

Greenhouse Action Plan

2018 - 2021





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Wyndham's Saltwater Gardening Champions

‘Wyndham is a low carbon city. As a community, Wyndham has embraced renewable energy, waste and water conservation practices and is committed to combating climate change.’

WYNDHAM - A LOW CARBON CITY

A low carbon city¹ is one where its Council, residents and businesses have a prosperous clean economy by:

- Using energy more efficiently, taking advantage of technology and delivering financial savings and productivity improvements.
- Producing low carbon electricity, replacing fossil fuel use with low emission alternatives.
- Embracing electrification and cleaner fuels. Carbon reduction can be achieved by switching from fossil fuels to electricity in transport, industry and buildings.
- Offsetting emissions, by increasing the storage of carbon in soil, forest and other vegetation, will improve the City’s amenity and health.

This is our vision for Wyndham.

PRINCIPLES

The following principles outlined in the Environment and Sustainability Strategy have informed the preparation of this Plan:

- Wyndham City will engage with, consult with and strengthen the community’s ability for sustainable stewardship of the environment, including indigenous communities in accordance with Wyndham’s Statement of Commitment.
- All Council decision making will be balanced through triple bottom line assessment to achieve quality of life outcomes.
- All relevant evidence based scientific data will be considered when determining long term sustainable outcomes.
- The Precautionary Principle will be applied to environmental decision-making processes; a lack of full scientific certainty will not be used as a reason for postponing measures to prevent environmental degradation.
- We will work with government, business, community and other stakeholders in order to maximise environmental benefits throughout the region.
- We will continually assess and reassess the state of our environment and implement programs to maintain and improve it.

1. Adopted from Climate Works 4 Pillars of a Low Carbon Economy - <http://www.2050pathways.net.au/>



GREENHOUSE TARGETS AND OBJECTIVES - WHAT ARE WE TRYING TO ACHIEVE?

Wyndham City has made a clear commitment to Corporate and Community greenhouse gas (ghg) reduction targets through the Environment & Sustainability Strategy (2016-2040).

The adopted targets are science-based and align with the global emissions reductions required to meet the United Nations Framework Convention on Climate Change's (UNFCCC) Paris Agreement² - *to keep global temperature rise this century well below 2 degrees Celsius (°C) above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C.*

The Greenhouse Action Plan (the Plan) will provide a roadmap for Wyndham City to:

- Meet Wyndham's 2020 ghg reduction targets and establish a pathway towards 2040 targets;
- Support Wyndham's residential and business community to transition to a low carbon city by saving energy, producing low/no carbon electricity and achieving long term financial and environmental benefits for the region; and
- Reinforce Wyndham City's position as a leader in tackling climate change, and supporting renewable energy through innovative partnerships, projects and community programs.

Table 1: Environment & Sustainability Strategy (2016-2040) greenhouse gas reduction targets

Corporate Targets	
2020	<ul style="list-style-type: none">• Reduce Council's corporate greenhouse emissions (CO2-e) by 12% below a 2014/2015 baseline, excluding the RDF*.
2040	<ul style="list-style-type: none">• Reduce Council's greenhouse emissions (CO2-e) by 95%.• Wyndham will be carbon neutral for corporate greenhouse emissions, as defined by the National Carbon Offset Standard, through the purchase of local offsets (excluding the RDF).
Community Targets	
2020	<ul style="list-style-type: none">• At least 55,000 tonnes of greenhouse gas emissions (CO2-e) avoided from residential and business sectors through the Low Carbon West Strategy.
2040	<ul style="list-style-type: none">• Zero net greenhouse emissions from electricity use in the municipality.

* Refer to page 17 for more information on greenhouse emissions inclusions and exclusions.

EMISSIONS REDUCTION HIERARCHY

The Emissions Reduction Hierarchy outlines the order of preference for the implementation of greenhouse gas emission reductions. Actions at the top of the hierarchy result in more cost-effective emission reductions.

Avoid Energy Use (Behaviour Change)



Reduce Energy Use (Energy Efficiency)



Switch to Renewable Energy



Offset Remaining Emissions

HOW WAS THE PLAN DEVELOPED?

The Greenhouse Action Plan was developed through:

- Community consultation during the public exhibition period for the Environment & Sustainability Strategy 2016-2040;
- Ghg emissions profile modelling, undertaken by experts, to develop a snapshot of Wyndham's community emissions; and
- Consultation with key stakeholders, including community groups, on proposed greenhouse actions and ghg emissions targets (September - October 2018).





WHY ACT NOW TO REDUCE CARBON EMISSIONS?

We have made a commitment.

Wyndham City has made a strong commitment to take action to address climate change and reduce ghg emissions.

The science tells us that this is what we need to do.

The world has warmed 1°C since pre-industrial times. According to the Bureau of Meteorology and CSIRO our future climate will see:

- Temperatures continuing to rise with more extreme hot days.
- More intense rainfall events.
- Harsher fire weather for southern and eastern Australia.
- Decreases in water and spring rainfall for southern continental Australia with an increase in droughts.
- Continued sea level rise.
- Further warming of the ocean and increased acidification³.

Global warming of above 2°C increases the risk of flood, drought, water scarcity and intense tropical storms. It is essential that Wyndham City helps with the global efforts to limit warming to 1.5°C.

The latest science tells us we need to act urgently.

In October 2018, the Intergovernmental Panel on Climate Change (IPCC) released the report *Global Warming on 1.5°C*. The IPCC is the United Nations (UN) body responsible for assessing the science related to climate change. The report with 91 authors, review editors from 40 countries and more than 6,000 scientific references cited, found that our planet is on track to warm by an estimated 3-4°C, much higher than the 1.5-2°C pledged as part of the Paris agreement.

