

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Submission to Wollongong City Council Zero Emissions Plan.



**Compiled by Members of the “Renew Illawarra” Branch*
November 2019**

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Executive Summary.

This document comprises multiple complementary proposals to achieve the zero emissions target set for Wollongong and other councils. It was prepared by the Illawarra branch of the national community-based organisation Renew and involved many people professionally qualified across most aspects of sustainable living and technologies, social geography and community linkages. Renew Illawarra represented the community at the recent Kiama workshop organised by NSW DPIE Zero Emissions team for Wollongong and four other regional councils.

Each proposal follows a standard format including suggested actions, Council's role, preliminary cost - benefit indicators and funding options. They comprise:

- Electricity from Renewables
- Transport - i) Public & Freight ii) Passenger Cars iii) Active Travel
- The Built Environment - i) Planning and New Builds ii) Existing Buildings
- Offsets - Creating an Urban Forest
- Waste and Recycling
- Planning, Policy and Institutional Arrangements
- Marketing Wollongong as a Low Carbon City; Community Education and Involvement

Council's role (outside its own operations) is facilitation and interaction with NSW State Government, with industry such as Bluescope, Port Kembla and Energy Australia and with commercial and community organisations. Renew Illawarra has strong interactions with Bluescope and with UoW including the Sustainable Buildings Research Centre (and its links to the CRC for Low Carbon Living), Australian Power Quality Research Centre, Smart Infrastructure Facility and also with the innovative regional power distributor Endeavour Energy. The next step is to fully define and refine these proposals including cost-benefit and timing analyses. All the above organisations, along with DPIE and consultants, can potentially help Renew and Council in this process. Renew HQ offers additional expertise, ranging beyond sustainable technologies into involvement with other Councils on Zero Emissions and into lobbying to the highest levels such as COAG.

Given the urgency of the situation and the time required for detailed planning, it is recommended that initial efforts start with Electricity from Renewables, specifically solar photovoltaic at 100kW to 10MW scales, for example on existing industrial buildings and unused land at Port Kembla, at Tallawarra Power station and at uncovered car parks at shopping centres. These would be community-linked industry and commercial initiatives, inclusive of battery storage for dispatchable power and EV charging where appropriate. There are examples of similar initiatives elsewhere eg a 62MW solar farm at Vales Point power station and a smaller scale version within the Newcastle LGA.

Many commercial and community organisations can undertake such projects, some with arrangements that do not requiring up-front capital, offering opportunities for a tender or reverse auction process for Wollongong.

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Introduction

This submission has been developed for the Wollongong City Council in anticipation the development of a plan to achieve the Zero Emissions Target by TBA.

Renew Illawarra Branch invited its members to a community forum discussion on the topic of **"What could Wollongong do to Reduce GHG Emissions?"** The ideas were brainstormed by 30 people who had previously attended some of the regular presentations. Subsequently a team of 10 volunteer champions from the group drafted the submissions in initially 10 categories. These drafts have been rationalised, edited and combined to make up this current document.

People from "Renew Illawarra" mailing list are keen to learn about aspects of sustainable technologies. They are generally degree educated in a discipline related to sustainability. The average age is in the order of 50 years and this depth of experience and education has clearly manifested in this document.

Most of them have made adjustments to the way that they are living in order to minimise their own carbon footprint. These efforts however, can only go so far without major changes to the Public Systems that they are a part of and use every day.

When invited to contribute to a plan to modify these public systems, they responded with enthusiasm.

***Note: The views/suggestions expressed in this document are not necessarily those of the national "Renew" organisation who oversee the "Renew Illawarra" Branch.**

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Process for building the Submission.

This document originated from a brainstorm from the abovementioned 30 people who generated 140 improvement ideas. These were then drafted into ten different sections by 10 different people. These sections formed the basis of this current final document after a prolonged editing period.

Scope of the Document

At the initial brainstorm session participants were asked to keep within the following scope

- Applies to the Wollongong Local Government Area. Remaining CO₂-e budget 49Mt.
 - Does not include local industry eg BlueScope. (Could include community linked initiatives)
 - Confined to Greenhouse Gas Emissions reduction.
 - Does not include pollution reduction, water use reduction etc. (Although some ideas may achieve both.)
 - Is not necessarily restricted to actions over which Council has direct control. Council represents the citizens of the Wollongong LGA and can facilitate changes to State, Federal and Commercial services supplied to the Wollongong Public.
-

What this Document Represents.

- A smorgasbord of systemic changes that would result in reduction of Greenhouse Gas Emissions
 - An attempt to identify modifications to the various systems that affect the emissions of the area. EG Transport systems. Built Environment. Community Behaviour. Renewable Energy.
 - Suggestions generally are working elsewhere in Australia or Overseas. (Links have been included where possible)
 - Is intended for use by Council Planners as an input for their Zero Emissions plan. It is expected that the normal plan building processes such as assessment of effectiveness, value for money spent, resourcing, community acceptance etc. be applied.
 - The ideas in this plan indicate the following about the creators
 - Local adaptation of the idea to the Wollongong LGA.
 - Appetite for radical change
 - Sense of urgency
 - Innovation
 - Inclusion of the whole community including disadvantaged
 - Improvement of the living environment
 - This document has not been designed to be a complete set of solutions to achieve Zero Emissions. We welcome an energetic Community Engagement process inviting the residents of Wollongong to submit ideas for the WCC Plan.
-

What this document does not represent.

- It is not a complete plan. No effort has been made to ensure the ideas cover all aspects of improvement that can be made.
- Suggestions have not been assessed for cost effectiveness or to quantify the reduction in GHG emissions.
- Because the plan has been drafted by a number of writers, the approach to completing each of the sections has been slightly different and will be so observed by the reader.

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- The document does not suggest any implementation priority or roll-out order. The normal WCC planning processes are expected to identify these.

Structure of the Document.

- A generic template was constructed with headings that can be identified in each of the sections to generate descriptions of the various aspects of each topic. (A copy of the Template and suggested contents for each question is attached at the end of this document)
- The template questions were designed to encourage descriptions of **Systemic Changes** required to reduce the GHG emissions of each topic.
- The brainstormed ideas related to each section are listed at the end of each section. (As a list they do not constitute a plan.)
- Derivatives of the brainstormed ideas can be found throughout each section in the various questions and not necessarily concentrated in the Suggested Actions Table. This demonstrates the complexity of each of the described systems that are a combination of Legislation, Physical Objects and Community Usage Patterns. The transition to the new system also requires adaptation to the Wollongong Culture, Investment, and Education and Engagement with the community.
- By their nature, suggestions on Council's role, behaviour change programs etc may be similar in each of the various sections. They have been retained in those sections to complete the author's model for implementation.

Acknowledgements

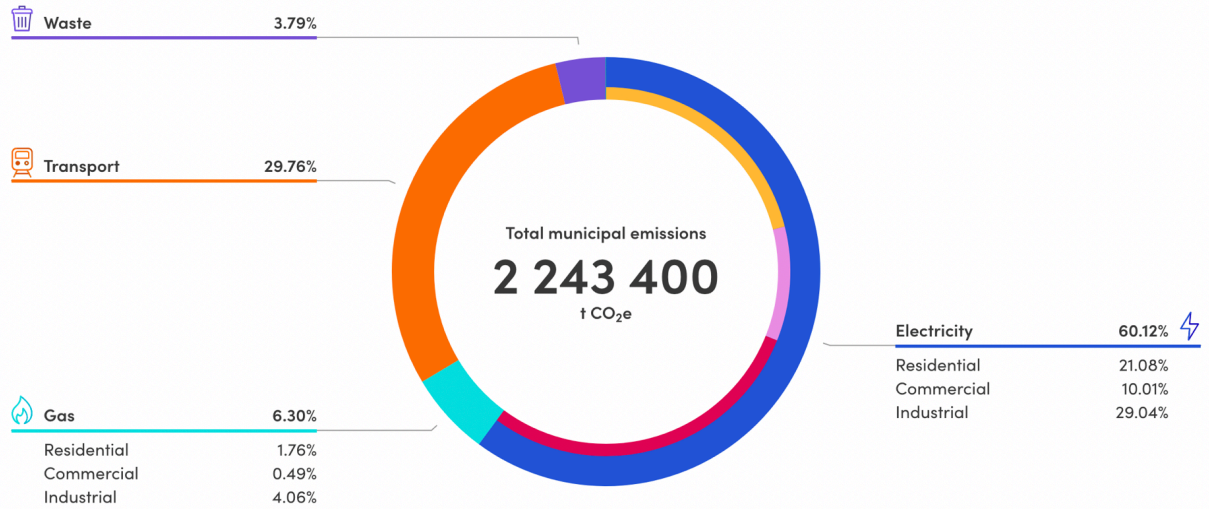
We wish to thank to thank the following people for their contribution to the project

- This submission was conceived and progressed by Greg Knight and Neville Lockhart.
- Thank you especially to Neville Lockhart who spent hours researching, shaping and checking the document.
- Carrie Wilkinson and Zac Nicholson who helped with publicising the event and helped facilitate the brainstorming session (Often a frantic task).
- The Champions from the initial Group who drafted each section within one week.
 - Ann Brown
 - Andrew Garvie
 - David Curtis
 - April Sampson-Kelly
 - Carrie Wilkinson
 - Neil Cairns
 - Elena Martinez
 - George Takacs
 - Neville Lockhart
 - Greg Knight.
- The 30 keen participants of the brainstorming session.
- The Department of Planning, Industry and Environment who invited Greg and Neville to join and present at their Council Staff training day.

The Challenge

Wollongong

2017 municipal emissions snapshot



[LINK](#)

1 Electricity from Renewables

Relates to 60.12% of Current Emissions

Brief Description of Strategy

- Increase solar generation across residential and commercial sectors
- Encourage/extend industrial solar generation
- Include battery storage where practical
- If and where relevant, liaise with NSW Government road map for pumped hydro storage
- Check whether wind generation (eg offshore, on headlands, on escarpment) merits feasibility (scale, capital/operating costs, community acceptance) assessment leading to inclusion in this proposal
- Emissions savings: From IPCC 2014 life-cycle comparison of power from numerous sources, the median for coal is 820g CO₂/kWh, while rooftop and larger scale solar range from 41-48g CO₂/kWh, giving a factor of ~20 reduction
- Costs: Solar and wind are already competitive with long-established coal power stations where the capital costs are excluded and much cheaper than new coal-fired power.
- Cost Recovery: Solar payback is currently 2-4 years and declining with various mechanisms for zero up-front capital cost.

