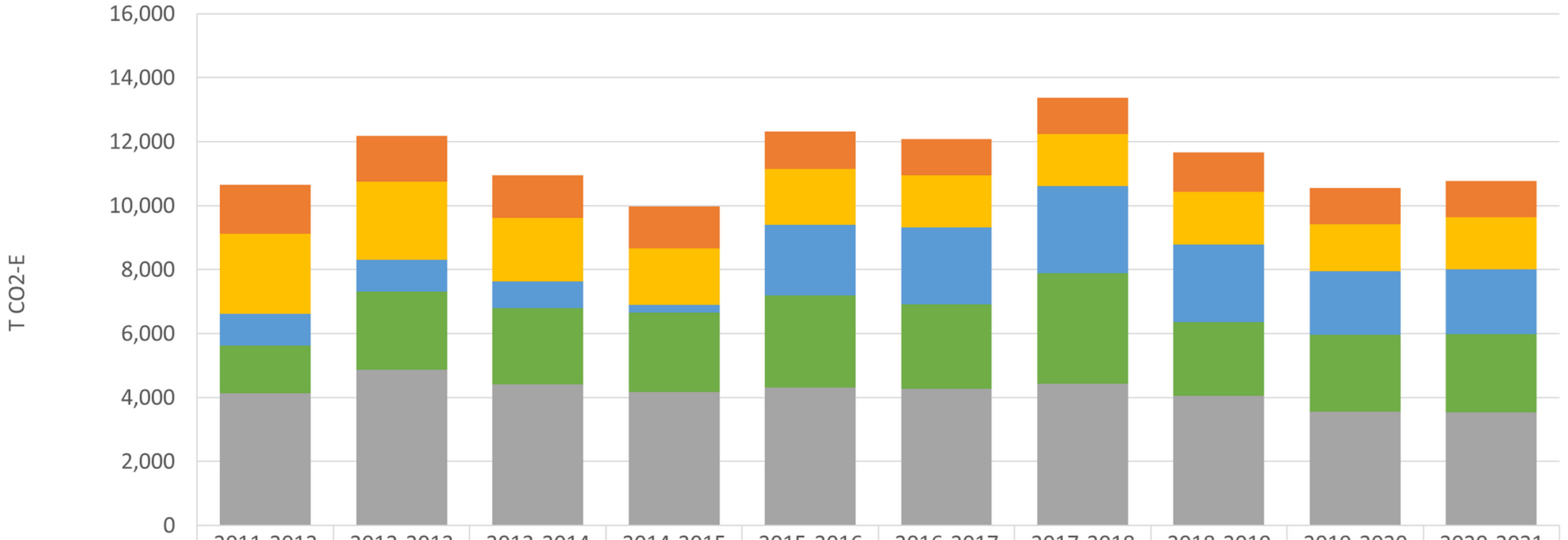
CITY OF MANDURAH
ENVIRONMENT

CARBON AND ENERGY

THE CITY'S CARBON FOOTPRINT

Power use comes from many different places throughout the council activities.



	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Fleet	1,519	1,420	1,327	1,312	1,175	1,119	1,144	1,249	1,125	1,127
Buildings & Parks	2,505	2,456	1,995	1,766	1,749	1,634	1,628	1,632	1,467	1,629
Aquatic Centre	990	989	833	253	2,189	2,402	2,706	2,426	1,995	2,027
Operational Waste	1,499	2,436	2,388	2,478	2,897	2,654	3,468	2,308	2,403	2,451
Street Lighting	4,133	4,872	4,403	4,173	4,305	4,266	4,430	4,057	3,558	3,539
Total	10,646	12,173	10,946	9,982	12,316	12,075	13,376	11,672	10,548	10,773

FAST FACT!