The report found:

- We are already seeing the consequences of 1°C of 'global warming' through more extreme weather, raising sea levels and diminishing Arctic sea ice.
- There are a number of climate change impacts that could be avoided by limiting 'global warming' to 1.5°C compared to 2°C (refer to table 1 for more information).
- Limiting 'global warming' to 1.5°C would require 'rapid and far-reaching' transitions in land, energy, industry, buildings, transport and cities. Global net human-caused emissions of CO₂ would need to fall by 45% from 2010 levels by 2030 and reach net zero emissions by 2050.
- There is only 12 years for 'global warming' to be kept to a maximum of 1.5°C. "The next few years are probably the most important in our history," the IPCC's Debra Roberts Tweeted on the day of the report's publication.

3.State of the Climate 2016 - <http://www.bom.gov.au/state-of-the-climate>

4.Victorians' Perceptions of Climate Change - In the Four Metro Greenhouse Alliances - <https://www.sustainability.vic.gov.au/About-Us/Research/Victorians-perceptions-of-climate-change>

So what's the difference between 1.5°C and 2°C warming? Is 0.5°C a big deal?

According to scientists in the IPCC report:

- At 1.5°C extreme heatwaves will be experienced by 14% of the world's population at least once every 5 years. If temperatures rise by 2°C this increases to one third of the planet experiencing more heatwaves.
- At 1.5°C Arctic sea ice would remain during most summers. At 2°C ice free summers are 10 times more likely with habitat loss for seals, whales, sea birds and polar bears.
- At 1.5°C coral reefs will decline by 70-90%. At 2°C almost all of the world's reefs will be destroyed.
- By 2100, global sea level rise would be 10cm lower with 1.5°C compared to 2°C.

Technology opportunities.

Why focus on the problems when the solutions are so attractive? There have been rapid advances in technology in the last 10 years, including lighting, renewable energy and storage batteries. The cost of these technologies has dropped significantly. The result of implementing such technologies include reduced carbon emissions, substantial cost savings and increased resilience to fluctuating fossil fuel prices.

Financial benefits.

Council projects will typically be designed to generate a positive return on investment within the asset life and community based projects will be designed to provide a financial saving to residents (particularly low socio-economic or vulnerable demographics) or businesses. Savings to business has the potential to stimulate economic growth and employment in the region.

Our community is concerned and expect us to act.

In 2016/2017 Sustainability Victoria commissioned a state-wide survey to collect data on Victorian resident's attitudes, beliefs and behaviours in relation to climate change. The survey showed:

- Three out of four residents in the Western region stated some level of concern about climate change, and four out of five residents agree that 'climate change is an issue that requires urgent action now.'
- 92% of residents in the Western region believe Local Government should lead or contribute to taking action on climate change.
- 97% of residents in the Western Region support solar panels in their area⁴.



POLICY - WHAT'S HAPPENING AROUND US?

United Nations (UN)

Sustainable Development Goals

In 2015, 193 countries, including Australia, signed onto the UN 2030 Agenda for Sustainable Development which set 17 Sustainable Development Goals for the global community to achieve by 2030.

The goals aim to end poverty, hunger and inequality, act on climate change and environmental initiatives, and improve access to health and education⁵. Established goals critical to this plan are:

- **Goal 7:** Ensure access to affordable, reliable, sustainable and modern energy for all.
- **Goal 13:** Take urgent action to combat climate change and its impacts.

Paris Agreement

The Paris Agreement in 2015, committed the world's governments to:

Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change⁶

Australia ratified the Paris agreement in 2016.

Australian Government

The Australian Government has an emissions reduction target of 26-28 per cent on 2005 levels by 2030 and a Renewable Energy Target (RET) that requires 33,000GWh (or 23%) of Australia's electricity to be sourced from renewable sources by 2020. The RET is scheduled to end in 2020.

Victorian Government

The Victorian Government introduced the *Climate Change Act 2017*. Commitments to reducing greenhouse gas emissions include:

- Legislating a long-term target for Victoria of net zero emissions by 2050.
- A target of generating 25% of the state's energy from renewable sources by 2020 and 40% by 2025.
- Launching TAKE2, Victoria's collective pledge initiative to take action on climate change to help Victoria reach net zero greenhouse gas emissions by 2050.

5.Global Compact Network Sustainable Development Goals Australia <https://sdgs.org.au/goals/> Accessed 18/07/2018

6.United Nations Climate Change The Paris Agreement <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

Local government, including Wyndham City, are traditionally at the forefront of reducing ghg emissions, working closely with the community and advocating for state and national emissions reduction targets.

POLICY - WHAT IS WYNDHAM DOING?

Wyndham Partnerships

Western Alliance for Greenhouse Action (WAGA)

Wyndham City is a member of the Western Alliance for Greenhouse Action (WAGA), a local government partnership between western region Councils that aim to respond to climate change across the region, and encourage their communities to transition to a low carbon society. Membership includes the Cities of Brimbank, Greater Geelong, Maribyrnong, Melton, Moonee Valley and Wyndham, and the Shire of Moorabool.

Global Covenant of Mayors for Climate and Energy

In 2017, Wyndham City committed to the Global Covenant of Mayors for Climate and Energy, a global alliance that aims to support, celebrate and accelerate the climate leadership that municipal governments are demonstrating on an international stage. Signatories pledge to reduce their community's greenhouse gas emissions, track their progress and prepare for climate impacts.

TAKE2

TAKE2 is Victoria's collective pledge initiative to take action on climate change, with the aim of helping Victoria reach net zero greenhouse gas emissions by 2050. Wyndham City is a founding partner of TAKE2 and has taken the universal pledge 'Working together, we pledge to play our part and take action on climate change for Victoria, our country and our planet'.

Wyndham Strategies

Low Carbon West

Low Carbon West, endorsed by WAGA Councils, is a strategy for the western region to transition to a low carbon economy.

Environment & Sustainability Strategy (2016-2040)

The Environment & Sustainability Strategy 2016-2040 addresses the key issues for Wyndham City to achieve a more sustainable future.

