Towards Net-Zero Emissions

Annual Energy Review 2021-22

A 30-kW solar PV system installed on the Shoalwater Shed roof at the Ulladulla Works Depot in 2022

Report prepared by Darren O'Connell & Andrew Truran

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Contents

1 Purpose

At the Shoalhaven City Council Strategy & Assets Committee meeting on 12 November 2019, it was resolved that Council "Endorse the preparation of Annual Energy Review reports to track Council's performance against energy and emission reduction targets established in Council's Sustainable Energy Policy." (MIN19.845).

The purpose of this report, which covers the 2021-22 financial year (FY2022), is to present an annual analysis of Council's energy consumption, document energy savings measures recently implemented and identify potential cost-effective measures for future energy efficiency and renewable energy investment. This report will also track performance of Council towards achieving its energy and emissions reduction targets set out in Council's adopted Sustainable Energy Policy (POL18/44) - and pending the new Sustainability and Climate Policy.

2 Introduction

Energy in the form of electricity, gas and vehicle fuel, is an essential resource for the effective operation of Shoalhaven City Council. Most of Council's current energy is derived from fossil fuels which are a costly and finite resource which also emit harmful greenhouse gases. From an economical and environmental perspective, it is critical that Council address its future energy needs and commence a strategic transition towards improved energy efficiency and use of more renewable energy. To guide this transition, an annual review of Council's energy usage, greenhouse gas emissions and energy efficiency measures was conducted (***this report***).

3 Electricity Consumption

The supply of electricity to Council is delivered through three (3) main agreements:

Supply Type	Site Consumption	Number of Sites	FY2022 Consumption (MWh)	FY2022 Total Electricity Spend
Small Sites	<100MWh per Year	~550	5,510	$1.179M
Large Sites	>100MWh per year	50	26,295	$4.038M
Street lighting	Unmetered	Aggregated	3,858	$667k*
TOTAL			**35,664**	**$5,884M**

**Not including Street Light Use of System (SLUOS) charges (approx. $1.2M)*

Figure 1 shows the typical bill breakdown for Shoalhaven Council's Electricity Accounts. Only the energy costs are negotiable (contestable) through retailer agreements as the network and other charges are fixed.

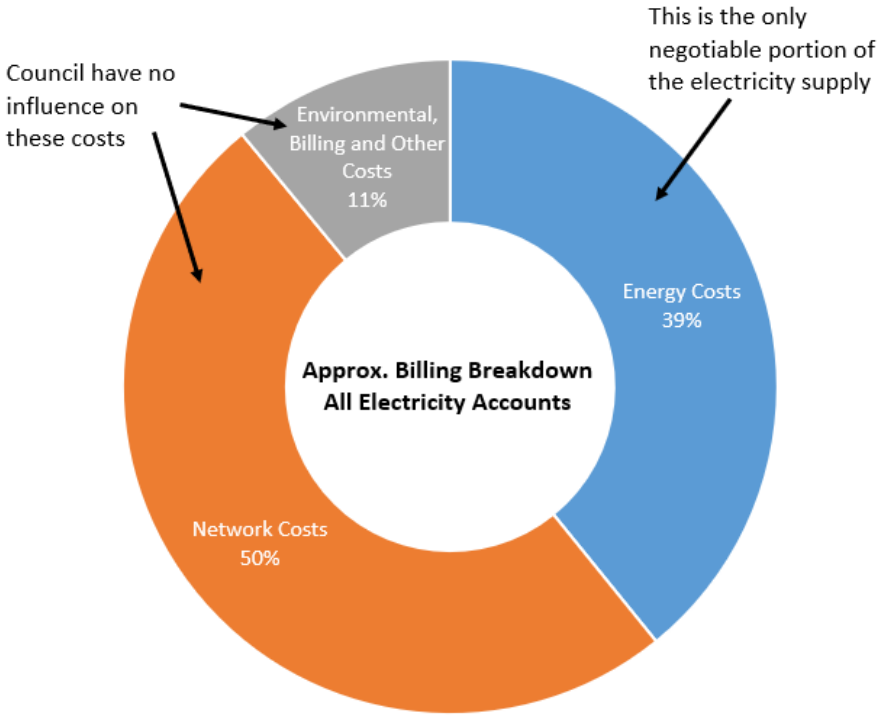


Figure 1. Shoalhaven City Council's typical electricity bill breakdown

In 2021-22, Shoalhaven City Council consumed 35,664 MWh of electricity across its three supply types: Large Sites, Small Sites and Street Lighting, with a total electricity spend of $5.884M (excluding the $1.2M for the Street Light Use of System or SLUOS). Over half of Shoalhaven Council's electricity was consumed by Shoalhaven Water's wastewater (33%) and water supply (26%) operations (Figure 2). In terms of the overall cost, wastewater processing ($2.07M) was more costly than water supply ($1.2M – Figure 3), with water supply pumps typically operating during traditional 'Off Peak' periods when electricity pricing is cheaper and to avoid excessive network demand charges.

The next largest consumer of electricity in terms of cost was street lighting across the Shoalhaven LGA. Although the majority of Shoalhaven's street lights are owned and operated by Endeavour Energy, Council pays for the power that the lights consume (around $667K/pa, Figure 3). A Street Light Use of System (SLUOS) charge of approx. $1.2M per year is also paid by Council to Endeavour Energy, but this comprises costs mainly arising from the operation, maintenance and capital costs of the street lighting network, rather than electricity consumption. An accelerated LED street lighting replacement project was completed during 2020-21 which resulted in substantial energy savings to Council. The next stage, to upgrade public street lighting across the Shoalhaven LGA to 100% LEDs, has now been approved by Council and will be completed by Endeavour Energy within the next 18 months.

Council's Aquatic Centres and Holiday Haven tourist parks then follow in terms of annual electricity costs with approximately $612K and $568K, respectively. Note that these were lower compared to the previous year, mostly due to COVID-19 disruptions to normal operating conditions throughout 2021-22. These assets are then followed by community facilities and Civic buildings making up $304K and $271K of electricity costs, respectively (Figure 3).

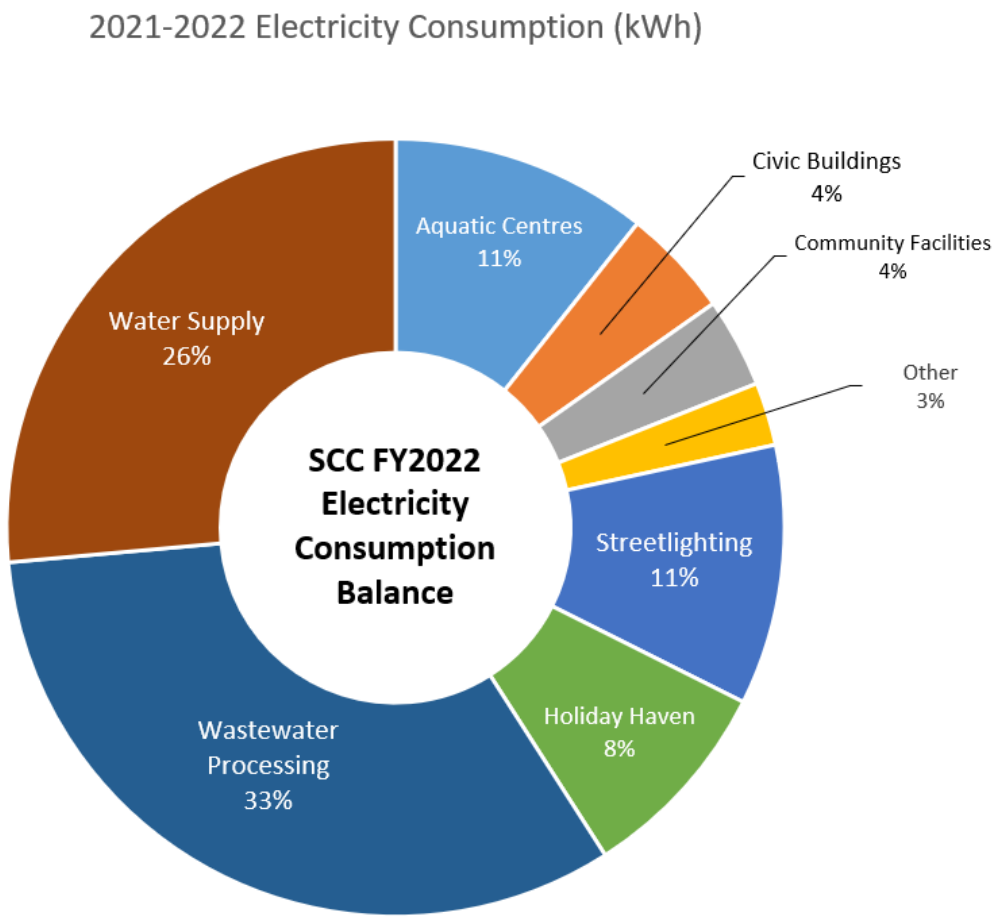


Figure 2. Shoalhaven City Council's 2021-2022 electricity consumption % by functional areas

