



# CARBON REDUCTION STRATEGY AND ACTION PLAN



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# I. INTRODUCTION

Logan City Council has committed to becoming a carbon neutral and green city. The Carbon Reduction Strategy and Action Plan provides a framework and identifies actions to enable this vision to become a reality.

Carbon neutrality will be achieved through the reduction of carbon emissions that occur as a result of Council's operations, implementation of innovative renewable energy technologies such as solar power technology and the delivery of carbon offsets.

Logan City Council's leadership on this issue will be evidenced through carbon neutrality certification under the National Carbon Offsets Standard (NCOS) for all quantifiable carbon emissions that occur as a direct and indirect result of Council's operations by 2022. The City of Logan is a dynamic innovative City of the future.



*Solar inverters and battery at Round Mountain Reservoir*

## II. STRATEGIC FIT

All levels of government from the United Nations through to local government are committed to reducing carbon emissions. Strategically, this plan aligns with the strategies and plans outlined below.

STRATEGIC DOCUMENT	STRATEGIC LEVEL LINK	STRATEGY
2015 Paris Agreement - Australian ratification	International climate change agreement	Target: Keep global temperature rise below 2°C above pre-industrial levels and pursue efforts to limit the increase to 1.5°C
National Emission Reduction Target	Australian Government adopted strategy	National target: Reduce emissions by 26 to 28% below 2006 levels by 2030
National Renewable Energy Target	Australian Government adopted strategy	Target: 23.5% of Australia's energy to come from renewable sources by 2020
National Energy Productivity Plan 2015-2030	Council of Australian Governments (COAG) adopted strategy	Target: 40% improvement in energy productivity between 2015 and 2030
Queensland Climate Transition Strategy: Pathways to a clean growth economy	Queensland State Government strategy	Action: Work with local governments to build climate transition capacity State Target: Zero net emissions by 2050 for entire state Interim State Target: 30% reduction in emissions on 2005 levels by 2030 for entire state State Target: 50% renewable energy use by 2030 for entire state
Logan City Corporate Plan 2017-2022	Corporate Plan Priorities: Green and Renewable (GR), and Image and Identity (II), and Next Generation Governance (NG)	Priority Outcome: GR1: A carbon neutral and green city Priority Focus: GR1.1: Develop and implement a carbon reduction strategy for the City of Logan to reduce and offset its carbon emissions Priority Outcome: II1: We are an innovative, dynamic, city of the future Priority Outcome: NG1: Our organisation uses innovation and technology to efficiently manage assets and deliver valuable services to our community and visitors
Logan City Council Energy Management Framework 2016-2021	Logan City Council strategic document	Strategic Outcome 1: Collecting, monitoring, and interpreting energy data Strategic Outcome 2: Building organisational capacity in energy management Strategic Outcome 3: Identifying and implementing energy management technology and business solutions
Waste Reduction and Recycling Plan 2017-2022	Logan City Council strategic document	Key areas of interest: <ul style="list-style-type: none"> <li>• Driving cultural change</li> <li>• Avoidance and minimisation</li> <li>• Reuse, recovery and recycling</li> <li>• Management, treatment and disposal</li> </ul>
Water Netserv Plan Part A 2017-2021	Logan City Council strategic document	Integrated water cycle management planning aim: 3: Reduce energy consumption

## III. VISION - WHERE DO WE WANT TO BE?

Logan City Council is committed to demonstrating innovative leadership in carbon neutrality and to becoming certified carbon neutral by 2022. All sources of carbon emissions will have been minimised, innovative renewable energy technology will be enhanced and all remaining carbon emissions will be offset.

This plan will deliver on Logan City Corporate Plan 2017-2022  
Priority Outcome: GR1:

- a carbon neutral and green city.

## IV. OBJECTIVES

Council aims to achieve the following target:

### **TARGET: COUNCIL'S OPERATIONS ARE NCOS CERTIFIED 100% CARBON NEUTRAL BY 2022.**

To achieve this target, the following strategic objectives will be delivered:

#### **Strategic Objective 1: Enhanced measurement and monitoring of carbon emissions**

- 1.1 Annually account for Council's carbon emissions profile through a robust, accurate and accountable analysis process.
- 1.2 Improve data management systems to enhance accuracy of carbon emission estimates.
- 1.3 Achieve and maintain carbon neutrality certification under the National Carbon Offsetting Standard.

#### **Strategic Objective 2: Avoid and reduce carbon emissions**

- 2.1 Investigate and implement opportunities that:
  - avoid the generation of carbon emissions;
  - minimise carbon emissions through improved operating efficiencies; and
  - minimise carbon emissions through the utilisation of innovative technological solutions.