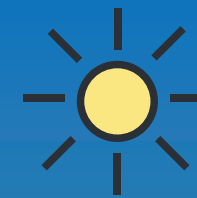
ESD Framework

The ESD Framework aims to reduce the environmental impacts of Council buildings by improving energy efficiency.

Climate Change Adaptation Strategy (2016-2020)

The Climate Change Adaptation Strategy responds to Wyndham's priority climate change risks, and seeks to establish a culture of organisational learning for feeding into future Council work.

WYNDHAM'S JOURNEY TO DATE



2004

- Adoption of Wyndham's first Greenhouse Action Plan.

2006

- Wyndham joins WAGA, a regional greenhouse alliance to collaborate on projects to reduce carbon emissions.

2012-13

- Annual reporting on Council's ghg emissions through the State of the Environment Report begins.
- Conversion of Wyndham owned traffic lights to LED technology.
- Installation of first solar PV systems (5kW) on the Wyndham Cultural Centre and Point Cook Library.
- Installation of sub-metering in large energy use facilities to better understand energy use.
- Introduction of fleet MYKI cards to encourage public transport use.
- Development of sustainable procurement program for Wyndham.

2013-14

- Energy audits and upgrades of top 10 energy consuming buildings.
- Launch of staff bike fleet.
- Wyndham's first Environmental Youth Summit.
- Wyndham's first Green Living Series - free environmentally themed events for the community including workshops, inspiring speakers and tours.
- \$2.7 million in Australian Government funding for the Lighting the West project, changing of old inefficient street lights to energy efficient alternatives.



2014-15

- Energy efficient design features at the refurbished Aquapulse Aquatic Centre and Encore Events Centre.
- Audit of all park and open space lighting.
- Installation of solar across 6 Council buildings.
- Werribee and Hoppers Crossing have the highest rates of household solar panels in Victoria.
- Wyndham offers residents, school and businesses access to free independent energy efficiency advice.
- Adoption of ESD Framework for Council buildings.
- Adoption of Low Carbon West - a plan to support a low carbon economy in the western region.
- Lighting the West - the change-over of almost 12,000 inefficient streetlights to energy efficient alternatives begins.
- Victorian Architect Awards Winner - Architecture award for Sustainability and Melbourne Prize - Saltwater Community Centre.

2015-16

- Development and endorsement of Wyndham's Environment & Sustainability Strategy (2016-2040) setting the strategic direction for Council's environmental management through short term and long-term visionary targets. Council and Community greenhouse gas emission reduction targets are set.
- Saltwater Community Centre, Wyndham's first 5 star equivalent building opened.
- Council adopted the 2016-2020 Climate Change Adaptation Strategy. Actions in the strategy align with the themes of building climate resilience and adaptation excellence.
- Completion of first stage of light upgrades at parks and open space.
- Successful piloting of a solar energy storage system (batteries) at President's Park Baseball Facility.
- 489kW of solar PV and 32kWH of solar battery storage installed across Council as part of the Large Scale Solar program.
- Solar bulk buy program for Wyndham residents supported 121 homes to install 321kW of solar.
- 5.3% of total Council capital expenditure was on sustainable purchases.



2015-16

- Environmental Upgrade Agreements offered to the Wyndham business community. Environmental Upgrade Agreements assist business with finance to improve their environmental performance and reduce utility costs.
- 26 graduates from the first Environmental Building Blocks Community Leadership program.
- Keep Australia Beautiful Awards finalist - Sustainable City of the Year and Environmental Sustainability.

2016-17

- Wyndham businesses installed over 564 kW of solar via Environmental Upgrade Agreements.
- Hybrid vehicles being purchased for Council's fleet.
- A Sustainable Business Luncheon was held for Wyndham businesses.
- 455 open space lights converted to energy efficient lighting.
- 494kW of solar PV installed across Council as part of the Large Scale Solar program.
- Banksia Sustainability Award finalist in the Sustainable Cities category.
- IPAA Leadership in the Public Sector Awards. Environmental Sustainability Award Winner for carbon reduction projects.

2017-18

- 842kW and solar PV and 269kWh of battery storage installed across Council buildings as part of the Large-Scale Solar program.
- 1,000 arterial street lighting energy efficient upgrades.
- Development of a Wyndham ESD policy implemented through the planning scheme.
- Introduction of Sustainable Design Assessment in the planning process to encourage developers to incorporate ESD into development.
- Decommissioning of IT servers at the Youth Resource Centre to a cloud server resulting in 30% energy savings.

WHAT EMISSIONS ARE WE COUNTING?

Council's corporate emissions are those resulting from Council operations. Emissions targeted by this Plan include:

- Electricity use (buildings and streetlights);
- Mains gas use (buildings and other assets); and
- Diesel and petrol use (fleet).

Electricity use includes major leased buildings including Aquapulse, Eagle Stadium and Werribee Outdoor Pool, that are not directly in our operational control but important to report on.

Emissions from Wyndham's Refuse Disposal Facility (RDF) are not included in this Plan. The RDF is a commercial entity with a unique set of controls, subject to external regulation.

Various initiatives to reduce emissions from the RDF have previously been implemented, including:

- Completing the installation of an additional gas engine and generator set at the gas recovery facility in September 2018. This has increased the generation capacity from 1.8 MW to 2.9 MW. A further upgrade to 4 MW generation capacity is scheduled to be completed in early 2019.
- Installation of gas extraction wells on the active cell prior to cell closure to enable better gas extraction.
- Achievement of 75% recovery of landfill gas generated at the RDF for renewable energy generation and flaring.
- Increase recovery of garden waste, timber and metals at the transfer station.
- Feasibility investigation into Alternate Waste Technologies to reduce the quantity of organics disposed to landfill completed.

