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Adelaide Hills Council

Corporate Carbon Management Plan

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Introduction

This Corporate Carbon Management Plan (the plan) has been prepared to assist Adelaide Hills Council (AHC) in understanding its current corporate carbon emissions footprint and how, over time, this can be meaningfully reduced in a financially responsible manner.

The AHC Strategic Plan (2016) states that "we will strive for carbon neutrality as an organisation and encourage our community to do likewise".

Carbon emissions are often used as the holistic benchmark of environmental impact as it encompasses and reflects the benefits from other sustainability initiatives, such as energy efficiency, water conservation, waste reduction and transport management. Carbon neutrality is the term used to describe actions taken to reduce and/or offset all emissions associated with an activity, in this case all emissions from Council's corporate activities.

The concept of carbon neutrality was tested at a Council workshop in April 2019. As AHC is in the early stages of this journey, it was agreed that the role of Council should be in managing its carbon emissions and undertaking projects that have a real impact on the environment, whilst also providing leadership and positive influence for the local community. It was therefore considered that the AHC journey should be around carbon management, and whilst carbon neutral may well be the end point of the journey, it is not the sole focus. Achieving 100% renewable energy usage is an agreed goal for Council.

Over the past 5 years, AHC have implemented several energy efficiency projects, which have resulted in a decrease in energy and carbon emissions. Combined with limited new development in the Council region, these actions have ensured that carbon emissions are on a downward trend. However, in order to make meaningful reductions from the current position, it is clear that AHC need an implementation pathway to prioritise and progress projects, and to monitor the reduction in future emissions.

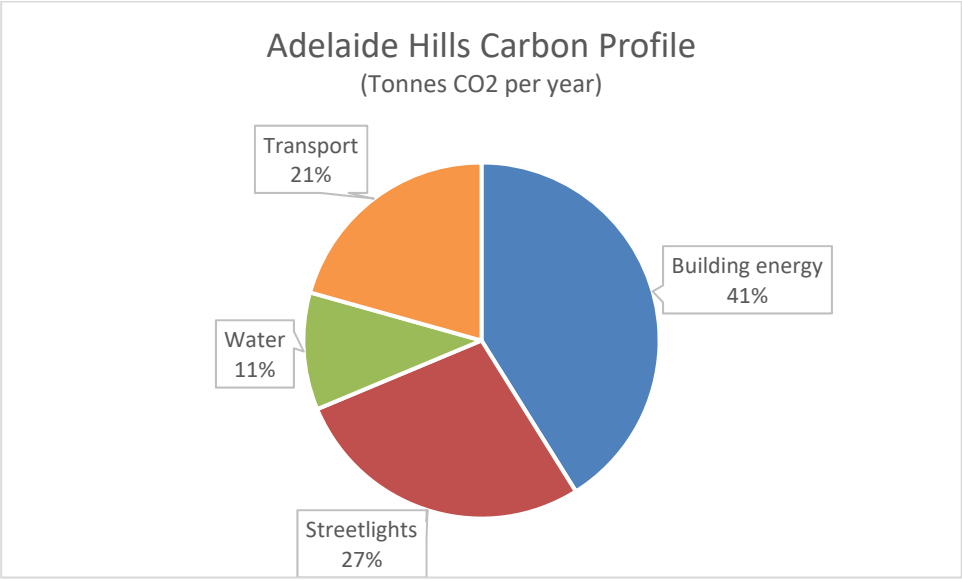
The plan sets out Council's goals and targets in managing corporate carbon emissions and provides a roadmap to guide Council towards 100% renewable energy and carbon neutrality. It includes the identification of a suite of key projects and supporting initiatives, together with an implementation plan to strive towards carbon neutrality. This plan includes requirements for ongoing reviews to consider budget and resource implications of the various projects prior to implementation.

Specifically, the plan includes actions to transition to 100% renewable energy. Whilst this is a separate goal to carbon reduction, it contributes greatly to the reduction of carbon emissions due to energy use.

Carbon Footprint

The current carbon footprint for AHC operations is estimated at 1,050 tonnes of carbon dioxide per year. The energy component of this is based on the current electricity contract, which has no renewables commitment within the contract. The estimate is based on the best available information at the time of this report for the purposes of planning for carbon management only; it should be noted that no waste or refrigerant information is included, and that the transport data is not complete.

The breakdown of the incomplete inventory is shown overleaf:



Corporate Carbon Profile (incomplete)

Energy consumption generally makes up a large component of an organisation's carbon footprint. At AHC, electricity is used in Council's buildings, utilities and street lighting. There is no piped gas in the AHC area, but some bottled gas is utilised.

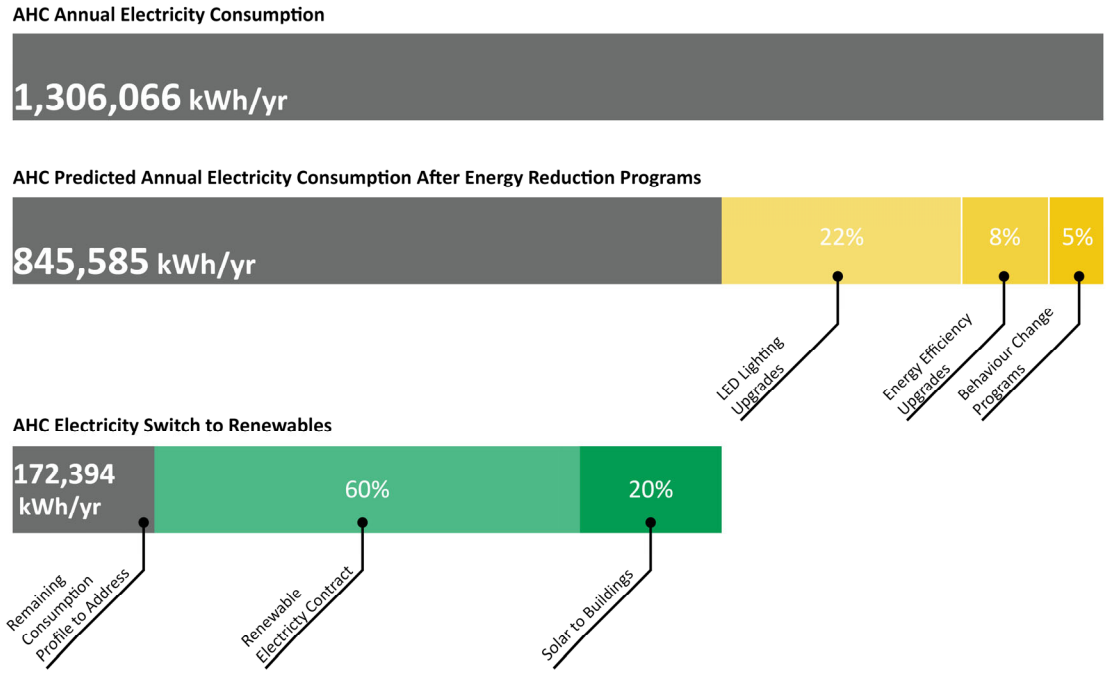
Note again that this is a very high-level estimate only, due to gaps and inaccuracies in data for waste, refrigerants and transport. In order that a detailed and current understanding of Council's carbon production and the impact of projects implemented to reduce this level, it is recommended that a full carbon inventory analysis is undertaken in accordance with the National Carbon Offset Standard (NCOS) carbon accounting rules.

Carbon Management Planning

The projects recommended for implementation in this initial implementation plan are shown in the table below. Since the inception of this plan, some of these projects have been funded and progressed, and this is shown in the 'current commitment' column.

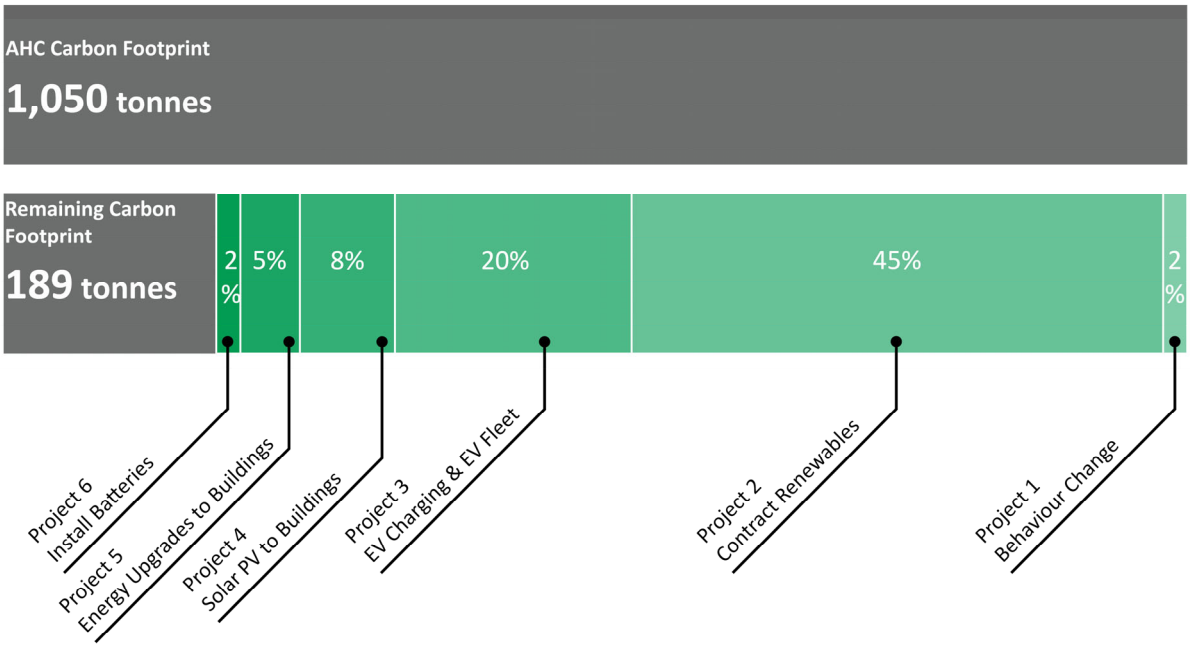
Priority Project	Current Commitment
Solar installation to buildings	Yes
Battery installation to buildings	
Install EV charging points	
Transition to EV fleet (subject to further analysis/funding review)	
Behaviour change program	
Energy audits and efficiency upgrades for buildings	Yes
LED street lighting upgrade	Yes
Purchase 100% renewable power	Partial
Become certified 100% carbon neutral	

The proposed project implementation plan detailed in this report will transition AHC to achieve 100% renewable energy and to strive towards carbon neutral operations. The following images show the proposed project implementation plans to achieve these goals:



AHC project implementation trajectory – towards 100% renewable energy

This project implementation plan shows that 100% renewable energy could be achieved by financial year 2023/24 by focusing on energy efficiency, renewable energy and behavioural change, and finally, decisions around electricity contracting (moving from 60% to 100% renewable energy).



AHC project implementation trajectory – towards carbon neutrality

Achieving carbon neutrality is possible but follows a more complex trajectory, as shown in the graphic above. Due to this complexity, not all projects can be fully costed at this stage, therefore making it difficult to determine project budgets. In particular, a more detailed feasibility analysis is required to fully understand the impacts, timing and costs of transitioning to electric vehicles for Council fleet.

Even after significant investment in the recommended projects to reduce energy and transport related emissions, there is a remaining footprint which requires the ongoing purchase of carbon offsets to achieve carbon neutrality. It is recommended that there is an annual review of projects and carbon emissions to continue to take steps towards carbon neutrality based on up to date information on Council's annual carbon emissions and current changes to technologies and costs.

This plan also includes a suite of supporting actions to help AHC implement the above projects, not least of which is a recommendation for a detailed annual carbon inventory (to assist in project planning as noted above, and to fully understand Council's changing emissions over time). It is also important that the local community is brought along with AHC on this journey, through consultation and education, and preparation of a community carbon management plan.

Alongside this plan, two separate technical information papers have been prepared to provide additional information on battery storage and electric vehicle charging.

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Document Control

Issue	Date	Change	Checked	Approved
01	29/05/2019	Initial draft for comment	GD	DD
02	14/06/2019	Updated with initial comments	GD	DD
03	25/06/2019	Updated with comments and workshop outcomes	GD	DD
04	1/7/2019	Final Draft	GD	DD
05	3/7/2019	Minor changes to final draft	GD	DD
06	4/9/2019	Consultation comments added to final draft	GD	DD
07	7/10/2019	Additional changes based on Council feedback	GD	DD
08	1/11/2019	Final	GD	DD

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Contents

1 Introduction

1.1 Purpose

This Corporate Carbon Management Plan (the plan) has been prepared to assist Adelaide Hills Council (AHC) in understanding and managing its current corporate carbon emissions footprint. This plan sets out Council's goals and targets in managing carbon emissions and sets a roadmap to guide Council towards renewable energy and carbon neutrality. It includes the identification of a suite of key projects and supporting initiatives, together with an implementation plan to achieve the stated goals.

Specifically, the plan includes actions to transition to achieve 100% renewable energy. Whilst this is a separate goal to carbon reduction, it contributes greatly to the reduction of carbon emissions due to energy use.

The plan includes recommended ongoing reviews of projects, budgets and resource allocations to assist Council to strive towards carbon neutrality in a financially responsible manner.

The plan has been prepared by dsquared Consultants, working in collaboration with Council.

1.2 Adelaide Hills Council Climate Commitments

The AHC Strategic Plan (2016) contains the following goal in relation to carbon management:

"We will strive for carbon neutrality as an organisation and encourage our community to do likewise"

In March 2019, in response to community and Council concerns, Council formally declared a Climate Emergency for the Adelaide Hills Council area. This declaration reaffirmed Council's commitment to addressing the impacts of climate change on the local Hills community, and emphasised the need for Council to take urgent action to demonstrate leadership in carbon management.

The Climate Emergency commitment also noted an aspiration to transition to 100% renewable energy for Council's energy uses, and a need to set targets in relation to energy use and carbon emissions. It is important to note that targets for carbon reduction need to extend beyond energy projects to address all carbon emissions from Council's operations.

AHC is a signatory to the Cities Power Partnership, which is a national program to support Australian towns and cities working towards clean energy. As part of this partnership, AHC has agreed to pledge actions towards renewable energy, energy efficiency, transport, and working in partnership to tackle climate change. These pledges are included in Appendix B and align with the goals, targets and recommendations of this plan.

Council has separately prepared a Climate Adaptation Plan for the region with other Resilient Hills & Coast Councils.