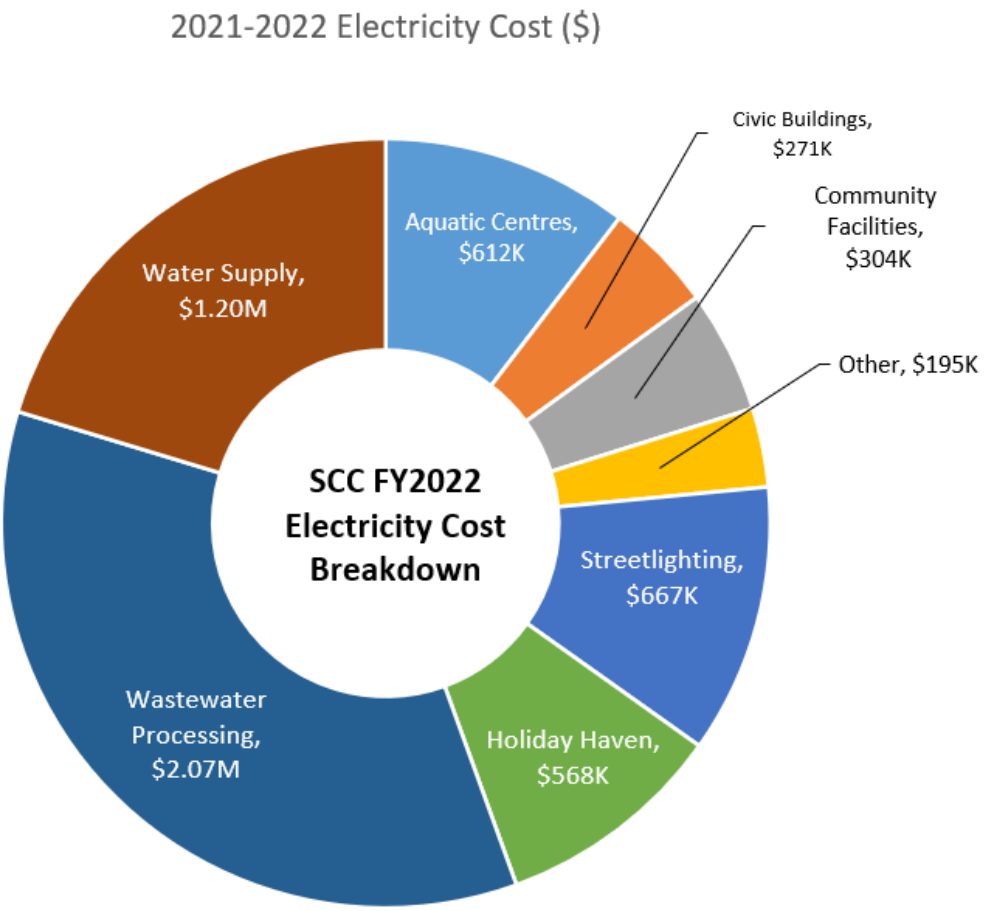


Figure 3. Shoalhaven City Council's 2021-2022 electricity costs by functional areas.

The annual electricity consumption breakdown into groups for all of Shoalhaven Council's assets for 2021-22, compared to previous years, is shown in Figure 4. Total electricity consumption has reduced in 2021-2022 compared to the previous year, mostly due to Covid lockdowns in financial quarter 1 and the Stage 1 LED streetlighting upgrade. Although this breaks the upward trend seen over the past 4 years, Council should expect an increase in electricity usage in 2022-2023 as assets return to 'normal' operating conditions. Improved energy efficiency practices are encouraged at all sites to reduce electricity consumption, operating costs and corporate carbon emissions, potentially funded through Council's Revolving Energy Fund.

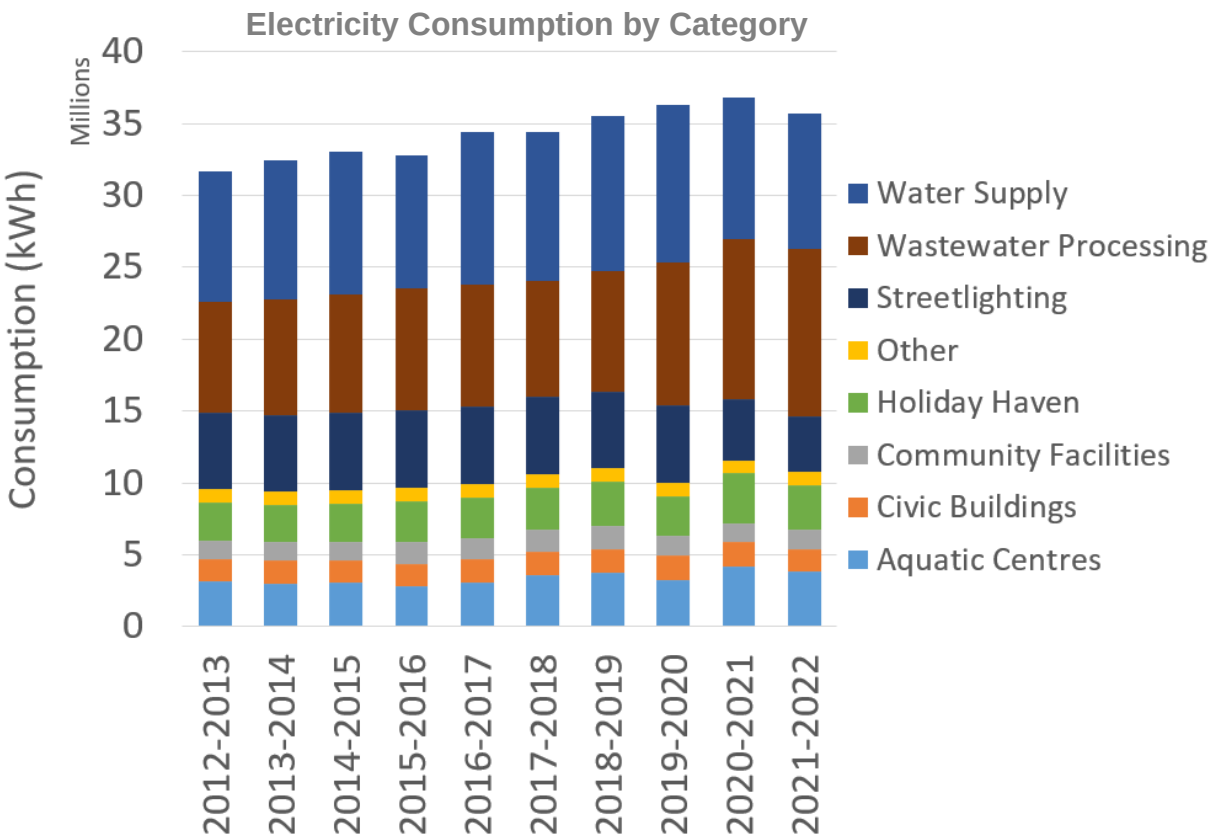


Figure 4. Shoalhaven City Council's annual trend in electricity consumption by group category

4 Fleet Fuel and Gas (Natural & Bottled LPG)

Shoalhaven Council's fleet vehicle fuel consumption remained relatively stable over the past three financial years, with diesel transport fuel by far the most consumed resource, see Figure 5.

