to 14 288 tCO₂e to 2019–20.

Waste releases emissions over a 30 year period. This means the City of Hobart is managing the impacts of legacy waste of up to 30 years ago.

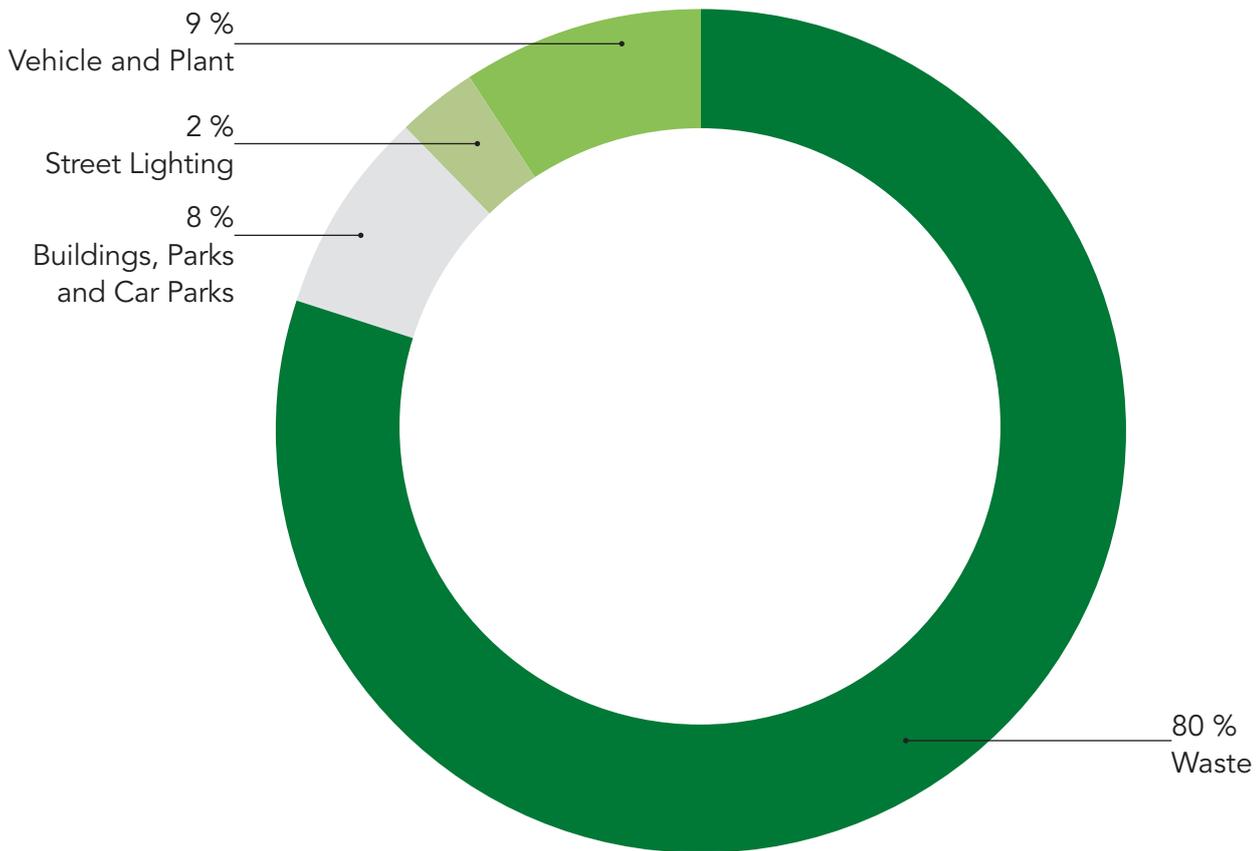


Figure 3: City of Hobart greenhouse gas emissions by asset area. Source: City of Hobart greenhouse accounts 2020

MCROBIES GULLY WASTE TRANSFER STATION STATISTICS

Time period	Total waste to landfill tonnes	Waste composted tonnes	Emissions savings from waste composting (tCO ₂ e)*	Landfill gas electricity generation (MWh)	Landfill gas emissions (tCO ₂ e) saved through gas burning
2019–20	19 997	7 866	10 600	5 071	32 201
Cumulative 2010 to 2020	328 365	74 006	99 982	700 287	426 275

Table 2: City of Hobart waste statistics. Source: City of Hobart greenhouse accounts 2020

***NB:** compared to a Business as Usual baseline of 2010, if green waste had gone to landfill (taking into account minor emissions from compost)

While the total amount of waste delivered to landfill rose by 240 tonnes⁴ over the last year, there was also an increase in composting from 7721 tonnes to 7866 tonnes over the last year diverted away from landfill.