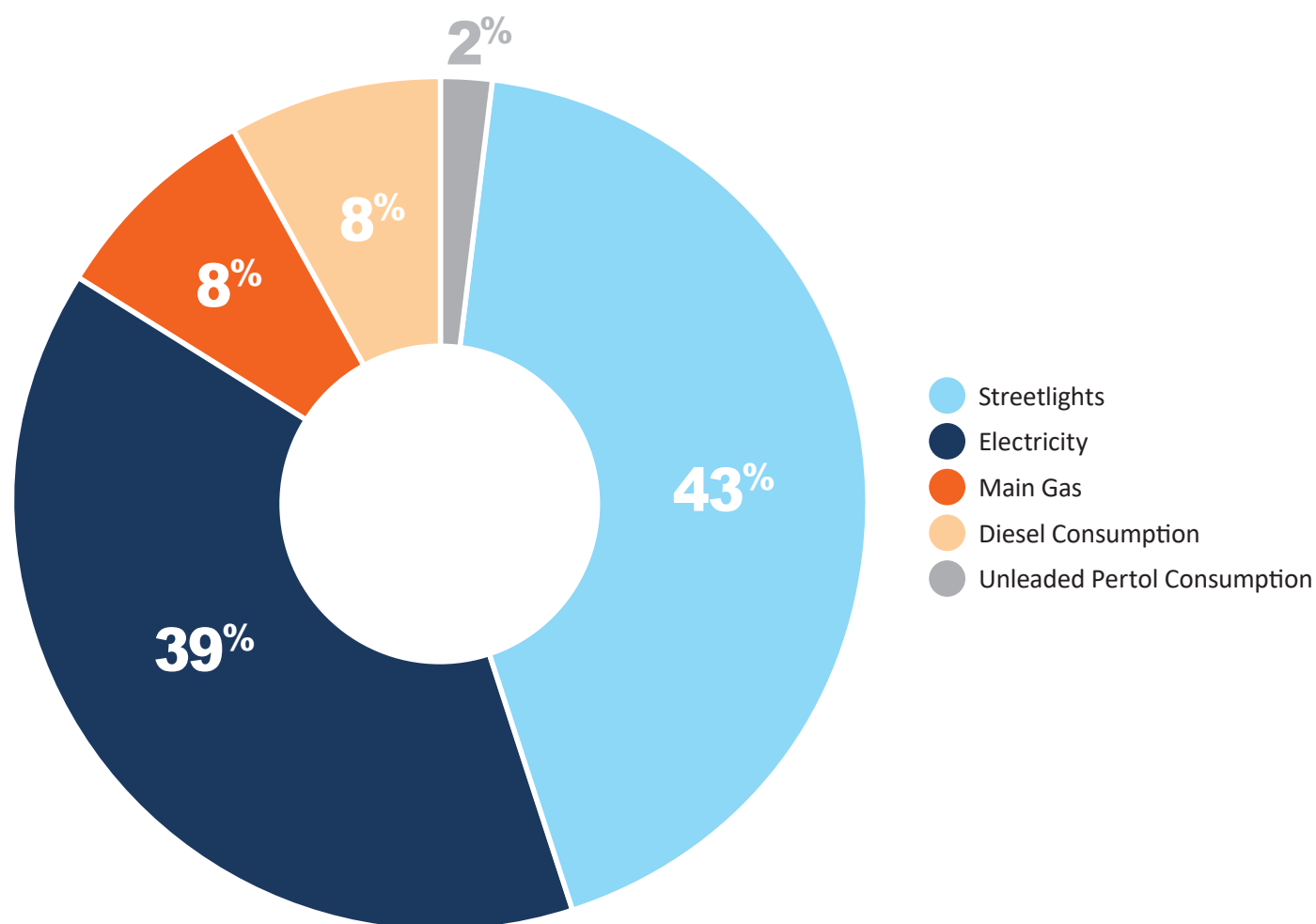
A transition to National Carbon Offset Standard (NCOS) reporting post 2021 will see data on the RDF, corporate travel and waste reported on as part of Wyndham City's overall emissions reporting.



WHAT DOES OUR EMISSION PROFILE LOOK LIKE?

Wyndham's corporate greenhouse gas emissions was 24,752 tonnes of CO₂-e in 2017-2018. This is equivalent to the greenhouse gas emissions from 4,584 average Victorian households. Wyndham's corporate greenhouse gas emissions are approximately 0.7% of Wyndham's total community emissions.

Council's emissions profile is based on the reporting requirements of the National Greenhouse and Energy Reporting (NGER) framework. Under this framework, electricity consumption from buildings and streetlights made up 82% of Wyndham's emissions.



In 2017, Wyndham had an estimated residential population of over 240,000, with a projected forecast of 424,000 by 2036.

BUSINESS AS USUAL PROJECTIONS - WHAT IF WE DO NOTHING?

Being in one of Melbourne's designated growth corridors, Wyndham City is one of Victoria's fastest growing municipalities, with numerous large scale residential developments currently under construction, and more being planned.

There are three business as usual scenarios to consider:

- Optimistic growth model - Under this model Wyndham's emissions growth is in alignment with average Consumer Price Index (CPI) of 2%;
- Intermediate growth model - Under this model Wyndham's emissions growth is in alignment with population forecasts and previous emission increases of 5-6%; or
- Pessimistic growth model - Under this model Wyndham's emissions growth is in alignment with street lighting growth rates of 6-8%

Under an intermediate growth model scenario of 5%, without any climate change mitigation projects, Wyndham's greenhouse gas emissions can be expected to rise to 27,652 tonnes of CO₂-e by 2019/2020.



CORPORATE TARGETS - HOW WILL WE GET THERE?

2020 Target

Reduce Council's corporate greenhouse emissions (CO₂-e) by 12% below a 2014/2015 baseline, excluding the RDF

In 2014/2015 Council's corporate emissions were 25,956 tonnes of CO₂-e. Based on intermediate growth projections of 5%, Wyndham City will need ghg savings of 4,811 tonnes of ghg savings per year by 2020, in order to meet this target.