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Suggested Actions:

Title	Description
Residential Uptake	<ul style="list-style-type: none"> • Encourage further residential uptake of solar panels (~3-10kW) to at least match the solar penetration per household of the better-performing NSW council areas with similar annual solar insolation. To include battery storage when economic with or without subsidies. • Additionally, new housing developments could be mandated to have solar panels on all new buildings and suburb-scale battery storage.
Panels on Larger Areas	<p>Utilise community, commercial, factory and industrial buildings and land for larger scale (100kW to 10MW) solar generation.</p> <ul style="list-style-type: none"> • There are many potential sites eg. BlueScope Roofs and much Port Kembla buildings and land. • Other examples could be roofs and open shopping centre & supermarket car parks like Aldi and Woolworths Fairy Meadow, Coles & Lederer Corrimal, Westfield Figtree. Some or all offer the added benefit of shading the building and reducing air-condition requirements. Shading the car parks with solar panels will reduce the Heat Island Effect. • Install Options for electric car charging using solar.
Work with Electricity Generation Utilities to Generate Solar Power	<p>Utility companies are actively searching for opportunities to install green power as coal fired power stations become increasingly unviable.</p> <ul style="list-style-type: none"> • The Tallawarra power station has considerable land area and is already linked to the transmission network. • A solar farm with battery or other storage could complement the gas-fired plant, similar to the 62MW plan for Vales Point in the Newcastle/Hunter region. • Encourage regional power distributors to install local storage batteries for a suburb. Benefits: <ul style="list-style-type: none"> ○ Reduces the risk of power network brownouts. ○ Captures more energy generated on residential roofs. (Currently some feed in systems are “disconnected” when local street voltage gets too high)

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Title	Description
Install Stored Energy Systems	<p>In the short-term nighttime energy can be supplied by base power, however in the near future it appears that the level base power will be reduced as Coal Fired power stations become unviable. This could lead to brown outs in periods of high usage such as winter evenings.</p> <p>A solution is to install local (Suburb Scale) batteries as has been done in West Dapto (Endeavour Energy). This will supply the energy required for nighttime use and also provide capacity to store PV electricity that is currently going to waste because of local over-voltage issues. Residents will again maximise the benefits of their feed in tariff.</p>

What would be Council's Role.

- This has net cost benefits as well as major emissions reduction so should be relatively easy. But marketing, facilitation, community interaction and particularly liaison with regional distributor Endeavour Energy is needed.
- Utilise Community land for multi-use solutions.
- Encourage BlueScope, PK Ports and other industries to best use industrial land and building roofs for their own purposes and community-linked outcomes.

What Behaviour Change is Required for this to Succeed.

Understanding of the benefits of investing in solar generation. How residents can generate income. As above should be **relatively** easy especially with various commercial and community entities taking care of up-front costs.

How can this initiative be optimised to benefit the Wollongong Community.

- Apart from the major emissions reduction and net cost-benefits, solar and distributed energy generates jobs.
- Scope for UoW's SBRC and APQRC in advising/consulting on the buildings and power quality aspects and UoW's Smart Infrastructure Facility in monitoring, controlling, optimising and integrating individual and overall systems.
- Increase employment in with local electricity suppliers eg Endeavour Energy

How Could it be Funded?

- Check Eligibility for Federal Emissions Reduction Fund. Sell Carbon Credits.
- Facilitate the uptake of solar investment schemes eg ClearSky. [LINK](#)

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- Purchase power from local solar farm companies eg Repower Shoalhaven [LINK](#). Use reverse auctions to secure supply (Similar to ACT)

Ongoing Maintenance and Ownership

Part of residential, shopping centre, commercial and industrial building processes, assisted by Endeavour, UoW and local solar contractors like Simmark.

Acknowledgements

Role	Name
Team Leader	Neville Lockhart

Idea Brainstorm Items

In no particular order.

- Community Scale Batteries
- Investigate NOT off-setting and purchasing carbon credits Facilitate Community Energy Projects
- Encourage uptake of electrical outdoor equipment eg Mowers Solar Leasing plans for tenants and renters
- Get Data on current Wollongong Solar Uptake
- Install Solar Farm
 - Integrated
 - Floating on Dams
 - Keep geese on installations
- Take back control of electricity grid to have more control
- Retrofit existing dams with micro-hydro power
- Put pressure on State and Federal Governments to introduce CO2 used to produce the product.
- Take control of Local Electrical Networks
- Faster roll out of LED/Low energy light (Street and House)
- Solar power bank on Energy Australia Power station site
- Program for installing solar on Public/Council Buildings
- How do we measure CO2 Reduction?

2 Transport

Relates to 29.8% of Current Emissions

Brief Description of Overall Strategy

Wollongong's Transport emissions are higher than the state average. The 29.76% represents the On-Road Proportion. Although there is a rail system which is efficient at transporting passengers to Sydney it does little to facilitate passenger transport within the region leaving the heavy lifting to the Buses and private passenger vehicles. A considerable proportion of the emissions are generated by commercial activity related to the Port and Heavy Industry. The principles of this strategy are therefore:

- Electrify the car fleet
- Electrify Mass Transport
- Optimise public transport to make it low emissions and more accessible
- Use autonomous vehicles to connect the public transport systems to the front door
- Encourage the use of personal vehicles such as electric bikes and scooters to replace short trips by cars.
- Integrate systems from the 3 levels of this Transport section to maximise efficiency. For example improving the networks from house to terminal, scheduling public transport so that the different modes interconnect. Eg Autonomous Vehicle to Bus or Train

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2.1 Transport – Public and Freight

Brief Description of Strategy

For freight, convert the light, medium and heavy transport to battery power or grid for rail.

For public transport, redesign the transport corridors to favour Electric Mass transport. Optimise traffic lights to favour these vehicles.

Provide autonomous vehicles that connect the front door to the transport corridors. (see 4.2)

Suggested Actions:

Title	Description
	Suburban Road Public Transport
Duplicate the free bus service.	<ul style="list-style-type: none"> Determine areas of greatest need and implement. This creates higher density housing and other benefits. Modify the pricing model to fund this service. (Residents living within the service area derive huge benefit through convenience and increasing property values. Whereas other residents subsidise funding for little benefit) Connect routes in a timely manner to seamlessly service the whole Illawarra corridor
Electrify and optimise Local Bus network	<ul style="list-style-type: none"> Work with local bus companies to convert fleets to electric buses Optimise bus routes to streamline the service. Program traffic lights to bus priority. 5G communication on bus and traffic lights set. (RMS is researching this) Work with RMS for Illawarra to be early adopter of smart traffic systems to prioritise bus thoroughfare Use smaller electric buses (Autonomous) with more routes and higher frequency. (eg Darwin Driverless Bus Trial. LINK) Review and Optimise the On-Demand Bus trial
Provide feeder transport to local bus and train routes	<ul style="list-style-type: none"> Use low speed autonomous vehicles to transport residents to public transport nodes. (Schedules or Uber style app or both) see 4.2
Investigate small electric trams to travel on the Illawarra Rail line between freight and Sydney Passenger services to provide rapid, convenient North South suburban transfer.	<ul style="list-style-type: none"> Investigate other cities who do this (Melbourne runs its St-Kilda tram in the rail line) Negotiate with State Rail Research local demand and financial viability. Optimise station facilities to make local stations attractive. Eg eScooter/eBike parking.

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Title	Description
	Local Delivery Systems
Apply incentives to convert local delivery fleet to EVs	<ul style="list-style-type: none"> • Optimise delivery routes to streamline the service. • Program traffic lights to delivery van priority. 5G communication on Van and traffic lights set. (RMS is researching this)
Optimise Internet Delivery to Residences.	<ul style="list-style-type: none"> • Create an Illawarra Regional Hub for parcel delivery to residences. • Seek out a courier company prepared to establish the infrastructure and fleet with smart circular delivery route programming. (eg. Cuts out the multiple Ebay individual delivery inefficiency). Only one supplier (eg. Australia Post) • Use this system to pick up outgoing parcels.
Reduce Grocery Shopping Trips (Internet Order System)	<ul style="list-style-type: none"> • Work with large grocery suppliers to create automated warehouse for internet orders. • Use EV delivery fleet. Provide subsidy to reduce the use of cars for shopping. Use smart routing for delivery. <p>This system will also help the disadvantaged to have access to food etc.</p>
	Freight Transport System
Work with Transport for NSW to migrate local Heavy Truck Freight systems to Electric Trains	<ul style="list-style-type: none"> • Convert Locomotives to Electric <u>LINK</u> • Migrate Port New Vehicle Transport to Rail • Work with BlueScope to convert freight transport to rail.

What would be Council's Role.

- Working with local businesses to develop optimal co-operative systems that work smoothly with Council Road Systems
- Develop free flowing transport corridors for vehicles that are smart (5G) capable, are approved by council for Low Carbon system use. Eg 5G enabled Buses and Delivery Vehicles. The Illawarra is suited to this because of the narrow North-South geography. This can be achieved by priority lanes on the expressway, smart traffic lights.
- Work with UoW to Optimise Transport System for Illawarra.
- Providing Fast Charge Stations for commercial vehicles at strategic locations
- Determine the capacity to change the Wollongong Council Fleet to a lower GHGe fleet and make appropriate changes. To raise interest paint on the sides for the vehicles that they are low GHGe.

What Behaviour Change is Required for this to Succeed.

- Residents need to enjoy the benefits of home delivery shopping (without the higher costs)
- Residents need to have access to easy to use software (App) for:

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- Ordering Groceries
- Despatching Parcels
- Local Autonomous Vehicle Pickup to connect residents to public transport facilities.