1.3 Context

Concerns over climate change impact are increasingly on the agenda for many organisations. The Intergovernmental Panel on Climate Change has stated that by 2030 global emissions must be down by at least 45% from 2010 levels to keep global temperature from rising by no more than 1.5°C. This has

formed the central aim of the Paris Agreement, which Australia became a signatory to in 2016. Australia's COP21 (Paris Agreement) commitment is to reduce emissions to 26-28 per cent on 2005 levels by 2030.

This is driving policies at a national level on tackling climate change, and is leading to many public and private sector organisations taking steps to increase their commitment to their environmental agenda.

Additionally, the UN Sustainable Development Goals set an agenda for considering the wider environmental and social impact of our actions. The key goals related to Council include:

- Goal 3 Health and Wellbeing – Ensure healthy lives and promote well-being for all at all ages;
- Goal 9 Industry, Innovation and Infrastructure – Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation;
- Goal 11 – Sustainable Cities and Communities – Make cities and human settlements inclusive, safe, resilient and sustainable.

Whilst global concerns are rising, Australian climate change policies are subject to change, and vary across States and Territories. There is therefore an opportunity for Councils to demonstrate leadership and action in climate change responses, and to influence the community approach to minimising climate impacts and carbon emissions.

1.4 Scope

This corporate plan relates to Council's corporate emissions, which can be defined as all emissions occurring from activities over which Council has direct operational control, such as operations within Council owned and operated buildings, including libraries and Council administration. It is recognised that Council also has an influence over emissions in the community, such as community waste collection and community groups using Council facilities, however as these are not under 'operational control' these are excluded from Council's corporate inventory.

However, Council has a unique position to offer leadership and influence in the wider community, and its ability to influence the emissions in the wider community will be the subject of future investigation.

Carbon emissions, boundaries, carbon neutrality and reduction processes are explained in section 2.

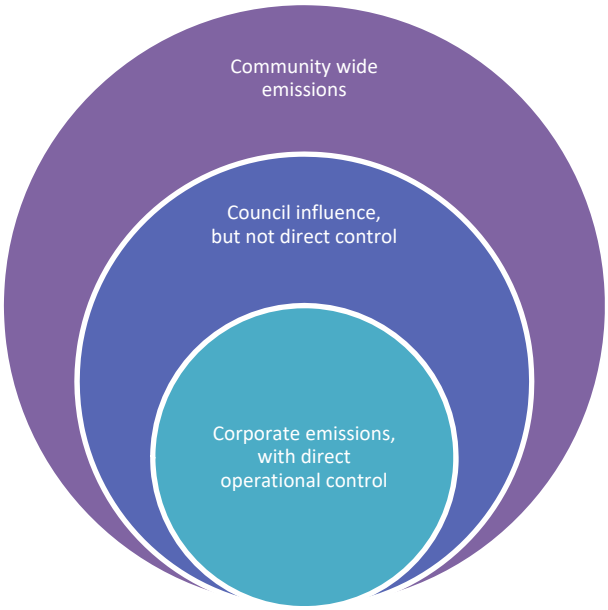


Figure 1: Community Carbon Emissions Sources

1.5 Consultation

Internal consultation has occurred to support the development of the high-level strategic goals, targets and projects associated with renewable energy and carbon management.

Informal consultation has been managed by Sharon Leith, Strategic and Sustainability Officer. Formal consultation has been carried out at the following workshops:

Council Workshop 1:	9th April 2019
Council Workshop 2:	11th June 2019
AHC Sustainability Advisory Group:	13th June 2019

1.6 Current Achievements

The Adelaide Hills region has a national reputation as an area of beauty and well-preserved native landscape. Its location so close to Adelaide means the area holds special significance as a major environmental, recreational and tourism asset. The Adelaide Hills community are known to be active in environmental awareness and conservation concerns, as often happens with communities in areas of natural beauty.

Council has been working for many years to address the environmental footprint of its corporate operations, striving to show leadership and aligning with the environmental awareness of the local community. Some of Council's recent actions to address energy use in its own assets include:

- Energy efficiency upgrades to Council buildings, including lighting upgrades, air conditioning replacements and energy metering.
- Installation of solar PV across Council buildings.
- Improved record keeping, including energy and water data captured automatically in carbon accounting software Trellis.
- Behaviour change programs, focussing on waste and energy.

The combination of these actions has led to a 17% reduction in energy consumed by the top eight energy consuming Council assets in the last 4 years, as shown in the graph overleaf.

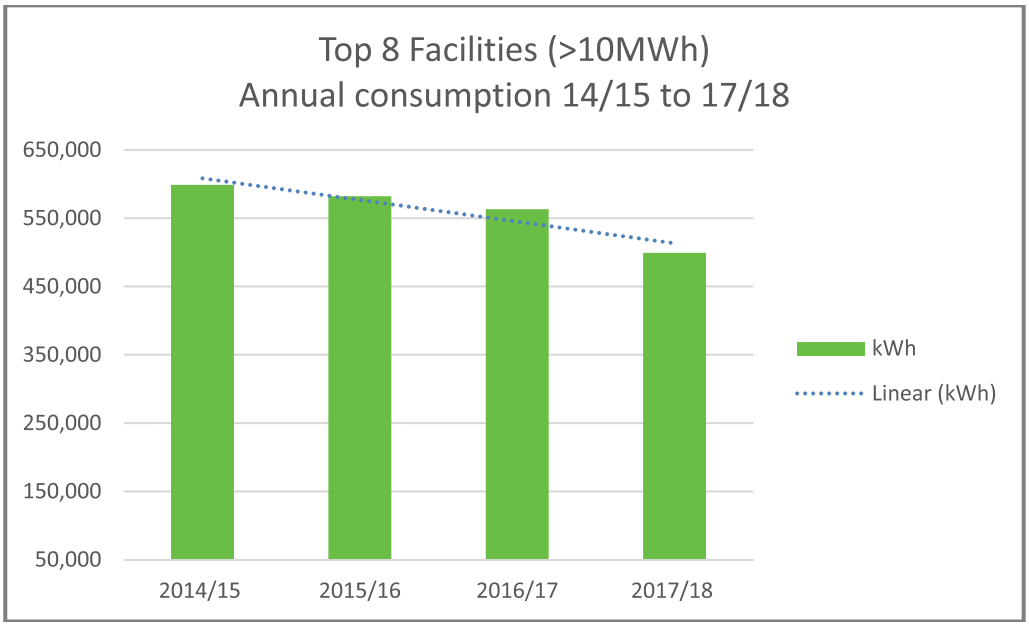


Figure 2: Reducing energy consumption over time (up to FY 2017/18)

Carbon reduction activities to date have mainly focussed on energy efficiency, and other carbon emitting activities, such as water conservation (emissions associated with treatment, transmission and pumping): waste (generation, collection and treatment); and transport emissions, have been considered to a lesser degree. To address this, Council have recently undertaken the following technical feasibility studies:

Battery storage

A review of battery technology, and consideration of the opportunities and benefits of integrating these at Council's facilities.

EV Charging

A review of electric vehicles (EV) and their charging infrastructure, including assessment of current available EV charging in the Adelaide Hills community.

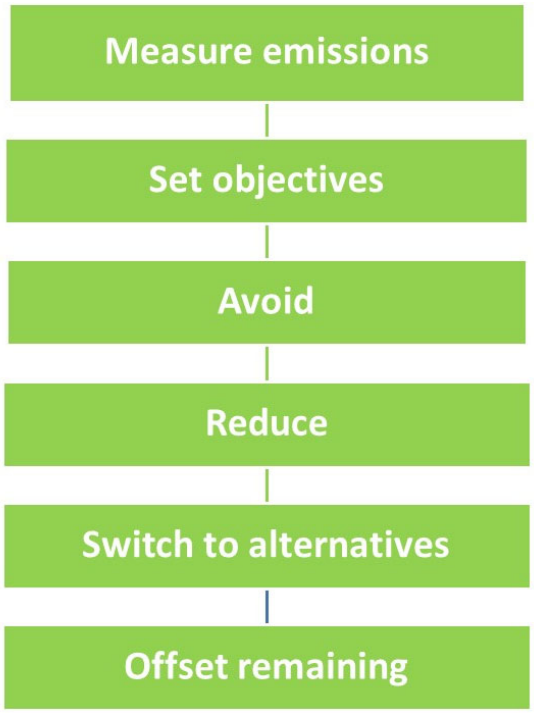
The recommendations of these papers are included as projects for implementation in this plan.

2 Carbon Management

2.1 Managing Carbon Emissions

Carbon emissions are often used as the holistic benchmark of environmental impact as it encompasses and reflects the benefits from other sustainability initiatives, such as energy efficiency, water conservation, waste reduction and transport management.

In order to manage and reduce carbon emissions, it is important to understand the source of these emissions. The following diagram shows the pathway to understanding carbon emissions:



1. *Start by understanding the emissions profile, including energy, water, waste, transport, and refrigerants.*
2. *Agree on objectives and timeframes for carbon reduction.*
3. *Identify where emissions can be avoided. This is often the most cost effective way of reducing emissions.*
4. *Implement reduction and efficiency programs for energy, water and waste.*
5. *Consider alternative energy sources, such as solar, and alternatives to transport emissions, such as electric vehicles.*
6. *Consider purchase of carbon offsets to offset any remaining emissions.*

Figure 3: Carbon reduction pathway

2.2 Emissions Sources

To measure carbon emissions, a defined boundary needs to be set to understand which emissions lie within Council's responsibility. This plan considers Council's corporate emissions profile only (as noted in Section 1.4), excluding any emissions that come from third parties, such as service providers or the wider Adelaide Hills community activities, and impacts from construction activities for community services (operational and capital works). This plan does not include the embodied energy in any of Council's assets.

The National Carbon Offset Standard (NCOS) gives a basis for understanding emissions sources and Council's control and influence over these sources. Understanding the corporate boundary is complex and can vary over time, i.e. some of Council's emissions may be considered 'immaterial' by the NCOS reporting standards, however Council may wish to include these in time. Additionally, Council may have limited access to data on some emissions, but improved reporting over time will allow these emissions to be included.

The following organisational emissions should be considered in a carbon inventory:

1. **Energy** (including lighting, heating and cooling, occupant energy use, plant equipment, other infrastructure and shared services). This includes all energy sources (grid electricity, on-site generated electricity, gas, diesel fuel etc.);
2. **Refrigerants** including air conditioning system leakage and replacement and refrigeration systems;
3. **Water** consumed, and **waste water** discharged (including emissions from off-site water treatment);
4. **Transport** to and from the precinct (including occupant commuting, occupant travel to and from a place of work, property management vehicles, forklifts, shuttle services etc.); and
5. **Waste** leaving the precinct (including all waste streams, and emissions associated with off-site waste recycling, processing, combustion, or disposal to landfill).

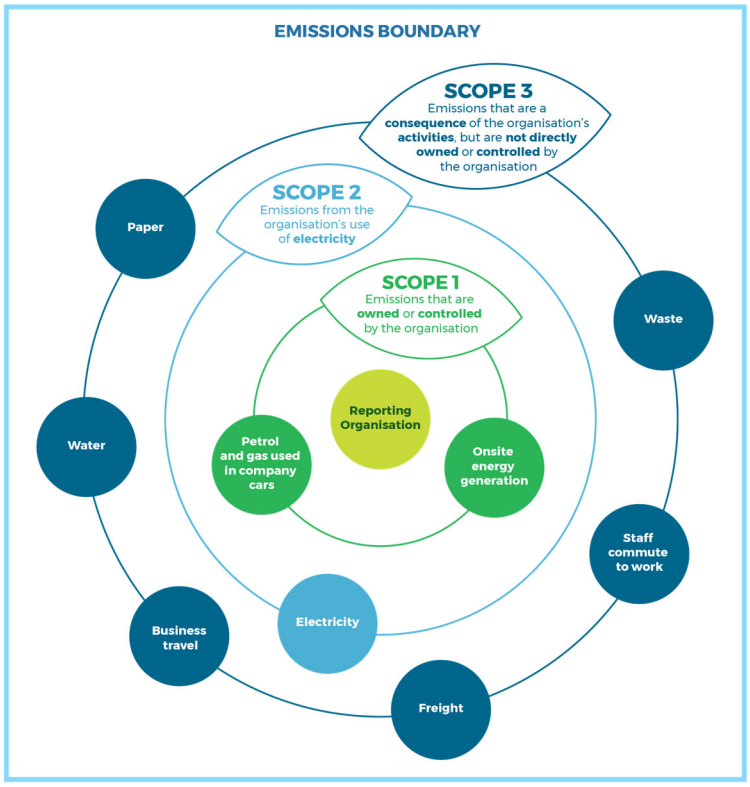


Figure 4: Defining emissions scopes. Source: NCOS

Depending on the level of control Council has over the emissions, they fall into various emissions categories and levels of reporting, as shown above and explained further here:

Scope 1 – direct emissions resulting from the organisation's ownership and control, for example energy generated on site, fuel used in generators and company vehicles.

Scope 2 – the consumption of electricity generated elsewhere.

Scope 3 – emissions from electricity consumption and fuel use (indirect emissions from the extraction, production and transport of fuel burned at generation), and emissions from waste, business travel and accommodation, office paper and water use. Other scope 3 emissions sources that may be relevant include staff commuting, food and catering, postage and freight, stationery, office printing, cleaning services, IT services (e.g. data centres) and telecommunication services.

Further information relating to the NCOS standard, emissions boundaries and the certification process is included Appendix A.

2.3 Carbon Goals and Objectives

The Department of Environment and Energy defines carbon neutral as follows:

'An activity, process, organisation, event, building or precinct is carbon neutral when its net greenhouse gas emissions (emissions) are equal to zero.'

Achieving carbon neutrality involves calculating all emissions sources within the agreed boundary, undertaking reduction projects, and the purchase and cancelling of carbon offsets or carbon credits equivalent to the remaining emissions.

The concept of carbon neutrality was tested at a Council workshop in April 2019. As AHC is in the early stages of this journey, it was agreed that the role of Council should be in managing its carbon emissions and undertaking projects that have a real impact on the environment, whilst also providing leadership and positive influence for the local community. It was therefore considered that the AHC journey should be around carbon management, and whilst carbon neutral may well be the end point of the journey, it is not the sole focus. Achieving 100% renewable energy usage is an agreed goal for Council.