Natural gas use is down on the previous financial year along with a slight reduction in LPG bottled gas consumption, see Figure 6. Much of the bottled gas is consumed at Council's Holiday Haven Parks and Leisure Centres. It is recommended that these assets consider a move away from gas and electrify their equipment at the end of its working life, where practicable. This 'fuel switch' allows these appliances to be powered by renewable electricity (via the Large Sites renewable Power Purchase Agreement) and therefore reduce emissions and running costs.

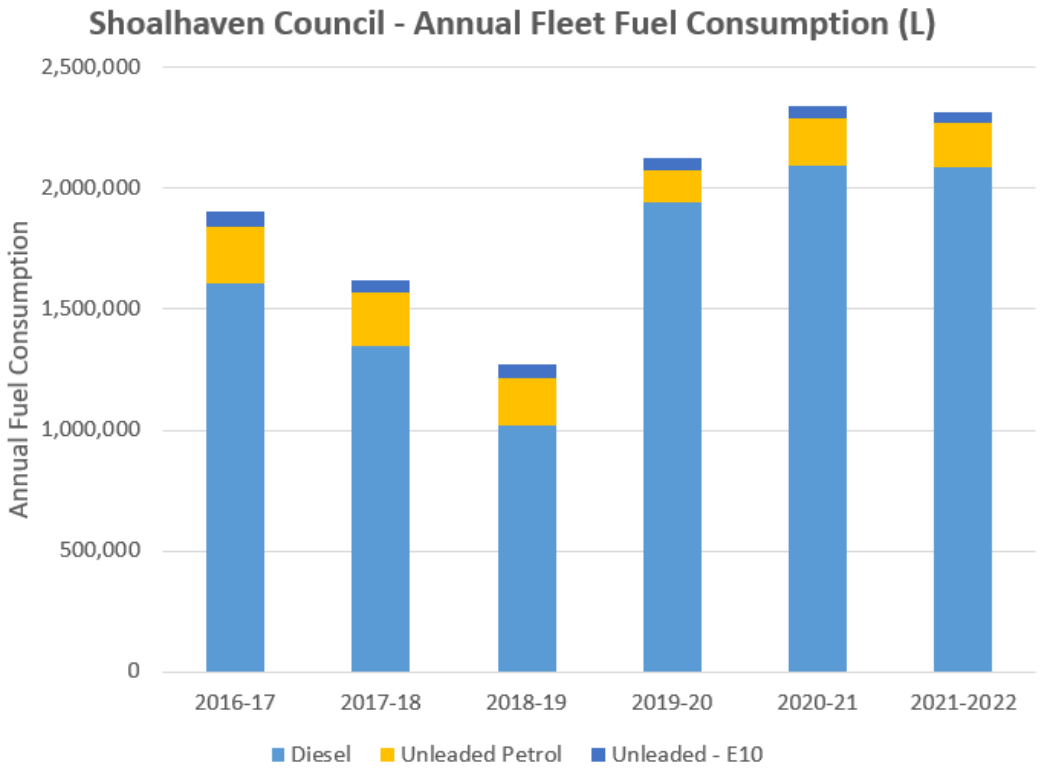


Figure 5. Shoalhaven City Council's annual fleet vehicle fuel consumption

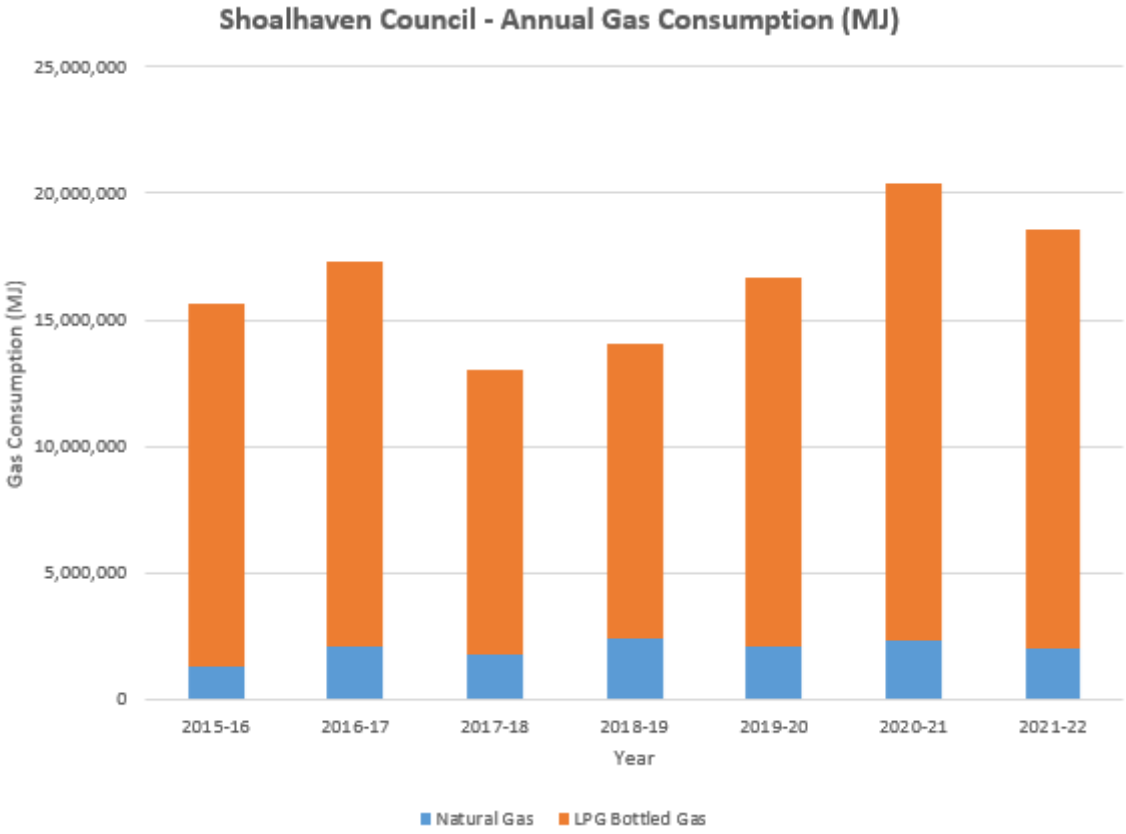


Figure 6. Shoalhaven City Council's annual natural gas and LPG bottled gas consumption

5 Greenhouse Gas Emissions

Shoalhaven City Council's operations emitted a total of **88,263 tonnes** of greenhouse gases (carbon dioxide equivalents or CO2-e) in 2021-22 (Scope 1, 2 & associated Scope 3 emissions). Council's ***purchased electricity*** contributed around one-third (35%) of Council's total annual corporate greenhouse gas emissions (Figure 7). Despite having 1070 kW of installed solar panels across 32 Council owned and operated assets, generating around 1,500,000 kWh per year, this renewable energy supplies only a small portion of Council's total electricity needs. The remainder of Council's electricity is generated from coal or gas-fired power stations which results in greenhouse gas emissions due to the combustion of these non-renewable fossil fuels. Under new electricity contracts from Jan 2023, Shoalhaven Council will commence purchasing a portion of its electricity supply from renewable energy sources, such as solar and wind farms.

Methane and nitrous oxide emissions from Council's 13 wastewater treatment plants were the highest source of greenhouse gas emissions at 37% in 2021-22. Methane emissions from the Council-operated landfill at West Nowra generated the third largest amount of equivalent greenhouse gas emissions at 20%, despite some additional flaring off of the gas for carbon emissions reduction purposes. Fleet transport fuels (diesel, petrol etc.) and gas for stationary energy (both natural gas and LPG) make up the remaining 8% of Council's corporate carbon emissions profile.

