



# ANNUAL REVIEW

2018/19







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# ZERO EMISSIONS BYRON LIMITED

## ANNUAL REVIEW 2019

The Board of Zero Emissions Byron Limited is proud to present its first Annual Review to the Byron Shire community and beyond. The Review is a snapshot of strategies and actions to achieve ZEB's goal of zero emissions in Byron Shire by 2025 across five sectors of energy, waste, buildings, transport and land use. Presenting the big picture first, it details challenges faced to meet this ambitious target. At the end of the review of each of the five sectors you'll find 'What do you think?' with specific questions, seeking your opinion on a variety of topics related to emissions reduction. We'd love to hear from you, so please email your ideas to [zeb@zerobyron.org](mailto:zeb@zerobyron.org)

ZEB is but one of a number of like-minded groups rising to the challenge of climate change. The Review highlights some of the inspiring initiatives of this enterprising and energetic community in seeking imaginative and practical solutions.

ZEB's Baseline Report was published in June 2016 and it has provided a working basis for strategic and action plans and a springboard for assisting other communities to strive for similar targets.

Byron Shire Council adopted similar aims to ZEB in February 2017 for its own emissions. Last year, it commissioned a report from Ironbark Consulting which found overall emissions were substantially higher than those in ZEB's report. Comparative figures for shire and council emissions are presented in the Tracking Zero Emissions section. In September 2018, Byron Shire Council declared a Climate Emergency, joining other councils around Australia and internationally with similar declarations. A working group was formed from councillors, community members and ZEB to develop adaptation plans for Byron Shire.

### About Zero Emissions Byron

Zero Emissions Byron Limited is a not-for-profit company limited by guarantee with charity and tax-deductible gift status. There is a Board of 5, an external advisory panel and a small band of volunteers. Funds are sourced through donations, fundraising and general community support and, most recently, we received our first sponsorships from Australian Ethical, Brookfarm and Spell and the Gypsy Collective, who join pro bono sponsors Marque Lawyers. We thank Diversicon Environmental Foundation for its generous contribution over the past three years. ZEB seeks to stimulate a sense of pride and participation among local businesses and the community in its ground-breaking work to meet the challenges of climate change and to lead by example.

ZEB's ultimate vision is to transform Byron Shire into a renewable energy economy (fossil-fuel free), where people can benefit directly from clean energy and transport, eat fresh pesticide-free local food, enjoy a waste-free environment and work in sustainable jobs – a fast-growing sector of the economy – giving young people hope for the future.

With best wishes for lower emissions!