32 201 tonnes of equivalent carbon dioxide emissions from methane, captured in underground pipework at the McRobies landfill in the previous 12 months, was destroyed for renewable energy generation. The electricity generated was 5071 MWh, enough to power 690 homes for a year.

Savings of 10 600 tCO₂e in 2019–20 from composting 7866 tonnes of organic waste away from landfill (includes the new foodwaste service FOGO).

Following significant waste emission reduction achievements, in 2012–13 City of Hobart expanded investments to fuel and energy efficiency improvements with favourable financial returns. In 2019–20 emissions reductions of 3.2 per cent were achieved across City of Hobart operations; mainly due to a 8.1 per cent reduction in energy use across street lighting, parks and buildings assets.

Lighting changeovers to LEDs, insulation upgrades, heating improvements and smarter building management systems have reduced average asset energy use by 8 per cent per m² between 2018–19 and 2019–20, halving energy use over the course of the decade (374 MJ/m² down to 189 MJ/m²).

Vehicle fuel use decreased with high fuel efficiency standards, driver training, GPS route tracking, the acquisition of hybrid electric vehicles and behaviour change with Covid-19 shutdown. City of Hobart currently has four electric vehicles as part of the fleet, including:

- 1 x full electric Volt
- 2 x Toyota corolla hybrid; and
- 1 x Mitsubishi Outlander Plug In Electric Vehicle (PHEV)

Road street lighting energy use reduced by 5 per cent due to a combination of newer LED lighting upgrades (such as Elizabeth Street Mall) and lighting removals.

City of Hobart energy reductions % 2018–19 to 2019–20



Figure 4: City of Hobart energy reductions by asset area. Source: City of Hobart greenhouse accounts 2020

Total bill savings from actions implemented in 2019–20 are estimated to be \$559 000, over the next decade.

Two additional systems were implemented at Centerpoint Car Park (31 kW) and Mawson Place (20 kW) in 2019–20 at a cost of \$63 500 and are estimated to save City of Hobart \$178 000 over the systems’ lifetimes.

Council Centre – basement air conditioning upgraded from an electric heater to a heat pump, saving an estimated \$32 000 a year in heating costs.

Town Hall Annex air conditioning upgrade to increase air recycling and reduce heating costs, saving an estimated \$2000 a year in heating costs.

Argyle Street Car Park toilets lights and hot water service successfully upgraded.

Elizabeth mall street lighting LED upgrades. Energy cost the City \$2.5 million in 2019–20, a reduction of \$1 million compared to the energy bills for 2018–19.

Investments with over 10–20 year lifetimes continued to deliver in 2019–20, including:

Energy efficiency upgrades included the building management control systems in the Town Hall, optimisation of newly installed heating and related mechanical plant works at the Doone Kennedy Hobart Aquatic Centre and further upgrade of lights with energy efficient LED technology in City-owned buildings and public lighting.

13 solar rooftop systems (over 2600 panels) have delivered City of Hobart annual bill savings of \$142 019 in 2019–20. See Appendix C for further details.

Since installation in 2016, solar savings are over \$610 194 with 2.4 million units of solar electricity generated.



APPENDIX A: COVID19 IMPACT ON ENERGY USE ANALYSIS

In response to the Covid-19 pandemic the City of Hobart shutdown various facilities, programs, community events and change to work practices with staff working from home. This led to a change in energy consumption patterns compared to business as usual. City of Hobart facility use changed during the following periods.