 # Note - *the greenhouse gas calculators used to calculate emissions for both wastewater and landfill gas in 2021-22 are partly the cause of these excessively high results. There are some peculiarities in the formulas and methods of both the calculators (sourced from the National Greenhouse and Energy Reporting Scheme) that can lead to overestimation of the outputs. For instance, much of the increase in wastewater treatment plant carbon emissions in the past year was actually due to the excessive wet weather inflows to all the treatment plants. However, these excessive inflows were mostly from stormwater/rainfall infiltration into the sewerage system and not necessarily an increase in actual municipal sewage from which the carbon emissions are associated. Council will be working on improving the input data for both these calculators to ensure accurate and repeatable emissions data is generated for future reporting purposes.*

Figure 8 shows Council's corporate greenhouse gas emissions for the 2015 baseline year, most recent years and emissions targets for 2025, 2030 and 2050. Although on a steady decline since 2016-2017, the past 2 years have shown an increase in emissions compared to the previous years (Figure 9). Much of this increase was due to the large increase in Scope 1 direct emissions from both wastewater treatment plants and landfill gases (Figure 10). Again, some of this is due to the calculation method/formula and not strictly an increase in carbon emissions from these sources. Notwithstanding this, it will take a great effort in all areas to actively reduce greenhouse emissions from Council's operations to achieve Council's net-zero emissions and interim carbon reduction targets.

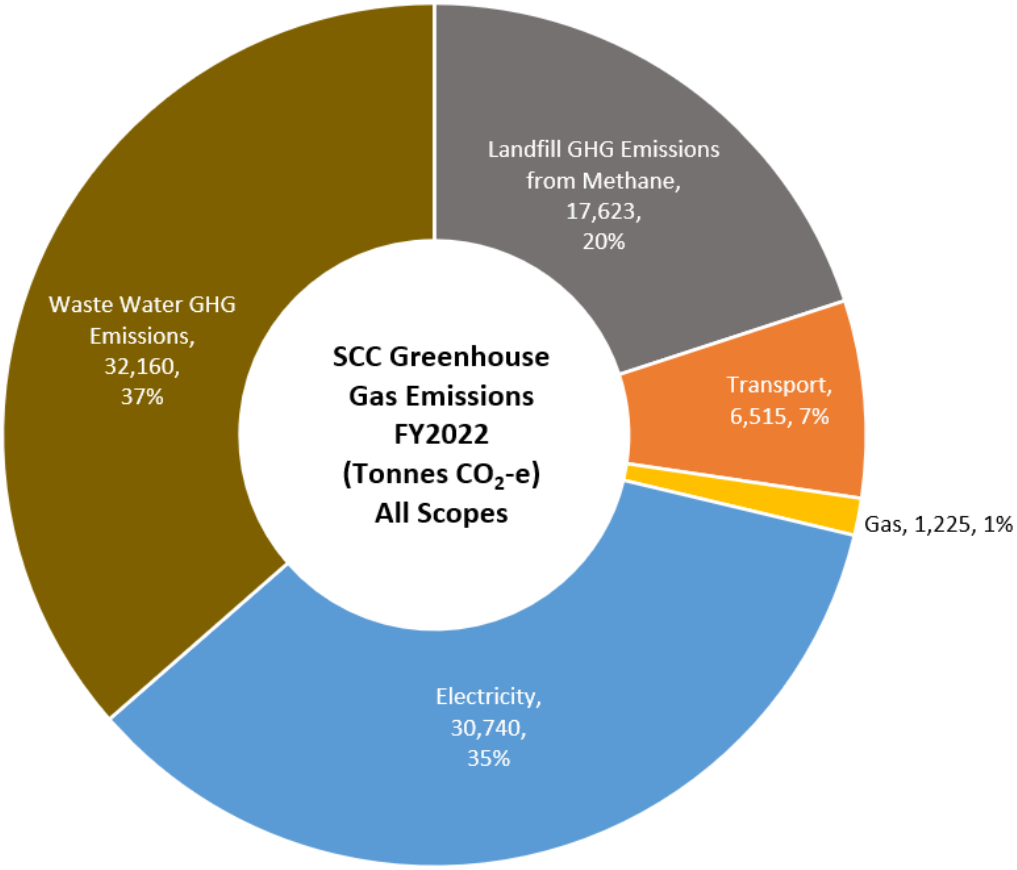


Figure 7. SCC corporate GHG emissions (from all scopes: 1,2 and 3) for 2021-22

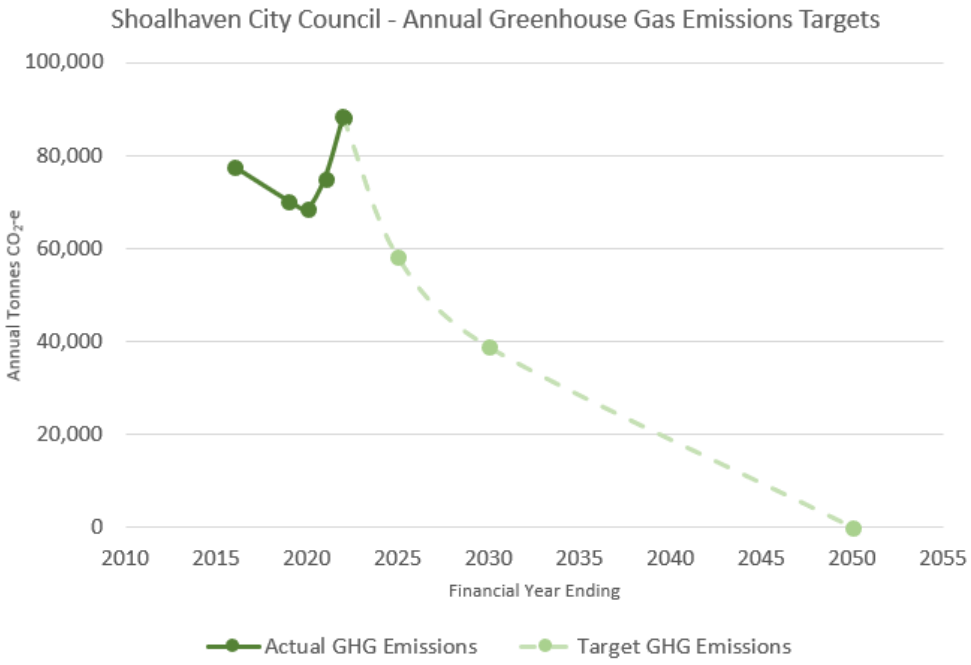


Figure 8. SCC's actual corporate greenhouse gas emissions to 2021-22 and projected targets

