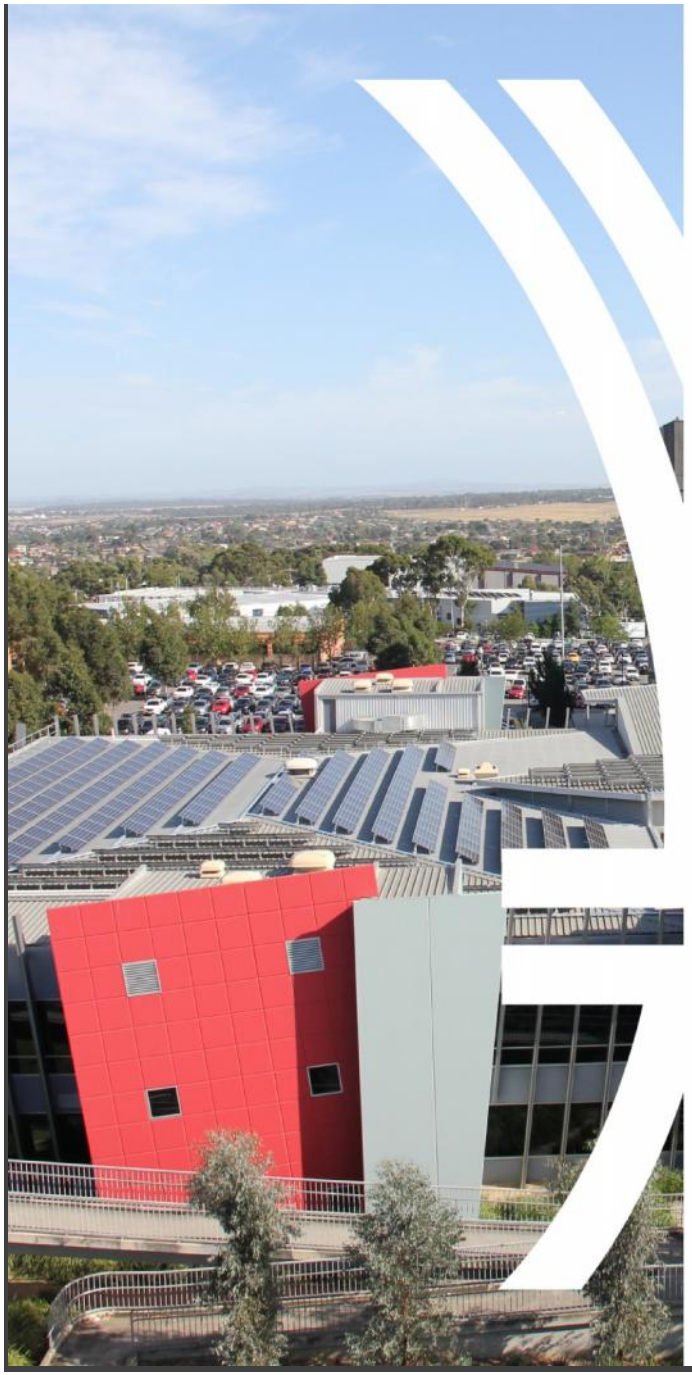

HUME CITY COUNCIL

GREENHOUSE ACTION PLAN 2018-2022

Council Operations

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HUME CITY COUNCIL

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1. INTRODUCTION

Hume City Council's Greenhouse Action Plan is a key component of Hume's response to climate change along with the Climate Change Adaptation Plan. The Greenhouse Action Plan focusses on reducing greenhouse gas emissions, primarily in Council operations, but also with the Hume community.

Council has a firm commitment to tackle climate change and reduce greenhouse gas emissions within its own operations. This commitment is reflected in the objectives and actions of the *Hume Horizons 2040*, the *Hume City Council Plan 2017-2021*, *Pathways to Sustainability: An Environmental Framework* and the previous *Greenhouse Action Plan (2013 - 2016)*.

This four year *Greenhouse Action Plan (2018 - 2022)* aims to:

- extend and expand the actions taken to reduce greenhouse gas emissions in Council operations, recognising that most of these actions have very positive financial returns
- undertake investigations for significant emission reductions and pursue these where required or where the business case is sound
- ensure that Hume City Council is well placed to set and resource an ambitious and achievable Corporate Greenhouse reduction target when the next Greenhouse Action Plan is developed
- continue and enhance Council's support for community emission reductions that return triple bottom line outcomes (economic, social and environmental) for the Hume community.