The focus of this plan is therefore to achieve and document the first five steps of the 'carbon reduction pathway' – to measure, set objectives, avoid, reduce, and switch to alternatives. No timeframe has been set to achieve carbon neutrality. This will be dependant on further review of the actions and outcomes achieved as projects are implemented, and available funding. It is recommended that this review is conducted annually.

2.4 Benefits of Carbon Reduction

Reducing the carbon from Council's corporate operations through various policy, efficiency, renewable energy, offsetting and electrification projects deliver a number of direct and indirect benefits to Council and to the broader Adelaide Hills community.

Key direct benefits include:

- Direct emissions reductions for harmful GHG emissions and related environmental benefits.
- Long term financial gains through reduced energy costs for operations (although short term costs can rise, it is anticipated that longer term operational costs will likely be reduced and may offset short term capital costs).
- The value of Council's building assets can be improved through the transition to more energy and waste efficient operations. Additionally, healthy buildings are known to contribute towards improved productivity, and reduced sick leave and staff attrition.
- Reputational gains from Council's adoption of a leadership position, making the Adelaide Hills region a more desirable place to live, visit and work.
- A greater use of energy efficient technologies and renewable energy sources reduces Council's exposure to unpredictable energy market price fluctuations, and in particular, anticipated long term price increases.

Key indirect benefits include:

- Better staff health and general wellbeing through improved air quality in buildings.
- Council innovation and exemplary initiatives will educate and pave the way for other parts of the community to follow suit.

2.5 Carbon Offsets

The National Carbon Offset Standard (NCOS) provides a list of eligible offset units under the standard's rules, to ensure genuine and credible emission reductions.

Under the NCOS standard, any remaining emissions left after carbon management and reduction projects (as per carbon reduction pathway in figure 3) must be offset by purchasing carbon offsets (also known as carbon credits). These offsets are generated when a reduction in carbon is made elsewhere to compensate for the carbon emissions generated by Council.

Until recently, there were very few carbon offset projects in SA, making it difficult to buy local offsets. However, Australian and overseas approved offsets are available, in support of forestry, agriculture and renewable energy projects.

The cost of offset unit purchase is variable and market dependent. This means that the price fluctuates on a daily basis depending upon the availability of the standard of offset required, the market demand at the time the purchase needs to be made, and the quantity of offsets required to be purchased. As demand increases and availability decreases, the price increases. The price also decreases as the quantity required increases. Essentially, basic supply and demand principles apply.

At 1st May 2019, the market price range for accredited Grade A carbon offset units that support Australian projects ranges from $14/tonne to $34/tonne. The current Australian Government Treasury Report on Carbon Pricing advises that the current carbon offset range for Australia is a core price of $20/tonne, and a high price of $62/tonne. The Treasury modelling undertaken indicates that as the demand for carbon offset units increases over time, availability will decrease, and the price will therefore increase accordingly.

For the purposes of this report, an assumed rate of $30/tonne has been applied. The purchase price will vary annually and is projected to increase over time. Alternatively, it is possible to bulk purchase offsets for future years, locking in an offset price at a low rate. The business case for this would need to be assessed at time of purchase.

2.6 Carbon Offset Projects – Case Studies

Australia's largest accredited biodiversity offset is the Yarra Biodiversity Corridor Offset, a revegetation project located 400km north of Perth. Managed by 'Carbon Neutral Consultants', this project involved planting seedlings in the wheatbelt region, to revegetate formerly cleared land.

https://carbonneutral.com.au/yarra-yarra-biodiversity-corridor/

In Tasmania, a large area of old growth forest previously designated for logging has been protected as a biodiversity forest, called the New Leaf Carbon Project. 28,000 hectares have been protected, and many companies, including Virgin Australia, but carbon offsets from this project.

http://marketplace.carbonmarketinstitute.org/new-leaf-carbon-project-2/

The SA Department of Environment and Water (DEW) have been working on biodiversity projects to produce SA carbon offsets, including the Kangaroo Island Biodiverse Carbon Credit Pilot Project and an area of revegetation on the River Murray. The recent extension of Charleston Conservation Park in the Adelaide Hills has been registered as a carbon conservation park with the Clean Energy Regulator, with the purpose of generating carbon offset credits through sequestration. It is difficult to obtain published information on these projects, however DEW have indicated that there may be opportunities for partnership with local organisations to create additional local biodiversity offsets. We recommend that further consultation is undertaken with DEW and SA Department of Premier and Cabinet to gain further clarity on what may be possible going forward.

3 Council's Corporate Emissions Profile

3.1 Carbon Emissions Profile

A corporate carbon inventory was prepared by Sustainable Focus in 2011. This report suggested a total carbon footprint of 1,472 tonnes CO_2. It was noted at the time that there was inconsistent data, and some emissions sources were not accounted for, e.g. no waste data was available.

Since this time, AHC has been monitoring energy and water usage using Trellis, a web-based data management system. This means there is now accurate usage data available for some carbon emissions (energy and water). Waste and refrigerant emissions are not well recorded at present, and transport data is spreadsheet based and noted to be incomplete.

However, we have used the up to date energy and water data to complete a high-level carbon profile for Council for this plan, as follows:

Table 1: Annual Carbon Profile (incomplete)

Carbon Emissions	Tonnes CO_2 per year
Building energy	432
Streetlights	290
Water	112
Waste	Unknown
Refrigerant	Unknown
Transport	217 (incomplete)
Total	1,050

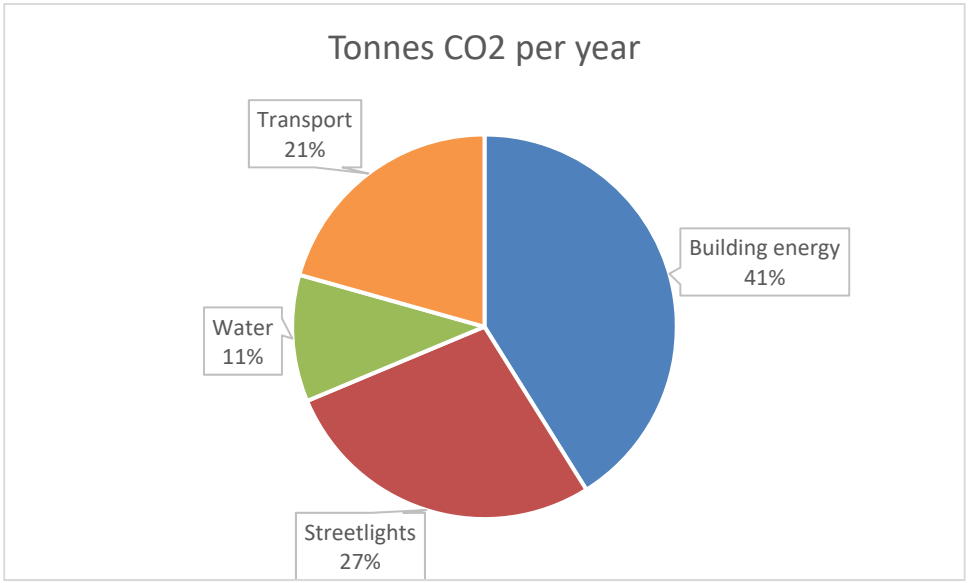


Figure 5: Annual emissions breakdown (incomplete)

This is comparable to the initial inventory. It is expected that some of the reduction in carbon emissions is due to energy efficiency projects. However, it must also be reiterated that this is a very high-level summary and cannot be claimed as accurate due to inaccuracies in data collection for waste, refrigerants and transport. In order that a detailed and current understanding of Council's carbon production and the impact of projects implemented to reduce this level, it is recommended that a full carbon inventory analysis is undertaken in accordance with the NCOS carbon accounting rules.

3.2 Current Energy Consumption

Energy consumption generally makes up a large component of an organisation's carbon footprint. At AHC, electricity is used in Council's buildings, utilities and street lighting. There is no piped gas in the AHC area, but some bottled gas is utilised. Therefore, when 'energy' is discussed in this report, it is mainly related to electricity usage (grid and renewable electricity generated from PV panels). The graph below shows a breakdown of Council's annual electricity usage based on 2017/18 energy consumption data (not costs) extracted from Trellis.

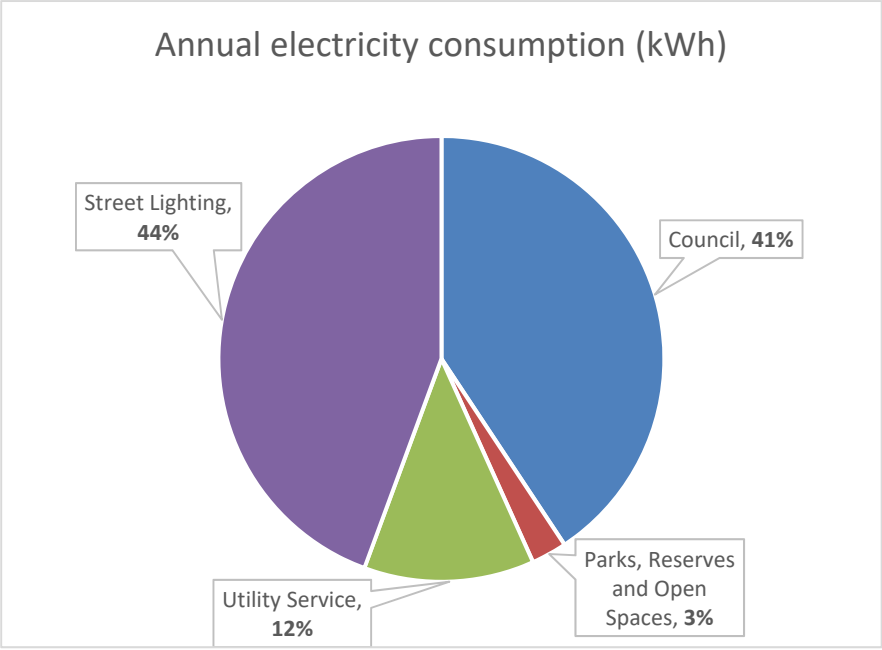


Figure 6: AHC Energy (electricity) Usage

Buildings are the biggest energy user under AHC direct control.

Council's annual electricity consumption is 1,306,696kWh (based on 2017/18 financial year). Note that this number excludes all energy associated with the Adelaide Hills Business & Tourism Centre, where tenancy energy use makes up the vast majority of the energy profile.

AHC has implemented several energy efficiency projects, reducing energy consumption by 17% in the past four years, with many of the buildings now including solar PV panels on their roof to manage their energy profile.

3.3 Electricity Contract

AHC's current electricity contract with Origin Energy does not contain any commitment to renewable energy. At the time of writing this report, AHC is considering a new electricity contract under an arrangement with the LGA for many of South Australia's Council's. The street lighting and above 160MWh

sites contract (3 years) has been confirmed to include a 60% renewable energy commitment. It is also likely that Council's electricity supply contract will be a minimum of 60% renewable for the small sites (below 160MWh). The carbon reduction implementation in this report assumes that this is a project to be implemented to step towards 100% renewable energy.

It is worth noting that the proposed LGA electricity contract is with a local SA electricity provider (Infigen) and supports actual renewable energy projects (in this case a wind farm). This contract is not GreenPower. Although GreenPower is an accredited renewable energy contract, it supports the renewable energy industry in committing to more renewable projects, rather than purchasing renewable energy directly from the provider (as is the case with the Infigen contract).

3.4 Water

Water is used in Council buildings, and in public parks and reserves, mainly for irrigation. This is a combination of mains (potable) water from SA Water, bore water and recycled water from Council's Community Wastewater Management Systems (CWMS).

Total annual mains (potable) water consumption is currently 51,942kL (based on 2017/18 year).

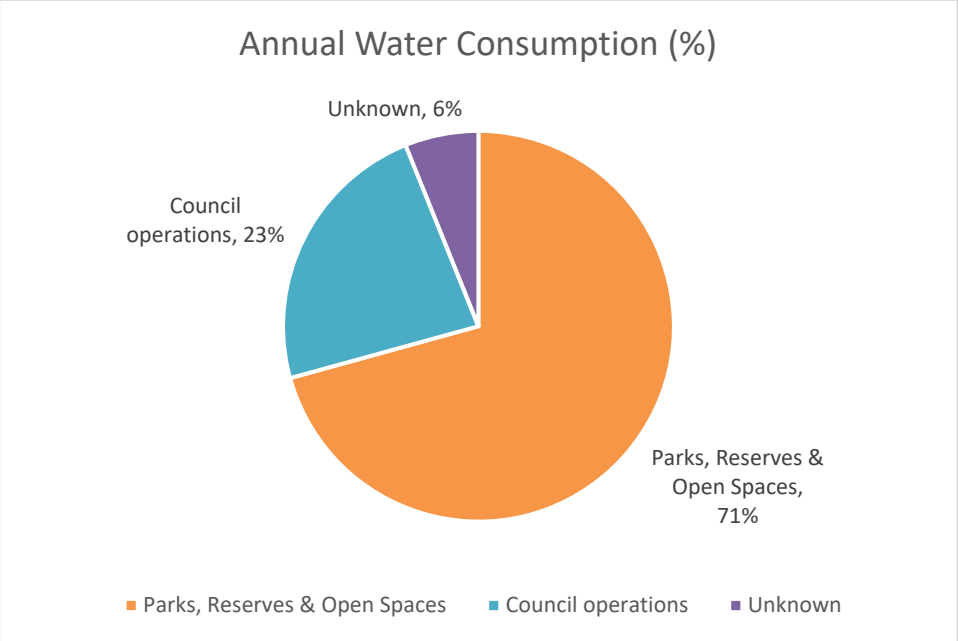


Figure 7: AHC Mains Water Usage

Carbon emissions from water are a result of the extraction, storage, treatment and distribution of freshwater through the reticulated system by SA Water. These emissions are typically included in the carbon account of the water authority. The water consumed within a building or precinct typically carries these embodied scope 3 emissions.

Bore water is also used, but records of this have not been assessed for this plan. Any carbon emissions associated with bore water extraction are a result of pump energy, therefore are included in the carbon emissions from energy.

3.5 Wastewater

Carbon emissions from wastewater occur from wastewater treatment plants. Where wastewater is sent to sewer, the emissions are carried by SA Water. When treated at source, the emissions associated with the treatment are AHC emissions. SA Water operate three CWMS in the Adelaide Hills, and Council operate two wastewater treatment plants. The systems operated by Council will also have electricity emissions associated with collection and treatment (pump stations), which are accounted for in the electricity accounts.