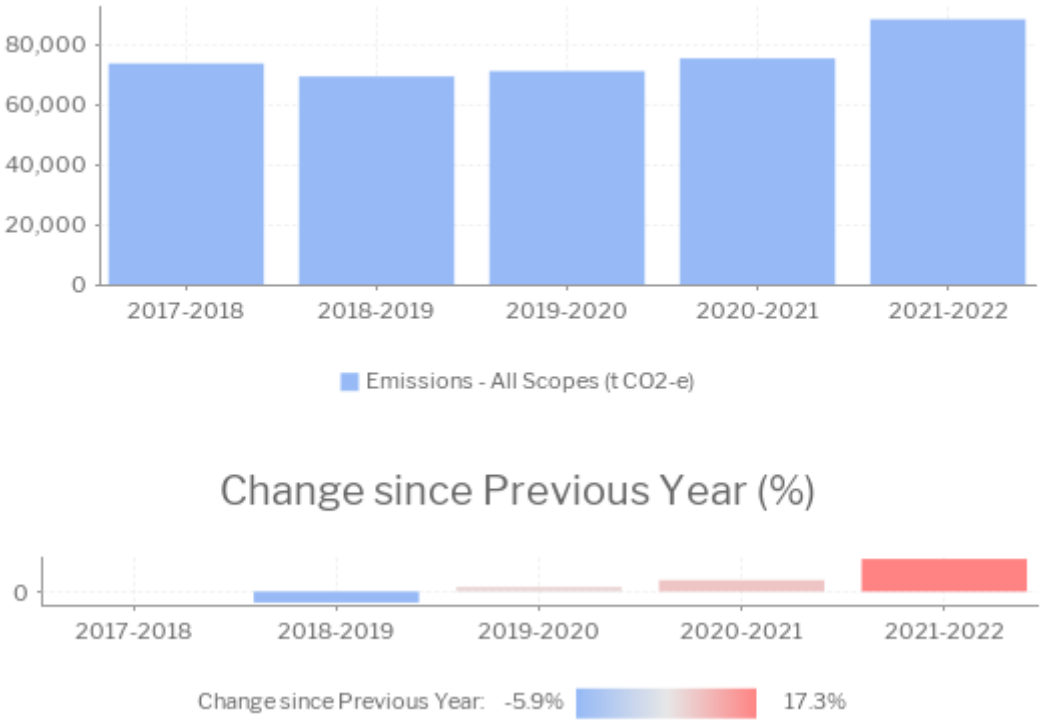


Figure 9. SCC total greenhouse gas emissions trends over past 5 years

A 20-kW solar PV installation at St Georges Basin Wastewater Treatment Plant

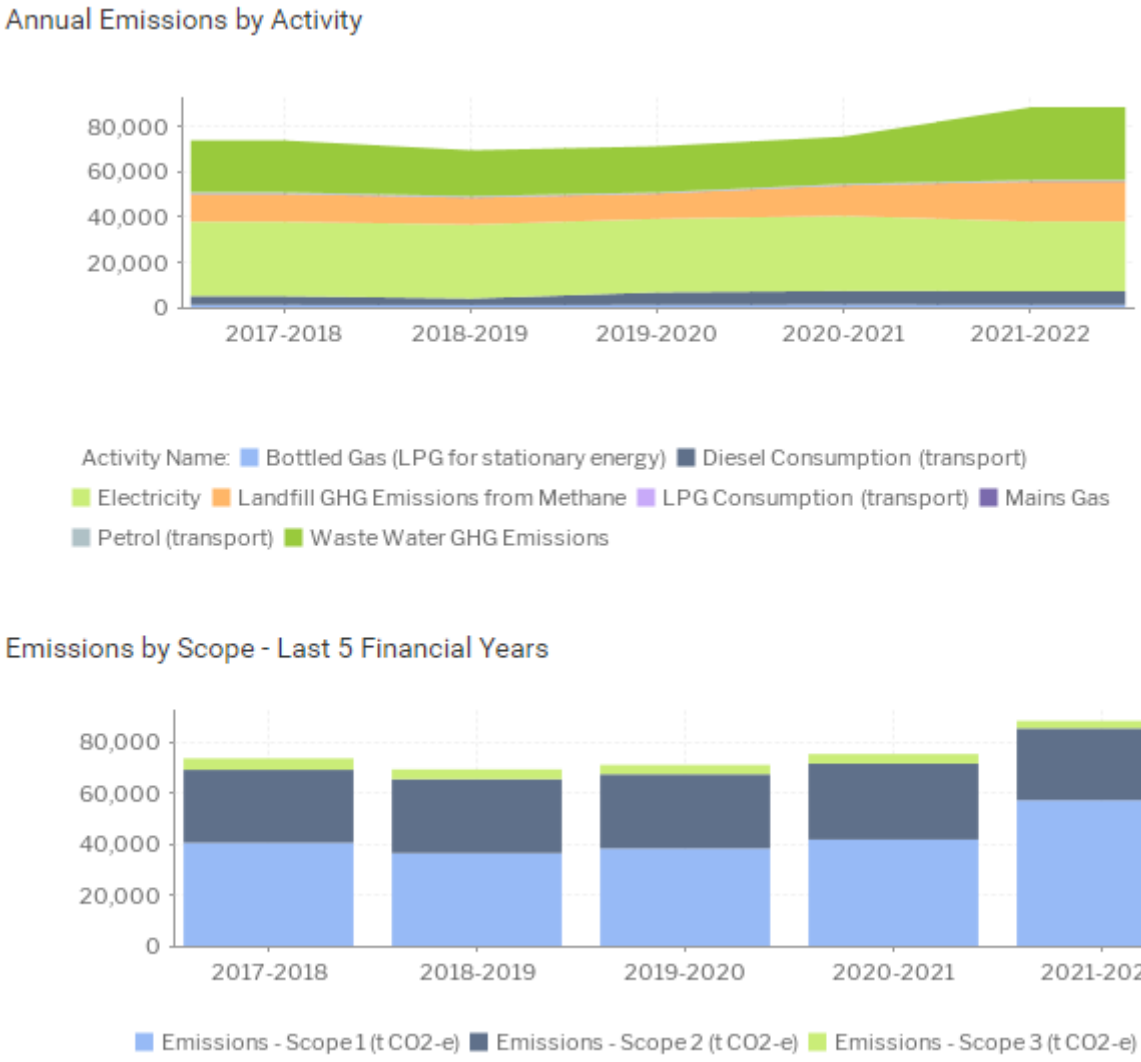


Figure 10. SCC corporate greenhouse gas emissions by activity over past 5 years

6 Cities Power Partnership

Shoalhaven Council is a member of the national Cities Power Partnership (CPP) program. Under the CPP, each member Council makes five action pledges in either renewable energy, energy efficiency, transport or working in partnership to tackle climate change. Progress on the pledges is reported back to the CPP every 6 months. Shoalhaven Council updated and refreshed its 5 pledges in mid-2020 and progress on these pledges has been outlined in **Table *1***.

Table 1: Progress update on Cities Power Partnership Pledges made by Shoalhaven Council

CPP Pledge	2021-22 Progress Update
1. Use council resources to support the uptake of renewable energy	Shoalhaven City Council commenced/completed 28 new solar PV installations (total of 424 kW) on Council assets including several wastewater treatment plants and 20 community halls (under the Recovery into Resilience project).
2. Facilitate large energy users' collectively tendering and purchasing renewable energy at a low cost	Shoalhaven Council lead a joint tendering activity with Kiama and Shellharbour Councils for the supply of renewable electricity for Large Sites and Street Lighting. The successful electricity retailer was Flow Power and all 3 Councils executed contracts with them for electricity supply under a Power Purchase Agreement from 2023-2030 inclusive. Shoalhaven will buy 25% renewables in 2023 and 2024, then increase to 50% renewables from 2025 onwards. Additional renewables (LGCs) are expected to be bought post-2025 depending on market pricing to eventually achieve 100% renewables.
3. Adopt best practice energy efficiency measures across all council buildings, and support community facilities to adopt these measures	Under the Recovery into Resilience project, around 25 community assets were fitted out throughout 2021-22 as Local Info Hubs with 10kW solar PV systems, a Tesla Powerwall battery and a generator connection point, allowing them to operate even during grid outages.
4. Roll out energy efficient lighting across the municipality	Shoalhaven Council has approved capital funding to engage Endeavour Energy to complete the 100% LED street lighting upgrade. This is expected to be completed within the next 18 months. It follows on from the large LED street lighting upgrade in 2020-21 in which 32% of Council's residential street lights were replaced with energy savings LEDs.
5. Ensure Council fleet purchases meet strict greenhouse gas emissions requirements and support the uptake of electric vehicles	Council continued its trial of some fully electric vehicles (EVs) throughout 2021-22 and now exclusively offer hybrid cars in the small car fleet range. Some steps were taken to encourage investment in EV chargers in the region as part of NSW Government programs.

7 Sustainable Energy Policy

Shoalhaven City Council adopted a Sustainable Energy Policy (POL18/44) on 28 May 2019. The Policy aims to ensure access to affordable, reliable, sustainable and modern energy for both its operations and that of the wider Shoalhaven community. To achieve this, a number of objectives and targets have been adopted and Table 2 shows progress performance towards achieving these targets (noting that the new Sustainability & Climate Policy targets would apply in future years).