The Plan outlines the objectives, actions and resource requirements to support this commitment, under the following key themes:

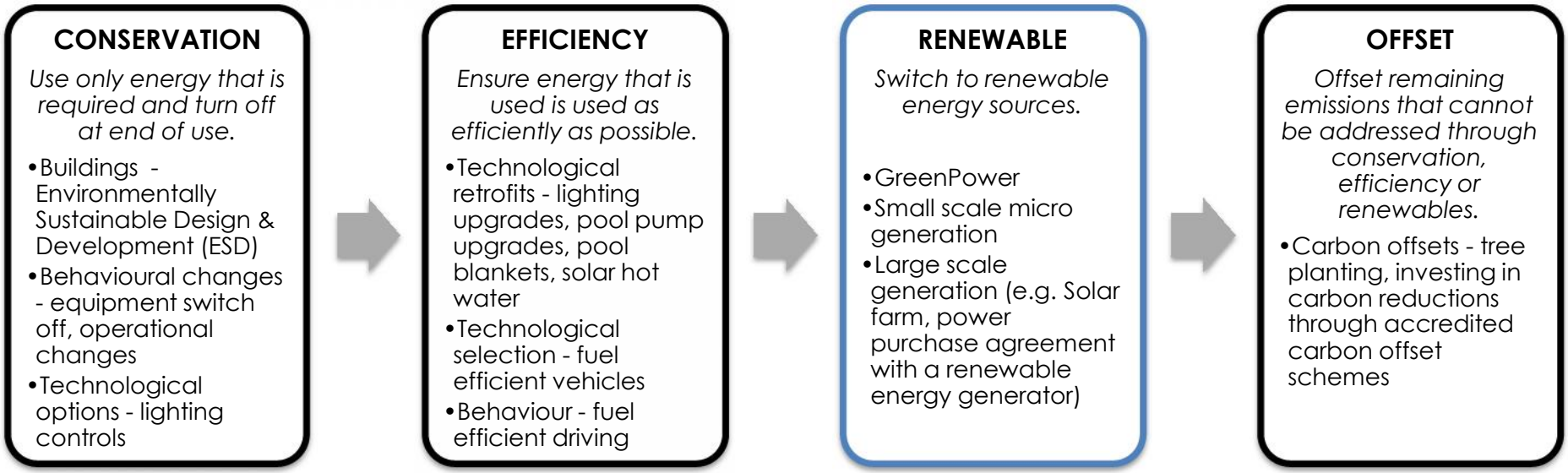
1. Buildings and Renewables
2. Waste
3. Public Lighting
4. Fleet
5. Supporting Community Emission Reductions
6. Contributing to Positive Change

There are several Council Strategies, Action Plans and programs that support climate change action both internally and externally:

Council document / program	Aim and Target Audience
Live Green Action Plan (2015-2019)	Engages and educates the Hume community on environmental sustainability.
Live Green Work Green program - the Hume Green Team	Engages and educates Hume staff on environmental sustainability.
Business Efficiency Network	Engages Hume businesses with energy efficiency and environmental practices.
Waste and Amenity Service Planning	Objectives include reducing greenhouse gas emissions associated with household waste.
Climate Change Adaptation Plan (2013-2017)	Outlines Council's approach to managing its climate change risks.
Hume Integrated Land use and Transport Strategy (HILATS) (2011-2020)	Integrates land-use and transport planning within Hume, and works to reduce reliance on the private car for residents.
Hume Integrated Water Management Plan and Action Plan (2014- 2017)	Seeks to increase use of alternative water sources, improve water efficiency in Council operations & reduce environmental impacts from storm water on Hume's creeks & waterways.
Procurement Policy	Outlines the procurement principles for Council purchasing, including environmental sustainability considerations.

These Strategies, Action Plans and programs are complementary to the Greenhouse Action Plan, which focusses on reducing greenhouse gas emissions from Council's own operations, supporting the reduction of community emissions and influencing and advocating for wider change as relevant. Supporting actions contained in these Strategies, Plans and programs are generally not replicated in this Action Plan - except where they have significant greenhouse reduction potential or where greenhouse reductions are a key objective of the program.

The energy hierarchy is a guiding principle of this Greenhouse Action Plan:



Hume is currently pursuing energy conservation, energy efficiency and renewable energy concurrently. The purchase of carbon offsets would be pursued only after emissions have been reduced and energy sources switched to renewable sources to the fullest extent practical. Energy conservation, efficiency and investment in generation of renewable energy are all cost-effective and have ongoing, additional benefits: reducing energy bills at Council facilities; reducing Hume's risk exposure to increasing energy costs; increasing user awareness; avoiding energy waste; and in many cases improving thermal comfort and service levels for facility users.

Specific KPIs & targets have been set under each key theme, focussing on what is realistic yet still challenging over the 2018-2022 timeframe.

The Greenhouse Action Plan capital works budget supports the energy efficiency and solar install activities undertaken through this Greenhouse Action Plan. As noted above in addition to reducing greenhouse gas emissions, these activities return financial benefits to Council with simple payback periods of 10 years or less years and frequently return thermal comfort and service benefits. A Greenhouse Action Plan capital works budget of $400,000 for 2017/2018 has already been approved by Council. This plan proposes a further four year program of works for energy efficiency, solar install and investigations of large scale renewables and greenhouse reduction target options as outlined in Appendix 2. Additional sources of funding also support the actions outlined in this Greenhouse Action Plan – existing sources of funding for each action/ activity are noted as relevant.

Goal: To Demonstrate Greenhouse Leadership by reducing greenhouse gas emissions in Council buildings

Key Performance Indicators (KPIs) and Targets:

KPI 1: Increase Solar Generation within Council facilities
Target: At least 1.2 MW of solar generation on Council facilities by 2021/22.

KPI 2: Improve energy efficiency and reduce greenhouse gas emissions from Council facilities with a particular emphasis on new buildings and the largest electricity consuming facilities.