### Board of Directors



Craig  
Johnson



Christobel  
Munson



John  
Taberner



Nik  
Midlam



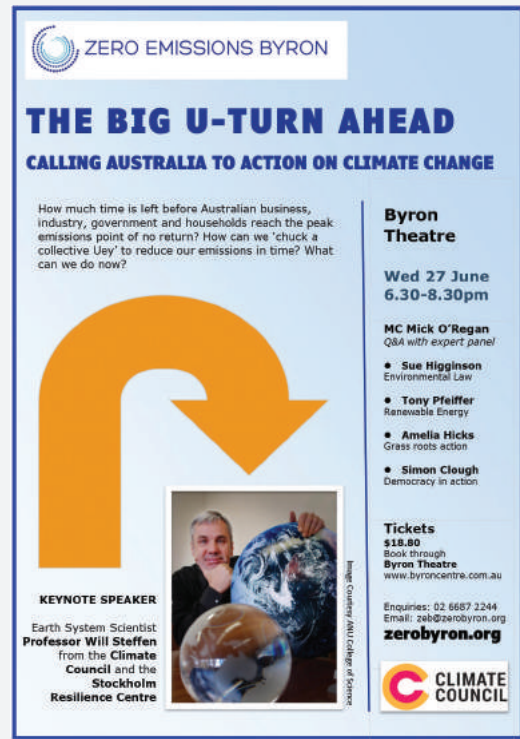
*Vicki Brooke*  
Chair

# HIGHLIGHTS

## The Big U-Turn Ahead

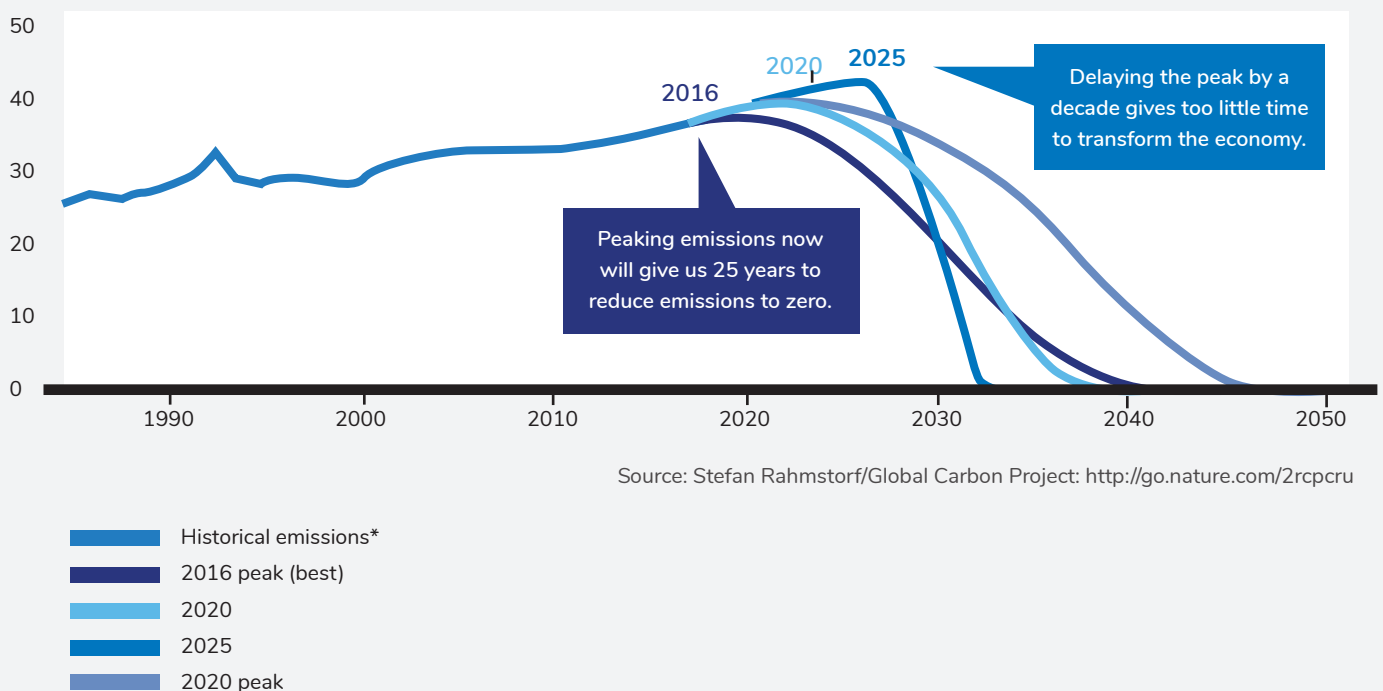
If we needed any reminding that the world must start taking urgent action on Climate Change, then the visit to Byron Shire by the Climate Council's Professor Will Steffen in mid 2018 hit the spot. His presentation at Byron Theatre, The Big U-Turn Ahead: Calling Australia to Action on Climate Change, was a sobering and timely reminder that we have less than two years now to start to reduce our carbon emissions.

The presentation by Professor Steffen, the following Q&A panel discussion with local experts, plus individual interviews with each panellist, were all filmed courtesy of Marigold Health Foods and are available via YouTube from links on the Zero Emissions Byron website [zerobyron.org](http://zerobyron.org). The film has been screened at both local events and Councils around Australia, with Sydney City Lord Mayor, Clover Moore commending us for "producing a resource for councils that calls for action on climate change".