***Table 2*: Performance towards achieving Sustainable Energy Policy targets**

Sustainable Energy Policy Target	Performance Rating
1. Aim to achieve net-zero greenhouse gas emissions by 2050 (consistent with the United Nations Paris Agreement ratified by the Commonwealth Government and the NSW Government's agreed targets). Interim targets to reduce emissions are 25% by 2025 and 50% by 2030, compared to 2015 levels.	X
2. Seek opportunities to source or generate electricity supply for Council's operations from renewable energy sources, with an interim target of 25% renewables by 2023 and eventually 50% from renewable sources by 2030.	✓
3. Promote relevant initiatives to the community and businesses to increase the uptake of installed rooftop solar panels across the Shoalhaven LGA towards a target of 33% of dwellings by 2025.	△
4. Upgrade all street lighting to energy saving LEDs by 2025.	✓

KEY -* X *Not on track* △ *Could do better* ✓ *On track to achieve

Energy savings LED flood lights being installed at Ison Park

Solar PV installation at Calla Bay Community Hall under the Recovery into Resilience project

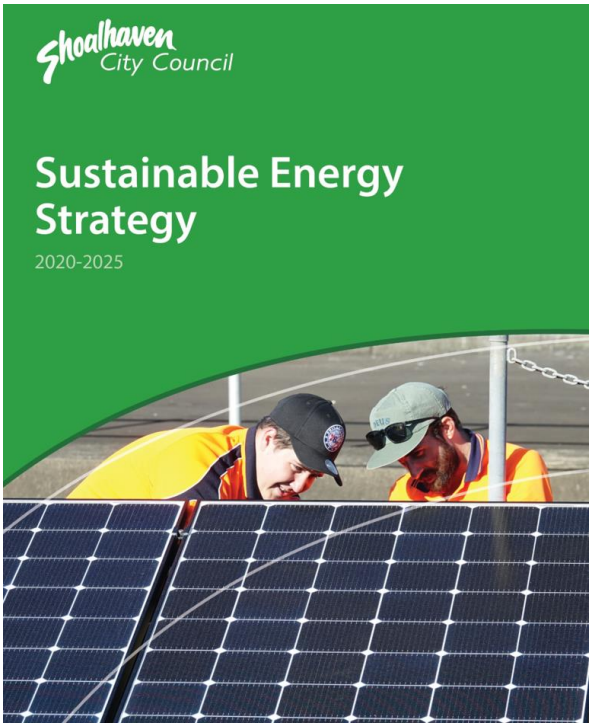
8 Sustainable Energy Strategy 2020-2025

Shoalhaven Council will support its Sustainable Energy Policy by implementing its approved Sustainable Energy Strategy 2020-2025, that identifies priority initiatives to achieve the following objectives:

- ***Cleaner Energy***: Transition to cleaner (lower emissions), more sustainable and more affordable energy sources.
- ***Less Energy***: Reduce the energy requirement for Council by maximising energy efficiency in all aspects of Council's operations.
- ***Measuring and Monitoring Energy***: Ensure systems, processes and expertise are in place to measure, monitor and manage energy consumption and renewable electricity generation effectively.
- ***Demonstration of Leadership***: Council will 'lead by doing' to encourage the local community and businesses to also transition to a more resilient, reliable and renewable energy future.

The Sustainable Energy Strategy outlines a range of measures that Shoalhaven Council intends to implement to better manage its energy requirements over the next few years to 2025. The Strategy incorporates comprehensive baseline energy and emissions data, Council's current corporate commitments, and identifies funding opportunities, such as Council's internal Revolving Energy Fund.

Progress on the initiatives in the Strategy during 2021-22 is outlined in Table 3.



8.1 Energy efficiency and demand management

Table 3: Progress and performance against Shoalhaven Council's Sustainable Energy Strategy 2020-2025 initiatives

PERFORMANCE KEY - ***X Minimal or no progress*** ***▲ Some progress but could do better*** ***✓ On track to achieve*** ***? Unknown***

ENERGY INITIATIVE	PROGRESS in 2021-22	PERFORMANCE
Upgrade aged Heating, Ventilation and Air-conditioning (HVAC) systems in Council's main administrative and community buildings for significant energy savings	Both the Shoalhaven Regional Gallery and Nowra Admin Centre have had their HVAC systems upgraded. Additional assets to be identified for energy savings opportunities.	▲
Work in collaboration with Endeavour Energy to further upgrade Shoalhaven LGA public street lighting to energy saving LED lights	Stage 2 to replace 100% of Council's public street lights to LEDs has been approved by Council. The $2.5M capital funding enables Endeavour Energy to replace the remaining 4,661 non-LED street lights with energy efficient LEDs. The project will generate Energy Savings Certificates to the value of approx. $780,000 (market variable) to offset the total cost of this project to Council. Endeavour is proposing to conduct the work in the next 18 months and possibly sooner depending on the rollout schedule with other Councils.	✓
Upgrade of Council building, parks and sporting field/court lighting to energy saving LED lights and smart lighting controls	Energy savings LED flood lighting upgrades were commenced/completed in 2021/22 at several Council assets including: • Francis Ryan Sports field, • Lighthouse Oval Top Sports field, • Bomaderry (Swamp Rats) Sports field. • Ison Park (Baseball) Sports field • Bernie Reagan (Cricket/Soccer)) Sports field	✓
Installation and maintenance of Power Factor Correction (PFC) units to reduce maximum network demand charges	It is unclear whether routine maintenance and inspections of PFC units at Council's Large Sites is taking place. PFCs units must be checked by a licenced electrician on a regular basis to ensure they are fully operational. The unit capacitors have a finite life and may not give any apparent warning when they fail. This can result in a loss of savings and unnecessary damage to existing equipment.	▲

ENERGY INITIATIVE	PROGRESS in 2021-22	PERFORMANCE
Load shifting of major electrical loads outside critical time slots to avoid excessive network demand charges	As demand charges can make up to one-third of the total electricity bill amount it is important that Large Sites avoid high electricity loads between 4pm and 8pm on working days. Burrier Water Pumping Station, with its energy efficient pumping schedule, has been particularly strict on avoiding these peak demand periods throughout 2021-22 and therefore averting the $15,000 maximum demand monthly charge.	✓
Energy efficiency measures for Council assets to reduce excessive base load electricity	Nowra Administration Centre continues to have a very high after-hours electricity baseload of around 45 kW. The building's daily electricity load also ramps up to around 170 kW at approx. 5am, presumably when the cleaners arrive and the central air-con system is set to switch on automatically. Further energy investigations are required on this asset to reduce overall power consumption and running costs. This will be particularly important for cost savings from 2023 when the cost of electricity for Large Sites increases dramatically compared to past power pricing.	X
Purchase energy efficient plant and equipment for new installations (use the Energy Rating Label, where applicable, the more stars the more energy efficient)	This initiative is difficult to track as it relies on all staff selecting energy efficient appliances in their procurement projects.	?
Consider 'load shedding' opportunities for suitable sites	Load shedding or 'powering down' high electricity consuming sites such as water pumping stations or wastewater treatment plants during times of peak demand for reimbursement is organised through an energy retailer. This has not been viable on existing electricity contracts but will be highly valuable from 2023 on the new Large Sites retail contract with Flow Power who specialise in demand management. Opportunities exist for Burrier WPS and some other water pumping stations that can be operated with some flexibility to absorb cheaper power prices and possible reimbursement during grid shortages.	▲
Fuel efficiency to be one of the criteria in the tendering and selection of Council trucks, cars and heavy plant	Fleet services has been active in sourcing fuel efficient vehicles for leaseback and pool cars. There are currently 2 fully electric vehicles and 1 plug-in hybrid within Council, as well as many standard hybrids. The smaller cars on Council's leaseback list are now mostly hybrids.	▲
Council's Aquatic Centres to adjust pool heating settings for improved energy efficiency and to reduce maximum network demand charges	With pool heating (particularly for outdoor pools) being one of the highest electricity consuming processes for Council, avoiding high power loads during peak demand periods (from 4pm to 8pm on working days) is critical to lowering electricity bill charges. Further investigation is warranted particularly from 2023 when electricity pricing for Large Sites will increase dramatically.	▲