#### **Strategic Objective 3: Embrace innovative renewable energy technology**

- 3.1 Enhance the use of solar PV installations at locations that are financially sustainable.
- 3.2 Investigate and implement other innovative renewable energy and energy storage opportunities that are financially sustainable.

#### **Strategic Objective 4: Offset remaining carbon emissions**

- 4.1 Utilise cost effective reputable eligible carbon offsets.

## V. POLICY POSITION

Council is committed to being a carbon neutral city by 2022. This will be evidenced by Council's operations being NCOS certified 100% carbon neutral through a robust, accurate and accountable analysis process. Carbon neutrality will be achieved through the following hierarchy of actions:

1. Avoidance of the generation of carbon emissions;
2. Minimisation of carbon emissions through improved operating efficiencies and the utilisation of innovative technological solutions;
3. Embracing the use of innovative renewable energy technology; and
4. Offsetting remaining carbon emissions.

## VI. WHERE ARE WE NOW?

### Improving Energy Efficiency

Council has already implemented a range of energy efficiency related activities and installations. This includes:

- Replacement of inefficient lights with new technology LED and fluorescent lamps;
- Installation of solar PV systems to provide renewable energy at numerous Council facilities including 30 kilowatt systems at Council's Recycling Centre and Animal Management Centre;
- Installation of an off-grid solar PV system at Round Mountain Reservoir powering a massive 95 kilowatt hour battery which is the first off its kind in Australia;
- Installation of an industry leading highly efficient air conditioning system utilising ammonia as the refrigerant gas, which has zero global warming potential, at the Council Administration Centre;
- Utilisation of LED streetlights at major developments including Yarrabilba, Flagstone and Bahrs Scrub; and
- Installation of solar hot water systems, variable speed drives, solar powered park lighting, voltage reduction equipment, and heat pump pool heaters across a range of Council sites and facilities.



*Ammonia chiller at the Council Administration Centre*

## Energy Management Framework

Council developed and adopted an Energy Management Framework in November 2016. This framework has improved understanding of energy use, built organisational capacity in energy efficiency and enabled innovative energy saving solutions to be utilised. The Energy Management Dashboard has been a key outcome of the Energy Management Framework as it automatically collates electricity use, fuel consumption and spending data for all of Council's operations.

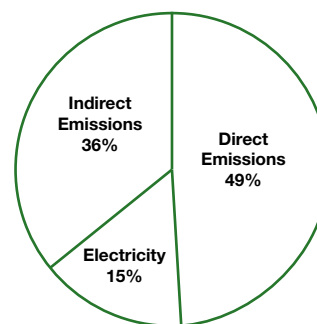


*Retrofitting pathway lights with LEDs*

## Carbon Emissions Profile

Council has prepared an organisational Carbon Emissions Profile based on the accounting principles outlined in the voluntary National Carbon Offsetting Standard (NCOS) with all quantifiable emissions included.

The Carbon Emissions Profile for 2016/17 estimated 141,538 tonnes of carbon emissions occurred as a result of Council's operations. A breakdown of emissions is shown below.



*Breakdown of emissions*

## VII. WHERE ARE WE GOING?

The City of Logan covers an area of 957 square kilometres and is home to over 314,000 residents. With \$5.9B worth of city assets, an annual budget of \$755M and over 1,400 staff providing 85 diverse services to the community, Council is a large and complex organisation.

With a population growth rate of 2% per year Council's operations will also continue to grow which ultimately impacts on Council's carbon emissions. To achieve Council's vision of a carbon neutral city an innovative, flexible and adaptive Carbon Reduction Strategy and Action Plan is required.



## VIII. KEY AREAS OF INTEREST

### Carbon Neutrality

To achieve carbon neutrality, or to be carbon neutral, means that the net emissions associated with an organisation's activities are equal to zero. The National Carbon Offsets Standard (NCOS) provides a recognised and reputable benchmark for carbon neutrality certification.

Council will demonstrate carbon neutrality certification via the following steps:

1. Establishing a carbon emissions profile.
2. Avoiding and reducing carbon emissions where possible.
3. Carbon offsetting all remaining emissions.
4. Having carbon emission accounting independently audited.
5. Publicly reporting on key information about the carbon neutrality claim.

### Solid Waste and Waste Water Management

The Browns Plains landfill is the largest source of carbon emissions from Council's operations. Over 59,000 tonnes of emissions are estimated to occur annually due to the breakdown of waste on-site. While a landfill gas collection system and power plant operates, almost half of the emissions generated escape to the atmosphere. Reducing these emissions will be a focus into the future.

The aerobic treatment systems at each of Council's waste water treatment plants result in significantly reduced direct carbon emissions relative to comparable anaerobic systems. Unfortunately aerobic systems require greater energy use, but this could be mitigated via the use of renewable energy technologies.