Target: Greenhouse gas emissions of Council's new large facilities (at the Design stage) at least 25% below the modelled greenhouse gas emissions equivalent to compliance with Section J of the National Construction Code, with greenhouse reduction contributed from both the building fabric and services.

Target: Reduction in greenhouse gas emissions from four large energy using buildings (Hume Administration Building, Broadmeadows GLC, Craigieburn GLC and Broadmeadows Aquatic and Leisure Centre) by 2022 as indicated in Appendix One.

Objective 1: Reduce Greenhouse Gas emissions from Council's existing facilities

Action / Activity	Budget	Responsibility	Level of Priority Action Completed	Outputs and Outcomes
Continue the roll-out of solar panels on Council facilities. Installs with solar export potential to be designed as battery ready for potential future retrofits.	GAP Capital Works budget (see Appendix Two)	**Lead**: Sustainable Environment **Support (internal)**: Capital Works & Building Maintenance	**High** Ongoing until 2022	Solar roll-out program implemented (output). Visible demonstration of Council's sustainability leadership and solar information for community members (output). Reduced grid energy use at Council's existing facilities and greenhouse gas emissions reductions (outcome). Reduced electricity costs for

				Council at existing facilities (outcome).
Continue to scope and implement energy efficiency opportunities with a sound financial return on investment in Council facilities (10 years or less simple payback) with a priority on large energy using buildings (where opportunities are largest).	GAP Capital Works budget (see Appendix Two)	**Lead**: Sustainable Environment **Support (internal)**: Capital Works & Building Maintenance. **Support (external)**: Expert Consultants.	**High** Ongoing until 2022	Energy efficiency program implemented (output). Reduced greenhouse gas emissions at Council's existing facilities (outcome). Reduced electricity and gas costs for Council at existing facilities (outcome).
Install solar panels at Council facilities that are leased or licenced to Neighbourhood Houses and the Gladstone Park Committee of Management.	Energy Efficiency Capital Works budget 2017/18 ($80,000)	**Lead**: Sustainable Environment **Support (internal)**: Finance and Property Development, Community Development and Learning	**High** 2017/18	Solar roll-out program implemented (output). Visible demonstration of Council's sustainability leadership and support of community organisations (output). Reduced greenhouse gas emissions (outcome). Reduced electricity costs for Council tenants (outcome).
Support the installation of solar panels and/or lighting upgrades at Sports Facilities.	GAP Capital Works budget (Appendix Two)	**Lead: Sustainable Environment** **Support:** Leisure Centres and Sport	2019/20	Solar roll-out program implemented (output). Visible demonstration of Council's sustainability leadership and support of community organisations (output). Reduced greenhouse gas emissions (outcome). Reduced electricity costs for Council sporting clubs

				(outcome).
Investigate the opportunity and business case for a large solar farm, or a power purchase agreement with a renewable generator to supply electricity for Council operations. A two stage investigation is proposed – 1. Review large scale opportunities, 2. Refine opportunities and prepare business case.	GAP Capital Works budget (Appendix Two) Up to $130,000	**Lead**: Sustainable Environment **Support (internal)**: Finance and Property Development, Economic Development **Support (external)**: Expert Consultants, Greenhouse Alliances	**High** Staged across 2018 and 2019	Scoping and business case in two stages for further consideration (output).
Maintain current GreenPower purchase of 10% of Council's electricity use in Council buildings, and investigate the costs and benefits of purchasing an increased percentage of GreenPower (and pending outcomes of solar farm investigations).	Current 10% purchase within current electricity budgets.	**Lead**: Sustainable Environment **Support (internal)**: Finance and Property Development **Support (external)**: Procurement Australia, AGL, GreenPower retailers	**Medium** 2018	10% GreenPower purchase for Council buildings maintained (output). Purchasing an increased percentage of GreenPower investigated, and percentage increase considered by Council (output). Proportion of energy sourced from renewables is maintained or increased (outcome). Continue to support renewable energy leadership (outcome).
Investigate the development of thermal comfort guidelines to set standard temperature ranges for heating and cooling in Council	Within Current Budget	**Lead**: Sustainable Environment **Support (internal)**: Building Maintenance, Human Resources.	**Medium** 2019	Investigation, consultation and briefing note to EMT for consideration (output).

facilities.				
Keep a watching brief on the development (technological, financial) of various renewable energy micro generation opportunities, particularly batteries for PV storage, PV cells integrated into building materials and wind. Complete investigation and prepare business cases for appropriate Council facilities if appropriate.	N/A	**Lead**: Sustainable Environment **Support (internal):** As required **Support (external):** NAGA, renewable energy industry, Jemena.	**Medium** Ongoing	Investigation and preparation of business case as appropriate (output).