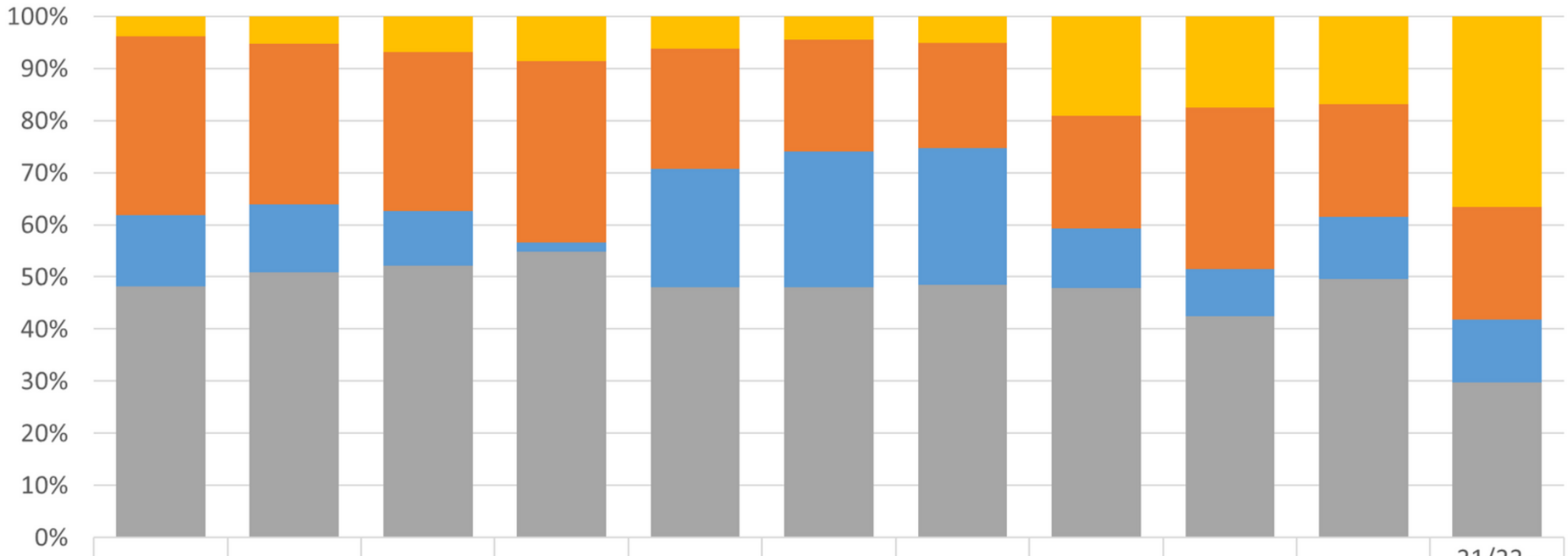
The City's Operational Carbon footprint (from council activities) is 2.14% of Mandurah's Community Carbon Footprint

Related

Mandurah Community Emissions Snapshot

THE CITY'S SHARE OF RENEWABLES

As of 2021, 17% of the City's power comes from renewable sources. We set a goal in 2019 to increase this to 25% of energy provided by renewable sources by 2030 and we are well on our way to beat this target.



	FY 11/12	FY 12/13	FY 13/14	FY 14 15	FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	21/22 - Projected
Renewable Energy	4%	5%	7%	9%	6%	5%	5%	19%	17%	17%	37%
Transport Fuel	34%	31%	31%	35%	23%	21%	20%	22%	31%	22%	22%
Natural Gas	14%	13%	11%	2%	23%	26%	26%	11%	9%	12%	12%
Black Power	48%	51%	52%	55%	48%	48%	48%	48%	42%	50%	30%

FAST FACT!

Did you know? Western Australia's Grid is already powered by 24% renewable energy.

Related

The Power Shift

WA Grid Dashboard

OUR EMISSIONS JOURNEY

1999
The City joins the UN Climate Protection Program

2011
Corporate Emissions Reduction Strategy (CERS) is developed, aimed at reducing the City's dependence on carbon

2014
Introduction of the Solar Plan to install solar PV systems on City owned buildings

The LED Plan to retrofit lighting in City buildings and public areas begins

2015
Installation of the RAC Highway electric vehicle charging station in the city centre

2017
The City installs geothermal heating at the MARC

2018
Western Power and Synergy Community Powerbank Trial in Meadow Springs

The City commits to fuel efficient council vehicles

Future Vehicles Expo held in Mandurah

2019
The City pledges to source 25% of all it's operational energy from renewable sources by 2030

2020
Several hybrids and one EV are added to the city fleet

The City leads the formation of a NERA Hydrogen Technology Cluster in the Perth and Peel Region

2021
Through the Cities Power Partnership, the City commits to five pledges to improve sustainable power use

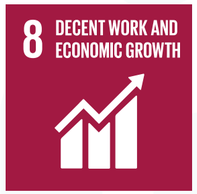
The development of an Integrated Transport Strategy (ITS) to improve active and public transport

The City is developing an LED street light conversion business case

Future projects
The City will commence sending waste to the Waste-to-Energy Plant

The City joins WALGA led Energy Sustainability and renewables Project, commits to 100% renewable energy, and looks to develop a Power Purchase agreement

1999 United Nations Cities for Climate Protection



Cities for Climate Protection (CCP) asked cities to commit to including climate change actions in their city plans. This includes decreasing greenhouse gas emissions, improving air quality, and increasing sustainable actions.