The systems supply treated wastewater for irrigation. Whilst volumes are recorded, recent records are inconsistent, and the accuracy of meters is being investigated. Electricity emissions associated with the collection, treatment and pumping are included in the electricity profile as this is the only reliable information available for wastewater use.

3.6 Waste

Detailed waste records are not kept for Council's operations, rather they are collected only at whole district level by East Waste, who service the AHC Council area (and are a subsidiary company). It is recommended that detailed waste records (volume and type) are kept going forward to enable a complete corporate carbon inventory to be reported (scope 3 emissions).

Waste emissions have been excluded from the carbon profile in this report until more detailed records are available. It is recommended that Trellis is used to track waste emissions to enable all emissions records to be easily collated in one place.

3.7 Transport

AHC staff use a combination of vehicles in their business use, from small fleet cars, to ute's, 4WD's and trucks for Council related maintenance and operational activities. Whilst vehicle type and km's travelled are recorded, this record appears to be inconsistent in its use and difficult to work out where the majority of work travel is occurring. The level of information provided was not detailed enough to differentiate business travel from other work related travel, such as commuting.

However, these records have been used to estimate a total number of km's travelled in the order of 1,297,959km per year, which is a significant portion of the carbon profile, recorded as scope 3 emissions. It is recommended that Trellis is used to track transport emissions to enable all emissions records to be easily collated in one place. Transport emissions should be recorded separately for business travel and for commuting (travel to and from work in Council fleet vehicles).

4 Carbon Management Opportunities

4.1 Potential Projects and Initiatives

A number of potential projects and supporting initiatives were identified to reduce Council's emissions, as listed in Appendix C. The list was then subjected to an initial shortlisting to identify those projects that were likely to have a measurable and significant impact on Council's energy and carbon emissions, or that were required to support recommended projects or broader internal Council activities around carbon management. These projects were then subjected to a detailed analysis, as described below.

4.2 Approach to Project Assessment

A Triple Bottom Line (TBL) based approach was taken to drive the selection and evaluation of an optimal suite of capital and non-capital initiatives that will help Council to achieve its carbon management goals.

The TBL approach considers environmental, social and financial impacts of each initiative. It goes beyond the traditional measures of profit, return on investment, and stakeholder (community) value to include environmental and social factors. By focusing on broader investment outcomes i.e. evaluating performance along the interrelated areas of profit, people and the environment, a triple bottom line approach is a strong tool to support sustainability goals.

The financial assessment for the majority of projects is based on recent quotations received by Council and/or industry tested knowledge of technology costs. Operations and maintenance costs are estimated based on industry knowledge. However, some of the costings related to transport related initiatives were not readily available or able to be quantified, due to lack of data and reporting in the AHC fleet use and needs. These costs are indicated in the recommended project tables in Section 5, and should be subject to further detailed investigations prior to implementation.

4.3 Multi-criteria assessment (MCA)

In order that Council selects the right projects to help it to drive towards 100% renewable energy and carbon neutrality, a bespoke multi-criteria assessment (MCA) framework was developed. The framework allows each potential project to be evaluated against a set of agreed TBL criteria and also relatively against other possible projects.

The criteria are based on strategic goals that were agreed with Council at a workshop in April 2019, with each being based around the TBL metrics. Criteria were distinct, weighted according to importance and double counting was avoided. Following detailed research, data gathering and analysis, 10 shortlisted projects were assessed via the MCA and a ranking was produced based on each projects strategic value.

Shortlisted projects have been scoped in more detail and a 'project on a page' reference was developed for each one (section 5).

The multi-criteria assessment was used only for assessing initiatives that directly impact on carbon emissions and electricity usage.

Other supporting initiatives (generation of new or renewed policies, plans, systems or procedures) were not assessed as they are considered to be required irrespective of MCA outcomes.

4.4 Goals and assessment criteria

The following goals were developed in consultation with Council and used as the basis for the MCA assessment.

Factor	Goal statement
Environmental	To develop a roadmap for carbon reduction and 100% renewable energy, whilst reducing reliance on the purchase of offsets.
Social	To demonstrate scalable leadership in carbon management and energy generation and usage that involves the broader community where possible.
Financial	To make fiscally responsible decisions that demonstrate strong ROI and that do not impose financial stress on Council budgets.

The MCA assessment criteria that support the above goals are shown below.

Environmental	Reduces Council's carbon production (inc. through renewable energy use)
	Delivers other indirect environmental benefits
	Can be procured locally

Social	Demonstrates leadership in sustainability (e.g. through asset ownership)
	Directly involves or encourages the community to adopt better practices
	Opportunities to incorporate broader AHC community or geographical district

Financial	Requires a capital budget
	Impacts upon Council's operating and maintenance costs or savings
	Has a short payback
	Relies on new or unproven technologies (with risk and associated cost)

4.5 Score Discussion

Scoring was conducted using a +3/-3 scale with clear score descriptions being developed for each criteria; as can be seen on the accompanying spreadsheet model in Appendix C. Criteria were also weighted in order to bring particular focus to certain factors that are considered of importance to Council:

- Primary weighting was at TBL level.
- Secondary weighting was at criteria level.

The outputs from the MCA and a detailed score discussion was documented and is included in the MCA summary in Appendix C.

5 Carbon Management Projects

5.1 Recommended Projects

From the MCA assessment, it was clear that there were a number of priority projects, and nine have been recommended for implementation. Costs for transport related initiatives have not been provided as these are subject to further detailed investigation and review.

Whilst these projects have been selected due to their ability to impact Council's carbon emissions and to meet the environmental, social and financial criteria identified in the MCA assessment, there are many supporting actions that are required to be implemented to support and lay the ground work for the projects listed here to be successful. These initiatives are listed in section 6.

The implementation strategy to plan the priority projects and supporting actions, and an associated cost and timeframe is detailed in Section 7.

Priority Project
Solar installation to buildings
Battery installation to buildings
Install EV charging points
Transition to EV fleet (subject to further analysis/funding review)
Behaviour change program
Energy audits and efficiency upgrades for buildings
LED street lighting upgrade
Purchase 100% renewable power
Become certified 100% carbon neutral

5.2 Solar PV to buildings

Initiative	Solar PV to Buildings
Description	Installation of 145kW solar PV to the following buildings: Stirling office and library: 70kW Woodside office: 20kW Nairne Road: 15kW The Summit: 10kW (in progress) Gumeracha Depot: 5kW Birdwood CWMS: 25kW
Key benefits	8% reduction in carbon emissions Continues roll out of Council owned renewable energy.
Estimated capital cost	Medium cost - $215,000
O+M costs	Annual energy savings of $43,000 from reduced energy costs
Payback	5 years
Cost assumptions	Allowed $1,500 per kWh to allow for smaller systems, safe and good access, etc. Lower cost and therefore faster payback potentially

	achievable if tendering all projects together. Ground mounted solar to Birdwood CWMS has been obtained from a proposal prepared for Council.
Delivery timing	Can commission immediately, quick turn around, quick benefits.
Key risks	None, but dependant on structural assessment of buildings.

5.3 Battery Installation to Buildings

Initiative	Battery Installation to Buildings
Description	Consider installation of batteries to support PV and allow for electricity price management. Key sites are Heathfield Depot, Torrens Valley Community Centre and Woodside Library, which all export more than 40% of solar PV generation. Provides good backup power cover during emergency events or power outage periods.
Key benefits	Slight reduction (2%) in emissions from improved use of solar power Back-up power in event of power failure. Could reduce the need for diesel generators.
Estimated capital cost	Medium cost - $120,000 for battery installation at three sites.
O+M costs	$10,000 in annual savings, low maintenance requirements.
Payback	Approximately 10 - 12 years
Cost assumptions	Difficult to obtain reliable data from manufacturers for systems of this size. Refer to separate battery paper for details.
Delivery timing	Currently issues around battery supply and availability.
Key risks	Lithium-ion technologies are proposed due to their lower upfront cost and low maintenance requirements. Bushfire risk (low) will require management procedures to be in place.

5.4 Install Fast Charging EV charging points

Initiative	EV Charging
Description	Install EV charging stations at key strategic locations for Council and public use.
Key benefits	Public and visible demonstration of sustainability commitment. External community users can use EV changing point (possible charge for public users).
Estimated capital cost	Medium cost - $70,000 for four sites

O+M costs	No emissions savings until EV fleet is activated. A fee for use model should be adopted to provide a future cost recovery source for the Council to operate and maintain the charging stations.
Payback	None at present.
Cost assumptions	Refer to separate EV paper for details.
Delivery timing	Can commission immediately, quick turn around.
Key risks	Rapidly evolving technology, risk of installing charger stations for cars that go out of production or that use different charging plugs.

5.5 Transition to EV Fleet

Initiative	Transition to EV Fleet
Description	Prepare and implement a vehicle procurement policy to transition the Council's vehicle fleet to electric vehicles.
Key benefits	Over time, move towards a zero-carbon transport strategy.
Estimated capital cost	Cost of purchasing equivalent number of EV vehicles. EV 50% cost premium over current light vehicles. The data for heavy vehicles is unknown and rapidly changing at present.
O+M costs	Ongoing fleet replacement with EV cars (or hybrid cars in a transitional period – to be confirmed after further investigation). Currently approximately 50% premium over current light vehicle purchase price. This will reduce as EV grows in popularity. Light fleet only initially, consider heavy fleet later as market matures.
Payback	Not calculated (insufficient data)
Cost assumptions	EV 50% cost premium over current vehicles.
Delivery timing	Recommend annual rollout of replacement of fleet to EV – one per year or faster, subject to further financial feasibility.
Key risks	Due to lack of data and investigation needed outside of the scope of this plan, capital costs and whole of life costs are not fully understood. Timeframe for rollout is unclear due to ownership of vehicles and relationship with employment packages. Integration with EV charging points needs to be monitored as technology is rapidly evolving. Full EVs (non-hybrid) may not have sufficient range between charges to satisfy Council's km usage requirements. Hybrids may be a more appropriate choice in the short to medium term.

Note: also refer to section 6.3 for detailed notes on the Transition to EV fleet initiative and the further work required.

5.6 Behavioural Change Program

Initiative	Behavioural Change Program
Description	Internal training and education program. Likely to result in a minimum 5% improvement in energy performance. Could extend to community education.
Key benefits	Minimal emissions reduction (3%), likely higher, but low cost. And with transferal opportunities to community through staff or outward facing education sessions or literature. Education to reduce consumption throughout all environmental factors, e.g. water, waste.
Estimated capital cost	Approx. $20,000 in year one
O+M costs	$10,000 ongoing for implementation
Payback	2 years
Cost assumptions	Consultancy employed in year one, ongoing costs could be internal or external
Delivery timing	Can commence immediately
Key risks	None

5.7 Energy Audits and Efficiency Upgrades for Buildings

Initiative	Energy audits and efficiency upgrades for buildings
Description	Continue roll out of energy efficiency projects, including lighting, HVAC, insulation, etc. Consider indoor environment projects, such as planting, painting, etc.
Key benefits	5% emissions reduction. High level of staff interaction and education. Some indoor environment and wellbeing benefits might be possible.
Estimated capital cost	$87,000 based on recent audit for Stirling Library and Administration building upgrade (this is budget for first year). Allow $50,000 per year going forward for energy efficiency at other key Council assets, plus allowance should be made to re-do energy audits and develop priority energy efficiency actions specific to each site.
O+M costs	Reduced energy costs in the order of $10-20,000 per year
Payback	Most energy efficiency projects paying back in 3-5 years
Cost assumptions	Costs are based on Stirling energy audits prepared by others.
Delivery timing	Energy audits could commence immediately, with upgrade projects in 2019/20.
Key risks	None

5.8 LED Street Lighting Upgrade

Initiative	LED Street Lighting Upgrade
Description	Upgrade to all streetlighting (1405 public streetlights) to include LED fittings, as per the paper presented for decision at the Ordinary Council Meeting on Tuesday 23 July 2019. Note only 900 to be upgraded in the first instance.
Key benefits	LED fittings are lower maintenance, have a longer life expectancy, and are more energy efficient, resulting in ongoing cost and emissions savings.
Estimated capital cost	$550,000 for all lighting based on costs in the Council report $360,000 for first 900 lights
O+M costs	Reduced maintenance and energy costs by approximately 50%
Payback	The Council report suggests a payback of 6-7 years.
Cost assumptions	Note that the summary presented above is based on information in the paper presented for decision at the Ordinary Council Meeting on Tuesday 23 July 2019. dsquared have not undertaken any independent assessment of this option.
Delivery timing	900 lights to be replaced in 2019/2020
Key risks	None

5.9 Purchase Renewable Power

Initiative	Purchase renewable power
Description	Initially considered that a 100% renewable energy contract may be available. During the time of writing this plan, it seems likely that a 60% renewable energy contract will be offered via the LGA contract for all sites and street lighting contracts.
Key benefits	45% of carbon emissions reduced through 60% renewable contract. 60% of carbon emissions could be reduced through 100% renewable contract (currently not an available option).
Estimated capital cost	None
O+M costs	Marginal increase in ongoing energy costs.
Payback	None
Cost assumptions	Relies on LGA contract negotiations.
Delivery timing	It is assumed that the LGA contract will run for a 3 year period. After this it is recommended that a 100% renewable energy contract is sought. This may be in conjunction with a community energy project.

Key risks	No perceived risks. Note that whilst this project is listed as 100% renewable energy, we have used the 60% contract for the first 3 years in the carbon projections.

5.10 Certified 100% Carbon Neutral

Initiative	Certified 100% carbon neutral
Description	Achieve NCOS certification for corporate emissions.
Key benefits	100% of carbon emissions offset. AHC a leader in Australia for carbon management. Public statement of commitment to the environment.
Estimated capital cost	$90,000 in consultancy and audit costs
O+M costs	Costs vary depending on timing of NCOS certification. Offsetting entire emissions in 2019 would cost $32,000 in offsets (noting that current data set is incomplete and therefore inaccurate.
Payback	None
Cost assumptions	Refer to NCOS section
Delivery timing	Can commence immediately, or after other carbon management projects have reduced overall carbon footprint.
Key risks	No energy, water, waste or transport reduction benefits to Council if 100% carbon offset purchased. No local benefit unless tied into a local offsets project. However, once other projects are implemented, there is a residual carbon amount that will require some form of offsetting to reach carbon neutrality and/or to achieve NCOS certification.