Objective 2: Ensure new facilities have reduced greenhouse gas emissions, are energy efficient and have sound Environmentally Sustainable Design and Development (ESD) outcomes

Action / Activity	Budget	Responsibility	Level of Priority Action Completed	Outputs and Outcomes
Develop Sustainable Buildings Policy to improve ESD outcomes in new Council facilities.	Policy development within current budgets.	**Lead**: Sustainable Environment **Support**: Capital Works & Building Maintenance, Community and Activity Centre Planning, other departments as needed.	**High** 2018	New Policy document (output). Improved clarity around Council's ESD expectations (output). Improved Environmentally Sustainable Design and Development outcomes and minimised greenhouse gas emissions at new Council facilities (outcome).
Continue to implement recommendations of the	Within Current Budgets	**Lead**: Sustainable	**Med**	Improved processes to integrate and achieve better ESD

Newbury Post Occupancy Evaluation to improve integration of ESD consideration into building project management processes.		Environment **Support**: Capital Works & Building Maintenance, Community and Activity Centre Planning, other departments as needed.	ongoing	outcomes at new Council facilities (output).
Further ESD training undertaken by relevant staff (e.g. Capital Works & Building Maintenance, Community and Activity Centre Planning, Leisure Centres and Sports, Sustainable Environment).	Within Current Budgets	**Lead**: Sustainable Environment **Support**: Capital Works & Building Maintenance, Leisure Centres and Sports, Waste, Human Resources	**Med** 2018	ESD training completed by relevant staff (output). Improved knowledge and awareness of ESD opportunities (outcome).
Quarterly ESD meetings for Capital Works & Building Maintenance and Sustainable Environment Department staff to discuss and progress ESD processes and outcomes.	N/A	**Lead**: Sustainable Environment and Capital Works & Building Maintenance	**Medium** Ongoing	ESD meetings held (output). Improved knowledge, awareness and collaboration of ESD opportunities (outcome).
Continue to select and purchase new appliances (within 1 star of best available energy star rating) as practicable.	Incorporated in Building Maintenance recurrent budget and Capital Works budget – with consideration given to operating savings for energy efficient appliances.	**Leads:** Building Maintenance (for existing buildings), Capital Works (for new buildings) **Support**: Sustainable Environment	**Medium** Ongoing	New Appliances purchased with high energy ratings (output).

3. WASTE

Goal: To Demonstrate Greenhouse Leadership by reducing emissions from the Sunbury Landfill

Key Performance Indicator (KPI) and Targets:

KPI 3: Reduce greenhouse gas emissions from Sunbury Landfill through methane capture and use for energy and/or flaring.
Target 1: Use gas capture and use or flaring to treat at least 75% of the emissions from the Sunbury Landfill.

Objective 1: Continue to manage Hume's landfill sites to reduce greenhouse gas emissions				
Action / Activity	**Budget**	**Responsibility**	**Level of Priority Action Completed**	**Outputs and Outcomes**
Investigate and trial the best option for capturing greenhouse gas emissions from the Sunbury Landfill to meet the EPA license requirements.	$800,000 Waste Capital Works budget	**Lead**: Waste **Support**: Finance and Property Development, Sustainable Environment	**High** 2018	Pilot study undertaken to test gas pressures and piping requirements to capture and flare or capture and use 75% of methane from Sunbury Landfill (output). Electricity generated at Hume's closed landfill sites (output). Council's greenhouse gas emissions from Hume's landfills reduced (outcome). Demonstrate leadership in greenhouse gas reduction at Hume landfills (outcome).
Implement full scale treatment of greenhouse gas emissions at the Sunbury Landfill informed by the investigations / pilot study.	$2,600,000 Waste Capital Works budget (pending Council approval)	**Lead**: Waste **Support**: Finance and Property Development, Sustainable Environment	**High** 2019 - ongoing	
Continue to outsource the generation of electricity and reduction of greenhouse gas emissions at Hume's closed landfill sites (Camp Road and Bolinda Road, Campbellfield).	N/A (Council receives an income stream of ~$45,000-$70,000/ annum).	**Lead (external)**: EDL (Electricity generation operators, Campbellfield) **Support**: Waste	**Medium** Ongoing	

Investigate options for reducing municipal waste to landfill particularly green waste and organics.	Within Waste budget	**Lead:** Waste **Support:** Sustainable Environment Department	**High** Ongoing	As per standard practice amongst Victorian Councils Municipal Waste is not included in Hume's corporate emissions inventory but it is a large source of municipal emissions that Council can influence through service delivery and education programs. Reducing green and organic waste to landfill can achieve significant greenhouse reductions as these waste streams break down to form methane, a potent greenhouse gas. Composting treatments can reduce the production of methane.
Investigate Waste to Energy opportunities within Hume.	Within Waste budget	**Lead:** Waste **Support:** Metropolitan Waste & Resource Recovery Group	**High** 2018	
Calculate, track and report to the community on greenhouse gas emissions from municipal waste collected via Council services.	Within current budgets	**Lead:** Waste **Support:** Sustainable Environment Department	**Med** 2018	

4. PUBLIC LIGHTING

Goal: To keep a watching brief on greenhouse reduction opportunities from Public Lighting.

There are no KPIs for Public Lighting outlined in this plan as at the time of writing the only action was further investigation into identifying the next opportunities for public lighting upgrades.