How can this initiative be optimised to benefit the Wollongong Community.

- Delivery Hub employs local residents for sorting, loading and local delivery operations.
- Public transport corridors optimised and connected to allow faster and closer transport to required destinations in the area.
- Employ local people to operate the Wollongong Bus and Freight Systems

How Could it be Funded?

- Funded by private industry within a stable legislation platform that encourages investment in the Wollongong LGA.

Ongoing Maintenance and Ownership

- Private industry

Please Consider the Following Points when Developing this Initiative

- Making accessible transport for disabled, disadvantaged and aged residents.
 - Working with adjacent councils so that transport systems connect seamlessly.
 - Take advantage of combined buying power.

Acknowledgements

Role	Name
Team Leader	Greg Knight
Contributors	• Andrew Garvie

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2.2 Transport – Passenger Cars

Brief Description of Strategy.

- Facilitate a future where passenger vehicles are low emissions, are utilised more effectively as a public resource, are available to the disadvantaged and connect to public transport.
- One of the major drawbacks for effective public transport is the first kilometre. Residents may not have the capability to get themselves to the nearest bus stop or train station especially if they have heavy or bulky goods.
- It is predicted that the sales of new electric vehicles will accelerate over the next decade up to 50% by 2030 and 95% of the small fleet by 2040. Electric Autonomous vehicles, customer friendly public transport system and price will significantly reduce the total number of cars on the road from the current level. This will reduce the amount of parking required and the area of multi lane highways freeing land for other users.
- Priority use of public roads and parking given to shared EVs.

Title	Description
Rental or Lease Solutions	<p>Work with car rental companies (like Go-Get) to make available a fleet of Electric Rental Vehicles throughout the LGA.</p> <ul style="list-style-type: none">• Dedicated Parking Spots. (Privileged positions)• Variety of capabilities. Passenger, Small cargo vehicles• Not required to be returned to original parking spot• Charging Stations in parking spots <p>Work with Finance Companies to Develop a product that facilitates group ownership of a vehicle for an area eg. suburb.</p> <ul style="list-style-type: none">• EV Owned and maintained by the finance company leased to residents• Designated street parking between street shade trees• App developed for booking and hourly rental• Financial Penalties for late return
Autonomous Vehicles	<p>Work with innovative companies (eg NRMA or special vehicle manufacturers and UoW) to develop vehicles programmed specifically for local areas that are autonomous and safe. (AVs)</p> <ul style="list-style-type: none">• Designed for short one-way journeys to local shops or transport nodes (Bus or Train or Hire EV)• Can carry people and luggage or shopping• Max speed 40Km/h• Trained (Programmed) in local routes with hazard avoidance included. (Similar to Lysaght autonomous coil transporters)• Can be ordered with Uber Style App. (with current location visible). ETA communication.• Has road priority over private passenger vehicles• Equipped with cameras to prosecute private drivers and pedestrians who deliberately take advantage of the accident avoidance systems. (ie not give way to the AV relying on the crash avoidance systems to avoid a collision)

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Title	Description
Convert the fleet to EV or Low emission vehicles.	<p>Provide incentives for residents to convert to an electric vehicle.</p> <ul style="list-style-type: none"> • Provide a network of parking spots with charging stations (consider solar power where rooftop space is available for PV panels) • Increase the number of available parking spots for EVs and not available to IC vehicles. (Reduce the amount of IC vehicles over time) <p>Convert the WCC Fleet to EVs</p>
Ride Sharing	<ul style="list-style-type: none"> • Provide priority parking for Ride Share EV owners who pick up and deliver passengers requiring to catch the same train/bus. (App driven. Request pickup, Driver responds, App allows priority parking)
Traffic Management	<p>Provide parking places for</p> <ul style="list-style-type: none"> • Private EVs • Suburban AVs <p>Provide special road markings for the local AV system if necessary</p> <ul style="list-style-type: none"> • Pickup/Drop Off places at Bus/Rail/Shopping Centres

What would be Council's Role.

- Develop and implement a plan for the preferential management of Electric Vehicles
- Parking for Private and Shared EVs
- Charging Stations
- Investigate entering into partnerships with other councils and residents to bulk buy EVs
- Partner with Suppliers who can trial Autonomous Vehicles (Specified Above) in the Wollongong Area.
 - Provide in-suburb parking and charging stations
 - Insist on local employees
- Adapt council regulations and road systems to integrate with new Australia Wide Legislation [LINK](#)

What Behaviour Change is Required for this to Succeed.

Education programs will need to be rolled out in a timely manner to achieve the following

- Community to understand and begin to adopt EVs and AVs
- How and why to comply to parking requirements
- Understand how to co-exist with AVs on the road
- Understand how to order an AV service.

How can this initiative be optimised to benefit the Wollongong Community.

- Encourage Manufacturers to train their vehicles in Wollongong

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- Employ Wollongong Residents to manage and service
 - Occasional hire EVs
 - Local suburb AVs

How Could it be Funded?

- AV system could be funded by Community Shares in the service which carries a competitive return on investment.
- Contract a private company to provide the system and rent the service.

Acknowledgements

Role	Name
Team Leader	Greg Knight

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2.3 Transport – Active Travel

The name of a program (Active Travel) is used by the ACT Government to Promote walking and cycling as a means of transport.

In this context walking and cycling do contribute to a reduction on greenhouse gases where those activities **replace** driving a car.

Many of the suggestions outlined below are general pushbike system improvements which will generally be covered by the Wollongong City Council Cycling Strategy. These improvements will streamline the travel for existing cyclists and in doing so encourage more motorists onto the cycle paths.

Increasing the use of eBikes and eScooters may encourage residents to not have cars or leave their cars at home.

Highlighted suggestions **may directly contribute** to a reduction in emissions

Brief Description of Strategy.

- Facilitate active travel by continuing to improve cycle paths and footpaths.
- Expand the use of active travel by increasing the network efficient paths.
- Promote the use of active travel by connecting active travel paths with public transport facilities, workplaces, schools and services.
- Make active travel low risk, convenient and enjoyable.
- Market active travel.
- Obtain information from other jurisdictions that have implemented active travel initiatives.
- Monitor use of facilities for use in future optimisation.

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Suggested Actions:

Title	Description
Path improvement	Separate commuter cycle paths from pedestrian paths.
	Separate cars and trucks from cycles.
	Design commuter bicycle paths to be ridden at 30 km/h.
	Use design principles that are proven to be effective.
	Ensure safety, eliminate or limit interaction with cars and heavy vehicles
	Make paths attractive and shaded with occasional refuge from rain
	Determine how to accommodate growing use of light powered vehicles, e.g. electric skate boards, scooters, etc.
	Use low greenhouse gas emission path construction methods
Convenience	Provide drinking water and toilets at appropriate intervals and make them accessible all or many hours of everyday.
	Improve path services for walking dogs, e.g. provision of water bowls at fixed locations.
	Provide showers at the end of journey.
	Provide secure and dry storage lockers for bikes and goods at the end of journey.
Network expansion	Improve the bicycle path network to optimise connection of homes, schools, work places and services.
	Make Electric bikes/scooters readily available, e.g. through docked and dockless rental schemes.
	Ensure new housing developments have substantial network of bike and footpaths.
Cost effectiveness	Develop bicycle paths that follow and are connected to existing conduits (rail corridors, creeks) that can be travelled with few cross roads.
	Upgrade existing paths in established suburbs
	Provide buses with bike racks
	Identify actions that are the most likely to be effective through measured outcomes in other jurisdictions and community consultation, e.g. with existing walking and cycling clubs.
Marketing	Establish walk/ride to school/work programs.

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Title	Description
Continuous improvement	Establish a continuous improvement program based on measured data and gap analysis.

What would be Council's Role.

- Establish an overall active travel strategy, engage appropriate providers to design networks, provide paths and services.
- Define performance requirements for providers and monitor their performance.
- Change providers if better cost-effective service can be obtained from others.
- Encourage, facilitate and coordinate industry participation, e.g. provision of showers in work places.

What Behaviour Change is Required for this to Succeed.

Wollongong residents would need to walk and ride more for this strategy to be successful. Car and truck drivers would need to become more tolerant and improve the safety of their driving around cyclists. Promoting walking and cycling could be combined with promoting health.

How can this initiative be optimised to benefit the Wollongong Community.

The various modes of transport need to be integrated with one another and services where appropriate. For example, there could be more provision of secure and dry bicycle storage at bus stops and train stations.

Ensure new product and service companies (Eg Public Bike fleet) providers employ local people.

How Could it be Funded?

- Generate revenue by increasing the costs of car parking in public places with discounted rates for EVs.
- Transfer expenditure from car park construction to active travel infrastructure.
- Commission a privately-owned fleet of eBikes and eScooters with charging stations. Residents could rent these vehicles.
- Require new businesses to include end of travel facilities when constructing new buildings.
- Control costs by using standardised bike facilities and combining with other councils for bulk purchases at discounted rates.
- Fund marketing by combining with health departments promotion of activities to improve health.

Ongoing Maintenance and Ownership

A reduction in expenditure on maintenance of car facilities would offset the ongoing costs of active travel facilities. The reduction in maintenance in car facilities should be possible if active travel is used frequently. As above, fund marketing by combining with health departments promotion of activities to improve health.

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Please Consider the Following Points when Developing this Initiative

- Other jurisdictions have established active travel strategies and programs as part of their climate change strategies (e.g. ACT). The opportunity to use their knowledge and reduce implementation costs for Wollongong City Council (WCC) therefore exists.
- WCC is encouraged to join the Cities Power Partnership.