5.11 Timing of Carbon Offsets

The final project option in this section is listed as '100% certified carbon neutral'. In reality, carbon neutrality can be achieved with or without NCOS certification. The steps to be considered are:

Timing: AHC could decide to purchase offsets today and become carbon neutral immediately. This would require an ongoing carbon offset purchase. To start this with Council's current carbon inventory would cost approximately $32,000 per year (based on carbon price of approx. $30 per tonne). However, the data collection needs more work to provide an accurate and auditable carbon inventory, and this would also bypass a crucial step to reduce emissions through the various other projects presented in this plan.

There is no payback and no follow on benefit, e.g. reduced energy costs. Refer to section 2.5 which notes rising carbon prices over time, and uncertainty in the carbon pricing market.

Third Party Approval: NCOS provides the benefit of a nationally approved carbon offset accreditation process. Without the certification, Council are limited in how proof of carbon neutrality can be justified. Other benefits of an NCOS certification are:

- Rigour of annual reporting in accordance with the framework, including annual 'Public Disclosure Summary' documenting carbon reduction commitments;
- Position of leadership and recognition;

- Enhanced corporate social responsibility; and
- Positive social and environmental outcomes.

Carbon Offsets: A decision would be required around which carbon offsets to purchase, i.e. local or international; renewable energy or biodiversity offsets; or initiating a new carbon offset project for the Adelaide Hills region through revegetation or biodiversity projects.

It is recommended that further analysis and consultation is undertaken to determine the most appropriate pathway to carbon neutrality.

5.12 Other Projects

Two large scale solar projects were initially considered with the MCA assessment, however these were quickly discounted due to high capital costs, high risk to Council, and long payback for investment (in excess of 15 years).

Additionally, in light of the recent proposal to consider a 60% renewable electricity contract through the LGA (not yet confirmed), it is unlikely that these projects would now be supported, as the large capital cost and long payback will be further eroded due to the smaller emissions benefit of such systems when already purchasing power with a significant renewable energy component.

6 Supporting Initiatives

6.1 Recommended Supporting Initiatives

It is imperative that Council implement additional initiatives to support the identified priority projects and Council's sustainability strategy. These supporting initiatives are generally policies and plans which lay the groundwork for the successful implementation of the priority projects. These include:

1. Carbon Accounting and Reporting

In order to inform better decision-making, comprehensive and up-to-date information on carbon sources is critical. This will allow Council to allocate funds and efforts to the highest value carbon reduction initiatives and will also directly support any future certification, under NCOS or other platforms. Key actions include:

- An annually updated and complete carbon inventory, aligned to NCOS standards.
- Further utilisation of Trellis – to accurately record and monitor all carbon emissions and transition to easy annual carbon accounting.
- Consideration of human resource implications – to be managed by Council or with assistance from specialist consultants.
- A data management and reporting plan – data completeness, integrity and reporting are critical to informing good decision making when attempting to manage complex areas such as emissions and carbon. Understanding the impact of investments and process or behaviour changes allows active management of carbon and meaningful and current reporting to be generated.
- A carbon offset policy – when Council are ready to consider carbon offsets, a policy will be required to specify what type and mix of carbon offsets are approved for purchase. This policy should also consider the timing of carbon offset purchase and make recommendations for NCOS certification.
- Carbon reduction promotion and communications to ensure advocacy and information sharing, including case studies and progress on delivery of the plan. External communications of the plan delivery and outcomes could include:
    - Annual Council Report
    - Council website and Social Media pages
    - AHC articles, articles in broader newspapers (e.g. The Advertiser) and articles in industry publications
    - Reports to the AHC Sustainable Advisory Group and Council.

2. Other Carbon Reduction Projects

Some initiatives are already being implemented by Council and have an impact on the carbon profile and in behaviour change.

- Continue to implement water conservation projects in accordance with the current Water Management Plan.
- Continue to implement resource recovery, waste management and minimisation projects, and implement separate corporate waste reporting.

- A technical assessment of a transition to EV fleet – this will allow for a position paper on transition, including timeframes, types of vehicles, consideration of light versus heavy vehicles, data management solutions, transition costs, whole of life costs, etc. Note that this is a key action to support the transition to EV – this initiative cannot be progressed without further investigation and understanding of cost implications. Refer Section 6.3 for more detail.
- Annual project monitoring and evaluation should guide how the progress of projects and the outcomes delivered will be measured and tracked. This should include factors such as targets, roles and responsibilities, time and cost considerations, issues and mitigations.

3. Plans and Policies

- A review of the procurement policy to include sustainable procurement– this will allow Council to influence how and from whom its goods and services are procured, taking account of traditional procurement factors but also the sustainability characteristics of the goods, services and vendors involved. Factors such as manufacturing materials, source location and transport logistics can all be addressed.
- An Environmental, Social and Governance plan to support future banking and investment activity – Government agencies and private entities are taking a growing direct interest in the types of businesses that they invest in, or that they borrow from. Environmental criteria consider how a company performs as a steward of our natural environment. Social criteria examine how it manages relationships with employees, suppliers, customers, and the communities where it operates. Governance deals with a company's leadership, executive pay, audits, internal controls, and shareholder rights. A plan that helps to guide this type of activity can help to avoid risk and improve reputation for Council.
- A sustainable buildings policy – This plan will ensure that any future building upgrade works, or any new buildings, adhere to sustainable design requirements. For example, this could include minimum energy performance standards for lighting and air conditioning upgrades, eco credentials for new furniture and equipment purchase, etc.
- A staff travel survey - Workplace travel surveys are used to gather data on travel to, from and between workplaces. Key reasons for implementing workplace travel surveys are to:
    - Assist in choosing actions that are appropriate for influencing travel behaviours, for example to reduce KM travelled and GHG emissions.
    - Provide data that allows you to measure changes in behaviour after actions have been implemented.
    - Provide data to support carbon accounting for NCOS.

6.2 Potential Community Initiatives

There are also a number of community initiatives that can help to communicate what Council is doing in leadership in carbon management, and to provide encouragement to members of the community to adopt better practices within their own homes and workplaces.

The initiatives can include:

- Community education, through the Council website, library information screens, booklets, community information nights, etc.

- Community consultation on some of the proposed projects included in this plan.
- Continue the proposed community energy project, being developed through a separate project with the Resilient Hills and Coasts Council group.
- A sustainable transport plan – A well targeted community sustainable transport plan can help to reduce GHG emissions, improve road safety, reduce congestion and increase the efficiency of transport systems. Others benefits often include incentivising a switch from cars to more sustainable transit modes such as walking, cycling, ride sharing and public transport. Electric vehicle opportunities can also be addressed.
- Prepare a Community Carbon Management Plan, to sit alongside this Corporate plan and to specifically address the Communities goals, targets and implementation.
- Consider supporting carbon neutral events, such as the Uraidla Sustainability Fair or Stirling Fringe. Events can be carbon neutral certified through NCOS, and is a very public demonstration of Council's community commitment.

6.3 Transition to Electric Vehicle (EV) Fleet

Given the likelihood of an ongoing renewable energy power agreement, the gradual transition to an EV fleet is a key component of a move to a more sustainable, carbon neutral Council. After the renewable energy contract is implemented, fleet emissions from work related travel are the next largest emission source. It is recognised that Council requires a large variety of vehicles for the delivery of its services and that for some vehicle classes, particularly heavy fleet and industrial type vehicles, EV alternatives are either hard and/or prohibitively expensive to source, or are not yet available to the market in Australia. Commercial type vehicles are being developed, however these are behind passenger vehicles in terms of development status and speed to market.

The initial focus therefore, should be on gradually transitioning light fleet / passenger vehicles from diesel, petrol or hybrid, to full EV. This would yield significant GHG savings, particularly if Council had already installed EV charging points that are fed by solar generated power. Solar powered EV charging would also yield additional vehicle operating cost savings, above and beyond those that could be anticipated through the running on EV fleet versus a traditional fossil fuelled fleet. Typically, EVs cost around 25% less to operate and maintain than equivalent diesel or petrol vehicles. Capital purchase costs for EVs tend to be higher (currently ~50% above current vehicle costs), however costs are steadily reducing. No costs are included in this report due to the lack of available information on Council's usage and rollout plan, as well as uncertainty in the timeframe for availability of heavy vehicles to suit Council's needs. *Therefore, the costs for this initiative do not contribute to the implementation costs for this Carbon Management plan.*

It is recommended that a comprehensive analysis is conducted on Council's light fleet / passenger vehicles to establish likely capital/whole of life costs and GHG implications. It should also be possible to negotiate fleet based pricing and servicing which may yield additional financial benefits versus more *ad hoc* purchase of various brands and from various dealers. This should be part of a wider feasibility study into the technical requirements, budget and timing of this initiative.

6.4 Council's Construction Activities

The corporate carbon inventory concentrates on operational emissions and does not include the embodied energy of materials that may be used in Council activities, such as the construction of a new building or laying of new asphalt for road works, or smaller construction and removal works. This is also

not a requirement of NCOS. However, Council may wish to develop a simple carbon accounting calculator for Council's construction related activities. This would transition Council's carbon commitment from their own internal corporate inventory towards a stewardship role over its activities and impact on community emissions and use of sustainable materials. This type of emissions accounting is considered by the industry to be a 'carbon positive' action – that is, going beyond carbon neutrality to positively impact the wider environment.

6.5 Ethical Banking, Investing, Borrowing

In recent years there has been an increased interest in ethical banking and responsible investment. This is underpinned by the three pillars of environmental, social and corporate governance, with these elements being brought together in a way that can be meaningfully assessed and understood by individual, government and corporate investors, lenders, investors and borrowers. Most large banks and investment institutions now have dedicated departments that exclusively look at responsible investing, and there are also now many smaller lenders and investment funds that specialise in offering only strongly ethical investment options. Furthermore, Australia's first dedicated ethical investment Exchange Traded Fund (ETF) has just been released to the open market.

These businesses or investments are evaluated and rated by methodologies such as the Equator Principles, which assess the environmental and social risk associated with specific investment activities and looks into the corporate governance of the entities involved. A key question for example is " does this business, investment or fund lend to, or benefit from, the fossil fuel industry?"

Banks and investment businesses operating with a socially conscious focus are fast coming to the foreground and customers of all types are actively expecting that the businesses they choose to deal with are socially responsible, sustainable, and contributing to the communities around them.

In this light, it is recommended that Council review its banking and investment activities and if necessary, actively refocus its financial dealings onto businesses that are competitive, have market leading products and that align with Councils own values and ESG principles.

6.6 Funding Opportunities

The following funding opportunities and grants are available to Council for projects which improve energy efficiency, invest in renewables, reduce waste to landfill and reduce emissions:

- **Green Industries SA (GISA): Solid Waste Opportunities Program (SWOP)** – Grants (up to $15,000) for organisations aiming to increase diversion of their solid waste from landfill. The grant can be used for waste management assessments, feasibility studies, strategic planning and best practice waste segregation and diversion systems.
- **Green Industries SA (GISA): Resource Efficiency and Productivity (REAP) –** Grants up to $10,000 for improving operations by saving resources and preventing or reducing waste. Additional $10,000 available to implement resource efficiency recommendations with 25% co-contribution.
- **Clean Energy Finance Corporation (CEFC) -** The CEFC provides long term, fixed rate debt finance where funds are used for investment in clean energy solutions, including solar PV and other renewable energy generation systems, energy efficiency in buildings, facilities and equipment, and low emission technologies (for example, tri-generation).

In line with the Council's Climate Change Emergency declaration, the following grants are available to the Council to support initiatives which will assist in building resilience, adapting to climate change and improving waste recycling processes with East Waste.

- **NRM Water Sustainability Grants -** The Water Sustainability Grants are contributing to projects that will help reduce urban heat effects, treat stormwater run-off and re-use water.
- **GISA Recycling Infrastructure Grants -** Industry & Local Government – This grant has been included as an opportunity to engage with East Waste on improving recycling processes and reduce landfill waste.

7 CMP implementation planning

7.1 Project Implementation

The approach to project planning and implementation is to break key project elements down into manageable, measurable and accountable steps. Robust planning will help to establish an approach that has the right balance between resources, skills and tasks.

The various projects will each be allocated to and delivered by the most appropriate departments within Council, utilising Council's existing project management, contracting and risk management procedures as required. Note that the factors influencing the priority of projects may change over time, with further development of plans and policies, budget availability, policy settings, technology development, etc, and so Council should adopt an approach of continuous review and re-optimisation in order to stay on the front of managing their emissions.

Delivery and ongoing delivery of projects will be supported through the suite of policies and plans described in section 6, as well as by Council's existing embedded processes.

7.2 Detailed Project Program

The implementation program shown in the graph below, and expanded as a project program overleaf, shows the recommended program of carbon management and supporting initiatives over a timeline from now until FY23/24. Projects have been carefully scheduled to deliver optimised benefits and to position Council to quickly make meaningful reductions to its carbon emissions. The initial focus is to achieve 100% renewable electricity in the short term, and to prioritise projects which result in reductions in the carbon footprint.

Figure 8 below shows that 100% renewable energy is achievable by 2023/24 when the energy efficiency and renewable energy projects have been implemented and the electricity contract changes to 100% renewable energy.

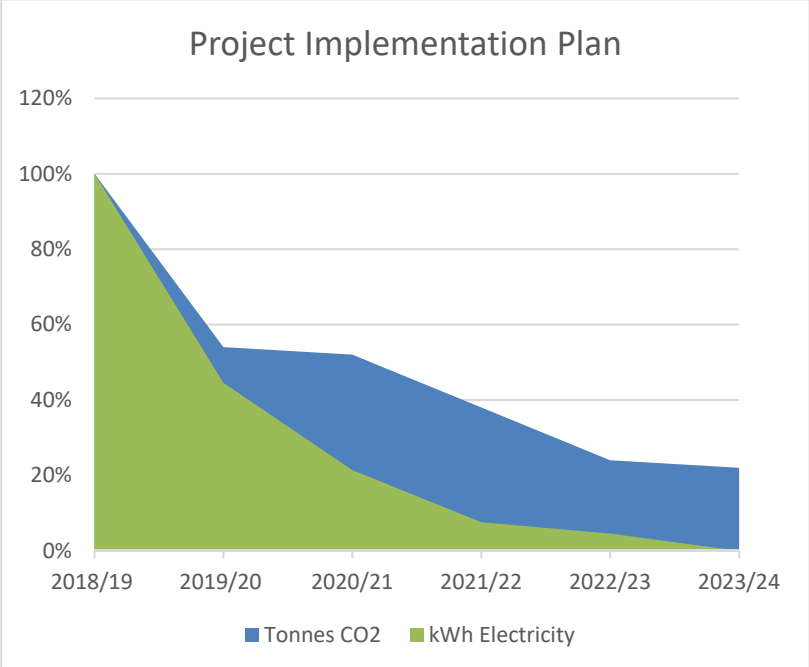


Figure 8: AHC project implementation trajectory

The timeframe for achieving carbon neutrality is subject to detailed analysis of offset strategies and ongoing review of the impact of the carbon reduction projects, including further studies and review of funding.