Objective 1: Improve the energy efficiency of street lighting within the Hume municipality				
Action / Activity	**Budget**	**Responsibility**	**Level of Priority Action Completed**	**Outputs and Outcomes**
Investigate further energy efficiency opportunities in street lighting and public lighting including smart controls, new technologies, LED upgrades and solar powered LED. Conduct a pilot project and prepare a business case.	$50,000 Business case opportunities for large scale implementation to be presented to Council.	**Lead**: Sustainable Environment **Support (internal):** As required **Support (external):** NAGA, Ironbark Sustainability and other consultants, Jemena, MAV Procurement	**High** 2019	Investigation and preparation of business case as appropriate (output). Public Lighting Policy approved by Council (output).
Continue to ensure energy efficient street lights in new residential estates via Council's Public Lighting Policy. New LED lights installed are smart control compatible.	N/A	**Lead**: Subdivisional Development **Support:** Sustainable Environment, Capital Works & Building Maintenance, Parks	**Medium** 2018 and ongoing	

Objective 2: Seek to improve the energy efficiency of Council's (non-street light) public lighting, including sports grounds, reserves and car parks				
Action / Activity	**Budget**	**Responsibility**	**Level of Priority Action Completed**	**Outputs and Outcomes**
Investigate the business case for LED lighting at Sports Grounds taking into consideration cost implications of peak kVA tariffs and fitness for purpose.	Business case from GAP budget and/or via installers quotes. Lighting installs from Leisure Centres & Sports and Capital Works budgets.	**Lead**: Leisure Centres and Sports **Support**: Sustainable Environment	**Medium** 2018	Investigation and preparation of business case (output). Implementation of LED lights where appropriate (output). Reduced greenhouse gas emissions from sports ground lighting (outcome)

Goal: To Demonstrate Greenhouse Leadership by reducing emissions within Council's Fleet

Key Performance Indicator (KPI) and Target:

KPI 4: Minimise the greenhouse gas emissions of Council's fleet[1].
Target: Increase the proportion of light fleet vehicles meeting the 150g CO_2-e/km benchmark from 11% to 20% by 2020[2].

Objective 1: Reduce the greenhouse gas emissions of Council's fleet				
Action / Activity	**Budget**	**Responsibility**	**Level of Priority Action Completed**	**Outputs and Outcomes**
Review the Fleet Policy with a view to reducing the CO_2-e/km benchmark for passenger vehicles from 175g CO_2-e/km to 150g CO_2-e/km to further encourage the uptake of more fuel efficient vehicles. Set the green rate benefits at which reduced staff contribution is required to130g CO_2-e /km or less.	Within current Fleet budget	**Lead**: Fleet	**Medium** 2018	Fleet Policy updated as required (output). Fuel efficient fleet vehicles purchased (output). Council's greenhouse gas emissions from fleet vehicles reduced (outcome).
Continue to monitor new low greenhouse gas emission vehicles and add these to the list of approved available Fleet Cars.	N/A	**Lead**: Fleet	**Medium** Ongoing	Available Fleet vehicles updated as required (output). Fuel efficient fleet vehicles purchased (output). 'Drive Safe' program completed (output). Council fuel expenses reduced
Continue to select and purchase fuel efficient fleet passenger and operational	Incorporated into the recurrent Capital Works budget.	**Lead**: Fleet	**Medium** Ongoing	

[1] Currently emissions from passenger and heavy fleet vehicles and total fuel use from novated leases are included in the inventory. Fuel use by staff using their own vehicles for work purposes has not been included.
[2] The light fleet reduction target applies to Council owned light vehicles only not novated leases.

vehicles, where operational requirements allow.				(outcome). Council's greenhouse gas emissions from fleet vehicles reduced (outcome).
Run 'Drive Safe' program which will support fuel efficient driving practices in addition to safety outcomes.	Within current Fleet budget	**Lead**: Fleet **Support**: Human Resources	**Medium** 2018	
Keep a watching brief on new technology and alternative fuel opportunities to improve efficiency and reduce emissions from Council's fleet. These might include biofuel if / when it becomes available again in Australia, electric vehicles and fuel cell use for heavy vehicles. Investigate and prepare business case as appropriate.	N/A – if/when good business case opportunities arise they will be presented to Council.	**Lead**: Fleet	**Medium** Ongoing	Investigation and preparation of business case as appropriate (output).

5. SUPPORTING COMMUNITY EMISSION REDUCTIONS

Goal: To Demonstrate Greenhouse Leadership by Assisting the Community to Reduce Emissions

Key Performance Indicator (KPI):

KPI 5: 500 Hume residents supported to install solar by 2022

Objective 1:

Action / Activity	Budget	Responsibility	Level of Priority Action Completed	Outputs and Outcomes
Undertake a scoping study to determine resourcing requirements and opportunities to improve ESD and energy efficiency opportunities. Depending on the outcomes of the scoping study: J investigate and deliver a range of projects to support community emissions reductions such as: o household solar roll-out program for low-income Hume households o increase energy literacy o help reduce energy bills, improve thermal comfort and reduce greenhouse gas emissions.	$50,000 per annum additional operating budget required.	**Lead:** Sustainable Environment	**High** 2018/19 and ongoing	Investigate and deliver a household solar roll-out program for low income Hume households (output). Pursue and deliver other energy efficiency and renewable programs that assist to increase energy literacy, reduce household energy bills, improve thermal comfort and reduce greenhouse gas emissions particularly for low income and disadvantaged households (output). Community greenhouse gas emission reduced (outcome). Improved energy literacy and thermal comfort for community participants (outcome).