Acknowledgements

Role	Name
Team Leader	Andrew Garvie

Idea Brainstorm Items

In no particular order. (44)

- Planning – Remove number of parking spaces required in DAs to encourage other modes of transport
- Install electric vehicle charging stations
 - General access
 - At places of work
- Optimise Local Delivery for Ebay, Food Deliveries
- Free Parking for Electric Vehicles (All Types)
- Facilitate Electric bike and scooters for transport. Parking Charging
- Encourage cargo bikes for distribution of goods etc.
- Redesign Cycle network. Optimise for Schools.
- Electric Coal Trains
- Start walk to school program.
- Mechanism to ensure E-Vehicles are charged from renewables
- Remove Car Transporters from the Illawarra
- Encourage more “Active” transport.
- Establish a program to work with industry to reduce CO2
- Community Council pickups to recycle
- Discourage the purchase of inefficient internal combustion engines
- Electric scooter and bike share scheme
 - Docked and Dockless
 - Subsidised.
- Smart, time sensitive parking meters
- Structures to develop commercial operations for enabling electric vehicles
- Lower speed limits on local roads
- Buses with bike racks
- Dedicated ride share parking
- Smart traffic lights. (Adjust to traffic level, warn to continue or slow down)
- Encourage Electric buses for local transport, smaller, more routes, more frequent (Smart Scheduling)
- Facilitate shared car system
- Integrate shared paths (Cycle and Walking) with creeks
- Community Rideshare App

Towards Zero Carbon Proposal from Renew Illawarra Branch.

- Reduce Parking 3% per year
- Develop shared vehicle policy
- Car sharing app
- Gradually increase EV only parking spaces
- Implement smart parking system to reduce traffic looking for a park
- Introduce alternative E-Vehicles Motorbikes, Bicycles, Scooters.
- Motorcycle parking incentive
- Free showers would cut journeys for travelers, revelers and homeless
- Wollongong Tram
- Electric Coal Trains
- More Buses trains and buses in Wollongong and Area
- Instead of parking, street calming
- Better pedestrian access & crossing. Encourage mobility
- Mandatory “End of Trip” facilities in public precincts. (Showers for Cyclists)
- Place future schools near younger population
- Cycle freeways. (Minimise stop start)
- Have bike paths that actually connect the community
- Bike Lanes

Towards Zero Carbon Proposal from Renew Illawarra Branch.

3 The Built Environment

Relates to some of the electricity consumed in Residential Buildings 21% and Commercial Buildings 10%

Brief Description of Strategy

The built environment policy encourages adaptable-use energy efficient dwellings that are net-energy exporters. There is more public greenspace and existing green space is optimised for carbon sequestration.

The demand for transport is decreased due to more enjoyable shared spaces with public facilities to enable transition and rest away from home. The buildings are retrofitted rather than replaced. The built environment have low-embodied energy, recycled materials, and are thermal-mass appropriate. The housing standard reflects the bioregion and enriches indoor-outdoor relationship.

These policy objectives recycle waste, reduce transport, increase carbon sequestration and lower thermal mass and emission particulates of the city.

Adopting these policies will reduce energy costs to government and individuals almost immediately and will also improve air quality and community engagement.

Costs involve research into carbon-negative materials (Wollongong has the opportunity to be a world leader on some of this research), changes to policy at local government level, monitoring effects of policy changes especially in regard to adaptive use of dwellings. Some low physical costs include provision of additional change and rest public facilities. Overall, the costs are very low and the benefits great (reduced risk of sea-level rise, flood, chronic water shortage and fire-storms).

Towards Zero Carbon Proposal from Renew Illawarra Branch.

3.1 The Built Environment – Planning and New Builds

Suggested Actions:

Title	Description
Building Code Upgrade	<ul style="list-style-type: none">• Mandate energy-efficient buildings with energy autonomy becoming net exporters of renewable energy.• Select and use standards that are performance based rather than only designed based. That is, the acceptance criteria must be a demonstration that the performance meets well-defined energy efficiency criteria.• Discourage demolition [in like-for-like projects] and• Encourage retrofitting and repurposing building (enforce preservation orders) because the process of demolition and rebuilding is one of the most wasteful and carbon-costly building activities.• Mandate the use of materials with low embodied energy and carbon-negative and/or carbon sequestering materials for new construction.
Community redesign	<ul style="list-style-type: none">• Create shared community green-energy generation hubs.• Increase green recreation space incorporating plants with high carbon-sequestration.• Allow clusters of smaller dwellings with useful communal green spaces.• Upgrade existing green space to increase carbon-sequestration.
Cultural behaviour shift	<ul style="list-style-type: none">• Reduce the urge for Wollongong residents to travel on holiday down the coast by creating more staycation options ie. nature reserve paths and shaded public play areas.• Reduce need for fewer daily journeys by providing for and enabling people to work from home and provide free 'transitioning' facilities in public spaces ie. showers and rest areas. This could facilitate the use of active transport from home to work (eg running or cycling) and negate the need to return home to refresh before attending an evening event near the workplace.• Encourage cycling with cycle highways and facilities (as done in Denmark and London). Refer Section 4

What would be Council's Role.

- Legislative Change
- Construction of public facilities

Towards Zero Carbon Proposal from Renew Illawarra Branch.

- Facilitation of Community Involvement including showcasing sustainable home and garden practices ie. initiatives like Sustainable house and garden day and/or reinstating 'Sustainability Street'.
- Work with UoW and CRC for Low Carbon Living [LINK](#)

What Behaviour Change is Required for this to Succeed.

WORKPLACES

Given that most people are at work 5 days a week, encourage offices to be designed to capture ocean breezes and switch off the airconditioners during the day. Showcase the award winning Council Building as an example to encourage retrofitting office spaces with energy saving features.

Another major behavior change would be a reduction in the number of short-journeys made each week. Encourage people to work from home by changing the regulations to allow clean small businesses in urban areas. Encourage children to walk to school by providing footpaths with shade trees in summer.

ROADWORKS

Natural areas with low plantings sequester carbon, capture dust particles and reduce heat on the roads. Soil also absorbs water whereas hard surfaces put pressure on storm water catchment. Roads that are dark absorb heat during the day, making the city hotter at night.

Council needs to find carbon negative alternatives to asphalt and concrete for the road materials. Cement accounts for 8% of world carbon emissions. Wollongong City council should investigate low emission alternatives to cement, and be committed to employing gardeners for public spaces. Reduce the provision of private parking in residential areas by the WCC (that is reliance or residents on street parking) and encourage residents to use their off-street residential parking.

VERGES

The culture of the lawn verge has high residential time costs. Most homes have lawn mowers. Most of these mower machines are highly inefficient and polluting, few are solar-powered electric. Some homes have a lawn mower only to comply with council regulations and neighbourhood expectation to keep a tidy front verge.

Changing the regulations and expectations to upgrade the verge from a patch of lawn to greenery of shrubs will increase carbon sequestration approximately 4 times, reduce green waste and build soil. Soil micro-organisms help sequester carbon. Shade from vegetation on the verges will also reduce the heat island effect.

OUTDOORS

People who live in Wollongong enjoy the beaches and parklands. So, encouraging people to turn off their airconditioners and go outdoors is easy, supporting them requires more rest (shaded spaces) and safe change facilities. For public spaces, create more shaded outdoor eating and play (including swings for adults) spaces.

How can this initiative be optimised to benefit the Wollongong Community.

- Above all, council needs to step out on to the path of innovation and change some of the restrictive legislation.
- The Wollongong community has a high number of retired educated members who talk with one another readily.
- Council can help govern any abuses to the new policy of adaptive use of homes and can mandate regulations for low embodied energy, recycled materials and energy efficient homes and provision by developers for truly useful green communal space.
- Wollongong can become world leaders in inclusive, healthy city living. It can utilise the big pool of educated elders and support their engagement (fitting their interests and hours) in maintaining the natural bounty.

Ongoing Maintenance and Ownership

Once established, the maintenance of policy will be the same as current policy although the administrative officers will need to stay abreast of new innovations (this could be done collaboratively with the University).

Please Consider the Following Points when Developing this Initiative

- We have limited land on which to plant more trees, use the thousands of kilometres of verge to triple our green space carbon-sequestration opportunity
- Wollongong has plenty of outdoor recreation space but not much provides shade
- Wollongong has a large proportion of educated and passionate elders who can contribute when sensitively managed.

Acknowledgements

Role	Name
Team Leader	Greg Knight
Contributors	• April Sampson-Kelly

Towards Zero Carbon Proposal from Renew Illawarra Branch.

3.2 The Built Environment - Existing Buildings

Brief Description of Strategy:

- Section 3.1 largely refers to new homes, new buildings, higher construction and energy efficiency standards etc. The bigger opportunity and challenge is to improve the energy efficiency of existing stock. Nationally, 9.5 million homes were built before minimum energy efficiency standards were introduced in 2005.
- Many local governments offer programs to drive uptake of energy-saving procedures and appliances. But these have not been very effective, particularly at “incentivising” the deep retrofits that are required. A close to home example is the “Positive Charge” initiative of Southern Sydney Councils. [LINK](#)
- With inefficient housing stock, Renewable Energy Generation actions described in Section 1, will have little net effect if the houses have no shading and/or “leak like sieves”.
- The CRC for Low Carbon Living, in which UoW is prominent, recognises this situation. It has produced a Guide to Low Carbon Residential Retrofit (with one on Commercial Retrofit coming soon), alongside Guides to New Build, Householders including Renters, Precincts, Landscapes etc.
- The approach and actions flow from this.
- Buildings are responsible for some one-third of primary energy use and a quarter of emissions in Australia. Electricity use in buildings is prominent in Wollongong’s emissions profile. Many options are available that can add up to major emissions reductions. Returns on investment can be positive, notably so with increased house values that result.

Suggested Actions:

Digest the information provided by the CRC that follows: The overall picture covers 26 retrofit options listed in the CRC Guide [LINK](#). These include just two (solar and batteries) that fall into the “active” (energy generation) category. Seven refer to more energy-efficient appliances and lighting, while the other 17 options are “passive” (design, shading, insulation etc) yet important pre-requisites.

These options are rated as low, medium and high under four headings - comfort, up-front cost, installation difficulty, and energy savings. They are assessed for 3 climatic regions, with the “Warm Summer/Mild Winter” region applicable to Wollongong. The options are further broken down for applicability to Pre-1920 homes, 1920-1970 homes, 1970-2000 homes and Post-2000 homes along with “Apartments and Higher Density Living”.