ENERGY INITIATIVE	PROGRESS in 2021-22	PERFORMANCE
Investigate energy savings solutions for Burrier Pumping Station on the Shoalhaven River	Burrier Water Pumping Station (WPS) uses by far the most electricity of any Shoalhaven Council asset every year. Demand management has been well practiced by Shoalwater staff to avoid maximum demand charges which are costly (~$15,000/month) for this Large Site. Additional energy efficiency and demand management opportunities will be investigated in 2023 as the new electricity contract with Flow Power allows for this site to participate in electricity savings schemes and operation when the power prices are cheapest.	✓

8.2 Fuel Switching

ENERGY INITIATIVE	PROGRESS in 2021-22	PERFORMANCE
Transition Council's fleet vehicles to hybrid or fully electric vehicles (EVs) where fit for purpose, cost-effective and rechargeable from renewable energy sources.	Fleet services has been active in sourcing fuel efficient vehicles for leaseback and pool cars. There are currently 2 fully electric vehicles and a plug-in hybrid within Council, as well as many standard hybrids. The smaller cars on Council's leaseback list are now mostly hybrids.	▲
Installation of Council-owned electric vehicle (EV) charging stations in strategic locations across the Shoalhaven LGA.	As yet no Council-owned electric vehicle (EV) charging stations exist in the Shoalhaven LGA. The 3 hot spot locations earmarked for fast EV chargers are the SEC, Huskisson and Ulladulla, where tourists are prominent. Government grants may be forthcoming to assist Council will the costs to install fast EV chargers. Council has applied under EoI opportunities under NSW Government schemes to attract investment in EV chargers and an EV charging station has recently been announced for Ulladulla in the initial funding round. Type 2 EV chargers are also being considered for some Holiday Haven Parks.	X
At the end of their working life, replace gas hot water systems on Council owned assets with heat pumps or solar hot water.	Gas (both natural mains gas and bottled LPG) is a very expensive fuel for heating and cooking and the carbon emissions from gas appliances cannot be easily negated. With the aim to 'electrify everything', no more gas appliances should be installed at Council assets. Electric appliances can be powered by renewables (either on-site or off-site through electricity plans) and are therefore the best choice for new builds and renovations of Council facilities.	X

8.3 On-site Renewable Energy

<table>
<tr><th>ENERGY INITIATIVE</th><th>PROGRESS in 2021-22</th><th>PERFORMANCE</th></tr>
<tr><td>Install solar PV systems on suitable Council-owned assets (rooftop or ground-mounted) where the business case is favourable to generate daytime electricity.</td><td>There were 28 new solar PV systems installed/commissioned on Council assets in 2021-22, totalling an additional 423 kW of behind-the-meter electricity. The systems installed were as follows:

<table><tr><th>Site Name</th><th>Solar PV System Size kW</th></tr><tr><td>Nowra Wastewater Treatment Plant</td><td>100</td></tr><tr><td>Bomaderry Wastewater Treatment Plant</td><td>50</td></tr><tr><td>Culburra Wastewater Treatment Plant</td><td>28</td></tr><tr><td>Shoalhaven Animal Shelter</td><td>15</td></tr><tr><td>20 RiRP sites (mostly community halls)</td><td>150</td></tr><tr><td>Ulladulla Works Depot - Shoalwater Shed</td><td>30</td></tr><tr><td>Conjola Wastewater Treatment Plant</td><td>15</td></tr><tr><td>Bendalong Wastewater Treatment Plant</td><td>15</td></tr><tr><td>St Georges Basin Wastewater Treatment Plant</td><td>20</td></tr></table></td><td>  </td></tr>
<tr><td>Battery storage to be incorporated with solar PV installations where an asset's energy and load profile suits and the business case is favourable.</td><td>Storage batteries remain relatively expensive and tend to be utilised where they offer numerous benefits such as backup electricity supply during grid outages. Several community halls throughout the Shoalhaven LGA have been fitted out with Tesla Powerwall batteries to supply secondary power during grid outages, as part of the Recovery into Resilience project.</td><td>  </td></tr>
<tr><td>Council continues to implement landfill gas methane flaring at its primary landfill facility at West Nowra.</td><td>Council's West Nowra Landfill site flared off the methane gas emanating from the waste cells during 2021-22. An additional 2,000,000 m^3 of methane was flared compared to the previous year. Operation of the landfill gas generation facility to turn the biogas into renewable energy to feed into the grid is under development.</td><td>  </td></tr>
<tr><td>Continue investigations into a mid-scale solar farm (<5 MW capacity) on the Callala Wastewater Treatment Plant site to generate renewable energy to meet some of Council's future electricity needs beyond 2025.</td><td>Although no further progress on the Callala WWTP solar farm occurred, the new electricity contracts from 2023 include the development of 2 new solar farms in the region by Flow Power. The Callala WWTP site is ear-marked for a solar farm (subject to planning approval). Shoalhaven Council will buy electricity from these new solar farms as part of their electricity contracts.</td><td>  </td></tr>
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8.4 Off-site Renewable Energy

ENERGY INITIATIVE	PROGRESS in 2021-22	PERFORMANCE
Develop and implement a corporate Power Purchase Agreement (PPA) to source renewable energy off-site (e.g. solar/wind farms) to achieve Council's adopted renewable energy targets.	Shoalhaven City Council recently partnered with Shellharbour and Kiama Councils (the Participating Councils) to lead a joint tendering activity for the long-term supply of retail electricity for Large Sites and Street Lighting. The tender was awarded to Progressive Green Pty Ltd T/as Flow Power and will commence on 1 Jan 2023. The Power Purchase Agreement will supply 25% renewable power in 2023 and 2024, increasing to 50% renewable from 2025 until the end of the contract term. Additional Large-scale Generation Certificates (LGCs) are proposed from 2025 to achieve 100% renewable electricity for all Council assets.	✓
Encourage local community renewable energy uptake for rooftop solar PV and storage batteries for residents and businesses in the Shoalhaven via Council-run: - Education and information programs; - Renewable energy bulk-buy programs.	Solar PV installations have risen to 29% of dwellings in the Shoalhaven LGA, compared to 18% in 2018. This is not far from achieving the Sustainable Energy Policy target of 33% of dwellings by 2025. A Solar and Battery 101 public workshop has been scheduled for October 2022 to assist the community with this technology. Shoalhaven Council has subscribed to the Australian Photovoltaic Institute (APVI) SunSpot tool which allows Shoalhaven residents and businesses to check on the suitability of their rooftops for solar PV systems.	✓
Work with Shoalhaven community groups proposing large scale community energy projects in the region.	Council staff worked with Repower Shoalhaven and Flow Power on their large solar farm completed in Dec 2021 on Council's old sanitary depot site at South Nowra. Council has also been working with Innovating Energy on their proposal for a biogas plant that would generate renewable power from primarily dairy farm manure.	✓
Participate in emerging energy technologies, such as battery storage, microgrids, embedded networks and Virtual Power Plants (VPP), where opportunities arise and if they support Council or the community's economic, social or environmental outcomes.	Council has embraced the installation of several Tesla Powerwall batteries as part of its fit-out of 25 community halls with secondary power systems for Local Information Hubs. Work has also taken place with Endeavour Energy on their project to create a microgrid with a community battery for Kioloa and Bawley Point villages.	✓