2011 Corporate Emissions Reduction Strategy (CERS)

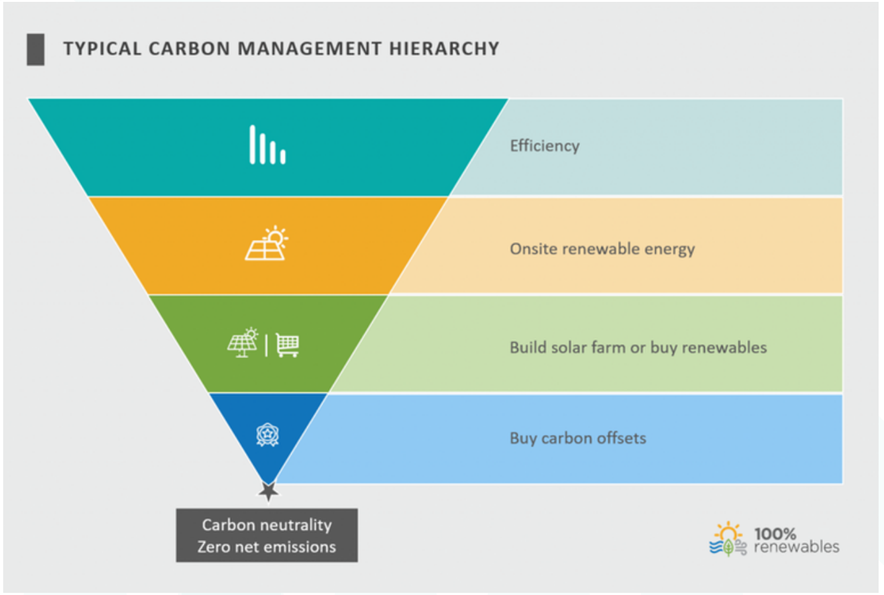
Initially, the City was focused on achieving carbon neutrality and was able to reduce emissions by 57% from 1999 levels. However, this mainly relied on buying carbon and renewable energy offsets. The City is now instead investing in renewable energy and energy efficiency projects that directly reduce operational emissions and putting funding towards Direct Action Projects, before revisiting offsets.

What are carbon offsets and how should they be used?

Carbon offset units are generated by projects that reduce, remove or capture emissions from the atmosphere such as reforestation, renewable energy or energy efficiency. One offset equals one tonne of greenhouse gas emissions that is avoided or reduced elsewhere.

Often these projects have other benefits such enhanced biodiversity, habitat protection and creating employment.

Carbon offsets or credits are a simple way to reach a carbon-neutral target right away but are generally the last stage of a carbon reduction strategy.



Our Direct Action Projects

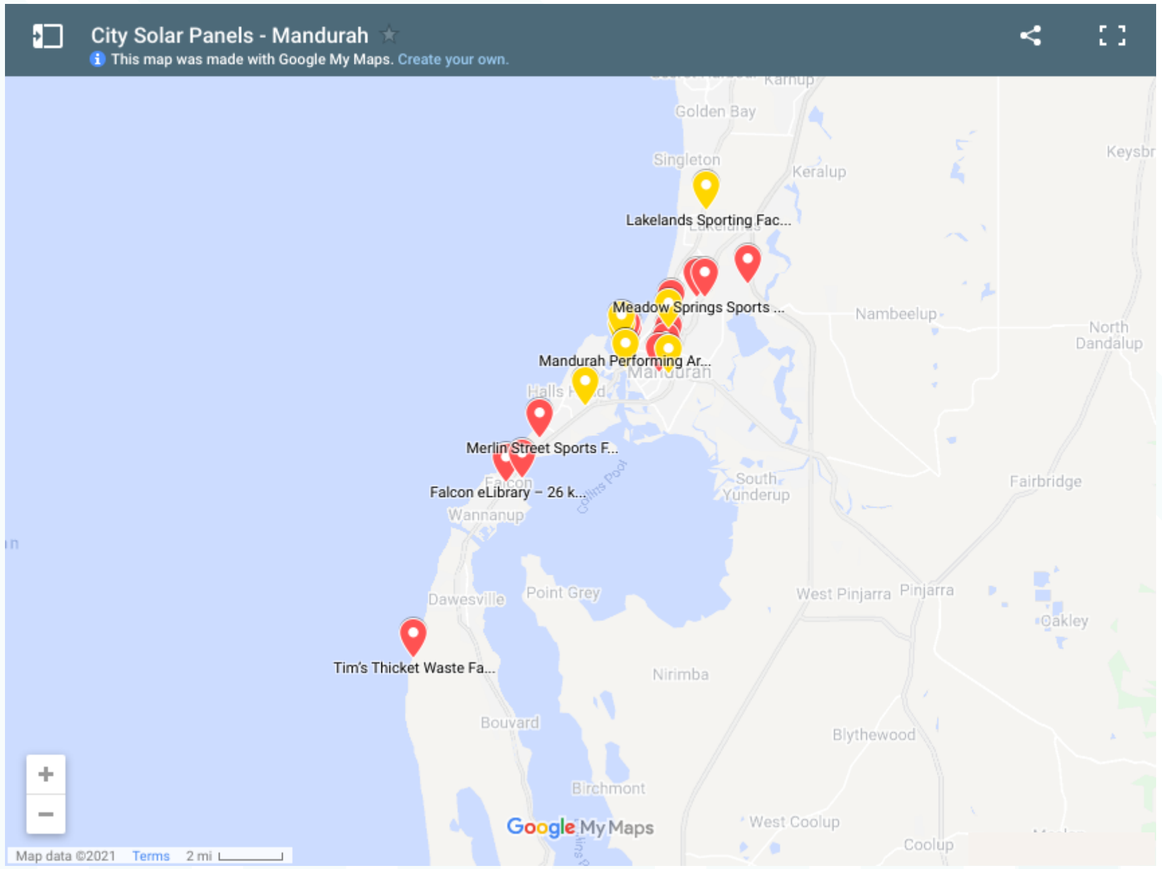
- 66 hectares of valuable bush protected from development through The Bushland Buyback Scheme
- 2,480 Solar Panels installed across 17 sites
- Over 3,000 LED lights installed
- Nearly 1km geothermal bore drilled to access renewable heat

Related

Bushland Buyback scheme

2014 Solar Plan

Since 2014 the City has installed 17 solar PV systems on the rooftops of city-owned buildings across the city. These systems total 643kW capacity, with an annual carbon reduction of 836 tonnes CO2-e. We expect to complete a further 190kW in solar systems by 2026.