- City of Hobart staff began working from home from late February, with the bulk of employees working from home from 30 March to 1st May, returning to work by 30 June. This impacted vehicle fuel use, with fewer trips and reduced load on some Council offices, particularly at the Clearys Gates depot
- Council Centre ran on 100 per cent fresh air, instead of finding energy savings using recycled air (typically a heat exchanger is used to preheat air, saving the energy required to heat air from a lower temperature)
- Town Hall closed to public events, and had the centralised air conditioning on for offices during shutdown
- Doone Kennedy Aquatic Centre closed, (March 17 to 18 June) with the equipment on to cycle through cleaning the pools and the use of some offices. One pool was out of use due to refurbishments.
- Car parks experienced much lower occupancy; Hobart Central was at half use, Argyle Street stayed open, Salamanca car park stayed open with fewer spaces and Centre point closed.
- Observation shelter on Mt Kunanyi closed
- Salamanca Market (reopened 8 August), Town Hall and Council Office customer service centre closed temporarily. Other events such as Long Beach markets reduced electricity use
- Mathers House was busy providing information to the public
- City Hall was used to accommodate the homeless through YouthArk
- Closure of the Travel and Information Service Centre
- Mornington Nursery operating hours were as usual minus contact with the public
- Public conveniences used relatively similarly as despite lockdown many people were out walking and riding



Asset type	Address	Greater or less energy use in March/April 2020 vs 2019 (benchmark year)
Vehicle fleet	Fuel use across vehicle fleet and plant	3.7 per cent reduction (23 795 L) of vehicle fuel use. Mathers House Gas use increased slightly over the year
Pool	Doone Kennedy Hobart Aquatic Centre	13 per cent less electricity use than in 2018–19. Pool gas use halved from 1200 GJ in 2018–19 to 505 GJ in 2019–20, due in part to energy management changes
Halls	Town Hall and City Hall	Town Hall similar energy use, City Hall use increased by 5400 kWh
Information	Kiosk Elizabeth st	Greater -100 kWh
Toilets	Salamanca place slightly less	Less – toilet energy use unlikely to change much based on visitor numbers
Car parks	Hobart Central Car Park	Slightly more in March and a 1787 kWh decrease in April

Table 3: City of Hobart Covid-19 impacts by asset area. Source: City of Hobart greenhouse accounts 2020; Sources: Caltex fuel summary as well as gas summaries of BBQ and sporting grounds and Aurora and ERM bill comparison for buildings



For example, DKHAC pool showed a reduction of 126 000 kWh of peak electricity use comparing March, April and May 2018–19 results with 2019–20 results.