## Crunch time: only two years away

There is a mean budget of around 600 gigatonnes (Gt) of carbon dioxide left to emit before the planet warms dangerously, by more than 1.5-2°C. Stretching the budget to 800 Gt buys another 10 years, but at a greater risk of exceeding the temperature limit.





## Solar Tuk Tuk

Late in 2018, ZEB hosted the visit through the Shire of an inspirational team from Melbourne: a solar-powered tuk tuk. Devised and operated by a team of young engineers from RMIT, the Tuk Tuk travelled at 50kph from Melbourne to Cairns, to “promote sustainable transport and a low-carbon future.” First stop on their Byron visit, billed as The Great Solar Tour de Byron, was a ‘show and tell’ at Byron Bay High School, where 150 curious year 9 students heard all about the evolution of the solar tuk tuk, and learned, too, that engineering careers don’t have to be dull.



## Taking Action

ZEB directors paraded our banner at several recent regional actions, such as the Rise For Climate in Tweed Heads in September 2018, and the SchoolStrike4Climate in Byron Bay in March 2019.

# MULTI

## AWARD WINNING DOCUMENTARY



## Mountain

In February 2019, a ZEB fundraiser was held at The Byron Theatre and was a sell-out success. Screened to a packed house, the multi award winning documentary “celebrating the power and majesty of the world’s mountains”, was set to music performed by the Australian Chamber Orchestra who donated two tickets to the ACO’s 2019 Brisbane season to the raffle. (Raffle winner Myrna Powell with ZEB Chair Vicki Brooke, below.)

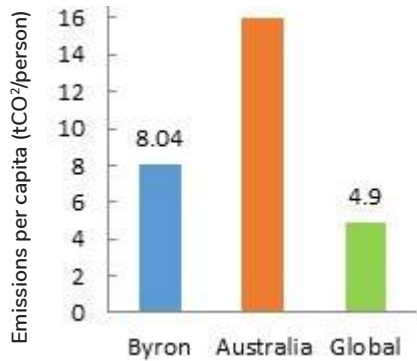




# BIG NEXT STEPS

Zero Emissions Byron has broad ideas to take the Shire's emissions to zero by 2025 from the starting point of July 2016 (following the publication of the Baseline Report).

## Emissions per capita



Comparison of GHG emissions per capita for the Byron Shire region, Australia and the global average

## Our Challenge

Byron Shire's annual per capita emissions are 8 tonnes, half the Australian figure but twice the world average! Clearly, we have a big task ahead to reduce emissions to zero by 2025.

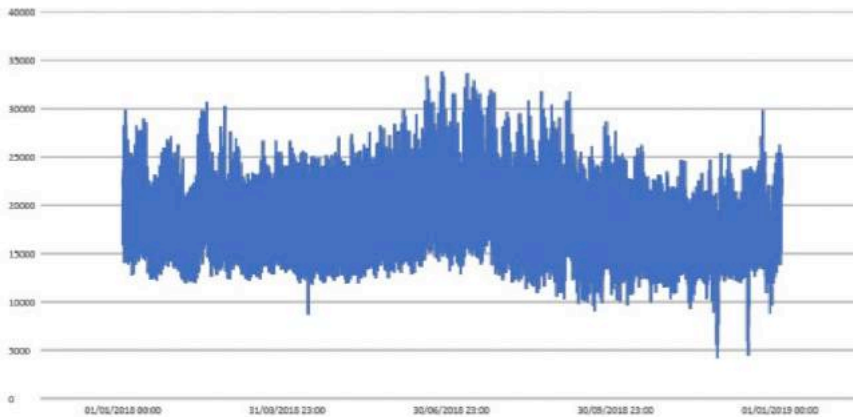
# IN BRIEF, HERE'S HOW ZEB WILL WORK TOWARDS ZERO EMISSIONS