What is a W, kW, or MW?

W stands for watt and it is a measure of electrical power and is named after James Watt, an 18th-century Scottish Inventor. A kW is equal to 1000 watts. A kilowatt-hour (kWh) is a unit of energy equivalent to one kW of power sustained for one hour or 3600 kilojoules. One megawatt-hour (MWh) is equal to 1000 kWh.

The average four-person household uses around 20 kWh per day.

Solar System monitoring

Click here to see how much energy some of the City's solar PV systems are producing every day.

2014 LED Lighting

In 2014, the City began a city-wide LED retrofitting project. LEDs can use up to ten times less energy than traditional globes. LEDs also last five time longer reducing ongoing maintenance costs and landfill waste. LEDs provide better quality lighting resulting in safer and more enjoyable outdoor spaces.

LED PROJECTS

1. LED lights in buildings and public areas - The City has installed over 3,000 LED lights in buildings, car parks, reserves, and sporting grounds across the city, with a further **115 sites** to be completed by **2026**.

2. Solar LED lighting - Where possible we have installed solar powered LED bollards for path lighting. These avoid emissions and the costly connection charges that would be incurred by not connecting to grid power where it is not currently available.

3. LED Street Lighting - Non-LED street lighting contributes 25% of the City's total carbon emissions. An LED replacement could reduce operational emissions by 1,400 tonnes of CO_2-e per year. We are currently preparing a business case and working through some of the barriers that exist to develop a replacement program.

22 solar powered bollards along the Mandurah Quays Foreshore (left)

Related

Switching to LEDS

How much have City LED retrofits reduced emissions by?