Continue to support energy efficiency and renewable energy use in Hume's commercial and industrial sector through the Business Efficiency Network, Light$mart and associated programs.	Within current budget	**Lead**: Economic Development	**High** Ongoing	Hume businesses made aware of energy efficiency and renewable opportunities and financial returns (output).
Continue to deliver the Green Waste collection service and promote discounted compost bins and worm farms to reduce organic waste to land fill.	Within current budget	**Lead**: Waste	**High** Ongoing	Reduced organic waste to landfill reduces methane, a potent greenhouse gas (output).
Continue to promote energy efficiency, renewable energy and energy literacy to households through the Live Green program.	Within current budget	**Lead**: Sustainable Environment	**Medium**	Improved energy understanding and energy efficiency and solar actions from Hume residents (outcome).
Roll-out the Energy Education program to one community group or organisation per year with a particular emphasis on people who speak languages other than English.	Within current budget	**Lead**: Sustainable Environment	**Medium**	Increased understanding of energy use and energy efficiency opportunities for communities who speak languages other than English (outcome).
Support and encourage Hume schools to install solar panels.	Within current budget	**Lead**: Sustainable Environment	**Medium**	Increased renewable energy generation at schools (output). Learning opportunities for Hume students (outcome).

6. CONTRIBUTING TO POSITIVE CHANGE

Goal: To Demonstrate Climate Leadership, collaborate with others and advocate and facilitate further action to reduce emissions

Key Performance Indicator (KPI) and Target:

KPI 5: Participate in joint funding applications and projects for greenhouse reductions.
Target: Hume participation in at least two collaborative grant funded projects.

Objective 1: To Demonstrate Climate Leadership, share information and facilitate further action				
Action / Activity	**Budget**	**Responsibility**	**Level of Priority Action Completed**	**Outputs and Outcomes**
Join the Victorian Government's Take 2 Pledge to voluntarily commit to tackling climate change.	N/A	**Lead:** Sustainable Environment	**Medium** 2017	Hume presence on the Take 2 website (output). Increased awareness of Hume's climate change leadership (outcome).
Investigate and pursue opportunities for improved greenhouse outcomes from procurement processes e.g. increased use of recycled materials; fuel efficiency of contractors etc.	Within current operational budgets	**Lead:** Sustainable Environment **Support:** Procurement, Assets, Capital Works & Building Maintenance	**Medium** 2019	Increased awareness and selection of environmentally preferable products (outcome). Increased awareness of opportunities for achieving environmental benefits through the contract process (outcome).
Continue to prepare an annual greenhouse inventory for Council operations. Report annually to Council on the greenhouse inventory and greenhouse reduction actions. Report the results of the greenhouse inventory publicly in the Sustainability	Within current operational budget	**Lead:** Sustainable Environment **Support:** Fleet	**High** Annually	Annual greenhouse gas emissions inventory prepared (output). Inventory protocol updated as required (output). Increased understanding by Council, staff and the Hume community regarding greenhouse gas emissions

Report.				Council is responsible for and actions undertaken to reduce emissions (outcome).
Continue to participate in the Northern Alliance for Greenhouse Action (NAGA) through information sharing, advocacy and collaborative greenhouse reduction and greenhouse adaptation projects.	~$25,000/annum for NAGA Membership (Within current GAP operational budget)	**Lead:** Sustainable Environment **Support (external):** Other Councils, NAGA	**Medium** Ongoing	Informal conversations and formal presentations at NAGA / MAV meetings (output). Conference presentations (output). Greenhouse reduction grant applications and collaborative projects (outcome). Potential cost savings through shared resources (outcome). Improved capacity within Hume & other local Councils to pursue energy efficiency & solar panels in Council operations (outcome).
Continue to share information about Council's electricity and gas usage and expenditure and assist with improved procurement and management as appropriate.	N/A	**Lead**: Sustainable Environment **Support:** Procurement, Capital Works & Building Maintenance, Leisure Centres and Sports	**Medium** Ongoing	Utility billing inaccuracies identified (output). Utility cost savings for Council identified (outcome). Improved management of Council's energy procurement and management (outcome).
Track the annual utility cost savings to Council which have resulted from individual energy efficiency projects (including street lighting).	N/A	**Lead**: Sustainable Environment **Support:** Finance and Property Development	**High** 2018	Energy efficiency projects and utility cost saving spreadsheet set up and regularly updated as utility data is available (output). Increased understanding and appreciation by Council of direct & ongoing utility cost savings delivered by energy efficiency projects (outcome).

APPENDIX 1 – KPI 2 - Facilities for targeted Greenhouse Reductions

The four facilities below are high energy users and contribute 42% of total greenhouse gas emissions from Council buildings. These four facilities were selected because of the significant opportunity for greenhouse reductions they present; solar installs are planned for three of the four and energy efficiency works planned in all four facilities. No major redevelopments of the facilities are currently planned so benchmark data for greenhouse reductions was available. Energy efficiency works and solar installs are planned for other significant Council buildings including Sunbury Aquatic and Leisure Centre, Broadmeadows Town Hall, SPLASH and Sunbury Global Learning Centre but benchmark energy use data is not available for these facilities.