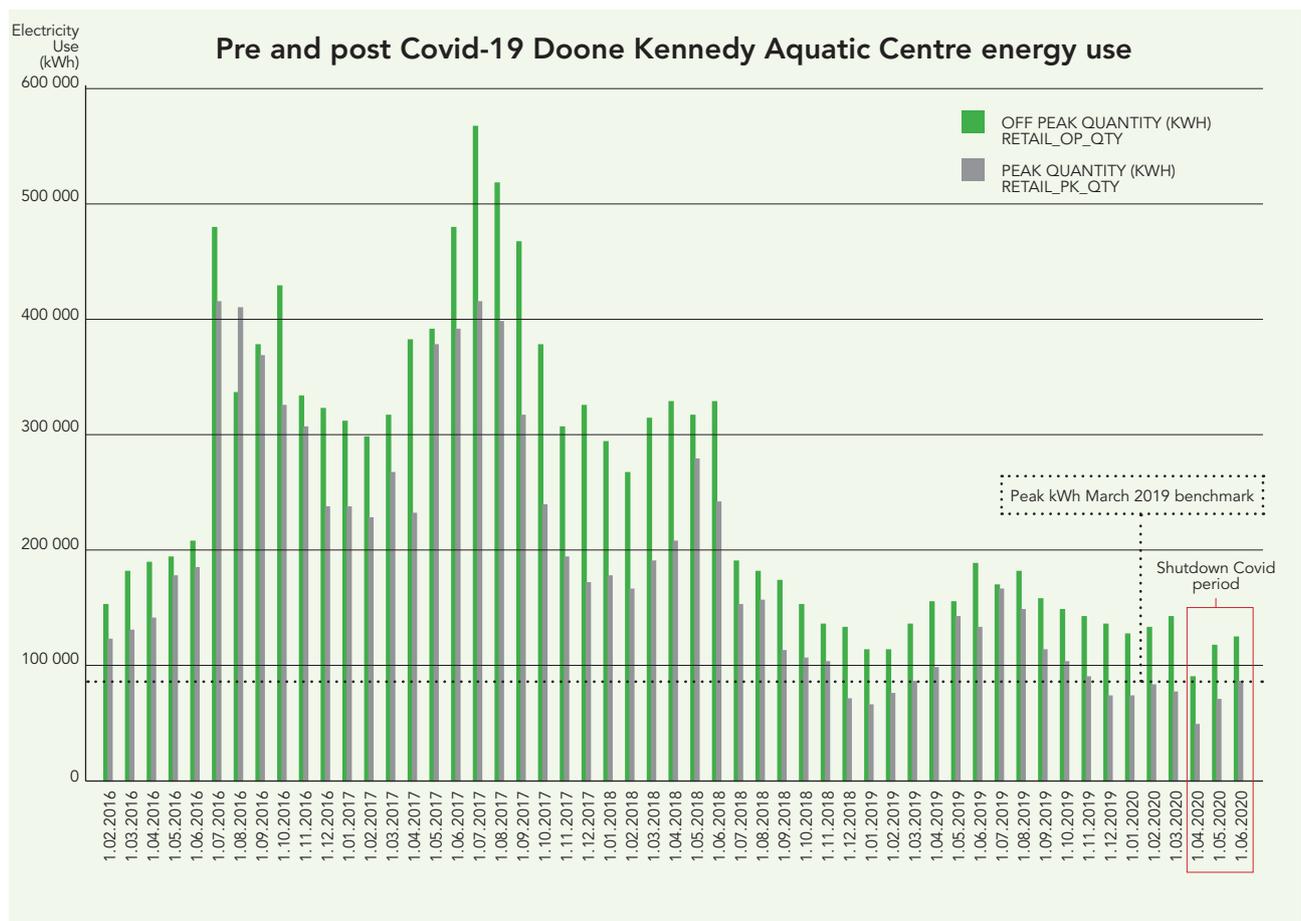


Figure 5: City of Hobart Doone Kennedy Hobart Aquatic Centre energy use 2016 to 2020. Source: City of Hobart greenhouse accounts 2020

APPENDIX B: GREENHOUSE GAS EMISSION AND ENERGY SNAPSHOT 2019–20

Year	Greenhouse Gas Emissions (tCO ₂ e-)	McRobies Gully Waste Management Centre tCO ₂ e-	Other Operations tCO ₂ e-	Annual Energy Use GJ
2009–10	22 285	15 984	6301	97 747
2010–11	21 986	15 997	5989	91 878
2011–12	22 092	16 043	6049	93 388
2012–13	21 757	16 218	5539	84 566
2013–14	21 160	15 887	5272	80 467
2014–15	20 621	15 750	4701	71 960
2015–16	20 018	15 432	4587	69 680
2016–17	19 723	15 267	4456	67 704
2017–18	19 105	14 697	4408	67 267
2018–19	18 453	14 579	3874	63 384
2019–20	17 861 (Target 18 497)	14 288	3656	58 235 (Target 63 797)
Total per cent reductions over a decade (2010 to 2020)	-19.9%	-10.6%	-42%	-40.4%
Total cumulative reductions over a decade (2010 to 2020)	20 074	5682	14 479	263 331
Difference per cent between 2018–19 to 2019–20	-3.2%	-2%	-5.6%	-8.1%
Difference in total between 2018–19 to 2019–20	592	291	218	5149