The following plan will see Wyndham City surpass it's 2020 corporate target of a 12% emissions reduction. The plan, focusing on street light energy efficient change overs and solar PV installations, will see emissions reduced by 28% below our baseline. Under a no growth scenario, these projects would represent a 44% reduction in emissions.

Project	Number	Annual Tonnes of CO ₂ -e Saved	Timeframe / Status
Residential Streetlighting upgrades	11,874 lights	4,050	2015/2017 Complete
Major Streetlighting upgrades	1,000 lights	511	2016/2017 Complete
Solar installations across 33 Council buildings	1,825kW	2,613	2016-2018 Complete
Solar installations across 30 Council buildings	777kW	1,113	2018-2021 In progress
Streetlighting upgrades	134 lights	50	2018/2019 In progress
Streetlighting upgrades - full share	5,800 lights	2,610	2018/2019 In progress
Streetlighting upgrades - cost share	1,669 lights	381	Works to be scoped
Total		11,328	



2040 Targets

Reduce Council's greenhouse emissions (CO₂-e) by 95%.

Wyndham will be carbon neutral for corporate greenhouse emissions, as defined by the National Carbon Offset Standard, through the purchase of local offsets (excluding the RDF).

The energy market and the renewable energy sector is moving at a rapid pace. In order to meet 2040 emission reduction targets, and take advantage of these changes, greenhouse actions need to encourage innovation and be flexible in their approach to future technologies.

Implementation of the actions guarantees that Wyndham City will take advantage of technological opportunities, and put Wyndham City on the path to meet the 2040 emission reduction targets.

It is important to acknowledge that over the next few years, Wyndham City will have maximised opportunities for energy efficiency and rooftop solar. Projects like regional Power Purchase Agreements and Offsets will become increasingly important to meet long term reduction targets.



Action Area	Actions	Year	Financing
Energy Efficiency Council Buildings and Assets	Undertake energy audits of 3 of Council's biggest utility users - Aquapulse, Eagle Stadium and Werribee Outdoor Pool.	2018/2019	Existing operational budget
	Deliver a broad suite of cost effective energy efficiency upgrades at Council's most suitable buildings via an Energy Performance Contract (EPC) model or similar. Investigate reinvesting financial savings into future energy efficiency and renewable energy programs to further reduce operating costs.	2019/2020	Capital works budget application
	Change over all remaining full share inefficient street lights to LED (approx. 5,800).*	2018-2021	Approved capital works budget
	Investigate options and changeover inefficient cost share lights (approx. 1,600), where feasible.	2020/2021	Capital works budget application
	Implement a cool roof trial on a Wyndham building (cool roof paint)*.	2020/2021	Capital works budget application
	Pilot a green wall on a Wyndham building.	2019/2020	Capital works budget application
	Investigate opportunities for precinct energy solutions for Council facilities and/or participate in a Virtual Power Plant trial/Microgrid trial.	Ongoing	External grant application
	Investigate emerging solar opportunities such as solar roofing tiles and solar bike paths.*	Ongoing	Existing operational budget
	Investigate and implement (where feasible) undercover solar carparking for a Wyndham carpark.*	2021	Existing operational budget
Renewable Energy	Implement Wyndham Solar City. Round two of solar installation on Council owned buildings with a focus on sporting clubs. Installation of 745kW on over 30 Council buildings.*	2018-2021	Approved capital works budget
	Establishment of solar monitoring for all solar systems.	2018/2019	Approved capital works budget
	Implement a solar maintenance contract.	2018/2019	Approved capital works budget
	Monitor the performance of trial batteries installed in 2018. Establish a storage battery business case of Wyndham buildings with suitable electricity usage profiles.	2018/2019	Approved capital works budget
	Installation of 200kWh of storage batteries on existing solar sites.	2018/2019	Approved capital works budget.
	Investigate a regional Power Purchase Agreement for the purchase of renewable power for Council operations. Purchase a minimum of 25% of renewable energy under Council's next energy contract.*	2018/2019	Existing operational budget

* Top 10 Council priority as voted by the Wyndham community.

Action Area	Actions	Year	Financing
Fleet	Implement driver education training and incentives for fuel efficient driving.	2019/2020	Existing operational budget
	Review of fleet policy to deliver greater environmental, social and financial benefits.	2018/2019	Existing operational budget
	Apply fuel efficiency criteria to the purchase and lease of new vehicles, with consideration given to the Green Vehicle Guide. Phasing out of diesel passenger vehicles.	Ongoing	n/a
	Provide annual fleet bike training and promotion.	Ongoing	Existing operational budget
	Where fit-for-purpose, purchase hybrid vehicles for small vehicle purchases.	Ongoing	Existing operational budget
	Investigate an alternative fuel vehicle for community transport vehicles.	2019/2020	Existing operational budget
	Trial the use of two fully electric vehicles in Councils fleet, and installation of electric charging points at the Civic Centre and Depot.	2018/2019	Capital works business case
Policy / Partnerships	Partner with a research facility to trial new technology to reduce emissions.*	Ongoing	New initiative business case
	Update Council's Environmentally Sustainable Development (ESD) Policy to reflect best practice, and increase scope to include public lighting and furniture selection.	2018/2019	Existing operational budget
	Engagement with energy distributor Powercor through a working group and biannual meetings to encourage energy efficiency opportunities.	Ongoing	Existing operational budget
	Development of guidelines for community events on how to reduce greenhouse gas emissions, including recommended minimum carbon offsets.	2019/2020	Existing operational budget
	Support the implementation of regional activities and advocacy on climate change mitigation and adaptation through ongoing memberships of organisations such as WAGA.	Ongoing	Existing operational budget

* Top 10 Council priority as voted by the Wyndham community.