Figure 9 presents the program in more detail, with a suggested timeframe for all projects and supporting activities.

The implementation strategy was presented to Council in June, and the workshop slides are included in Appendix C.

Figure 9: Detailed Project Implementation Plan

Initiative Description	FY18/19	FY19/20	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25
Council commitment to carbon neutral journey							
Declaration of Climate Change Emergency							
Development of CMP for Council corporate activities							
Solar installation to buildings							
Battery installation to buildings							
Install EV charging points							
Transition to EV fleet (subject to further analysis/funding review)							
Behaviour Change Program							
Energy audits and Efficiency Upgrades							
LED Streetlights							
Purchase renewable power		Go to 60%	60%	60%	Go to 100%	100%	100%
Certified 100% carbon neutral							
Commence data collection and NCOS understanding							
Develop full carbon inventory							
Review procurement policy to include sustainability							
Develop Env, Social, Corporate Governance (ESG) Plan							
Develop Sustainable Buildings Policy							
Develop Sustainable Transport Plan							
Continue to implement waste and water projects							
Develop EV Fleet Transition Plan							
Initiate staff travel survey							
Develop Community Carbon Reduction Plan							
Initiate community engagement sessions							
Support community energy project							
Monitoring & evaluation of policies, plans, and projects							
	Completed						
	New Initiative						
	In progress						

7.3 Project Implementation Activities

The following tables summarise the key carbon reduction activities to Council will undertake on a year-by-year basis. No costs have been provided for a transition to EV fleet and this is the subject of further investigation.

Fin Year 19/20	Initiative category	Initiative description	Est. capital cost
Priority Projects	Buildings	• Commence energy upgrades	$50,000
		• Installation of 145kW solar PV to the following buildings: ✓ Stirling - 70kW ✓ Woodside: 20kW ✓ Nairne Road: 15kW ✓ The Summit: 10kW (in progress) ✓ Gumeracha Depot: 5kW ✓ Birdwood CWMS: 25kW	$215,000
	LED lighting upgrade	• Commence LED street lighting project	$500,000
	Carbon management	• Commence carbon inventory and data management review	$15,000
Supporting initiatives	Feasibility & investigations	• Run staff travel survey for journeys to, from and within workplaces to establish baseline data	$10,000
	Data and reporting	• Collate data around Council's energy use and carbon production	N/A
		• Review procurement policy to include sustainability	Complete
	Monitoring & Evaluation	• Commence - Monitor appropriateness of relevant Policies, Plans & Projects and amend as required	N/A
	Policies & plans	• Develop data and reporting plan	$10,000
	Behaviour change	• Initiate Behaviour Change Program	$15,000
	Renewable energy	• Purchase of 60% renewable energy through LGA contract	N/A

	Certification	• Gain detailed understanding for NCOS (or similar) costs, certification prerequisites and ongoing requirements	N/A
	Community	• Support community carbon awareness engagement sessions	N/A
		• Support community energy project	$20,000

Fin Year 20/21	Initiative category	Initiative description	Est. capital cost
Priority Projects	Buildings	• Continue energy upgrades (allowance is for Stirling library and administration building)	$100,000
	Transport	• Install EV charging points	$35,000
Supporting initiatives	Feasibility & investigations	• Develop full Carbon Inventory for all Council activities (to inform possible future NCOS certification)	$10,000
	Data and reporting	• Ongoing - Collate data around Council's energy use and carbon production	N/A
	Monitoring & Evaluation	• Ongoing - Monitor appropriateness of relevant Policies, Plans & Projects and amend as required	N/A
	Policies & plans	• Develop Sustainable Buildings Policy	$10,000
		• Develop ESG policy	$20,000
		• Develop Sustainable Transport Plan	$12,000
		• Develop EV Fleet Transition Plan	$10,000
		• Ongoing - Monitor appropriateness of relevant Policies, Plans & Projects and amend as required	N/A
	Behaviour change	• Monitor behaviour change impacts	N/A
	Renewable energy	• Ongoing purchase of 60% renewable energy through LGA contract	N/A
	Certification	• Prepare for NCOS (or similar) certification	N/A
	Community	• Ongoing - community energy project	$10,000

Fin Year 21/22	Initiative category	Initiative description	Est. capital cost
Priority Projects	Buildings	• Install battery storage at Heathfield Depot, Torrens Valley Community Centre and Woodside Library	$120,000
		• Roll out energy audits and efficiency upgrades	$50,000
	Transport	• Continue to install EV charging points	$35,000
		• Carry out detailed feasibility into transition to EV (or hybrid) fleet, including technology, budget and timeframes	$TBC
Supporting initiatives	Feasibility & investigations	• Periodic staff travel surveys to capture data and improvement opportunities	$5,000
	Data and reporting	• Ongoing - Collate data around Council's energy use and carbon production	N/A
	Monitoring & Evaluation	• Ongoing - Monitor appropriateness of relevant Policies, Plans & Projects and amend as required	N/A
	Policies & plans	• Develop Carbon Offset Policy – include local biodiversity offsets	$8,000
	Behaviour change	• Periodic – Behaviour Change Program updates	$5,000
	Renewable energy	• Ongoing purchase of 60% renewable energy through LGA contract	N/A
	Certification	• Prepare for NCOS (or similar) certification	N/A
	Community	• Periodic community carbon awareness engagement sessions requirements	N/A
		• Develop Community Carbon Management Plan	$20,000
		• Ongoing - community energy project	$5,000

Fin Year 22/23	Initiative category	Initiative description	Est. capital cost
Priority Projects	Buildings	• Roll out energy audits and efficiency upgrades	$50,000
	Transport	• Ongoing - transition to EV (or hybrid) fleet	$TBC
Supporting initiatives	Feasibility & investigations	• N/A	N/A

	Data and reporting	• Ongoing - Collate data around Council's energy use and carbon production	N/A
	Monitoring & Evaluation	• Ongoing - Monitor appropriateness of relevant Policies, Plans & Projects and amend as required	N/A
	Policies & plans	• N/A	N/A
	Behaviour change	• Monitor behaviour change impacts	N/A
	Renewable energy	• Initiate purchase of 100% renewable energy through LGA contract	N/A
	Certification	• Prepare for NCOS (or similar) certification	N/A
	Community	• Ongoing - community energy project	$5,000

Fin Year 23/24	Initiative category	Initiative description	Est. capital cost
Priority Projects	Buildings	• Roll out energy audits and efficiency upgrades	$50,000
	Transport	• Ongoing - transition to EV (or hybrid) fleet	$TBC
Supporting initiatives	Feasibility & investigations	• Periodic staff travel surveys to capture data and improvement opportunities	N/A
	Data and reporting	• Ongoing - Collate data around Council's energy use and carbon production	N/A
	Monitoring & Evaluation	• Ongoing - Monitor appropriateness of relevant Policies, Plans & Projects and amend as required	N/A
	Policies & plans	• N/A	N/A
	Behaviour change	• Periodic – Behaviour Change Program updates	$5,000
	Renewable energy	• Ongoing - Purchase of 100% renewable energy through LGA contract	N/A
	Certification	• First year of full carbon accounting in accordance with NCOS protocol in preparation for NCOS certification (subject to ongoing review)	$10,000
	Community	• Periodic community carbon awareness engagement sessions requirements	N/A
		• Ongoing - community energy project	$5,000

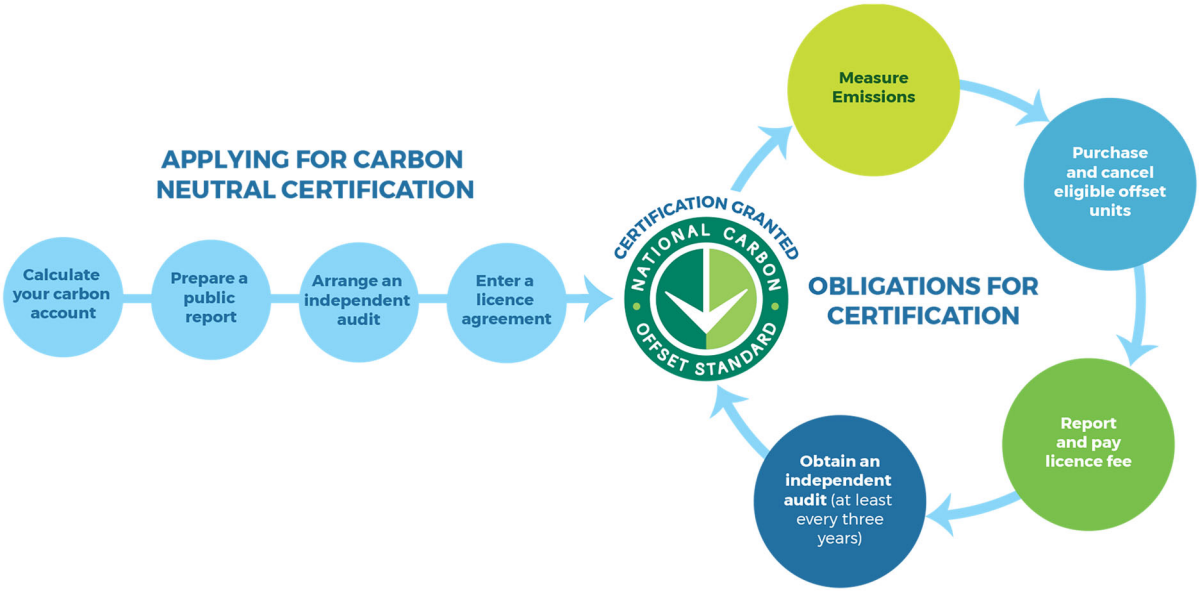
Fin Year 24/25	Initiative category	Initiative description	Est. capital cost
Priority Projects	Buildings	• Roll out energy audits and efficiency upgrades	$50,000
	Transport	• Ongoing - transition to EV (or hybrid) fleet	$TBC
Supporting initiatives	Feasibility & investigations	• N/A	N/A
	Data and reporting	• Ongoing - Collate data around Council's energy use and carbon production	N/A
	Monitoring & Evaluation	• Ongoing - Monitor appropriateness of relevant Policies, Plans & Projects and amend as required	N/A
	Policies & plans	• N/A	N/A
	Behaviour change	• Monitor behaviour change impacts	N/A
	Renewable energy	• Ongoing - Purchase of 100% renewable energy through LGA contract	N/A
	Certification	• Become 100% carbon neutral certified (NCOS or similar)	$50,000
	Community	• Ongoing - community energy project	$5,000

Introduction

The Australian Government, in partnership with the property sector and business, has developed the *National Carbon Offset Standard (NCOS) for Precincts (Precinct Standard).* The organisational standard is a voluntary standard to manage greenhouse gas emissions and to achieve carbon neutrality. It provides best-practice guidance on how to measure, reduce, offset, report and audit emissions that occur as a result of the operations of an organisation.

NCOS

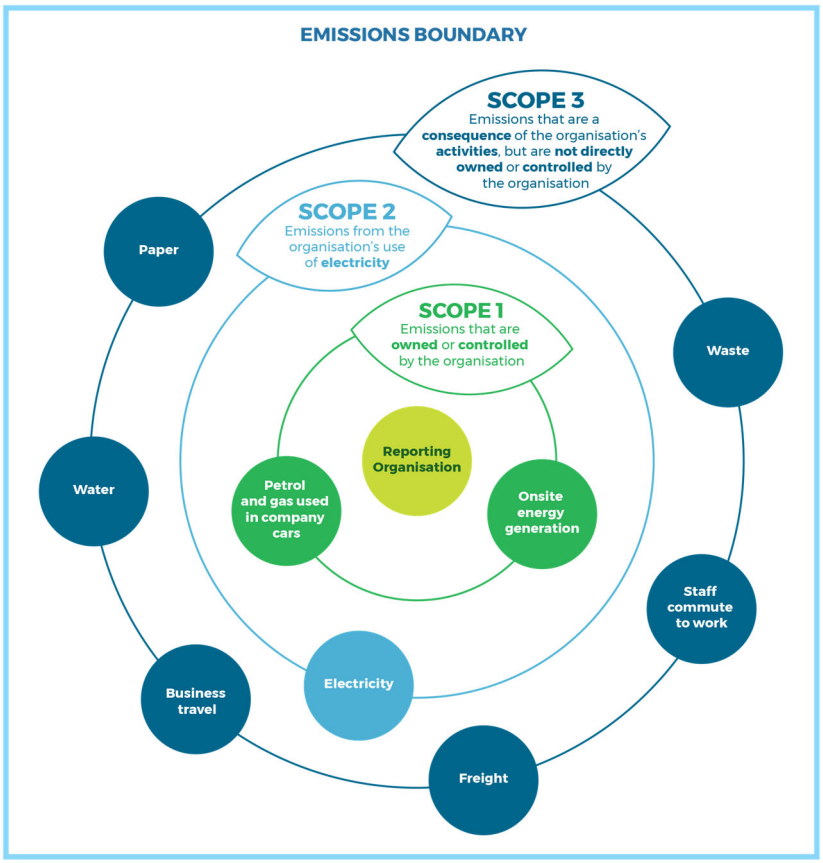
The purpose of NCOS is to provide a structured, auditable pathway for organisations to work towards carbon neutrality. The NCOS standard encourages the measurement, management and reduction of greenhouse gas emissions as far as is practicable, with the remaining emissions cancelled out by the purchase of accredited offset units.



Appendix Figure 1: NCOS Pathway to certification. Source: NCOS

The following operational emissions are to be accounted for:

1. **Energy** (including lighting, heating and cooling, occupant energy use, plant equipment, other infrastructure and shared services). This includes all energy sources (grid electricity, on-site generated electricity, gas, diesel fuel etc.) and all emissions scopes (Scope 1, 2 & 3: see Figure 2);
2. **Refrigerants** including air conditioning system leakage and replacement and refrigeration systems;
3. **Water** consumed, and **waste water** discharged (including Scope 3 emissions associated with off-site water treatment);
4. **Transport** to and from the precinct (including occupant commuting, occupant travel to and from a place of work, property management vehicles, forklifts, shuttle services etc.); and
5. **Waste** leaving the precinct (including all waste streams, and Scope 3 emissions associated with off-site waste recycling, processing, combustion, or disposal to landfill).