RENEWABLE ENERGY	BUILDINGS	WASTE	TRANSPORT	LAND USE
<p><b>GOAL - ACHIEVE 70MW OF NEW RENEWABLE ENERGY</b></p> <ul style="list-style-type: none"><li>• Help increase uptake of household solar and battery storage.</li><li>• Assist community-owned solar farms.</li><li>• Investigate renewable energy sources outside the shire.</li><li>• Promote energy efficiency for households and businesses.</li></ul>	<p><b>GOAL - REDUCE THE CARBON FOOTPRINT OF NEW &amp; EXISTING BUILDINGS TO ZERO BY 2030</b></p> <ul style="list-style-type: none"><li>• Encourage environmental Upgrade Agreements (EUAs) for commercial buildings.</li><li>• Educate community about passive solar buildings.</li><li>• Set up expert working group to design and implement strategy.</li></ul>	<p><b>GOAL - REDUCE WASTE EMISSIONS TO ZERO</b></p> <ul style="list-style-type: none"><li>• Work with programs to divert food waste from landfill.</li><li>• Encourage composting and other non-invasive practices.</li><li>• Review, recycle, re-use community education.</li><li>• Hire instead of buying wherever possible.</li></ul>	<p><b>GOAL - WORK TOWARDS ZERO EMISSIONS AS FAST AS POSSIBLE</b></p> <ul style="list-style-type: none"><li>• Lobby for more EV chargers throughout the Shire.</li><li>• Encourage electric public transport and electric buses.</li><li>• Plan for EV car sharing and encourage EV car hire.</li></ul>	<p><b>GOAL - REDUCE EMISSIONS FROM THE LAND USE SECTOR TO ZERO</b></p> <ul style="list-style-type: none"><li>• Plant 1.8 million trees and other vegetation.</li><li>• Encourage regenerative agricultural practices.</li><li>• Work to achieve agricultural and food waste reduction strategies.</li></ul>

# TRACKING ZERO EMISSIONS

## Electricity use

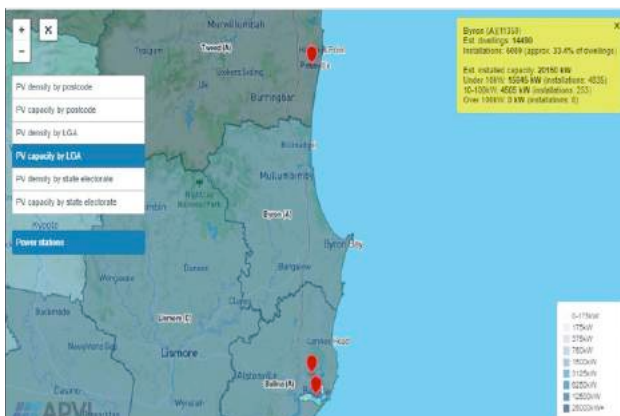
Three substations operated by Essential Energy supply electricity to the Byron Shire at Suffolk Park, Ewingsdale and Mullumbimby. As the chart below shows, total demand is slightly higher in winter than summer (due to electric heating). Overall the 2018 data indicates a slightly declining trend, a good sign. More energy efficiency and increased use of renewable energy will be key to meeting zero emissions.



**TABLE 1**  
2018 electricity demand  
in kilowatt hours for the  
Byron Shire (source:  
Essential Energy)

## Solar uptake

The Australian PV Institute records levels of solar installations around the country. Byron Shire has high levels of solar installed to homes and business. Around a third of households are estimated to have solar. There are almost 5,000 solar systems below 10 (kW) kilowatts in size (typically households) adding up to a significant 15 megawatts (MW). In addition there are more than 250 systems larger than 10kW adding up to 4.5MW, bringing the total installed solar capacity to more than 20MW. Based on the Essential Energy chart above, this indicates that, on a sunny day, at times local solar could generate the minimum energy demand of the shire.