APPENDIX C: CITY OF HOBART SOLAR STATISTICS 2015–16 TO 2019–20

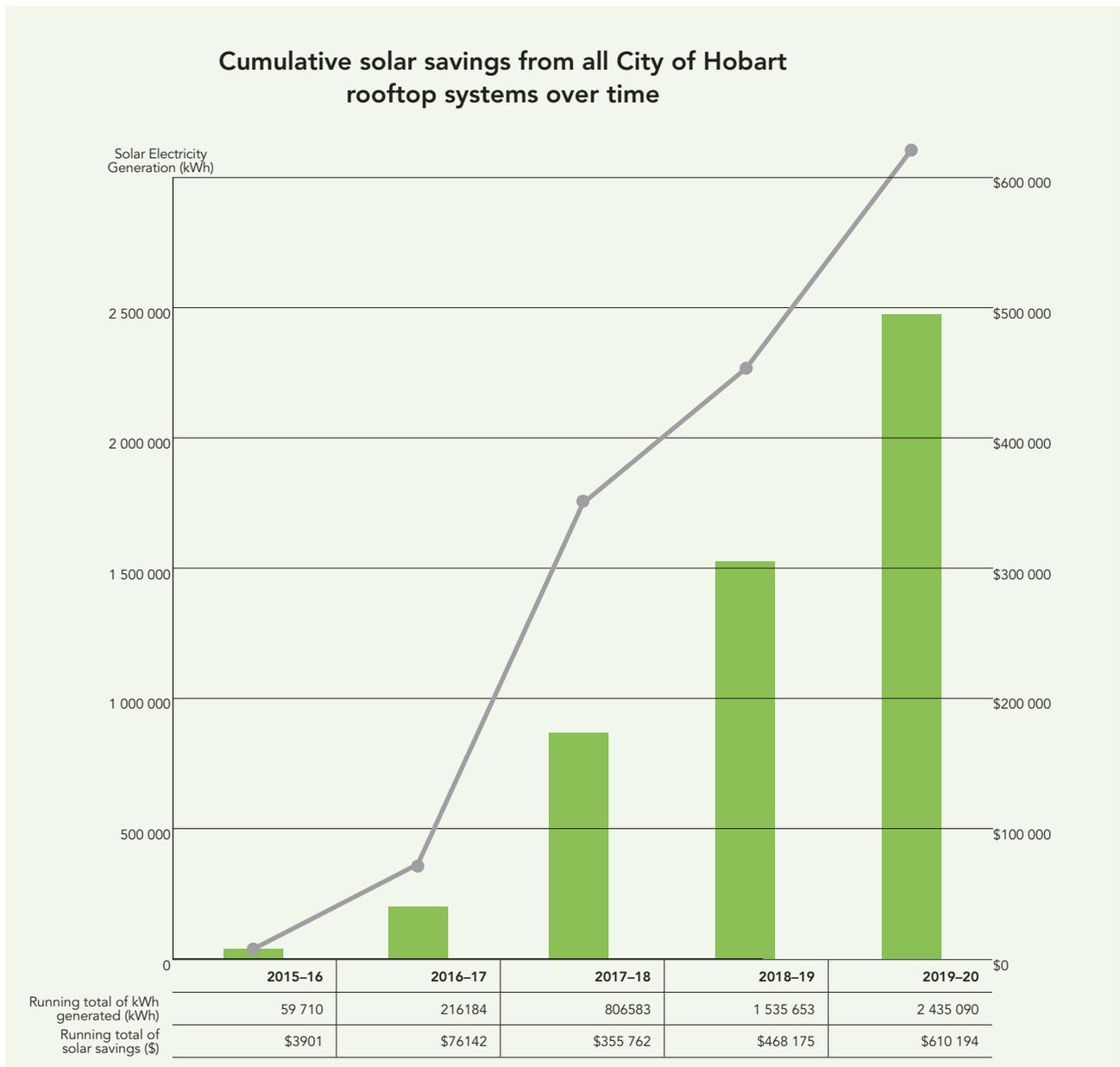


Figure 6: City of Hobart solar generation 2016 to 2020.
Source: City of Hobart greenhouse accounts 2020