Appendix Figure 2: Defining emissions scopes. Source: NCOS

Emissions Scope

The organisation emissions include all emissions that the organisation has control over. They fall into the three globally accepted categories:

Scope 1 – direct emissions resulting from the organisation's ownership and control, for example energy generated on site, fuel used in generators and company vehicles.

Scope 2 – the consumption of electricity generated elsewhere.

Scope 3 – emissions from electricity consumption and fuel use (indirect emissions from the extraction, production and transport of fuel burned at generation), and emissions from waste, business travel and accommodation, office paper and water use. Other scope 3 emissions sources that may be relevant include staff commuting, food and catering, postage and freight, stationery, office printing, cleaning services, IT services (e.g. data centres) and telecommunication services.

The carbon account must include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). Any exclusions must be disclosed and justified.

NCOS Certification

The annual carbon account needs to be audited by an independent third party which carries NGERS Accreditation at least every three years. Once the emissions inventory has been confirmed, the carbon is then cancelled via the purchase of certified offsets, following which a submission can be made to NCOS for certification. Full details regarding NCOS is available here:

http://www.environment.gov.au/climate-change/government/carbon-neutral/ncos

Example NCOS Data Collection Sheet

The following shows the basic data collection required by NCOS:

Carbon Emission Profile Calculator

	Total	Units	Emission Factor	Carbon Emission (tonnes)
Scope 1 emissions				
On-site stationary fuel use		KL		
Transport fuel use		KL		
Natural gas use		kg		
Refrigerant use		kg		
			Total Scope 1 Emissions	
Scope 2 emissions				
Electricity Use		kWh		
Renewable Energy Purchase		kWh		
			Total Scope 2 Emissions	
Scope 3 emissions				
Electricity – Transmission & Distribution		kWh		
Water		kL		
Wastewater		kL		
Waste (Landfill)		tonnes		
Waste (Mixed Recycling)		tonnes		
Waste (Organic)		tonnes		
Waste (Cardboard/Paper)		tonnes		
Employee commuting (car)		km travelled		
Employee commuting (public transport)		km travelled		
Flights		km travelled		
Taxis		$ Spent		
Fleet Vehicles		km travelled		
			Total Scope 3 Emissions	0.00

Total Carbon Footprint	0.00

Total Carbon Footprint Without Renewables	0.00

Appendix B – Cities Power Partnership Pledges

The following pledges have been selected to best align with the commitments of this Carbon Management Plan, from a long list supplied by the Cities Power Partnership.

Theme	Pledge
Renewable energy	Install renewable energy (solar PV & battery storage) on Council buildings.
	Power Council operations by renewables, directly (with solar PV or wind), or by purchasing Greenpower (from electricity retailers). Set targets to increase the level of renewable power for Council operations over time.
Energy Efficiency	Public lighting can use a large proportion of a city's energy budget - roll out energy efficient lighting (particularly street lighting) across the municipality.
Sustainable Transport	Ensure Council fleet purchases meet strict greenhouse gas emissions requirements and support the uptake of electric vehicles.
Work together and Influence	Implement an education and behaviour change program to influence the behaviour of Council officers, local residents and businesses within the municipality to drive the shift to renewable energy, energy efficiency and sustainable transport.
	Promote knowledge sharing and strengthen the local community's capacity and skills in renewable energy, energy efficiency and sustainable transport.

Adelaide Hills Council - Carbon Management Plan
Project List

Initiative	Summary Description	Further Costing
Roll out behavioural change program for energy and waste.	Internal training and education program. Likely to result in a minimum 5% improvement in performance. Could extend to community education.	Yes
Solar install to buildings	Add to current solar PV where suitable: Stirling - 70kW Woodside: 20kW Nairne Road: 15kW The Summit: 10kW Gumeracha Depot: 5kW Total: 120kW	Yes
Solar farm	Consider feasibility of a large solar farm (1.8MW) to meet all of AHC electricity demands. Possible location is Mount Charles landfill.	Yes
Ground mounted solar	250kW solar installation on vacant land as a smaller installation but not limited by roof area. Good for community visibility.	Yes
Battery install	As detailed in the battery technical paper, consider installation of batteries to support PV and allow for electicity price management.	Yes
EV charging points	As detailed in the EV technical paper, consider installation of EV points as an enabler for transitioning to EV fleet.	Yes
Transition to full EV fleet	Transition all AHC vehicles to EV	Yes
Community electric bus	Support the ageing community with a free local bus - electric or solar powered.	This is a community initiative and not subject to further analysis as part of the corporate AHC carbon management plan.
Bike and e-bike free parking	Refer EV technical paper.	This is a community initiative and not subject to further analysis as part of the corporate AHC carbon management plan.
Water conservation upgrades to buildings	Reference to existing water management plan.	As AHC are already implementing water initiatives, continue to roll these out.
Update carbon inventory	Complete an updated inventory based on NCOS emissions boundaries.	Recommended as a supporting action to the Carbon Management Plan.
Implement further waste management initiatives	Refer AHC waste management plan and program of initiatives (not yet reviewed)	As AHC are already implementing waste initiatives, continue to roll these out.
Develop sustainable procurement plan	This plan can be used to guide low emission procurement decisions, such as carbon neutral products, etc. A centralised system streamlining procurement decisions can also save money, which can be fed into other sustainability initiatives.	Recommended as a supporting action to the Carbon Management Plan.
Develop ESG (environmental, social, governance) plan for banking and investments	To support consideration of sustainability commitments in the AHC supply chain.	Recommended as a supporting action to the Carbon Management Plan.

Develop sustainable buildings policy	Code for new developments or major refurbishments, with specific focus on energy efficiency and sustainability strategies. Check LGA project on this.	Recommended as a supporting action to the Carbon Management Plan.
Develop carbon offset policy	For AHC but also could be available for public use.	Recommended as a supporting action to the Carbon Management Plan.
Annual reporting on energy and carbon progress	Document the journey and publish on website. Explore with Trellis. Needs governance plan.	Recommended as a supporting action to the Carbon Management Plan.
Data management system	Further consider opportunities for data management with Trellis.	Recommended as a supporting action to the Carbon Management Plan.
NCOS or 3rd party certification	Achieve National Carbon Offset Certification.	Yes
Energy efficiency of buildings	Continue roll out of energy efficiency projects, including lighting, HVAC, etc. Consider indoor environment projects, such as planting, painting, etc.	Yes
Purchase renewable power	Through LGA contract or solar purchase power arrangement.	Yes
Carbon neutral events/zero waste events	Stirling Markets? Fringe? Uraidla Sustainability Fair. Get NCOS event certified.	This is a community initiative and not subject to further analysis as part of the corporate AHC carbon management plan.
Sustainability savers fund (internal)	Where savings are made from existing or new projects (such as energy savings from solar panels) use $ savings to reinvest in new sustainability projects.	Already implemented by AHC sustainability team, but will cease to exist as actions are identified in the Long Term Financial Plan.
Staff travel survey	Undertake staff travel survey and use this to inform emissions reduction in transport.	Recommended as a supporting action to the Carbon Management Plan.
Sustainable transport policy	Including development of bike and walking paths? Public transport?	This is a community initiative and not subject to further analysis as part of the corporate AHC carbon management plan.
Explore potential for partnering with renewable energy provider	e.g. AGL Hydro Kanmantoo	This is a community initiative and not subject to further analysis as part of the corporate AHC carbon management plan.
Develop a Community Energy Plan with RHC Councils	Refer to work with the Regional Hills and Coast group.	This is a community initiative and not subject to further analysis as part of the corporate AHC carbon management plan.
Upgrade street lights	Refer LGA project	This initiative is being managed by the LGA.
Community education projects	Guides, info papers, website, use library screens, etc	This is a community initiative and not subject to further analysis as part of the corporate AHC carbon management plan.
Community sustainability fund	Extend existing fund for community organisation for sustainability upgrades.	This is a community initiative and not subject to further analysis as part of the corporate AHC carbon management plan.
EV contracted services	Such as waste fleet with East Waste.	Set up a discussion with East Waste to see if this can compliment the Carbon Management Plan. Possibly consider in the fleet project.

Adelaide Hills Council - Carbon Management Plan
Project List

Total annual kWh	Total annual carbon
1,306,066	1,050
5%	

Ref	Initiative	Summary Description	kWh Reduction	Abated Carbon (CO2-e tonnes)	Carbon Abateme	Est. Capital Cost	Annual Savings ($)	Est. Payback	O&M Considerations
1	Solar installation to buildings	Add to current solar PV where suitable - total: 24kW	165,840	85	8%	$180,000	$35,000	5	Stirling council buildings works best when integrated with battery
2	Large Scale Solar Farm	Consider feasibility of a large solar farm (1.8MW) to meet all of AHC electricity demands. Possible location is Mount Charles landfill.	2,487,600	1269	121%	$5,940,000	$470,184	13	Allow $25,000 in annual maintenance costs.
3	Local ground mounted solar	250kW solar installation on vacant land as a smaller installation but not limited by roof area. Good for community visibility.	345,500	124	12%	$675,000	$45,088	15	Allow $4,000 in annual maintenance costs.
4	Battery installation to buildings	As detailed in the battery technical paper, consider installation of batteries to support PV and allow for electicity price management.	NA	17	2%	$120,000	$10,400	12	
5	Install EV charging points	As detailed in the EV technical paper, consider installation of EV points as an enabler for transitioning to EV fleet.	NA	NA	0%	$70,000	NA	NA	No savings until EV fleet project activated. Carbon abatement listed in project 6.
6	Transition to EV fleet	Transition all AHC light vehicles to EV	NA	217	21%	NA	NA	Nil	Needs detailed technical assessment
7	Behaviour Change Program	Internal training and education program. Likely to result in a minimum 5% improvement in performance. Could extend to community education.	65,303	33	3%	$20,000	$10,449	2	Have used Stirling electricity rate as savings - bigger savings associated with behaviou change in other facilities.
8	Stirling Library and Admin energy upgrade	Continue roll out of energy efficiency projects, including lighting, HVAC, etc. Consider indoor environment projects, such as planting, painting, etc.	105,436	54	5%	$87,317	$23,907	3.7	Used 2016 Stirling Library Audit as example project.
9	Purchase 100% renewable power	Through LGA contract or solar purchase power arrangement.	0	666	63%	$0	-$235,092	0	Assumed 100% renewable energy contract is double existing electrcity supply rate.
10	Certified 100% carbon neutral	Achieve National Carbon Offset Certification.	NA	1050	100%	$90,000	-$52,500	NA	NCOS costs include $20K certification, $40K audit and $30K consultancy fees. Ongoing annual costs approximately $30,000 in certification and consultancy, plus operational offset costs.

Adelaide Hills Council - Carbon Management Plan
MCA Commentary

Goals	
Environmental	To develop a roadmap for carbon reduction and 100% renewable energy, whilst reducing reliance on the purchase of offsets.
Social	To demonstrate scalable leadership in carbon management and energy generation and usage that involves the broader community where possible.
Financial	To make fiscally responsible decisions that demonstrate strong ROI and that do not impose financial stress on Council budgets.

MCA Criteria		Project 1	Project 2	Project 3	Project 4	Project 5	Project 6	Project 7	Project 8	Project 9	Project 10
	Commentary	Solar installation to buildings	Large scale solar farm	Local ground mounted solar	Battery installation to buildings	Install EV charging points	Transition to EV fleet	Behaviour change programme	Stirling library & admin energy project	Purchase 100% renewable energy	Certified 100% carbon neutral
Environmental	Reduces Council's carbon production (inc. through renewable energy use)	9% reduction in carbon emissions.	Generates sufficient electricity to offset 100% of AHC carbon emissions.	Vacant land next to Stirling freeway roundabout assessed as test case for larger solar (not limited by building roof area). 250kW provides 18% of AHC carbon emissions.	Slight reduction in emissions from improved use of solar power.	No or minimal reduction until transition to EV fleet.	Reduces fuel emissions over time when combined with EV charging stations powered by solar panels.	Ongoing behaviours change program results in small $ reduction, but 5% ongoing emissions reduction.	Stirling upgrade used as example project. 8% reduction in electricity emissions annually.	100% of electricity demand is provided by renewable power.	100% of carbon emissions are offset.
	Delivers other indirect environmental benefits	No other indirect environmental benefits.	Allows creation and on sell of locally generated carbon offsets.	No other indirect environmental benefits.	Back up power in event of power failure. Could reduce the need for diesel generators.	External community users can use EV changing point.	Saves fuel costs, further utilises solar panel efficiency.	Education to reduce consumption throughout all environmental factors, e.g. water, waste.	Improved IEQ benefits from better lighting quality. Also results in increased productivity and improved staff health and wellbeing.	Increases demand for renewable energy projects in SA.	Can offset emissions from all sources. May be able to generate wider environmental impacts through type of offset purchased.
	Can be procured locally	Reputable local suppliers are available and competitively priced.	Reputable local suppliers are available and competitively priced.	Reputable local suppliers are available and competitively priced.	Local suppliers, some supply issues.	Reputable local suppliers are available and competitively priced.	Bought from local dealer, but not manufactured locally.	Local consultants or internal program.	Reputable local suppliers are available and competitively priced.	Yes, 100% renewable energy contract to be sourced through LGA.	SA carbon offsets not widely available right now, but potential to work with others to create new local offsets. Currently assessed as 0 as offset source not known.
Social	Demonstrates leadership in sustainability (e.g. through asset ownership)	Visible investment in renewable technology. Easy to communicate benefits to public via live energy data screens, etc.	First investment in large scale solar in AHC area.	Highly visible demonstration of leadership.	Demonstration of leadership in new technologies. Needs promotion.	Public and visible demonstration.	Public and visible demonstration.	Public and visible demonstration.	Staff might perceive some leadership from the upgrades.	Public and visible demonstration.	Leading in Council's in Australia.
	Directly involves or encourages the community to adopt better practices	No direct involvement or encouragement with public.	Potential for community to purchase local carbon offsets.	No direct involvement or encouragement with public.	No direct involvement or encouragement with public.	Recommended that EV are available for public use.	Shows a leadership and influence position, but not direct involvement.	Information produced/training sessions could be made available to the public as free community sessions.	No direct involvement or encouragement with public.	Encourages community to consider 100% renewable energy contract options.	Encourages community to consider 100% carbon offset contract options.
	Opportunities to incorporate broader AHC community or geographical district	Not scalable beyond roof area of buildings. Note this does not include potential community energy project.	Potential to increase scale of solar farm to allow more community purchase of electricity or offsets.	Only sized for small parcel of vacant AHC owned land.	Not scalable beyond AHC buildings and related assets. Note this does not include potential community energy project.	Fully scalable across AHC or community facilities.	Does not directly translate into wider community.	Information produced/training sessions could be made available to the public as free community sessions.	First project is Stirling. Energy efficiency upgrades can be rolled out across all assets.	Not scalable beyond AHC buildings and related assets. Note this does not include potential community energy project.	Not scalable beyond AHC buildings and related assets. Note this does not include potential community energy project.
Financial	Requires a capital budget	Capital outlay of $180,000	High capital outlay of $5.8M	High capital outlay of $675,000.	Medium capital outlay	Assumed only standard EV in 2 locations, $20,000	Assume rolling replacement of cars as technology evolves.	Low capital expense.	Medium capital outlay	No capital costs.	Ongoing certification and audit fees.
	Impacts upon Council's operating and maintenance costs or savings	Ongoing energy savings	100% of energy costs offset	Ongoing energy savings	Medium ongoing cost savings	Assumes council adopts a cost recovery model to recover O&M costs.	Lower ongoing maintenance costs and reduced ongoing fuel cost.	Sustained energy savings.	Medium ongoing cost savings	Increased ongoing operating costs (20%).	Increased ongoing operating costs (4%).
	Has a short payback	5 year payback	13 year payback is not considered desirable	15 year payback is not considered desirable	10 year payback is not considered desirable	Currently, no return on investment. In future, could be powered by renewables and used for EV fleet.	Likely payback is more than 5 years. This may reduce in time as cost come down.	This is an ongoing project, ongoing commitment required to maintain benefits.	4 year payback	No payback.	No payback.
	Relies on new or unproven technologies (with risk and associated cost)	Safe and reliable technology. Well proven. Easy to operate and maintain.	Safe technology, but large scale solar farm relatively new application, and risks associated with site.	Safe and reliable technology. Well proven. Easy to operate and maintain.	New technology but widespread use and application. Some issues with supply of this size of battery.	New technology but widespread use and application. Some plugs may become obsolete over time.	New technology but common use and application.	No risk.	No risk.	No risk.	No risk.