## Emissions profile

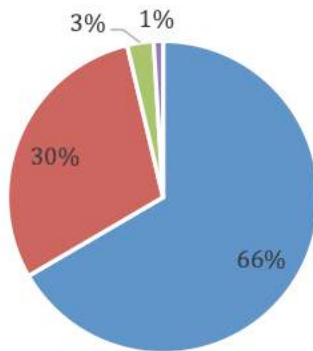
In June 2018, Byron Shire Council commissioned a report from Ironbark Consulting *Byron Shire Council Community Emissions Profile*. This report is produced annually to reflect significant changes to emissions (through a cleaner grid and changes in demographics). It is a high level report (the results vary in some places to the report produced for ZEB in 2016); however, while it clearly shows priority areas for emissions reductions, it does not include the land use sector.





## Emissions (t CO2e)

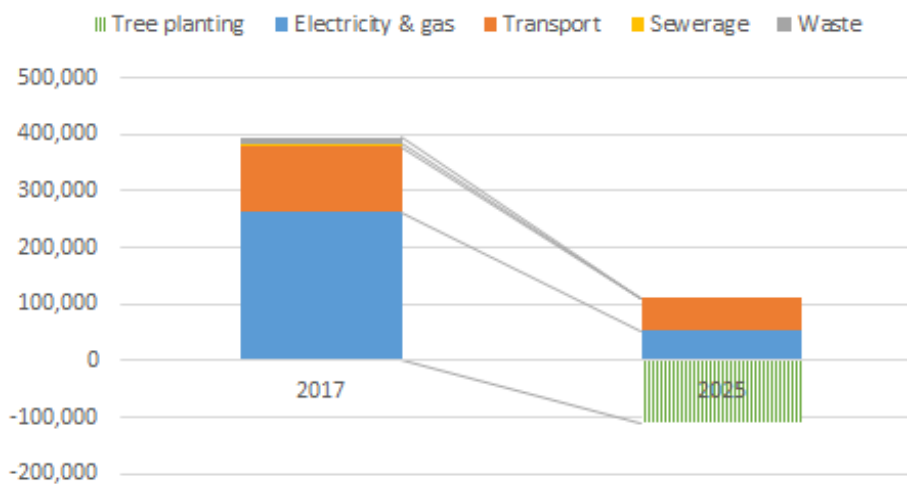
Electricity & Gas Transport Waste Sewerage



CATEGORY	EMISSIONS (T CO2 E)	PERCENTAGE (%)
Electricity & Gas	262,410	66%
Transport	117,057	30%
Waste	10,751	3%
Sewerage	3,863	1%

Emissions projections for the shire are shown in the figure below.

## Emissions (t CO2e)



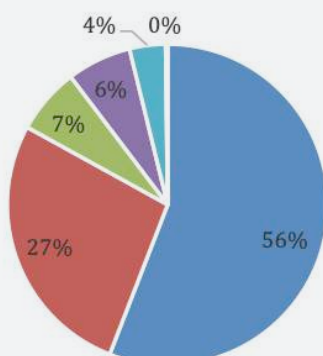
This chart is based on 80% reduction in electricity and gas emissions and 50% reduction in transport emissions over the 8-years between 2017-2025. It assumes transport and sewerage emissions reach zero (waste to energy) and reflects the upscale of permanent sequestration through tree planting. Courtesy Nik Midlam.

## Council emissions

In early 2019 Byron Shire Council released To Zero Together, its strategy for net zero emissions for Council operations by 2025. At 17,453 tCO2e, Council emissions are around 4% of the total Shire. Taking these emissions to zero will make a small but necessary contribution to the Zero Emissions Byron target for the entire Shire.