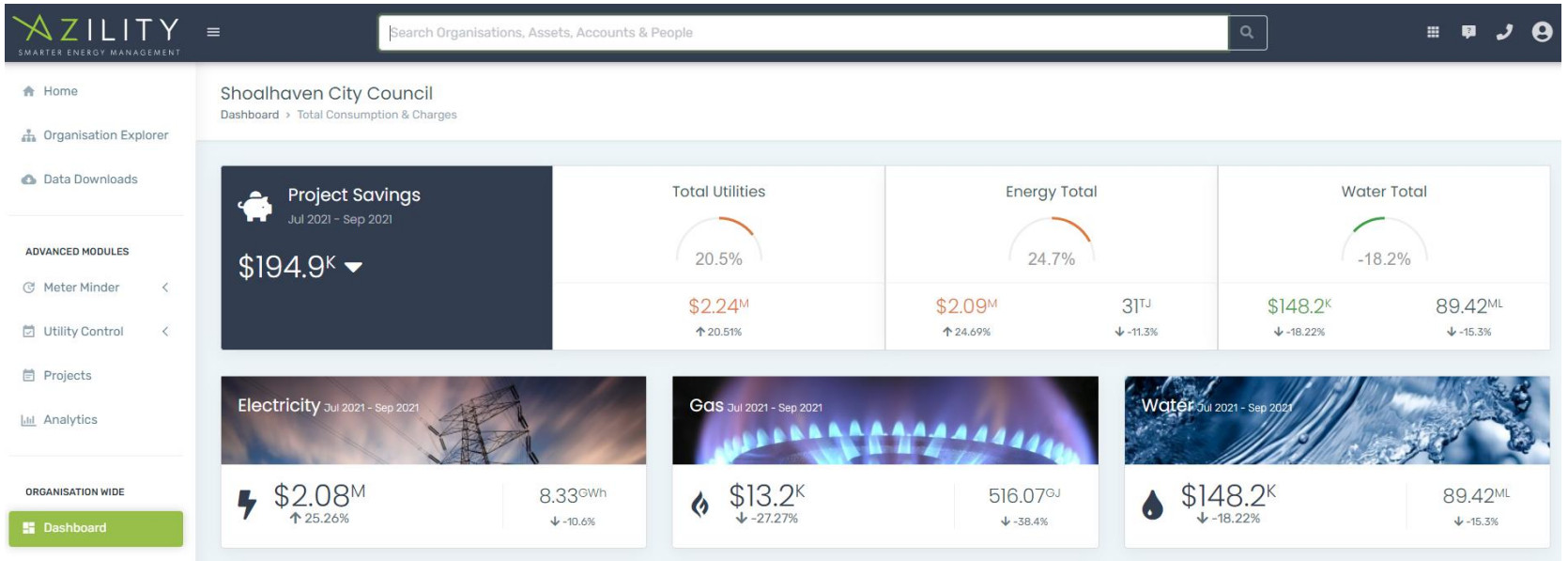
8.5 Carbon Offsets

ENERGY INITIATIVE	PROGRESS in 2021-22	PERFORMANCE
Afforestation projects – carbon sinks	Carbon offsets are not required at present to achieve Council's adopted emissions targets. There have been some preliminary discussions with Enviro Services around 'blue carbon' and working with Greening Australia to explore council owned land that would be suitable for local offsetting.	N/A

8.6 Resourcing, Implementation & Expertise

ENERGY INITIATIVE	PROGRESS in 2021-22	PERFORMANCE
Employ an Energy Manager to coordinate, communicate and implement Council's sustainable energy policy, strategy and plans.	An Energy Management Coordinator contractor has been engaged by Council to implement its sustainable energy policy and strategy, and to project manage and coordinate energy efficiency, renewable energy and electricity tendering projects.	✓
Maintain Council's Revolving Energy Fund (REFund) to provide future funds for high priority energy efficiency and renewable energy projects.	The REFund has continued and funded projects with the most recent being an energy-savings LED lighting upgrade at the Shoalhaven Entertainment Centre. Additional investment into the REFund has now been made by Council from the up-front lease payments for the South Nowra Solar Farm which will fund new projects. This includes an approved LED lighting upgrade and 95 kW solar PV installation at the Ulladulla Civic Centre.	✓
Identify and seek funding and financing to implement priority energy savings projects with solid business cases.	Recovery into Resilience grant funding supported the installation of solar/battery systems at 25 community halls/Holiday Haven parks. Council also accessed both Energy Savings Scheme certificates and RECs for reducing costs for installed energy efficiency and solar PV projects, respectively.	✓
To track progress towards its energy and emissions targets, Council will prepare an Annual Energy Review in October every year to publish the previous financial year's energy consumption and greenhouse gas emissions data.	This 'Annual Energy Review' (***this report***) documents performance against both the Sustainable Energy Policy targets and gauges implementation of the Sustainable Energy Strategy.	✓

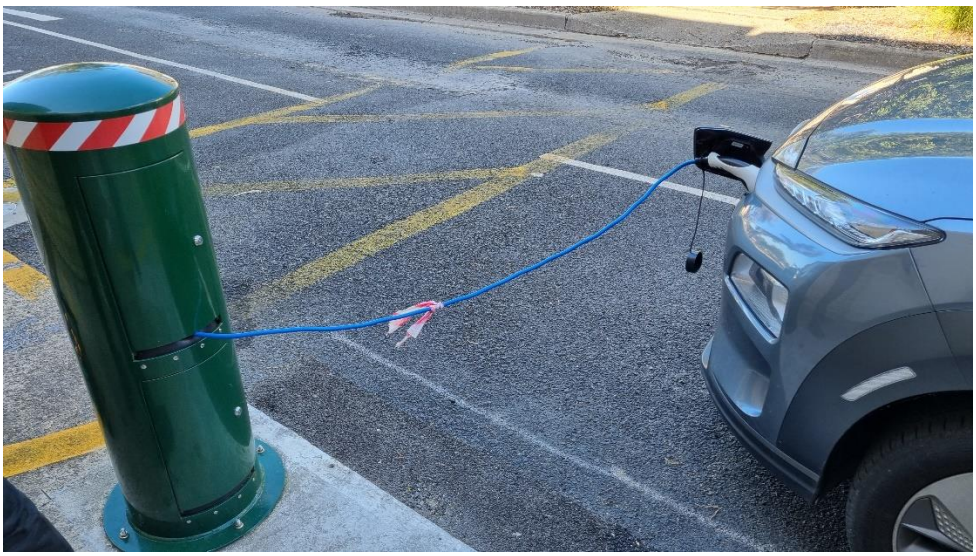
ENERGY INITIATIVE	PROGRESS in 2021-22	PERFORMANCE
Calculate and report on Council's greenhouse gas emissions using acceptable methodology and protocols.	Council uses the *National Greenhouse & Energy Reporting* (NGERS) scheme methodology to calculate and report on its annual carbon emissions sources.	✓
Maintain membership to the Climate Council's national Cities Power Partnership (CPP) program and continue implementing pledges under the program.	Council continues to implement its revised pledges under the CPP (see Table 1 above).	✓
Maintain access to an online dashboard energy portal to access and monitor all energy and emissions data, monitoring, reporting and billing.	Azility continues to be well utilised by Council's energy and accounts staff for energy monitoring and billing (see Dashboard screen shot below). Any staff can access the Azility platform via a password, if required.	✓



9 Recommendations

The following sustainable energy actions are priorities for implementing throughout 2022-23 for Shoalhaven City Council:

- Work with energy partner Flow Power to analyse energy efficiency at all Large Sites and identify and implement demand management opportunities to reduce electricity costs and charges. This will involve the installation of a Flow Power kWatch controller and commencement of Flow Power's Energy Ready program at all Large Sites. Priority sites would include Burrier Water Pumping Station and the Nowra Administration Centre;
- Continue to identify and approve energy efficiency projects under the Revolving Energy Fund (REFund), making use of the top-up funds approved by Council from the South Nowra Solar Farm up-front lease payment;
- Identify additional sites and funding opportunities for further solar PV installations at Council assets, including solar farm development sites for Flow Power under Council's Power Purchase Agreement for Large Sites and Street Lighting;
- Investigate external grant funding for installing EV Fast Charging Stations at priority sites within the Shoalhaven LGA;
- Continue to work with Endeavour Energy on the upgrade of the remaining 41% of residential street lights to be replaced with energy savings LEDs;
- Work with Endeavour Energy to facilitate the new Bawley Point/Kioloa community microgrid project now underway;
- Develop an Emissions Reduction Plan to identify pathways to achieve Council's net zero target;
- Develop an engaging Council webpage on sustainability and climate change for improved community engagement on local sustainability and energy actions, including the benefits of installing residential and business solar PV.



Charging a Council-owned EV at the Ulladulla Works Depot