Key Facility	% greenhouse reduction by 2020 (from 2016 baseline year)	Rational for inclusion	Greenhouse Reduction Opportunities (if relevant)	Facility Manager / Interested Parties
Broadmeadows Leisure Centre	6%	Largest energy using Council facility with good energy efficiency reduction opportunities	Commission cogeneration system (to be confirmed – still under investigation) 99kW Solar installation Roof upgrade Boiler upgrade Controls works for air-conditioning Pool blankets Double Glazing LED lighting upgrade	Michael Bzdel, Manager Broadmeadows Leisure Centre
Hume Global Learning Centre - Broadmeadows	18%	Large energy using Council facility with good energy efficiency reduction opportunities	99kW Solar installation (complete) LED lighting upgrade (complete) Building Management System (BMS) controls	Dana Burnett, Coordinator Community Facilities & Learning Henry Budz, Coordinator Building Maintenance Wendy Byron, Coordinator The Age Library

			optimisation Install large ceiling fans for better heat circulation (in progress)	
Hume Global Learning Centre - Craigieburn	24%	Large energy using Council facility with good energy efficiency reduction opportunities	99kW Solar installation (complete) BMS controls optimisation (in progress)	Dana Burnett, Coordinator Community Facilities & Learning Henry Budz, Coordinator Building Maintenance Amanda Forde, Coordinator Craigieburn Library
Hume Administration Building	3%	Large energy using Council facility with good energy efficiency reduction opportunities	BMS controls optimisation (in progress) LED lighting upgrade	Henry Budz, Coordinator Building Maintenance

APPENDIX 2 – Proposed Solar and Energy Efficiency Works 2017/18 – 2021/22

Year 2017/2018	Project	Anticipated cost	Simple Payback (years)	Current Project Status	Notes
2017/2018	Broadmeadows Aquatic and Leisure Centre - pool blanket upgrade	$80,000	<4	Indicative quote and payback assessment complete.	Further liaison with Facility Manager to ensure willingness to use blankets. Proposed before and after gas monitoring to be undertaken to demonstrate environmental and financial benefits.
2017/2018	Solar installs on medium-sized Council facilities	$190,000	<3	Installs scoped and ready to proceed with RFQ.	Preschool centres including Steward Lane, Westmeadows, Pembroke, Bank Street, McEwen Drive, Taylor Drive, Tarcoola, and Broadmeadows Youth Centre. Gladstone Park Community Centre
2017/2018	Sunbury Aquatic and Leisure Centre - pool lighting	$20,000	<4	Scoped and ready to proceed with RFQ pending completion of redevelopment.	Upgrade to energy efficient LED lighting.
2017/2018	Broadmeadows Aquatic and Leisure Centre - Pool Hall and Gym Lighting	$30,000	<4	Pool Hall lighting scoped and ready to proceed with RFQ – to be timed with centre closure for roof upgrade.	Gym lighting upgrade complete. Upgrade to energy efficient LED lighting.
2017/2018	LED upgrades Hume GLC Broadmeadows	$20,000	<5	Scoped and quote obtained. (complete)	Upgrade to energy efficient LED lighting.
2017/2018	Building Management System Optimisation – a range of sites	$20,000	Depends on opportunities identified	To be determined – ongoing.	Significant energy savings can be achieved by ensuring Building Management Systems are turning off plant and equipment when not required.
2017/2018	10% Contingency	$40,000			
	Total 2017/2018	**$400,000**			

Year 2018/2019	Project	Estimated cost	Simple Payback	Current Project Status	Notes
2018/2019	Broadmeadows Aquatic and Leisure Centre (BALC)	$120,000	<3	Initial assessment and paybacks scoped.	Various works including replace spa heater, air-conditioning controls, set point adjustments.
2018/2019	BALC - Double Glazing 25m pool and sauna	$100,000	<9	Initial scoping, quote and payback undertaken.	Savings could be higher.
2018/2019	BALC Building Management System (BMS) upgrade	$70,000	Depends on opportunities identified	Identified as required through boiler upgrade project.	25m Pool Hall air-conditioning integration into existing BMS system and boiler controls.
2018/2019	Large Scale renewables Scoping Study Stage 1	$50,000	N/A	Costing based on studies conducted by other council/s.	Review large scale solar opportunities on Council land.
2018/2019	Economy cycle retrofits and passive air conditioning	$60,000	Usually less than 8 years	N/A	Retrofit economy cycle dampers to Heating Ventilation and Cooling Systems where relevant (for use of outside air when temperatures are suitable).
	Total 2018/2019	**$ 400,000**			