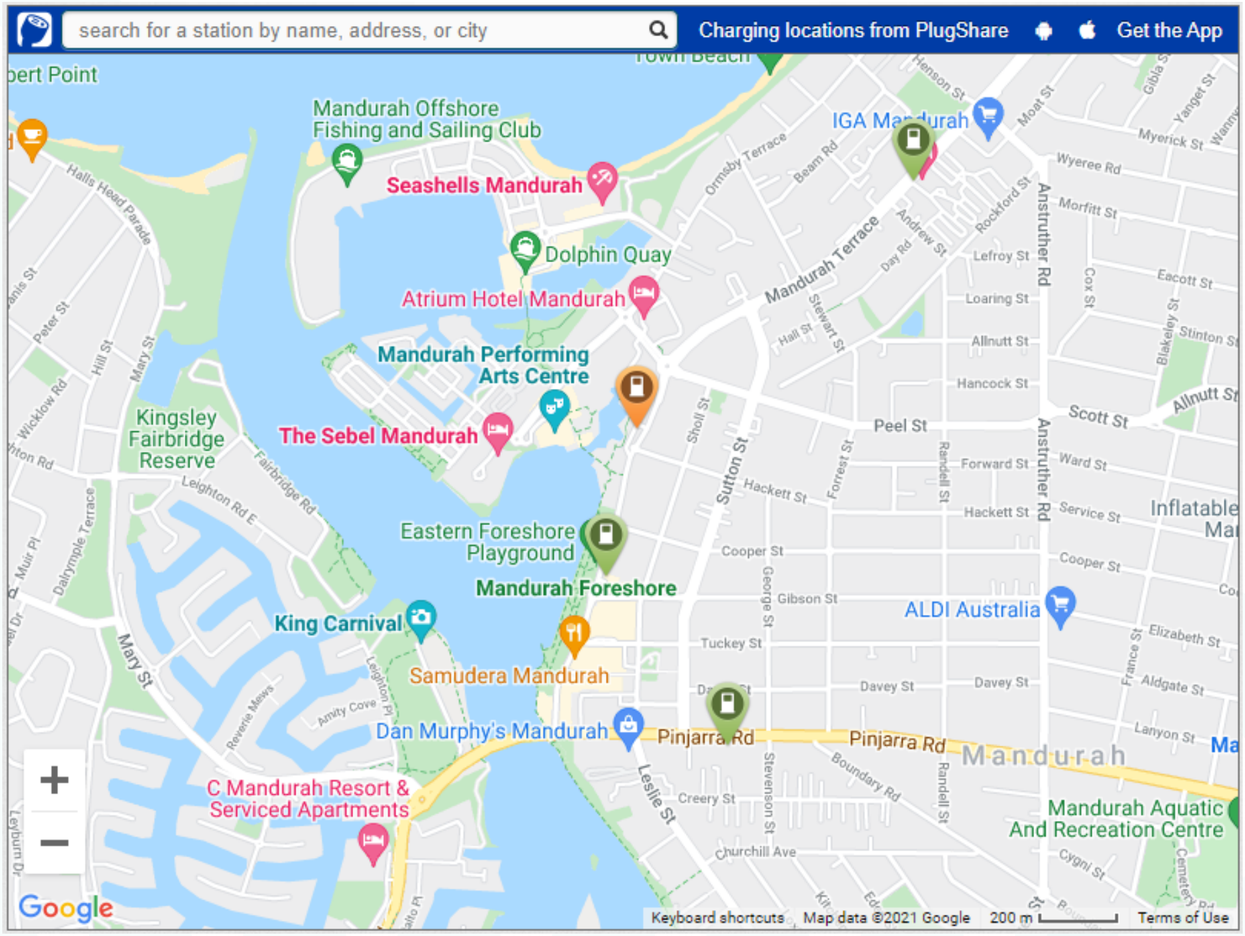
50% in carparks

15% in buildings

TIPS FOR AT HOME

Download the Light Bulb Saver App to find out how much you could save just by changing your light bulbs and get handy tips about choosing the right lighting for each room in your house.

2015 RAC Electric Highway Charging Station



Click on the map to find out more!

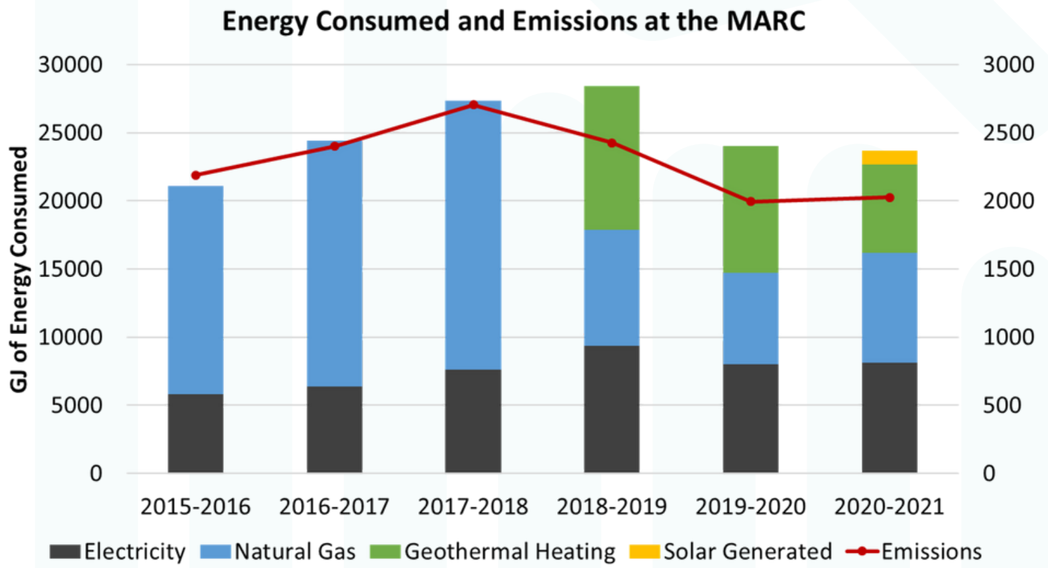
We want to make it easier for our community to try sustainable alternatives like electric cars. So, we partnered with the RAC to install a fast DC Electric Vehicle charging station at the Mandurah Visitor Centre as part of the RAC Electric Highway Network.