Action Area	Actions	Year	Financing
Reporting, Monitoring and Education	Monitor and report annually on Council's greenhouse gas emissions through the State of the Environment Report. Report on Community ghg emissions via Global Covenant of Mayors Reporting.	Ongoing	Existing operational budget
	Prepare for National Carbon Offset Standard (NCOS) reporting in 2022, with a view of offsetting 50% of Council emissions by 2023 (excluding the RDF). NCOS 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 for organisations, products and services, events, precincts and buildings, excluding the RDF.*	Ongoing	Existing operational budget
	Conduct staff training and behaviour change programs to ensure facilities and equipment are operated efficiently. This includes improved processes, monitoring, communication and consultation.	Ongoing	Existing operational budget
	Establish internal monitoring and reporting for the implementation of the Greenhouse Action Plan. Develop internal behaviour change incentives, training and education.	Ongoing	Existing operational budget
	Improve systems and processes to manage utilities across Council, to improve accuracy and accountability for utilities management.	Ongoing	Existing operational budget
	Monitor and review performance of solar systems for 12 months of operation and undertake a financial assessment.	Ongoing	Existing operational budget
Offsets	Investigate partnerships to plant trees for carbon offsets in Wyndham.*	2020/2021	Existing operational budget
	Develop guidelines for offset purchasing (including social responsibility, accuracy of emission reductions, biodiversity and transparency).	2020/2021	Existing operational budget
Procurement / Supply Chain	Undertake a review of opportunities to reduce the carbon impacts associated with our supply chain and develop a plan to implement initiatives.	2018/2019	Existing operational budget
	Organise supply chain workshops/education to encourage businesses to reduce emissions and develop carbon neutral products and services.	2018/2019	Existing operational budget
	Investigate divestment of Council funds away from banks and other institutions that fund, or engage in, fossil fuel resource development and deployment.*	2019/2020	Existing operational budget

* Top 10 Council priority as voted by the Wyndham community.

Wyndham City's Community Emissions

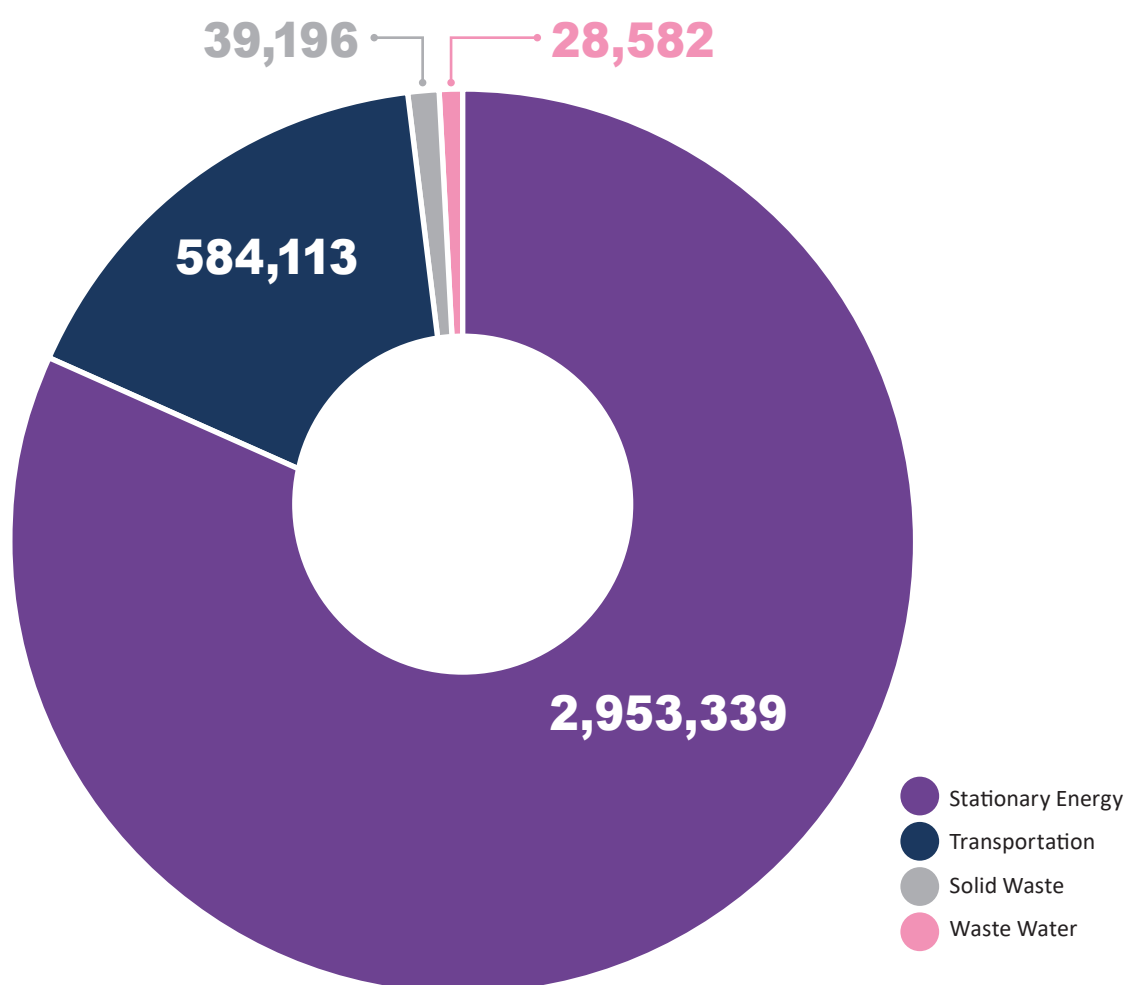
WHAT EMISSIONS ARE WE COUNTING?