Title	Description
Green Rating System	Implement, administer and provide a rating service similar to the CSIRO-Centre for Liveability Real Estate model. “The Renovators Guide to the 17 Things” LINK <ul style="list-style-type: none">• Private Dwellings• Rental Dwellings• Accommodation• Public Housing• Commercial Establish a team of accredited assessors (Eg Seniors)

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Title	Description
Upgrade performance of existing housing stock	<ul style="list-style-type: none"> • Develop legislation for minimum standards in insulation, draught proofing, shading etc for house extensions and modifications. These are inexpensive. • Legislate that house alterations should carry at least an eg.10 rating out of 17 Things. • Develop a public education program that demonstrates the benefits of retrofitting a current house. Use the rating system above. This could include <ul style="list-style-type: none"> • Education Sessions • DIY demonstrations • Typical energy costs for houses depending on their efficiency • Refer to Renew’s Climate Resilient Homes material LINK
Upgrade the Rental Property Stock	<ul style="list-style-type: none"> • Invite Landlords to participate in a free house efficiency rating program. (17 Things) • Landlords can publish their ratings and charge slightly higher rents compared to properties with lower ratings. • Facilitate the installation of solar panels on rental properties through a no hassle installation program where the panels are owned by shareholders and renters pay for the generated electricity. Use providers like ClearSky LINK • Develop and implement a DIY energy efficiency program for renters who are trying to reduce their energy costs.
Public Housing	<ul style="list-style-type: none"> • Work with the relevant authorities to upgrade current public housing stock with cost effective solutions such as draught proofing. • Encourage the Department of Family and Community Services to upgrade their premises. Alter the cost equation so that the Cost of the installations are paid back ASAP and they start generating income to install more.
Commercial and Accommodation Businesses.	<ul style="list-style-type: none"> • The return on Capital Equation for upgrading current buildings is favourable. Use the WCC Council Building as an education example to encourage local business to increase their building efficiency and install solar panel. These businesses have larger roof and parking areas and will receive better return on Solar Panels • Work with commercial networking organisations to establish a competition for Efficiency of Commercial Buildings. • Encourage the retrofitting of LED lights to commercial and street lighting. Eg. Shellharbour Council LINK

Council’s Role:

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Council, in collaboration with UoW, SBRC, DPIE and other expert organisations linked with the CRC need to work on the detail applicable to Wollongong, before the CRC closes on June 30, 2020.

In parallel, investigate the CRC's Pathways in the Wollongong context, working with State Government including the suggested priority to low-performing assets in the social and community housing sector. That could act as the launching market into the wider private ownership sector.

Adapt the Centre for Real Estate Liveability rating system. Train assessors and provide low cost assessments to residents. [LINK](#)

Behavioural Change:

Develop education/marketing programs to reach the "unconverted" in the private housing sector.

Benefit to Wollongong Community:

Health, Cost and Emissions benefits. Higher housing values especially with the growing recognition of Sustainability Features in Real Estate valuations and marketing. Considerable local work for retrofit contractors.

Ongoing Maintenance and Ownership:

Householders, Landlords, Renters, Commercial Building Owners assisted by retrofit contractors.

Links:

- Renew and 40 other organisations have called on COAG and energy ministers to implement measures that would substantially improve the energy efficiency of existing homes (Nov 2019). [LINK](#)
- Every Building Counts, a policy toolkit developed by the Property Council and Green Building Council of Australia was launched by the Federal Energy Minister (Nov 2019) [LINK](#)
- Victorian Healthy Homes Program managed by Sustainability Victoria [LINK](#) - free upgrades for up to 1000 Victorians identified through local councils and health providers (started 2018)
- Netherlands Energiesprong Program retrofitting passive, active and appliance options. Now adopted in France Germany UK and US. [LINK](#)

Idea Brainstorm Items

In no particular order. (16)

- Develop energy ratings for all buildings (Like ACT)
- Public Developments to be 5.5 or 6 star rating or Green Star
- Housing Building Air Leakage Assessments

Towards Zero Carbon Proposal from Renew Illawarra Branch.

- Planning codes
 - Eaves
 - Passive Solar
- Allow more businesses to operate from home
- Angel investor scheme – Invest in local projects
- Encourage light coloured roofing materials
- Basix Upgrade
 - Understanding
 - Avoid poor living spaces
- Provide incentive for using low embodied energy materials. Not concrete
- Light Coloured Roads and Rooves
- Mandate recycled materials in road base
- Investigate alternative materials other than concrete and steel in high rise buildings.
- Implement Higher Basix Standards
- Encourage smaller dwellings and higher density (terrace) housing
- Design a program for retrofitting houses including public housing with solar
- Encourage that Apartment Common Property is run by solar

4 Creating an urban forest

Increases the Carbon Sink and reduces Heat Island Effect

Brief description of strategy

Urban forestry is the care and management of single trees and tree populations in urban settings for the purpose of improving the urban environment. Urban forestry advocates the role of trees as a critical part of the urban infrastructure. It is suggested that Wollongong adopts the concept of creating an urban forest with the aim of having 50% shade cover over all bitumen and hard surfaces by the summer of 2037, utilising trees beside roads, along creek-lines, on public land and in private land. This proposal has twin goals of helping mitigate climate change by creating a larger carbon sink and adapting to the increasingly hot summers forecast to occur in the future by creating a cooler human environment in summer. The proposal complements the existing Urban Greening Strategy of council which has a target of achieving total canopy cover for the urban area of 35-40% by 2037. (This proposal focuses on desirable shade cover of bitumen and hard surfaces which contribute to the overall heat of the city, rather than the entire urban area).

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Suggested Actions:

Title	Description
Plant trees	Plant sufficient trees to achieve the aim of 50% shade cover over all bitumen and hard surfaces in the city by the summer of 2037. These trees should be a combination of deciduous trees such as plane trees (to allow warm winter sun to penetrate where appropriate) and indigenous species. Special attention should be placed on avoiding highly flammable species (such as eucalypts) and should favour soft foliated non-flammable species such as the indigenous rainforest species Illawarra Flame Tree, Red Ash, White Cedar and Lilly Pilly etc.
Connect tree corridors	Ensure trees form corridors for wildlife using existing natural corridors along the gullies flowing off the escarpment, street trees, storm water detention basins etc. Prioritise use of indigenous species where possible in these situations, to protect and promote biodiversity.
Integrate tree planting with active transport planning	As the city shifts towards providing better infrastructure for cycling, this will inevitably lead to a redesign of urban streets to encourage active transport options. As this occurs there will be considerable opportunity to incorporate shade trees into these redesigned streets.
Encourage options for agroforestry	With larger numbers of trees in the urban area there could be some encouragement of managing some of those trees for timber. Some indigenous species are noted timber trees, such as Red Cedar, White Beech, Illawarra Plum Pine and Coachwood.
Review the RFS “10/50” ruling	It appears that the “10/50” rule (Administered by the RFS) overrides council tree clearing legislation. This ruling has allowed some residents of normal suburbs (eg Mangerton) almost free licence to remove trees. These usually large trees would contribute little to the fire risk of the buildings because of their height. <ul style="list-style-type: none"> • Council should review the Zoning and privileges applying to Suburban areas and cause the ruling to be amended.

What would be Council’s role.

- √ Devote more resources to existing programs of street tree planting by council to increase the rate of planting across the city, including in public parks and reserves as well as private property.

Towards Zero Carbon Proposal from Renew Illawarra Branch.

- √ Form an urban forestry task force with community representation, expert urban forestry representatives and council staff to drive the proposal forward, working within the scope of the existing Urban Greening Strategy.
- √ Provide incentives to individuals to grow and plant trees in their gardens or in their nature strips, and to commercial landowners for planting trees in suitable areas such as carparks.
- √ Encourage Rural Landowners and Industry to plant trees on currently vacant land. Remove rules that prevent them from harvesting or removing the trees when further development of the property is planned.
- √ Examine council rules to ensure there are not disincentives to individuals planting trees in their gardens or on their nature strip.
- √ Allow the GreenPlan nursery to be more accessible by being open every weekday for business and promote the nursery more widely across the LGA.
- √ Encourage the establishment of community-based nurseries to propagate trees for local communities.
- √ Monitor the sequestration of carbon according to best practice. Include such measurements in reporting of progress towards net zero emissions.

Legislative Considerations.

Consider including revision of Wollongong Development Control Plan (WDCP) 2009 'Chapter E17 Preservation and Management of Trees and Vegetation' to reflect updates to State and Regional Planning Legislation.

Specifically:

- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 came into effect on 25 August 2017 and was one of a suite of Land Management and Biodiversity Conservation reforms, which works together with the Biodiversity Conservation Act 2016 and Local Land Services Amendment Act 2016, to regulate the clearing of native vegetation in NSW.
- Section 5 of the SEPP outlines the local government areas to which the legislation applies. While the City of Wollongong is not identified as a local government area to which the SEPP applies, the majority of land use zones (e.g. residential, business, industrial), are identified as zones to which the SEPP applies.
- Clause 7.1 states that “A person must not clear vegetation in any non-rural area of the State to which Part 3 applies without the authority conferred by a permit granted by the council under that part”. Part 3 applies to vegetation in any non-rural area of the State “declared by a development control plan to be vegetation to which this Part applies”.
- Chapter E17 of Wollongong Development Control Plan (WDCP) 2009 outlines Council’s requirements for the preservation and management of trees and other vegetation (including pruning and removal). The chapter precedes the commencement of the Vegetation in Non-Rural Areas SEPP and the removal of Clause 5.9 ‘Preservation of Trees or Vegetation’ from the Wollongong Local Environmental Plan (WLEP) 2009, however the advice relating to the management of ‘prescribed tree’ and ‘prescribed other vegetation’ is considered relevant for the purpose of establishing vegetation to which Part 3 of the SEPP applies.
- Under the provisions of Clause 5.9 of the WLEP 2009 (now removed), “a person must not ringbark, cut down, top, lop, remove, injure or willfully destroy any prescribed tree or other vegetation, without development consent or a permit being granted by Council”. Council should update Chapter E17 of the WDCP 2009 to reflect the Vegetation in Non-Rural Areas SEPP, which aims to protect the biodiversity value of trees and other vegetation and to preserve the amenity of non-rural areas of NSW through the preservation of trees and other vegetation.