Related WA Government Electric Vehicle Strategy Plugshare EV charge point finder

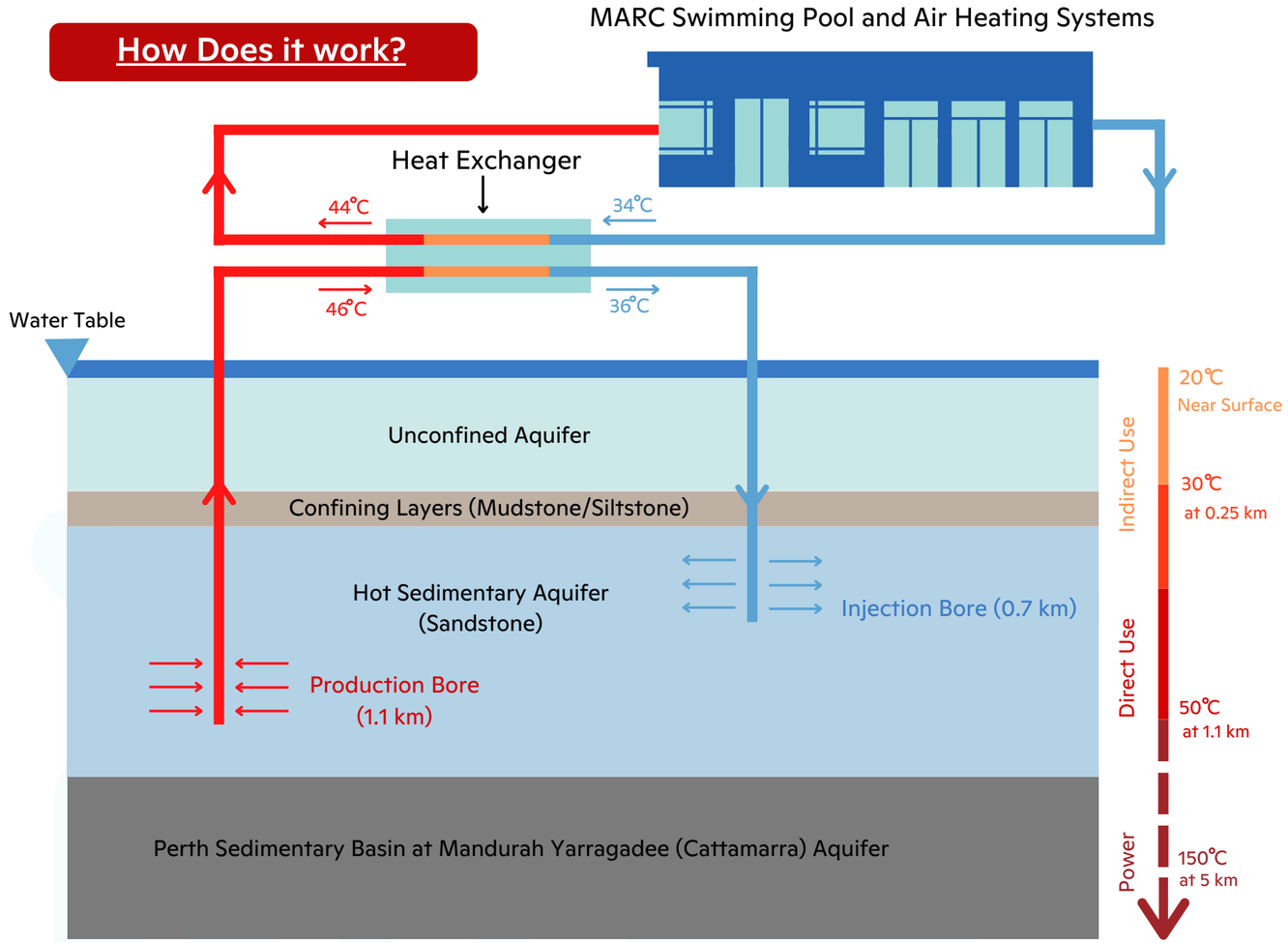
2017 MARC Geothermal

The City increased its consumption of renewable energy by 14% as a result of installing geothermal heating at the MARC in 2018. The system uses heat extracted from groundwater nearly 1 km underground to heat the water in the pools and provide space heating within the centre.

This installation has reduced the dependence on gas for heating by over 50% and we eliminated 286 tonnes CO2-e emissions each year.



How Does it work?



Related MARC development project details

2018 PowerBank Trial

Western Power and Synergy launched their first community Powerbank trial here in Mandurah. This trial aimed to boost the battery storage of solar power for residential homes. For $1 per day, residents can store their excess solar power in the community battery and draw on this during peak use periods in the evening. Daily storage allows residents to access more of the power that they generate and gives them savings on their bills.

Since the initial trial in Meadow Springs, the project has continued in expanded to 12 additional metropolitan and regional locations.

Related

PowerBank Trial in Mandurah

Synergy PowerBanks

2019 CERS 2.0

In 2019 the City reviewed the CERS and made two changes:

1. Adopted a 25% renewable energy target by 2030 in the place of carbon neutrality.
2. Pledges to partner with external parties in order to help drive renewable energy development and uptake beyond the City's operational boundaries.

UPDATE!

The City will achieve 37% renewables by 2025 through the WALGA Renewables Project.

Related

Carbon Neutral vs Renewable Energy Targets

Mandurah Community Emissions Footprint

2019 Future Vehicles Expo

The Future Vehicles Expo hosted by the City in 2019 showcased battery and fuel cell electric vehicles, e-bikes and scooters and even the RAC driverless Intellibus. This event aimed to encourage our community to think about cleaner transport alternatives.

FAST FACT!

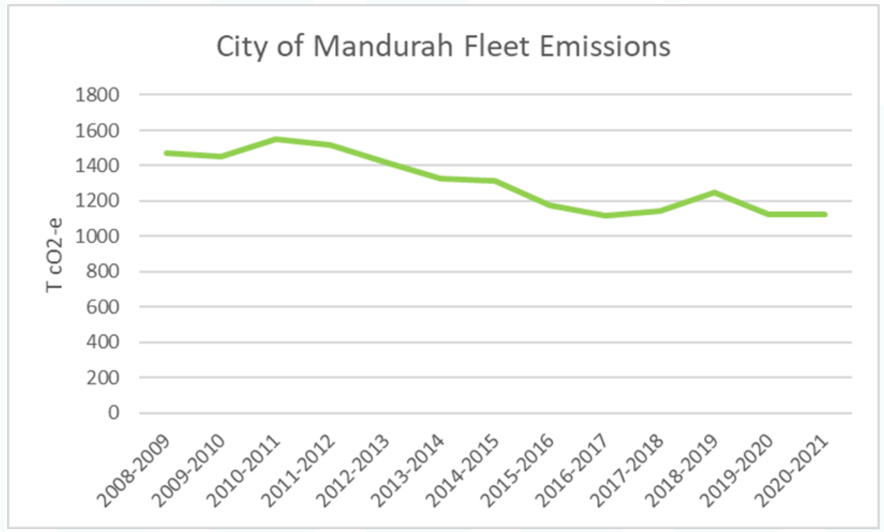
Based on Electric Vehicle Council statistics around $14 worth of electricity will drive you as far as around $50 of petrol.