Community emissions are those resulting from operations within the Wyndham municipality and include Council's corporate emissions. The greatest contributor to community emissions is stationary energy - electricity consumption by buildings and facilities. This will be the focus of this Greenhouse Action Plan. Smaller sources of community emissions are covered by the following Wyndham strategies:

- Stationary energy (Wyndham Greenhouse Plan)
- Transportation (Wyndham Integrated Transport Strategy)
- Waste (Wyndham Waste & Litter Strategy)

WHAT DOES OUR EMISSION PROFILE LOOK LIKE?

Wyndham's community ghg emissions were 3,605 kilotonnes of CO₂-e in 2016/2017. On-road transportation is responsible for 16% of emissions, while emissions from solid waste and wastewater both account for 1% each. This emissions profile is consistent with the international standard.



COMMUNITY TARGETS - HOW WILL WE GET THERE?

2020 Target

At least 55,000 tonnes of ghg emissions (CO₂-e) avoided from residential and business sectors through the Low Carbon West Strategy.

Wyndham needs to avoid a total of 55,000 tonnes of ghg emissions to meet the 2020 target. Between July 2015 and December 2017, Wyndham residents and businesses installed almost 17,000kW of solar. This is equivalent to avoiding 58,000 tonnes of ghg emissions by 2020.

2040 Target

Zero net greenhouse gas emission from electricity use in the municipality

Council only has a limited amount of control and influence over many of the emissions sources. Council's role is to advocate and assist the broader community to implement energy efficiency and renewable energy projects. A multi-sectorial approach, including residents, businesses and other levels of government, is required to achieve substantial emissions reductions throughout the municipality.

The Wyndham community has a long way to go to reach 2040 targets. Council will assist the community to reach the target through the following actions:



Action Area	Actions	Year	Financing
Planning	Incorporate greater support for ESD within the Wyndham Planning Scheme with the adoption of an ESD policy through a planning scheme amendment. Build ESD internal capacity including assessment of planning referrals and ongoing training for planners.	2018/2019	Existing operational budget
	Investigate and implement ESD compliance strategies for applicable permits.	2019/2020	Existing operational budget
	Investigate the creation of a recognition program for the developer community to promote the incorporation of sustainability in subdivision and major buildings.	2019/2020	Existing operational budget
	Organise a forum and subsequent workshops for the development industry promoting the benefits of Green Star communities or equivalent and Wyndham's expectations for ESD in planning.	2018/2019	Existing operational budget
	Investigate incentives to attract carbon management businesses to Wyndham (e.g. renewable energy, energy efficiency, carbon offsetting)*.	Ongoing	Existing operational budget
Community	Promote cool housing design, energy star rated appliances information and grid connected solar panels.*	Ongoing	Existing operational budget
	Development of a Wyndham Climate Change Taskforce to assist with review, monitoring, advising and engaging the community on the delivery of the Greenhouse Action Plan.	2018/2019	Existing operational budget
	Run an energy efficient appliances bulk buy for the community.	2020/2021	Existing operational budget
	Investigate a solar and battery bulk buy program for the Wyndham community including schools and SMEs.*	2019/2020	Existing operational budget
	Investigate a Solar Saver model to assist pensioners and low-income households to install solar.*	2019/2020	Existing operational budget
	Deliver solar advice days to Wyndham residents.	2018/2019	New initiative funding budget application
	Investigate, and where feasible, facilitate community owned renewable energy projects in Wyndham.	2020/2021	Existing operational budget
	Increase the community understanding of climate change issues and actions they can take through the Green Living Series, Facebook and Green Living e-newsletter.*	Ongoing	Existing operational budget
	Develop educational signage in community buildings, highlighting solar PV systems and associated benefits.	2018/2019	Existing operational budget
	Develop a program to assist residents reduce their energy and water bills through a series of annual community information sessions.	2018/2019	Existing operational budget

* Top 10 Council priority as voted by the Wyndham community.

	Investigate the Green Money App for Wyndham, where residents are rewarded for making healthy, sustainable choices. Rewards are offered for activities such as walking, riding and saving energy. Rewards include discounted movie tickets and coffee vouchers.	2019/2020	Existing operational budget
Community	Work with local electricity distribution businesses to install solar PV systems in precincts where additional power generation will relieve pressure on the electricity grid.	Ongoing	Existing operational budget
	Develop community food waste education programs to reduce food waste and encourage a plant based diet.*	2018/2019	Existing operational budget
	Development of guidelines for new home builders covering landscaping, trees, solar and energy efficiency.	2019/2020	Existing operational budget
	Deliver edible gardening workshops to encourage residents to grow their own food.*	2018-2021	Existing operational budget
	Provide Environmental Upgrade Agreements (EUAs) to businesses for energy efficiency and renewable energy projects. Extend EUAs to residents if appropriate changes are made as part of the Local Government Bill.	2018-2021	Existing operational budget
	Support renewable energy feasibility/investments.*	Ongoing	Existing operational budget
	Host a biennial business lunch promoting business sustainability opportunities.	2018/2019	Existing operational budget
	Development and implementation of education program for businesses to reduce energy emissions and waste.	2019/2020	Existing operational budget
	Provide businesses with an approved panel of solar and energy specialists to assist with bill reduction and energy efficiency.	Ongoing	Existing operational budget
Schools	Deliver school incursions creating student awareness and fostering climate change action.*	Ongoing	Existing operational budget
	Deliver annual 'Love your Locals' and the Environmental Youth Summit to provide information about climate change and create opportunities for change.	Ongoing	Existing operational budget
Transport	Implement parking incentives to increase the uptake of electric vehicles and enable the installation of charge points to keep pace with electric vehicle ownership in the community, including solar charging.	2018/2019	Capital budget bid
	Promotion of sustainable transport choices.	Ongoing	Existing operational budget
Partnerships	Support community environment and sustainability initiatives through Council's grants program.*	Ongoing	Existing community grants budget
	Support LeadWest advocacy around active and public transport as part of the Transport Strategy for Melbourne's West.	Ongoing	Existing operational budget

* Top 10 Council priority as voted by the Wyndham community.