What behaviour change is required for this to succeed.

- ✓ This is not a proposal that necessarily requires a great deal of behavioural change in the community. Already the council is planting trees and providing trees through the GreenPlan scheme. Already people are planting trees. It is simply a beefing up of existing behaviours and providing an overall goal and concept behind it.
- ✓ Having said that developers frequently remove trees in advance of development and some people see trees as problematic with regard to ocean views etc. Tools are available to Council (both through education and regulation) to minimise or reverse these factors.

How can this initiative be optimised to benefit the Wollongong community.

- √ The key to ensuring this initiative is successful will be widespread support for it. Providing conspicuous data (e.g. on public billboards) on the heat of public areas such as footpaths, children's playgrounds and road surfaces with and without shade will assist in convincing people of the merit of more shade in the city in summer. Experiencing good shade and becoming aware of the temperature differences will be the best way of convincing people of the merit of more shade!
- √ Establish a Wollongong 'brand' associated with urban forestry and especially our indigenous trees. This could make sense to local residents and also be something of a tourist draw, the way that Jacarandas are associated with Grafton. Something like 'Flame Tree City', or 'Rainforest City'.

How could it be funded?

- √ Establish a council-managed fund for the express purpose of planting more trees in the urban area into which people taking overseas holidays could pay a proportion of their plane tickets.
- √ Council would fund its own plantings and provide incentives to private landholders. Increased spending by council could be justified by the provision of better amenity for its citizens, potentially lower health costs and increased levels of tourism to the city.
- √ Private landholders would fund plantings on their own properties.
- √ Typically leafy suburbs have higher house prices, so urban greening can be financially positive to the individual. Well-targeted promotion could ensure that much of the added cost of plantings could conceivably be borne by individual landholders and developers.
- √ Develop an urban greening program and apply for funding in the Federal – Emissions Reduction Fund.

Ongoing maintenance and ownership

Inevitably more trees in the public land of the city will require increased maintenance of treed areas by council staff. With increased trees in the urban area there may be increased risk from falling limbs. Therefore it may need to become easier for people to manage trees near their house where danger exists. Special attention also would need to be taken that the trees do not interfere with existing infrastructure such as powerlines, through the development of appropriate verge vegetation guidelines. Care needs to be taken in the management of tree corridors that they do not become wicks for bushfires (as occurred in Canberra with fire prone vegetation) by the careful selection of non-flammable species.

Please consider the following points when developing this initiative

- Avoiding the creation of bushfire hazards (by encouraging non-flammable soft-foliaged indigenous species and deciduous trees)
- Education Programs to mulch tree litter on residential gardens in preference to dumping in the green bins.
- Avoiding hazards to vulnerable pedestrians such as wheel-chair bound people and the elderly
- Integrating street-tree plantings with redesigning urban streets to encourage active transport (cycling, walking, skateboard riding etc).

Towards Zero Carbon Proposal from Renew Illawarra Branch.

- Developing wildlife corridors that can also incorporate off-road cycleways and footpaths, which would support local biodiversity while also filling the critical gap in east-west active transport routes across the LGA.

Acknowledgements

Role	Name
Team Leader	David Curtis
Contributors	<ul style="list-style-type: none">• Emma Rooksby• Carrie Wilkinson

Idea Brainstorm Items

In no particular order.

- Link trees to wildlife corridors
- Link millions of trees for wildlife corridors
- Trees/urban forestry
- Ensure tree management (people won't grow trees unless it is easy to manage them)
- Replace lawn verge with shrubs and provide incentives for this
- Trees – urban forest using trees and private land with aim of 70% shade cover on bitumen surfaces
- Plant 1 million trees
- Investigate local timber/agroforestry
- Stop cutting down trees
- Encourage tree planting on private land and incentivise

5 Waste and Recycling

Relates partially to the Waste, 3.8% of Current Emissions

Brief Description of Strategy:

To establish the Illawarra-Shoalhaven region as

- i) a zero waste community, and
- ii) a hub for the circular economy, by 2050.
 - Waste contributes to emissions both directly and indirectly. The direct contribution is primarily through methane generated in landfill. This is something which Wollongong Council already has plans to address. Whilst this is a significant part of the Council's emissions, it is not that large compared to the overall emissions embodied in the goods and services consumed by the community.
 - Indirect emissions come from the collection and processing of waste, as well as from the energy used in the initial production of the material. For many materials, eg glass and aluminium, the energy and water needed to recycle these materials is much less than that needed to produce virgin material.
 - There are also embodied emissions in the existence of a landfill site, as that is additional land which could otherwise have been vegetated.
 - Some waste inevitably ends up in our natural environment, particularly our marine environment, harming wildlife and diminishing ecosystem function. This too can lead to emissions as declining ecosystems can become carbon sources, whilst recovering ecosystems can become carbon sinks.

The objective of this strategy should be to move to full resource recovery, with zero waste, zero litter, and flourishing natural environments.

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Suggested Actions:

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Title	Description
Quantifying the problem (WCC and ISJO)	<ol style="list-style-type: none"> 1. Quantify waste streams to establish resource available for recovery. 2. Quantify escaping waste, litter, and establish impact.
Identifying solutions	<p>Investigate and select the best collection system: source separation (e.g. by providing a separate bin for glass or paper) or commingled collection.</p> <ol style="list-style-type: none"> 1. Investigate options for reducing production of waste streams. 2. Determine what technologies and methods currently exist for processing the various waste streams. 3. Develop an ambitious strategy to increase the recovery of waste. 4. Develop a business case 5. Investigate barriers to implementation.
Establishing partnerships	<ul style="list-style-type: none"> • Identify institutions and community groups who can play a role in helping achieve the objective.
Engaging the community	<ul style="list-style-type: none"> • Get the community enthused and excited about the prospect of achieving the zero waste goal and the opportunities created by becoming a hub for the circular economy. Engage with the community on how to reduce generation of waste, how to recycle. • Build on the FOGO initiative to engage the community in FOGO and Disciplined Waste Processing • Establish a Reduce, Reuse, Recycle, Recover education program.. • Encourage Mens-Sheds and other forums to repair items as a public service or for a small fee. e.g. the Repair Cafe model which is gaining momentum https://repaircafeballarat.com.au/
Establish battery and solar panel recycling at Port Kembla	<ul style="list-style-type: none"> • Battery and solar panel recycling will be key industries in the movement to a circular economy. Councils should work to facilitate the establishment of such industries, taking advantage of our port facilities and rail infrastructure. Such industries can provide the foundation for establishing the Illawarra as a hub for the circular economy. • These can be augmented later with businesses recycling building materials into high performance structural insulated panels. • Steel recycling via electric arc furnaces can be re-introduced as Australia takes advantage of its renewable energy resources to provide cheap and abundant electricity.

What would be Council's Role.

Illawarra Shoalhaven Joint Organisation (ISJO) would play a coordinating role, assisting the individual councils, UOW, and community partners work together most effectively to achieve the goals.

- Coordinating grant applications.
- Individual councils would play a role in rolling out programs in their areas, and in educating the community (including households and businesses.)
- Councils can help establish community gardens, and facilitate food/produce swaps, to reduce food waste. Compost produced through FOGO and other measures could be re-used in these community gardens.
- Competitions to see which schools can produce the least waste could be promoted by councils.
- Investigate waste contractors to build a local waste processing facilities.

What Behaviour Change is Required for this to Succeed.

- Establish repair cafes to help prolong life of goods.
- Educate community about proper sorting of waste streams.
- Encourage purchases that require less packaging, eg, fresh fruit for snacks rather than packaged junk food.
- Re-use more green waste on the site where it is produced.

How can this initiative be optimised to benefit the Wollongong Community.

- Becoming a zero waste community with pristine natural environments will directly benefit residents, as well as make the area more desirable for visitors.
- Becoming a hub for the circular economy provides obvious employment benefits, and will help to take advantage of the currently under-utilised infrastructure and employment lands at Port Kembla. It also helps to provide a future for Bluescope locally beyond steel production via the blast furnace route utilising coking coal.

How Could it be Funded?

- Once actions have been identified as part of a strategy there is the ability to apply for funding from State Government grant programs aimed at waste reduction.
- The establishment of expanded recycling initiatives as part of the shift to a circular economy is also likely to prove attractive to government bodies providing grants for both environmental initiatives and economic initiatives.

Towards Zero Carbon Proposal from Renew Illawarra Branch.

- Becoming a hub for the circular economy can be supported by research grants obtained from government sources by a collaboration between UOW researchers and industry partners such as BlueScope.

Acknowledgements

Role	Name
Team Leader	George Takacs

Idea Brainstorm Items

In no particular order. (11)

- Work with other councils to produce local food
- Host local markets
- Cut food waste by redistribution systems
- End staggered bulk household waste collection. Do areas all together. Make it legal to reuse articles in the piles
- Make it legal to take from kerbside council cleanup
- Provide incentives and grants for processing recycling
- Dangerous and difficult satellite recycling stations]
- Install a recycling facility – all materials
- Set aside local Council land for community vegetable gardens
- Highlight and celebrate native food
- Implement FOGO

6 Planning

6.1 Planning and Policy

Brief Description of Strategy

- Urban planning provides the scaffold for envisioning and implementing sustainable development. Urban areas are products of thousands of individual site-level development and design decisions.
- Current building code requirements fall well short of what is required for low carbon housing. For local government, planners have been attempting to address this shortfall through land use planning systems in an effort to increase engagement with ecological sustainable design.
- As the statutory authority for the assessment and determination of the majority of development applications in the Wollongong local government area, it is essential that Council has clear and enforceable development controls to improve the sustainability of development.
- The Wollongong Local Environmental Plan (2009) and Development Control Plan (2009) should be comprehensively reviewed and updated to reflect and encourage planning and development that aligns with current best practice in ecologically sustainable development in the context of a changing social, economic and environmental climate.
- Cities need leading edge and enforceable planning and design initiatives to ensure liveability, quality design, resilience and residential, tenant and pedestrian amenity in the built environment.