### Energy Efficiency

Technologies including LED lighting, smart control systems, and increasingly efficient appliances can deliver opportunities to improve energy efficiency by providing the same service while resulting in less carbon emissions. Energy audits have been undertaken at numerous large Council facilities highlighting options including lighting upgrades, improvements in air conditioning operation and the potential for power factor correction. Opportunities to increase energy efficiency will be a key element of this strategy.



*Beenleigh Events Centre following lighting upgrade*

## Solar PV

Solar photovoltaic (PV) systems convert light from the sun into electricity. Since 2012 Council has installed approximately 230 kilowatts of solar PV on a range of Council buildings and facilities. A further 100 kilowatts has been installed by tenants on Council owned community buildings. Solar PV is a proven technology that offers a reliable and low maintenance opportunity to reduce electricity costs and carbon emissions.

Solar PV systems can be a very cost effective method to support Council's goal of achieving carbon neutrality. Council will consider the whole of life costs including the upfront and maintenance costs, the electricity cost savings and the payback period when investing in solar PV systems.

## Renewable Energy

A range of renewable energy technologies may support Council's journey to carbon neutrality such as solar PV, small scale hydropower systems at waste water treatment plants, expansion of the methane collection system at the landfill, wind power technologies and geothermal air conditioning systems.

## Carbon Offsetting

In order to achieve carbon neutrality, all unavoidable emissions must be offset via the purchase and subsequent retirement of carbon offsets. The NCOS requires that the offsets must meet several integrity principles to ensure that they are genuine and credible.

There are several types of NCOS approved carbon offsets available including locally generated Australian Carbon Credit Units (ACCU) and internationally generated Certified Emission Reduction Units (CER). Each offset unit represents a reduction or removal of one tonne of carbon dioxide equivalent. Criteria that accounts for cost, location, co-benefits and type will be used when determining which offsets to select for purchase.

## Cities Powering Partnership

In January 2018 Logan City Council joined the Climate Council's Cities Power Partnership (CPP). The Partnership aims to enable local governments to share knowledge and expedite activities that will effectively reduce carbon emissions across Australia. The Climate Council's "Action Pledges" will support Council in achieving its carbon neutrality target.



*30 kW solar PV system at the Logan Recycling Market*

## IX. HOW ARE WE GOING TO GET THERE?

Carbon neutrality will be achieved through the following hierarchy of actions:

1. Avoidance of the generation of carbon emissions;
2. Minimisation of carbon emissions through improved operating efficiencies and the utilisation of innovative technological solutions;

3. Embracing the use of innovative renewable energy technology; and

4. Offsetting remaining carbon emissions.

In accordance with this hierarchy the following actions will be undertaken:

### STRATEGIC OBJECTIVE 1: ENHANCED MEASUREMENT AND MONITORING OF CARBON EMISSIONS

#### 1.1 Annually account for Council's carbon emissions profile through a robust, accurate and accountable analysis process

Actions	Timeframe	Links with key areas of interest	Branches
Deliver an annual carbon emissions profile report for Council's operations	Annually	Carbon neutrality	HEW

#### 1.2 Improve data management systems to enhance accuracy of carbon emission estimates

Actions	Timeframe	Links with key areas of interest	Branches
Improve the accuracy of carbon emission estimates, with particular reference to indirect carbon emission sources	2019-2021	Carbon neutrality	HEW; CF
Participate in internal and external knowledge sharing forums and activities that provide information and support to improve carbon emission data management systems	Ongoing	Carbon neutrality; CPP	HEW

#### 1.3 Achieve and maintain carbon neutrality certification under the National Carbon Offsetting Standard

Actions	Timeframe	Links with key areas of interest	Branches
Instigate and maintain carbon neutrality certification under the National Carbon Offsetting Standard	2020-2022	Carbon neutrality	HEW; CF
Investigate the potential for Council joining the international C40 Cities Climate Leadership Group	2019-2020	Carbon neutrality; CPP	HEW; CF
Deliver and release a carbon emissions profile public disclosure statement	2021-2022	Carbon neutrality	HEW

## STRATEGIC OBJECTIVE 2: AVOID AND REDUCE EMISSIONS

### 2.1 Investigate and implement opportunities that:

- avoid the generation of carbon emissions;
- minimise carbon emissions through improved operating efficiencies; and
- minimise carbon emissions through the utilisation of innovative technological solutions