Year 2019/2020	Project	Estimated cost	Simple Payback	Current Project Status	Notes
2019/2020	Solar PV install - Broadmeadows Town Hall	$128,000	<7	Scoped.	Planning for this project has been integrated into BTH redevelopment process including: roof type and strength; minimisation of roof plant etc.
2019/2020	Street-lighting Smart Control pilot / business case investigations	$50,000	N/A		Officers will research opportunities on an in-house basis initially. A pilot project will be undertaken with Jemena. Further business case development may require some consultancy input.
2019/2020	Solar PV installs	$280,000	<7	Scoped using Sunulator software - quotes to be obtained.	For Broadmeadows Aquatic and Leisure Centre(99kW), Boardman Basketball Stadium (99kW) and Sunbury Landfill (20kW)
2019/2020	Solar installs at Sporting Facilities	$120,000		Community facility where club pays the electricity bills.	Broadmeadows Basketball Stadium.
2019/2020	LED lighting upgrade – GLC Craigieburn	$30,000	<5	Based on other installs.	LED lights return excellent efficiency outcomes.
2019/2020	Additional BMS optimisation various sites	$71,000	Depends on opportunities identified	N/A	To be determined.
2019/2020	Large Scale Renewables Scoping Stage 2	$80,000		Costing based on studies conducted by other council/s.	Refinement and development of Business Case opportunity.
2019/2020	LED lighting upgrades (various facilities)	$50,000	<5	Based on other installs.	LED lights return excellent efficiency outcomes.
2019/2020	Solar PV installs	$140,000	<7	Scoped.	Bolinda Road Resource Recovery Centre, Gladstone Park Senior Citizens, SPLASH Aqua Park & Leisure Centre, and Gladstone Park Bowls Club (community leased facility).
	Total 2019/2020	**$949,000**			

Year 2020/2021	Project	Estimated cost	Estimated Simple Payback	Current Project Status	Notes
2020/2021	Solar PV installs	$195,000	<7	Scoped using Sunulator software - quotes to be obtained. Aitkin Hill designed in for retrofitting.	Malcolm Creek Kindergarten, Craigieburn Leisure Centre, Aikin Hill Community Centre.
2020/2021	Voltage Optimisation Sunbury Aquatic and Leisure Centre	$120,000	<4	Initial scoping, quote and payback undertaken.	N/A
2020/2021	Solar PV installs for leased Council owned facilities	$160,000	TBD	Scoped using Sunulator software - quotes to be obtained.	Greenvale Recreation Reserve, John Ilhan Reserve, Hume Regional Tennis Centre, Eric Boardman Reserve, Broadmeadows Historical Society, Sunbury Men's Shed, Girl Guides Craigieburn, Connections at Craigieburn, Sunbury and Craigieburn SES, Youth Projects Uniting.
2020/2021	Lighting Upgrade Hume Administration Building	$44,500	<5	Opportunity scoped and costed; trial and staff communications yet to occur.	Upgrade to LED lighting.
2020/2021	LED lighting upgrades (various facilities)	$90,000	<5	Based on other installs.	LED lights return excellent efficiency outcomes.
2020/2021	Investigate and install solar batteries at appropriate Council facilities.	$60,000	TBD	Solar installs with export capacity will be installed as 'battery ready'	Batteries are expected to be cost effective by this time and could be retrofitted to Council facilities that are exporting energy to the grid.
2020/2021	Solar PV install	$45,000	<7	To be factored in to building design process.	Greenvale West Community Centre
2020/2021	Sunbury Aquatic and Leisure Centre - pool blankets	$83,000	<3	Quotes received.	Replace existing pool blankets that are worn and damaged and install pool blanket for new warm water pool.
	Total 2020/2021	**$ 797,500**			

Year 2021/2022	Project	Estimated cost	Estimated Simple Payback	Current Project Status	Notes
2021/2022	Solar PV installs for community leased Council owned facilities	$145,000	<3	Scoped using Sunulator software – quotes to be obtained.	Progress Reserve, Sprint Athletics, Anderson Reserve, Donnybrook Reserve, Highgate Recreational Reserve.
2021/2022	2 Pool Blankets at SPLASH (50m and leisure pool)	$108,000	<4	Pending completion of development.	Pool blankets were not included in the new facility but planning allowed for retrofitting of pool blanket on 50m and leisure pool.
2021/2022	Investigate and install solar batteries at appropriate Council facilities.	$60,000	TBD	Solar installs with export capacity will be installed as 'battery ready'	Batteries are expected to be cost effective by this time and could be retrofitted to Council facilities that are exporting energy to the grid.
2021/2022	Voltage optimisation BALC.	$120,000	<4	Initial scoping, quote and payback undertaken; requires re-scoping based on current plant and equipment required.	N/A
2021/2022	LED Lighting Upgrade (various facilities).	$90,000	<4	Based on other installs.	LED lights return excellent efficiency outcomes.
2021/2022	Install Large fans Hume Global Learning Centre Broadmeadows - internal street.	$75,000	TBD	Opportunity identified, scoped and quote obtained.	Installation of large fans in the internal street of the Hume Global Learning Centre - Broadmeadows would help keep conditioned air low and improve efficiency and comfort.
2021/2022	Engage consultants to review greenhouse projections and cost reduction opportunities for setting reduction target.	$29,500	N/A	N/A	To provide input into setting an ambitious and achievable greenhouse reduction target in the following GAP.
2021/2022	Economy cycle retrofits and passive air conditioning.	$60,000	Usually less than 8 years	N/A	Retrofit economy cycle dampers to Heating Ventilation and Cooling Systems where relevant (for use of outside air when temperatures are suitable).
	Total 2021/2022	**$687,500**			