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Suggested Actions:

Title	Description
<p>Review and update Wollongong Development Control Plan (2009).</p>	<p>Chapter A2 ‘Ecologically Sustainable Development’ (ESD) of WDCP (2009) came into effect on 14 December 2016. The chapter is just 3 pages and is predominantly composed of broad objectives and principles, which are unenforceable. Chapter A2 does little more than point the reader to other chapters of the DCP through which design principles for ESD are scattered and inconsistent. Hence, rather than being the primary outcome, ESD has been viewed as one consideration amongst many.</p> <p>This chapter (and WDCP 2009 as a whole) should be critically reviewed and amended in order to consolidate ecologically sustainable development regulations into the one chapter. These development controls should consist of mandatory, numerical standards against which development is designed and assessed, and should reflect current best practice. Council should identify existing controls and further opportunities to require sustainable, ‘climate-wise’ built environment through developing a more robust and enforceable suite of standards in the DCP.</p> <p>For example, the DCP should include provisions to achieve net-zero emissions buildings, including operable windows on upper floors to permit natural cross ventilation and reduce reliance on artificial ventilation, installation of a photovoltaic system to all roofs and rainwater capture and reuse on site.</p> <p>Additional changes to existing development controls may include and encourage:</p> <ul style="list-style-type: none"> • Increasing provisions for landscaping (e.g. increasing the minimum landscaping requirement for residential development from 20% on lots of 600m² or less to 30%); • Mandating integration of renewable energy and rainwater in the servicing of communal open space areas in multi-dwelling and residential flat building developments; • Increasing the minimum lot size for residential development in R1 and R2 residential zones from 449m². Planning controls Australia-wide have encouraged developers to reduce the size of new housing lots but with little reduction in house sizes. This has resulted in a reduction in the size of significant areas of landscaping and trees, which cool the air and sequester carbon; • Mandating the use of permeable driveway materials to decrease impervious surfaces associated with provision of double-car garages.

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Title	Description
Encourage developers to go beyond the minimum requirements for energy and water efficiency.	<p>Related to the above, the DCP should include mandatory provisions and/or incentives that encourage developers to exceed the minimum commitments for energy and water efficiency under BASIX, NABERS and the Apartment Design Guide (SEPP No. 65).</p> <p>The DCP should require or provide incentives for a development application for commercial development to be accompanied by a NABERS Commitment Agreement that shows a minimum 5-star rating for energy and a minimum 4 star rating for water. For residential development the DCP should require or provide incentives for development that achieves well above the minimum 40% energy and water reductions under BASIX.</p> <p>These lifted energy and water efficiency targets should be proportionate to the scale and cost of the development across single dwelling, mid-rise and high-rise residential development i.e. assessment of a development application against a more rigorous set of development controls focused on ESD (including BASIX and NABERS) may be “triggered” by larger development e.g. development with a certain gross floor area, number of dwellings, number of carparks, alterations and additions of a certain floor area. The Council Alliance for Sustainable Built Environments (CASBE) in Victoria provides guidance on setting parameters for development that “triggers” a higher standard for ESD.</p>
Monitoring, evaluating and reporting emissions progress.	<ul style="list-style-type: none"> • Document, summarize and report what the Council and community is doing already to lower emissions. • Identify a number of case studies for good urban design, planning and development throughout Australia as a guide. • Install a (solar powered) electronic board in Crown Street mall that shows how the community is tracking in terms of reducing CO2 and staying within the current carbon budget.

What would be Council’s Role.

Development controls in a Council’s local environmental plan (LEP) and development control plan (DCP) need to be kept as up-to-date as possible. Clause 3.21 of the *Environmental Planning and Assessment Act 1979* specifies that Councils are required to assess, every 5 years, whether relevant local environmental plans are still fit for purpose given any changes in local or external circumstances.

Given changes in population, the provision of infrastructure and services, regional and local strategic plans, environmental factors, and other key indicators, Council should undertake a comprehensive review of the existing DCP and LEP in consultation with the public to establish a clear suite of best practice, enforceable standards for ecologically sustainable design.

What Behaviour Change is Required for this to Succeed.

Developers and Council need to work together to achieve development that provides a high level of liveability, residential amenity, transport and pedestrian amenity.

How Could it be Funded?

Establish environmental levies on all developments, calculated as a proportion of the total cost of the development.

Developers for large developments who do not meet DCP requirements for higher BASIX targets or NABERS targets for water and energy efficiency could be charged an environmental levy.

Please Consider the Following Points when Developing this Initiative

- Many of the suggestions in this proposal will require greater flexibility in the existing planning controls and zoning frameworks in the Wollongong Local Government Area. For example, the rezoning of land to allow for local renewable energy projects, mixed-use zoning to encourage sustainable urban form and connected communities.
- Councils in other states have committed to greater enforceable development standards for mandating more environmentally sustainable design. The [Council Alliance for Sustainable Built Environments](#) (CASBE) in Victoria involves local governments working with design and planning professionals to create environmentally sustainable built environments. Councils have outlined “triggers” for development that requires a more robust assessment of design against the provisions of a dedicated policy or suite of development controls for ESD.
- In 2013 the City of Melbourne introduced [an amendment](#) to the Melbourne Planning Scheme, which incorporates a new energy, water and waste efficiency policy. The new clause provides objectives, policy requirements, application requirements and industry recognised performance measures (standards) to assess energy, water and waste efficiency of new building developments. The policy applies to applications for the construction of a building (including alterations and additions) for the purposes of office, retail, education centre and accommodation, with some exceptions, and provides mandatory standards that aim to minimise greenhouse gas emissions, minimise mains potable water use and minimise waste going to landfill.
- Joining the Fab City Network [LINK](#)
- Run Scenario Planning workshops to identify possible future Adaptation and Mitigation required

Acknowledgements

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Role	Name
Team Leader	Carrie Wilkinson

Links

- Moore, T., Moloney, S., Hurley, J. and Doyon, A. (2017). Implementing sustainability in the built environment: An analysis of the role and effectiveness of the building and planning system in delivering sustainable cities. RMIT University: Centre for Urban Research, <https://cur.org.au/cms/wp-content/uploads/2017/09/implementing-sustainability-in-the-built-environment.pdf>
- World Health Organization. (n.d.) 'Health and sustainable development: Healthy urban planning', World Health Organization, accessed 15/11/19 <https://www.who.int/sustainable-development/cities/strategies/urban-planning/en/>
- Darchen, S. and Searle, G. (2018) 'Our cities fall short on sustainability, but planning innovations offer local solutions', The Conversation, 14/12/18 <https://theconversation.com/our-cities-fall-short-on-sustainability-but-planning-innovations-offer-local-solutions-107091>

Idea Brainstorm Items

In no particular order. (10)

- Establish Environmental levy on all large developments
- Amend the DCP to have a stronger chapter on eco.sustainable design
- Meet the Target set. Also set an interim target
- Find out what we are doing already. (Document)
- No amalgamation of schools
- Mandatory Standards DCP chapter
- Specify dates to achieve Emissions Targets
- Install carbon reduction levy on Council Rates (eg. \$10/property)
- Inspire youth to stay in the area and become involved.
- Install an electronic board on Crown Street that shows how we are tracking CO2. (Reductions)

Towards Zero Carbon Proposal from Renew Illawarra Branch.

6.2 Institutional Arrangements

Brief Description of Strategy

- establish ongoing high-quality dialogue with range of organisations and institutions to explore possibilities for cooperation and sustainable infrastructural development, eg. Ally with regional councils to establish local distribution networks emanating from a centralised storage hub.
- pro-actively seek out best practice in non-local regions and environments, eg. consult with ACT government on zero emissions strategies
- resource and support the pursuit of cooperative and shared project developments, in line with Council policies and targets, and to ensure ongoing exchange of ideas
- develop project briefs and seek funding from Clean Energy Finance Corporation (CEFC) to engage researchers such as UoW or UNSW Social Policy Research Centre (SPRC), eg. to seek lower emission production of concrete
- once inter-institutional agreements and partnerships in place, continue to adequately resource compliance, performance measurement and progress toward agreed objectives.

Suggested Actions:

Title	Description
Initiating dialogue	Establish small group to lead inter-institutional consultation
Establish Resource	Assign staff and establish communication paths
Plan & Prioritise	In line with WCC's zero emissions strategy develop prioritised project list directed at inter-institutional cooperation
Analysis of Current State of Play	Establish what networks, alliances, consultative practices and resources are already available/accessible in regard to the prioritised project list. <ul style="list-style-type: none">• Join the Fab City Network LINK

What would be Council's Role.

- Facilitate establishment of the mechanism
- Resource (staffing, etc.)
- Incorporate WCC's current strategic plans into the Zero Emissions Strategy
- Facilitate connections with other LGAs, local non-government organisations and businesses, NSW government
- Establish relationships with NGOs such as CEFC, SPRC, UoW

What Behaviour Change is Required for this to Succeed.

- Preparedness to seek help/buy-in from outside local area??

How can this initiative be optimised to benefit the Wollongong Community.

Towards Zero Carbon Proposal from Renew Illawarra Branch.

- Ensure high-quality and ongoing consultation with local community of practise
- Establish local community working groups to design change within the LGA

How Could it be Funded?

- Detailed cost-benefit analysis in the early stages to determine what advantage/potential benefit might accrue from cooperative purchasing amongst multiple Councils, preferencing localised transport/delivery from a shared cargo hub, preferring “Buy Local”, etc.
- Establish a seed fund to aid cooperative purchasing across infrastructure, transport alternatives, etc. Actively seek sponsorship from local business, NGOs, grant bodies to establish seed fund. It could be augmented by a subscription/membership mechanism, like the Illawarra’s own Culture Bank.

Ongoing Maintenance and Ownership

Ideally Council-led, with opportunity for ongoing management/consultative committees representing all partners to drive agenda within their Brief.