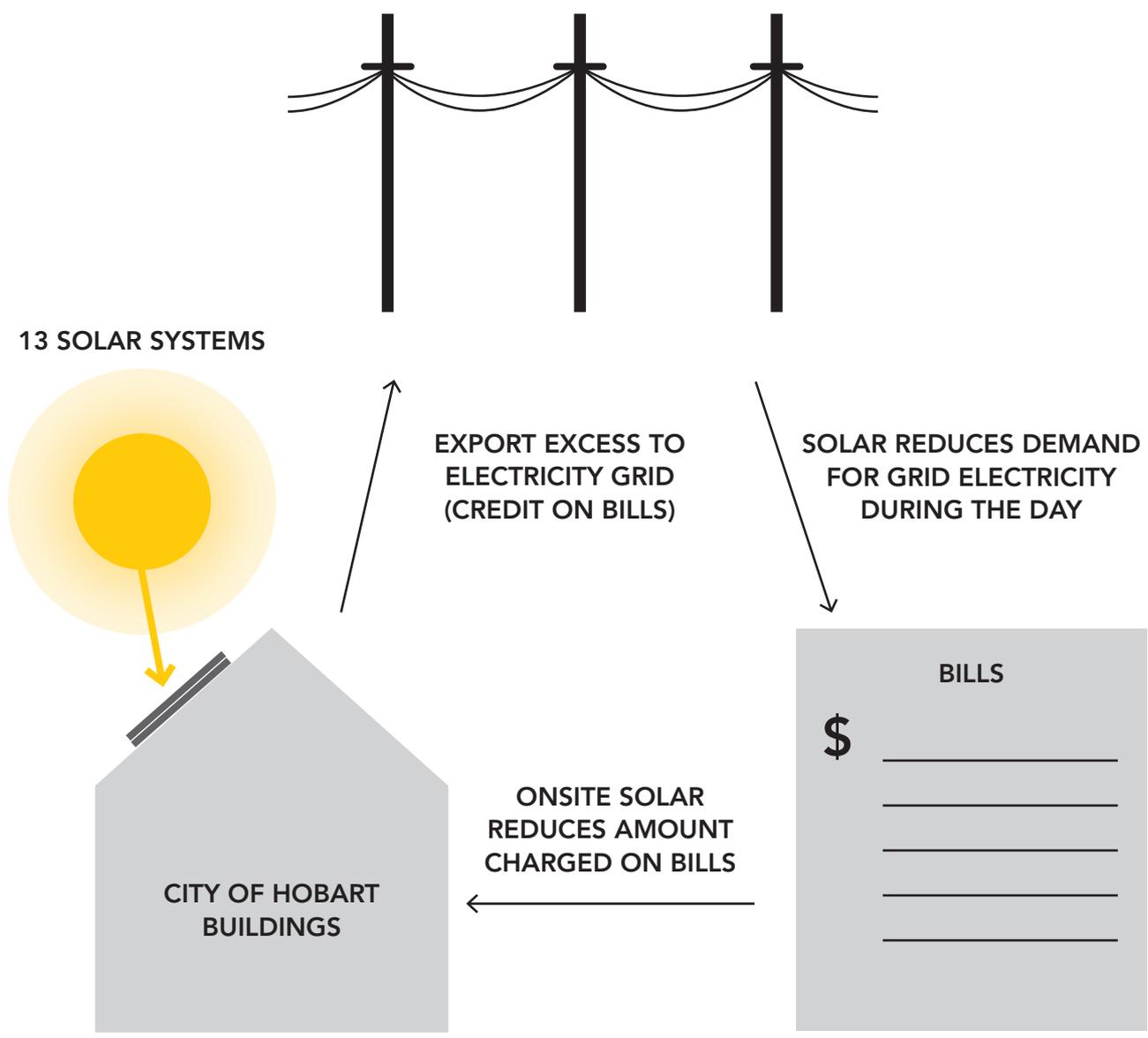


Figure 7: Diagram of solar savings- example City Hall 31 kW rooftop solar system in March.
 Source: City of Hobart greenhouse accounts 2020

APPENDIX D: SIGNIFICANT GREENHOUSE GAS EMISSION AND ENERGY REDUCTION PROJECTS – SUMMARY LIST 2019–20

Project Title	Cost	Savings/yr	GHG Savings tCO ₂ -e/yr (est)	Energy Savings GJ/yr (est)
Fleet – Ongoing replacement with more fuel efficient vehicles	In vehicle cost	\$10 000	15	125
Council Centre – basement air conditioning upgraded to more efficient heat pump	\$60 000	\$32 000	42	756
Town Hall – Annex Recycled Air Upgrade	\$10 000	\$2000	2.4	43.2
Argyle St Toilet lights upgraded and hot water system	\$10 000	\$3000	5	90
Mawsons Place – Solar Panels (20 kW system)	\$20 000	\$3700	5.2	93.6
Centrepont Car Park – Solar Panels (31 kW system)	\$43 500	\$5200	8	144
Totals	\$143 500	\$55 900	78	1252

NB: Savings includes any associated increase or reduction in maintenance costs



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