Related

eRideables Road Rules

2020 Low Emissions Vehicles

In 2020 the City completed an Electric Vehicle Suitability Assessment by using driving data obtained from a sample of CityFleet vehicles. The assessment found that in about two-thirds of cases HEVs provided a better financial and environmental outcome over the life of the asset than the current ICE. This resulted in the introduction of several HIV and one BEV vehicle to the City's fleet list.



The City has also committed to greater fuel-efficient vehicles, choosing to only buy vehicles with 7L/100km or less fuel efficiency.

We have already seen an 18% decrease in CO2 e-emissions from council vehicles since 2011.

TIPS FOR AT HOME

Check out the Green Vehicle Guide to see how fuel-efficient your car is!

FAST FACT!

Smooth braking and acceleration allow more energy to be recaptured while driving and reduces how often the electric vehicle needs to be charged. So safe driving is more efficient driving!

Related

Car Jargon: What is BEV, FCEV, PHEV, HEV, ICE

2021 Perth and Peel Hydrogen Cluster

The City is supporting the research and application of hydrogen power in Mandurah through the NERA Hydrogen Technology Cluster (H2TCA) program. The City has partnered with Murdoch University, the Peel Development Commission, the Kwinana Industries Council and a number of local hydrogen technology innovators to establish the Perth and Peel Hydrogen Cluster as a leading Australian hydrogen industry technology developer, enabler and adopter.

We are aiming to create an environment where public, private and education sectors collaborate to innovate, build competence and capability, create business and market development opportunities, and develop technology excellence in regional, national and international hydrogen supply chains.

"As we progress our plans to Transform Mandurah, the use of hydrogen could have significant impacts towards how we create jobs for our future, and how we tackle climate change"
– Mayor Rhys Williams

What is Hydrogen, how does it work as a fuel, and what are the challenges that the NERA cluster is trying to overcome?