Acknowledgements

Team Leader

Neil Cairns

Links

- Inter-LGA partnerships are an established mechanism for cooperation and achieving shared outcomes – eg. The Cooks River Alliance: LINK a partnership of four councils – Bayside, Canterbury-Bankstown, Inner West, and Strathfield – who are working together with communities for a healthy Cooks River Catchment. The Alliance is hosted by the City of Canterbury-Bankstown.
- Shellharbour Council has joined the Cities Power Partnership LINK, which website has a detailed knowledge-base to support councils attaining zero emissions.

Idea Brainstorm Items

In no particular order. (12)

- Work with adjoining councils to fuel local food production
- Enter in to Sister City Drought purchase agreements. EG Wagga hosts Wollongong Solar Farm. (win/win Space-Revenue)
- Join forces with other councils to create “Sustainable Buy In” collective. Eg to bulk buy EVs, Scooters, Solar Panels etc.
- Identify Funding and Grant opportunities.
 - State
 - Federal
 - Private
- Develop a fund/seed fund for residents. Industry and Commerce can donate to support Council
- CEFC provide funding for SPRC to research alternatives to concrete.
- Council to connect with other councils who have declared Climate Emergency for joint action
- Create Centralised storage for local distribution networks. Food Cargo

Towards Zero Carbon Proposal from Renew Illawarra Branch.

- Knowledge transfer to sister city. Eg Idea Exchange with Canberra
- Interaction with public housing providers to identify water and energy strategies
- Make sure Council adopts an emissions reduction plan.
- Employ more sustainability officers to monitor those ideas.

7 Community Engagement and Marketing

7.1 Community Education and Engagement

Brief Description of Strategy:

- To engage and educate the community so they understand how to change their habits to reduce their emissions and why it is necessary. 20% of Wollongong's emissions come from residential properties and individual habits affect other sectors.
- We need the community to be on Council's side when the necessary changes are made, so their understanding of the situation is vital.
- Council should run a program like "Sustainability Street" which ran in 2003. Rather than just a street, larger communities could be involved such as school communities or suburbs.
- Council would need to make provision for wages for a Community educator and maybe a few experts, also the cost of hiring venues and promoting the program. The returns may not be as obvious, but this program could create a community with better physical and mental health.
- Council benefits from less waste produced.
- The community could help with creating canopy by planting and maintaining street trees.

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Suggested Actions:

Title	Description
Employing a program co-ordinator	The program co-ordinator could contact Renew Illawarra members or interested experienced retirees who have expertise in some of the topics suggested below to see if they would like to run the classes.
Plan a schedule for educational meetings	<p>Suggestions: classes on 7 different topics, each run twice in case people are not available. Maybe Saturday afternoon and Sunday mornings once a month or fortnight. Possible topics are</p> <ol style="list-style-type: none"> 1. The importance of community; this can include sharing ideas and experiences, sharing vegetables, sharing tools, starting a repair café or a library of things. Creating better communities means less loneliness as people get to know their neighbours. Also, better physical health as people walk more and the air is cleaner and not as noisy. 2. Reducing energy use: including changing lights, energy efficient products, solar panels and batteries, heating choices, 3. Reducing water use, including water tanks, water-efficient shower roses. Now that we are using a desalination plant, excessive water usage creates emissions. 4. Reducing waste; 5. Increasing biodiversity which includes planting and maintaining street trees, replacing weeds with natives, installing frog ponds, bird baths and insect hotels. 6. Reducing car-dependency by encouraging active transport. Walk to school program. Walk to work program. 7. Food choices. Possibly cooking classes to teach vegetarian/vegan cooking. Have meat-free day. Buying local products. Community markets.
Hire community spaces	This could be school halls if engaging school communities or a Community Centre if engaging a suburb.
Invite the community to participate	<ul style="list-style-type: none"> • Leaflet residents. • Speak to P&C or at community meetings. Television and Radio advertisements.
Plan a waste audit	In 2003 Council did a waste audit before and after the educational meetings.
Plan “catch up” days where community members can discuss what they have achieved	Maybe have open houses. Integrate into to Renew’s Sustainable House Day LINK

What Behaviour Change is Required for this to Succeed.

These classes will all be about behavioural changes, like eating less meat or walking to work. The hardest task is to get community members to come along. The beauty of doing it with a school community is the P&C often has an environmental committee who could help promote this within the school.

How can this initiative be optimised to benefit the Wollongong Community.

- Encouraging people to buy local would improve local businesses.
 - Improving the Social Capital.
-

How Could it be Funded?

Council could do a trial run. For example, Keiraville Public School community. This could be funded by a \$15,000 environment grant available at present.

Ongoing Maintenance and Ownership

Once the 7 topics have been covered, the community could decide if they wanted to hold further talks or community “catch ups” and Council could provide the venues. They may wish to have a community dance or trivia night. These are all good ways to bring a community together.

Acknowledgements

Role	Name
Team Leader	Elana Martinez

Idea Brainstorm Items

In no particular order. (10)

- Support Training for local initiatives.
- Community cooking lessons or cooking meat free meals
- Have meat free days at Council Catering
- Ban single use plastic. Especially in Council and Council Leased Buildings
- Walk to work program
- Develop better sense and centres of community
- Revisit “Sustainability Street” with classes (2003)
- Task force from Community to drive the process
- Ask young people for ideas
- Neighborhood forums – two way transfer of information

Towards Zero Carbon Proposal from Renew Illawarra Branch.

7.2 Marketing Wollongong as a Low Carbon City

Brief Description of Strategy

1. Target residents, industry, university, manufacturing industry, health services, to encourage the transition to a low carbon city
2. Begin marketing Wollongong as a city aiming for sustainable, low carbon development, not a city based on steel and mining

Title	Description
Tourism	<ul style="list-style-type: none">• Discard “Coal coast” and change to “Cool coast” or “Clean coast” (or similar slogan)• Keep reference to the area’s History of mining and steel, but look to a cleaner future.
Community Engagement (Marketing the Concept)	Market “Zero Emissions Wollongong” to the local residents. Specifically: <ul style="list-style-type: none">• Target older people, who may be less knowledgeable about emissions• Target youth, who are the future• Foster sense of pride in a clean, sustainable city• Have new recycling advertising campaign for residents to sort materials better, maybe have rewards for best street in random checks of bins• Set up the Council Facebook page with low emissions focus, to share actions, pride in community, reach out to youth on Instagram with pictures, stories of how you can do more and what Council is doing
Industry Marketing Campaign.	<ul style="list-style-type: none">• Ensure regulations are followed• Encourage less use of energy, more use of solar panels• Foster initiatives like the use of low carbon geopolymers at Port Kembla and advertise these as achievements• Publish good news stories

What would be Council’s Role?

Educate, Encourage, Aid planning for transition, liaise with Destination Wollongong

Towards Zero Carbon Proposal from Renew Illawarra Branch.

How can this initiative be optimised to benefit the Wollongong Community.

- Promote Wollongong as a low carbon Tourist Destination.
- Feature approved (by council audit) low carbon Wollongong properties on Air BnB and Tripadvisor (etc.) websites

Ongoing Maintenance and Ownership

- Council Provide an accreditation service for tourism properties
- Council Develop Marketing Campaign for low carbon projects and refresh periodically.
- Include Community Achievements in the Campaign as they are completed.

Please Consider the Following Points when Developing this Initiative

- It's difficult to market Wollongong as a low carbon, sustainable city at present. The steelworks and coal mining don't fit the brand.
- Probably the best approach is small steps which are well advertised, as suggested above.

Acknowledgements

Team Leader

Ann Brown

Links

<https://www.youtube.com/watch?v=pF5UzGtlav8&t=12s>

Use of low carbon geopolymer at Port Kembla

Brainstorm Ideas for this Group

No particular order (9)

- Realise the need to have Negative Emissions
- Community Participation.
 - Ongoing engagement and platform to contribute to long term planning and development.
 - Create a "Social Vow"
- Marketing
 - No more "Coal Coast"
 - Zero emissions community
 - New Tourism Campaign
- Engagement
 - Youth the future
- Life be in it program
- Strategies to engage our older population
- Promotion Advertising Campaign
 - Recycling

Towards Zero Carbon Proposal from Renew Illawarra Branch.

- Sustainability at home
- Educate on end use
- “Cool Coast” not “Coal Coast”
- Engage Older Population in reducing CO2

Towards Zero Carbon Proposal from Renew Illawarra Branch.

8 Appendices

Process for building details and statistics.

Step	Statistics
Invitation to participate in Brainstorming Session	<ul style="list-style-type: none"> Mailing List 325. 30 Attendees
Brainstorming Session 7th November	<ul style="list-style-type: none"> 90 Minutes 140 ideas 10 Groupings 10 Group Champions to draft documents
Champions Draft documents off-line by 15 November	<ul style="list-style-type: none"> All using Standardised Document Template Eight Documents Drafted Transport section divided into three subdocuments and completed
All participants invited to comment/modify documents.	<ul style="list-style-type: none"> 5 edits/comments
All documents reviewed and edited by Neville Lockhart & Greg Knight <ul style="list-style-type: none"> Ensure suggestions are in a form useful to council for consideration Arrange the ideas into systems that can be modified to reduce emissions. (Systems Thinking) Add links to examples where system are functioning elsewhere Ensure suggestions are likely to result in reduction of emissions 	<ul style="list-style-type: none"> 1 topic removed Several topics combined All documents edited and standardised Preamble drafted 40 hours
Final Draft Reviewed by All participants	Documents combined – 52 Pages
Publish	<ul style="list-style-type: none"> Documents combined Topics ordered.

Towards Zero Carbon Proposal from Renew Illawarra Branch.

Possible further assistance and resources that could be made available to Wollongong City Council by Renew Illawarra Members.

The “Renew Illawarra” Branch members have a variety of planning and technical skills that may be accessed for the purposes of building a robust Zero Emissions Plan.

Some members are keen to assist in the following processes where time permits:

- Development of a Decision Matrix to assess the viability and value of proposals
- Research to provide data for the Business Cases for significant Zero Emissions Projects
- Risk analysis for projects.
- Project Planning Assistance
- Community Engagement Strategies

Please contact the editor if more assistance would be helpful.

Greg Knight (Tympanist@gmail.com)