Actions	Timeframe	Links with key areas of interest	Branches
Investigate new waste disposal, waste recycling and alternative waste processing technology opportunities that may reduce carbon emissions	Ongoing	Solid waste management	HEW
Review the Waste Education Program to ensure it is providing best practice waste education messages and is reaching the greatest audience possible	Annually	Solid waste management	HEW
Engage with Council suppliers and contractors regarding carbon accounting, point of purchase carbon offsetting and carbon reduction opportunities	2018-2022	Carbon neutrality	AD; HEW;
Develop staff awareness and understanding of the benefits of carbon emission minimisation including: <ul style="list-style-type: none"> <li>• promotion of public transport and other low emission transport options;</li> <li>• business planning processes for events and Council services;</li> <li>• efficient vehicle driving techniques; and</li> <li>• promotion of internet based communication.</li> </ul>	2018-2022	Carbon neutrality	All Branches
Implement best practice energy efficiency measures where feasible in new and upgraded Council buildings and facilities	2018-2022	Energy efficiency; CPP	HEW; SLF; AD; WB
Install electricity sub meters at the Loganholme Waste Water Treatment Plant and the Beenleigh Waste Water Treatment Plant subject to a cost/benefit analysis	2017-2018	Energy efficiency	WB; HEW
Subject to a cost/benefit analysis undertake energy efficiency upgrades across Council's large facilities	2018-2022	Energy efficiency	HEW; SLF; AD; WO; WB
Deliver energy efficiency resources and information to tenants of Council owned buildings	2019-2020	Energy efficiency	HEW; SLF
Review minimum fuel efficiency requirements for all Council purchased vehicles	2018-2020	Energy efficiency;	PFS; HEW; CF



<b>Actions</b>	<b>Timeframe</b>	<b>Links with key areas of interest</b>	<b>Branches</b>
Investigate options for altering waste water treatment processes to reduce direct carbon emissions	2018-2019	Waste water management	WB; HEW
Prepare an options paper for retrofitting existing streetlights with LEDs	2020-2021	Energy efficiency	RIP; HEW
Ensure that all new public lighting installed by Council utilises energy efficient technologies subject to a cost/benefit analysis and considers renewable energy technologies	2018-2022	Energy efficiency	RIP; HEW; SLF
Investigate opportunities to amend the planning scheme to require that developers installing public lighting utilise energy efficient technologies	2020-2021	Energy efficiency	RIP; DA; HEW
Utilise power saver settings on Council computers	2017-2022	Energy efficiency	IS; HEW
Trial the use of plug-in electric vehicle technology	2018-2020	Energy efficiency	PFS; PA; CF; AD; HEW
Install power factor correction equipment subject to a cost/benefit analysis	2019-2022	Carbon neutrality	HEW; SLF; WB; WO; AD
Investigate the feasibility of using lower embodied emissions building materials	2019-2020	Carbon neutrality	RCM; WI; HEW

## STRATEGIC OBJECTIVE 3: EMBRACE INNOVATIVE RENEWABLE ENERGY TECHNOLOGY

### 3.1 Enhance the use of solar PV installations at locations that are financially sustainable

Actions	Timeframe	Links with key areas of interest	Branches
Investigate the feasibility of solar PV systems on Council operated facilities, sites, car parks, and land fill sites including cost/benefit analysis	2018-2022	Solar PV; CPP	HEW; CF; FI; SLF; AD; WB; LCI; RIP
Support tenants of Council owned community facilities to install community funded solar PV systems (including helping them to access state and federal funding)	Ongoing	Solar PV; CPP	SLF
Where feasible and subject to a cost/benefit analysis, include on-site renewable energy systems during the construction of new Council facilities	2018-2022	Solar PV; Renewable energy	HEW; CF; SLF; AD; WB; LCI; PA; CG

### 3.2 Investigate and implement other innovative renewable energy and energy storage opportunities that are financially sustainable

Actions	Timeframe	Links with key areas of interest	Branches
Trial on-site renewable energy storage systems at Council facilities subject to a cost/benefit analysis	2017-2021	Renewable energy; CPP	HEW; AD; CF; WO
Investigate the feasibility of using geothermal air conditioning systems at new Council facilities	2019-2020	Renewable energy	HEW; SLF; CF
Investigate the feasibility of using alternative renewable energy and energy efficiency opportunities across Council's operations	2018-2022	Renewable energy; energy efficiency	HEW; WB; CF
Negotiate and accommodate the installation of new gas collection systems within an operational landfill cell to enable early harvesting of landfill gas for power generation	2017-2018	Renewable energy; solid waste management; CPP	HEW

## STRATEGIC OBJECTIVE 4: OFFSET REMAINING CARBON EMISSIONS

### 4.1 Utilise cost effective reputable eligible carbon offsets

<b>Actions</b>	<b>Timeframe</b>	<b>Links with key areas of interest</b>	<b>Branches</b>
Investigate carbon sequestration opportunities within the City of Logan	2019-2020	Carbon offsetting	HEW
Purchase and retire a sufficient number of NCOS approved carbon emission offsets to allow Council's carbon emissions profile to be entirely offset subject to Council approval	2021-2022	Carbon offsetting	HEW; FI; CF