Adelaide Hills Council - Carbon Management Plan
MCA Results

	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6	Project 7	Project 8	Project 9	Project 10
	Solar installation to buildings	Large scale solar farm	Local ground mounted solar	Battery installation to buildings	Install EV charging points	Transition to EV fleet	Behaviour change programme	Stirling library & admin energy project	Purchase 100% renewable energy	Certified 100% carbon neutral
Unweighted	4	8	2	2	7	5	14	6	8	6
Weighted 1	1.65	2.60	0.90	0.90	1.80	1.45	4.75	2.30	2.75	2.00
Weighted 2	0.38	0.78	0.17	0.04	0.23	1.45	1.35	0.53	1.06	0.91

		Unweighted	Rank		Weighted 1	Rank		Weighted 1 & 2	Rank
Project 1	Solar installation to buildings	4	8		1.65	7		0.38	7
Project 2	Large scale solar farm	8	3=		2.6	3		0.78	5
Project 3	Local ground mounted solar	2	10=		0.9	10=		0.17	9
Project 4	Battery installation to buildings	2	10=		0.9	10=		0.04	10
Project 5	Install EV charging points	7	4		1.8	6		0.23	8
Project 6	Transition to EV fleet	5	7		1.45	8		1.45	1
Project 7	Behaviour change programme	14	1		4.75	1		1.35	2
Project 8	Stirling library & admin energy project	6	6=		2.3	4		0.53	6
Project 9	Purchase 100% renewable energy	8	3=		2.75	2		1.06	3
Project 10	Certified 100% carbon neutral	6	6=		2	5		0.91	4

Appendix D – Carbon Management Implementation Presentation

Adelaide Hills Council

Carbon Management Plan

1

April Workshop

"We will strive for carbon neutrality as an organisation and encourage our community to do likewise"

What we discussed:

- Achieve 100% renewable energy
- Cities Power Partnership Commitments
- Towards carbon neutral

CITIES POWER PARTNERSHIP

2

April Workshop

"We will strive for carbon neutrality as an organisation and encourage our community to do likewise"

What's happened since?

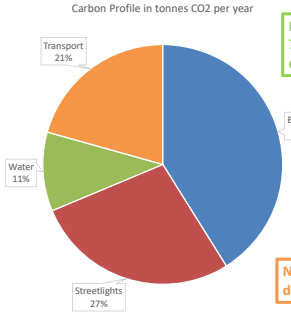
- Council clean energy contract for 60% renewable power (tbc)
- Transition to LED public street lighting
- Community energy project

CITIES POWER PARTNERSHIP

3

Managing Carbon Emissions

Current carbon profile



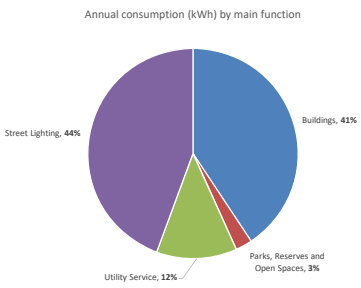
Electricity use currently 70% of Council's emissions!

Note incomplete/ out of date carbon inventory

4

Carbon Management Plan

Current energy profile



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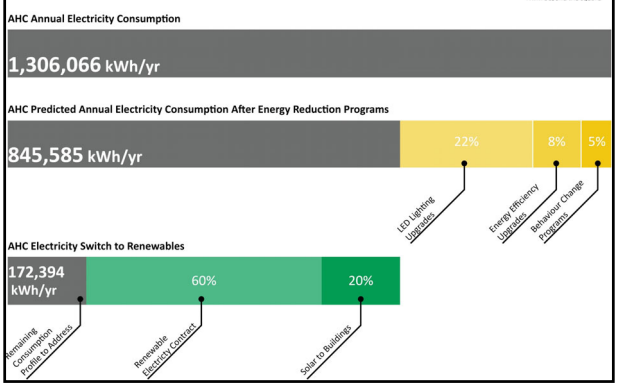
Building Energy Projects



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Remaining Carbon Profile

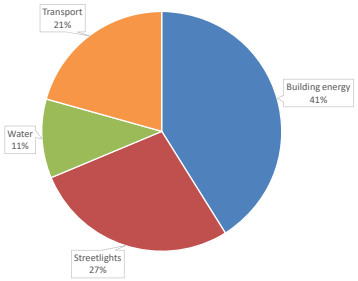
- With 100% renewable energy, carbon profile still exists from water, waste, transport, refrigerants

7

Managing Carbon Emissions

Before energy projects....

Carbon Profile in tonnes CO2 per year



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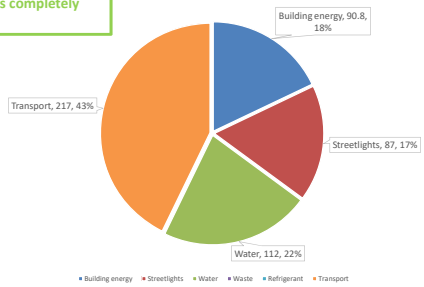
Managing Carbon Emissions

After energy projects....emissions profile has completely changed!

Tonnes CO2 per year



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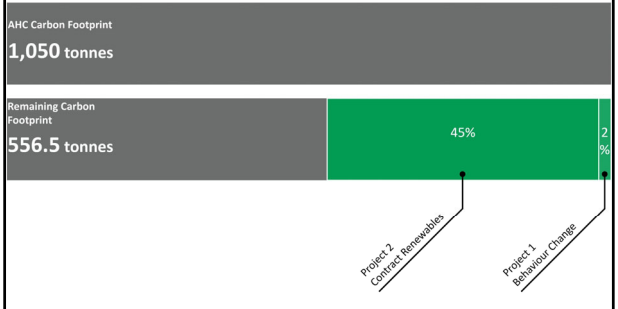
Managing Carbon Emissions

10

Managing Carbon Emissions



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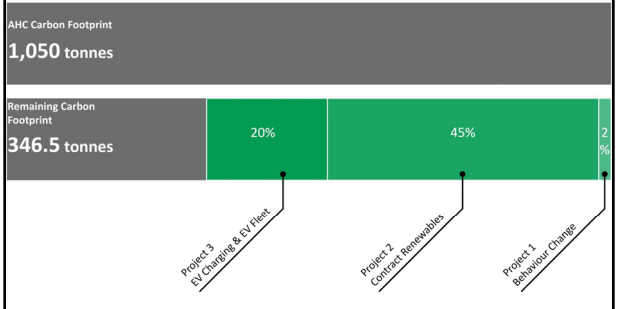
Managing Carbon Emissions



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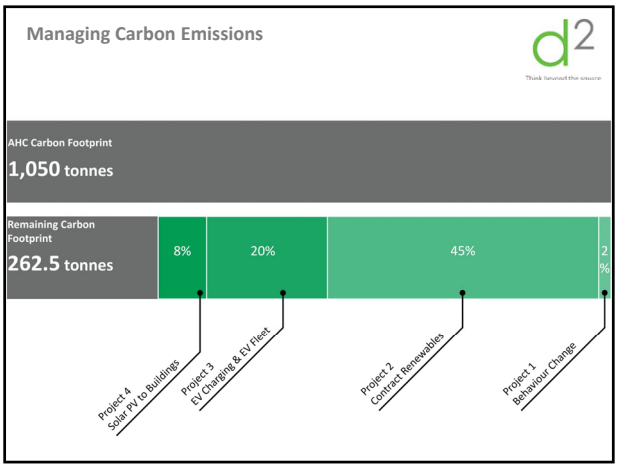
Managing Carbon Emissions



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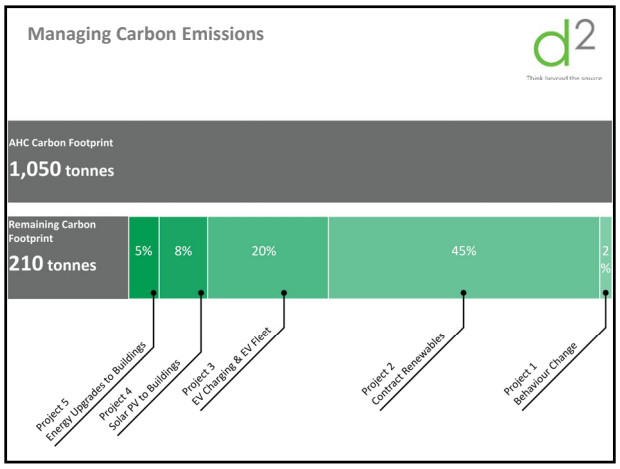
Managing Carbon Emissions



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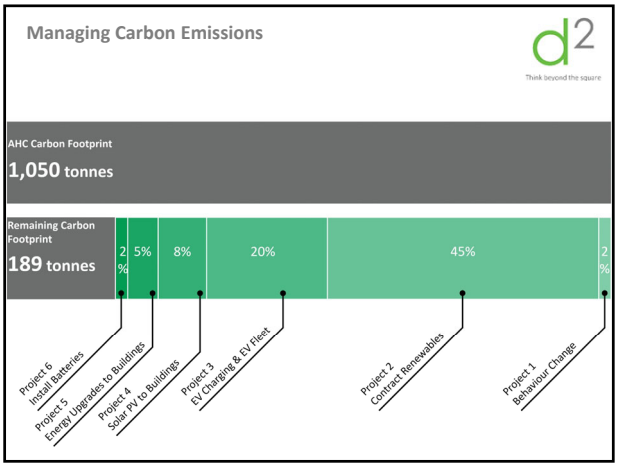
Managing Carbon Emissions



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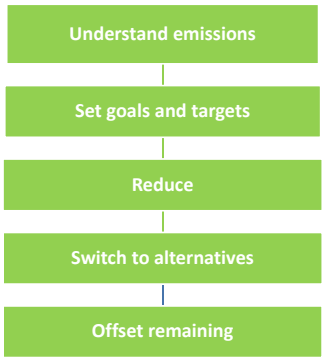
Managing Carbon Emissions



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Cities Power Partnership Pledges….discuss

Theme	Pledge
Renewable energy	Install renewable energy (solar PV & battery storage) on council buildings.
	Power council operations by renewables, directly (with solar PV or wind), or by purchasing Greenpower (from electricity retailers). Set targets to increase the level of renewable power for council operations over time.
Energy Efficiency	Public lighting can use a large proportion of a city's energy budget - roll out energy efficient lighting (particularly street lighting) across the municipality.
Sustainable Transport	Ensure Council fleet purchases meet strict greenhouse gas emissions requirements and support the uptake of electric vehicles.
Work together and Influence	Implement an education and behaviour change program to influence the behaviour of council officers, local residents and businesses within the municipality to drive the shift to renewable energy, energy efficiency and sustainable transport.
	Promote knowledge sharing and strengthen the local community's capacity and skills in renewable energy, energy efficiency and sustainable transport.

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Next Steps

- Remaining energy?
- Remaining emissions?
- What's in a name……..Carbon neutral, carbon reduction, carbon management, carbon positive?!
- Priority Projects….comments to Sharon
- Cities Power Partnership Pledges….comments to Sharon

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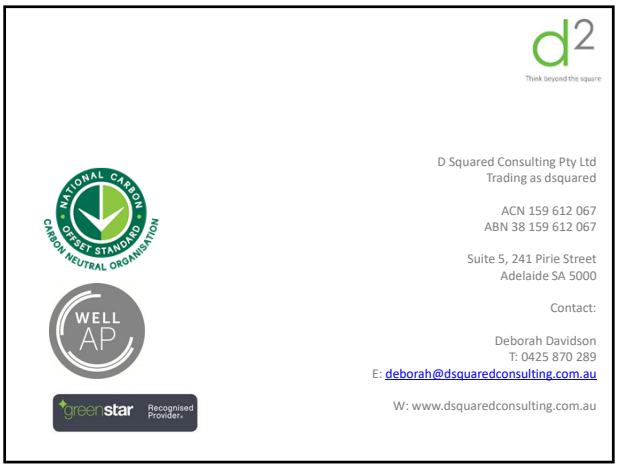
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Think beyond the square
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