Where do carbon offsets fit in?

WHAT IS CARBON OFFSETTING?

Carbon offsetting is compensating for the greenhouse gases you are emitting by preventing or removing the same amount of greenhouse gases from happening elsewhere.

Carbon offsetting projects include:

- Projects that support the prevention of greenhouse gases that would otherwise be released into the atmosphere. When renewable energy is purchased through mechanisms such as Power Purchase Agreements, investment is made into the renewable energy industry, reducing emissions that would have come from coal.
- Projects that draw carbon dioxide out of the atmosphere into 'forest sinks' - increasing the storage of carbon in soil, forest and other vegetation by planting trees and vegetation.

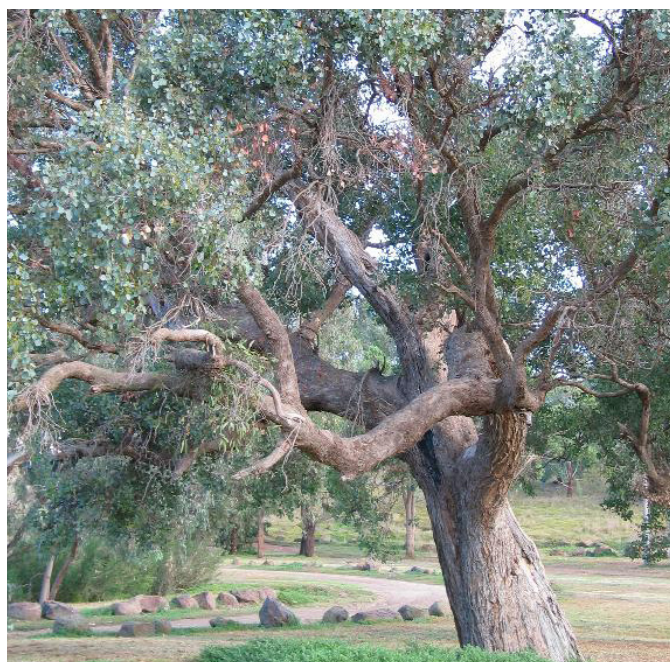
CARBON OFFSETS IN WYNDHAM

Whilst expensive, and at the bottom of the emissions reduction hierarchy, it should be noted that carbon offsets provide a broad range of benefits in addition to reducing ghg emissions including:

- Increased amenity and green spaces;
- Reduced air pollution;
- Supporting habitat for native animal and plant species;
- Employment for local people; and
- Health benefits associated with less air pollution and more green space.

This plan will see carbon offset guidelines developed and local offset opportunities explored to allow Wyndham to prepare for purchasing offsets once all cost effective and reasonable emission reduction projects have been implemented.

We do know through initial investigations that the options for substantial carbon offsetting in Wyndham are limited, given that we are in a grassland environment where tree growth is stunted, except in the immediate river flood plains. It is expected that offsets will have to be purchased outside of Wyndham.



FINANCIAL BENEFIT

Council projects will typically be designed to generate a positive return on investment within the asset life. A longer payback may sometimes be deemed acceptable where there is the opportunity to trial smart technologies that have other qualitative benefits.

Community based projects will be designed to provide a financial saving to residents (particularly low socio economic or vulnerable demographics) or businesses. Savings to business has the potential to stimulate economic growth and employment.



MEASURING OUR SUCCESS

Wyndham will monitor:

- Ongoing corporate emissions through an environmental data management system;
- Community emissions through a 2020 snapshot of the community emissions profile; and
- Renewable energy generation through a solar monitoring platform.

Progress on ghg reduction actions and renewable energy generation will be reported to the community through Wyndham's annual State of the Environment Report and TAKE2. Community emissions and actions will also be reported via the Global Covenant of Mayors.

The Wyndham Climate Change Taskforce will assist with review and monitoring of the Plan.

In 2020/2021, the Greenhouse Action Plan will be reviewed and new targets set towards our long term goals, building on the successes and learnings from the current plan.



CO2-e - Carbon Dioxide Equivalent. A standard unit for measuring carbon footprints.

ESD - Environmentally Sustainable Design. To reduce the impact of construction and buildings on the natural environment.

EUA - Environmental Upgrade Agreement. An agreement between a property owner, a bank and local government that facilitates a building upgrade to improve energy efficiency.

Fossil Fuel - Non renewable hydrocarbons formed within the earth over thousands of years that create greenhouse gas emissions when used as energy. Includes coal, gas and petrol.

Greenhouse Gas Emissions (ghg) - Includes carbon dioxide, methane, nitrous oxide, and other gas that contribute to climate change.

IPAA - Institute of Public Administration Australia

kW - kilowatt (1000 watts).

kWH - kilowatt hour.

LED - Light-emitting diode

National Carbon Offset Standards (NCOS) - A voluntary standard to manage greenhouse gas emissions and to achieve carbon neutrality.

Precautionary Principle - Environmental Management rule that if a threat of serious or irreversible damage to the environment or human health exists, a lack of full scientific knowledge about the situation should not be allowed to delay containment or remediation.

RDF - Wyndham's Refuse Disposal Facility (RDF)

Renewable Energy - Energy from renewable sources including wind, solar, hydro and other sources.

Links

Low Carbon West Strategy -

<http://waga.com.au/climate-change-action/low-carbon-west/>

Global Covenant of Mayors for Climate and Energy -

<https://www.globalcovenantofmayors.org/>

TAKE2 - <https://www.sustainability.vic.gov.au/TAKE2>

Environment & Sustainability Strategy (2016-2040), ESD Framework and Climate Change Adaptation Strategy (2016-2020) -

<https://www.wyndham.vic.gov.au/about-council/your-council/plans-policies-strategies/environment-sustainability-plans-strategies>