Related

NERA Cluster in Mandurah

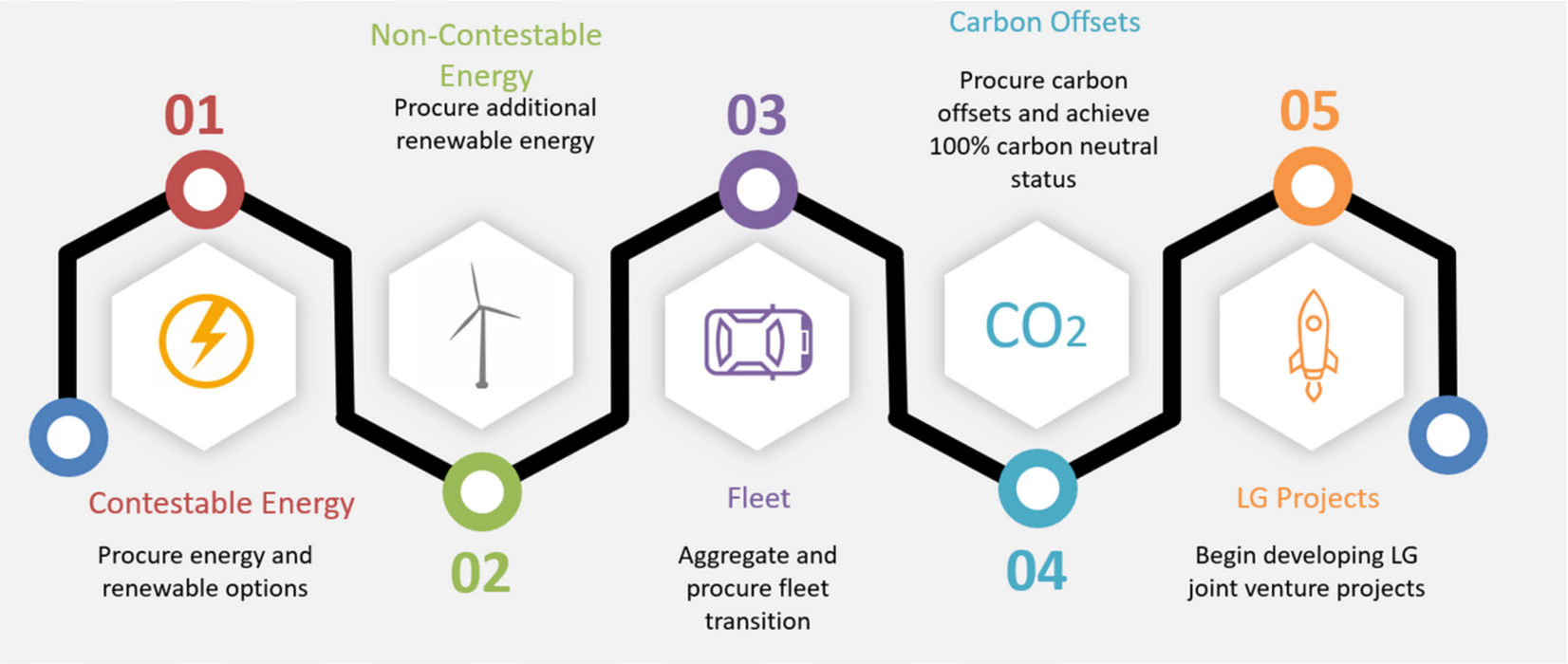
H2TCA Network

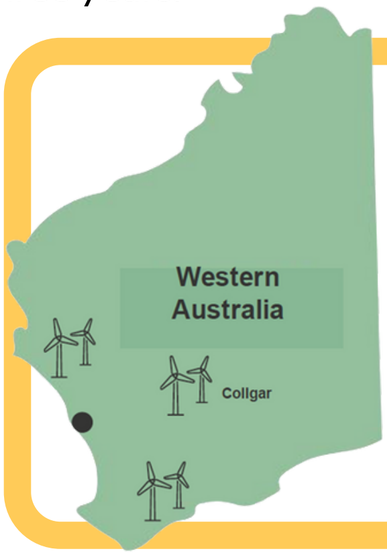
www.h2cluster.com.au

2021 Energy Sustainability and Renewables Project

Western Australia Local Government Association (WALGA) is leading a project that will help WA local Governments achieve their emissions reduction targets and get better value for money by aggregating contracted energy and other procurement through a 5 Stage Roadmap.

Together with 51 other WALGA members, we have entered into an electricity supply agreement with Synergy (Stage 1 of the Project) that will allow us to transition to 100% renewable electricity for our contestable contracts over the next three years.
The 50 local Governments will save over 42,000 t CO-2e and $5m collectively.





The renewable energy for this project will be sourced from 3 WA wind farms:

- Albany Wind Farm
- Collgar Wind Farm
- Emu Downs Wind Farm

Related

What does Contestable mean?

WALGA Energy Sustainability and Renewables Project

2021 Cities Power Partnership

What is the Cities Power Partnership?

CCP is a network of cities across Australia that are tackling power challenges. We use this partnership to set goals and share knowledge and resources.

The City of Mandurah has committed to five pledges to improve our sustainable power usage, with progress reports on these pledges required every year. These pledges align with our current projects and our future goals seen across this timeline.

The City's CCP Pledges

- Install renewable energy (solar PV and battery storage) on council buildings.
- Facilitate large energy users collectively tendering and purchasing renewable energy at a low cost.
- Encouraging sustainable transport use such as public transport, walking, and cycling through council transport planning and design.
- Power council operations by renewable energy, and set targets to increase the level of renewable power for council operations over time.
- Roll out energy efficient lighting across the municipality.

2022 and beyond

The City has more initiatives underway that will help continue to drive down emissions:

2022 - LED Street Lighting Business Case

We are working on the business case to convert over 10,000 street lights to LED. This project has the potential to reduce the City's emissions by 1,700 t CO_2-e per year.

2022 - Integrated Transport Strategy

The City is working on a strategy that aims to deliver a more accessible and connected City that encourages and enables our community to shift to more safe and sustainable modes of transport.

2023 - Waste to Energy Project

From 2023 the City will direct its municipal waste to a Waste to Energy (WtE) Plant in Kwinana instead of to landfill. The methane (CH_4) emissions that are released by decomposing waste and are 20 times more harmful than CO_2, will be avoided. Electricity will be generated by the waste treatment at the plant.

The plant can process 400,000 tonnes per year of general waste and will generate 36MW of baseload electricity.

This is equal to taking 85,000 cars off Perth's roads and powering 50,000 households every year.

Find out more

2025 - Renewable Energy Power Purchase Agreement (PPA)

A long term PPA is the goal of Stage 2 of the WALGA Energy Sustainability and Renewables Project. A PPA would secure renewable energy pricing and facilitate new local renewable energy projects to be built, as they provide the project developer with the certainty of a long-term customer needed to finance large solar and wind farm projects.

Related

Waste to Energy Project

What is a PPA?

Tips and Resources to Reduce Your Emissions

Saving Energy at Home

- Find out how to save energy by using it carefully in your home.
- Use the Energy Rating Calculator for home appliance
- Compare your household electricity bill to the average household in your area
- Discover which gas appliances can save energy in your home

Buying Solar and Batteries

- This Solar 101 beginner guide will help you demystify solar.
- This Buying Solar guide will help you make informed choices
- Owning Solar Guide to help you to get the most out of your investment.

Sustainable Transport

- 10 Transport Tips
- Guide to e-bikes
- Use the Green Vehicle Guide when making your next vehicle purchasing decision
- Battery Electric Cars FAQ
- Check out all the EV models currently available in Australia
- Hydrogen fuel cell vehicles explained
- Synergy Electric Vehicle Energy Home Plan

Green Buildings

- Check out Your Home and learn how to create a sustainable home
- Learn about Passive Design
- Get FREE architecturally designed sustainable house plans
- Get a FREE NABERS home energy assessment to identify opportunities for improvement
- Building? Consider building a Green Star rated home

Waste

- City of Mandurah Waste Education page
- Learn how to reduce your waste at home to reduce landfill emissions
- Check out the ABCs War on Waste series
- Top 10 Ways Cut household Waste and other sustainability tips
- Find a Recycler Near You