## Emissions (t CO2e)

Landfill Electricity Sewerage Fleet Street Lights Gas



CATEGORY	EMISSIONS (T CO2 E)	PERCENTAGE (%)
Landfill	9,755	56%
Electricity	4,733	27%
Sewerage	1,162	7%
Fleet	1,134	6%
Street lights	633	4%
Gas	36	0%
<b>Total</b>	<b>17,453</b>	<b>100%</b>



# 51%

## OF ELECTRICITY USED IN THE SHIRE COMES FROM FOSSIL FUELS

## ENERGY

Electricity use is the biggest source of emissions in Byron Shire and over 51% of the electricity used in the Shire comes from fossil fuels. The largest energy users are households.

While over 30% of households have installed solar panels (with postcode 2482 topping 40%), the slower uptake of battery storage means residents still rely largely on the grid for their night-time power.

Reducing energy use and improving efficiency in the way energy is used in the home and at work is one of the easiest ways to reduce emissions. Improvements to the ways we light, heat and cool our homes and cook will help to reduce emissions and save money.

Exciting projects in development include the 5MW Byron Bay Solar Farm at Byron Eco Park, community-owned solar farms, solar gardens for renters, a microgrid in the Byron Arts and Industry Estate and a feasibility study planned for the Mullum micro hydro project.

Byron Shire Council aims to be net zero emissions by 2025 (Council allows for some offsets of its energy use). Council is developing substantial projects including a 5MW solar farm at Myocum, a solar carpark at Council offices, solar and other initiatives for Valance's Road Sewage Treatment Plant, as well as continuing Council's energy efficiency programs in street lighting, its transport fleet and other areas.

### ZEB's strategies and targets

- 70MW of renewables energy to the Shire by 2025; 40MW sourced from households and at least 30MW from large-scale solar projects (solar farms), either within the Shire or sourced externally
- Continue education around energy efficiency for businesses and households and offer product incentives
- Investigate options such as importing renewable energy into the Shire from other sources
- Reduce use of bottled gas by encouraging solar hot water and induction cooktops
- Design buildings for passive solar (see buildings sector)

- Continue to work through RePower Byron to promote ethical energy sources, energy efficiency and renewables
- Promote solar panels, smart meters and batteries by developing educational resources for business and community

### Challenges

- Possible high saturation point of solar within residential properties, largely due to high percentage of renters.
- Byron Shire may not be seen as ideal for certain large scale solar of >20MW, mainly due to number of cloudy days and the cost of land.
- Cost of renewable energy may be too high to import into Byron Shire.

### Actions

- Join Business Renewables Council Australia (BRC-A) to access a wide range of resources
- Work to ensure sufficient solar projects are planned to meet ZEB's goal
- Encourage and support community-owned renewable energy
- Work with Council to develop renewable energy initiatives
- Monitor and report quarterly on energy emissions towards zero
- Investigate renewable energy sources outside the shire
- Promote energy efficiency for households and businesses



Subpod system and solar panels at Habitat, Byron Bay



Mullum hydro co-ordinator Svea Pitman with ministers Niall Blair, Don Harwin and the Parliamentary Secretary for Renewable Energy Hon Ben Franklin MP in 2018.

## Cool Corem



Community-Owned Renewable Energy Mullumbimby (COREM) aims to transition Mullumbimby to 100% renewables by 2020. COREM initiated a revolving energy fund to install solar on community buildings. To date seven projects are up and running. COREM assists community groups by funding 4 x 5kW shares in Enova's first solar garden for those groups unable to access solar, and it has begun its own solar garden project. COREM initiated the waste-free event RenewFest held in May and is the most active partner in RePower Byron, a household engagement initiative along with Enova and ZEB.

Leading the way in micro hydro, COREM commissioned a pre-feasibility study to re-open the heritage plant at Laverty's Gap and is currently seeking funding for the full feasibility study. If it becomes operational, Laverty's Gap has the potential to supply a significant portion of night time energy use.

## Did you know?

You should soon be able to access interest-free loans for solar and batteries. The Empowering Homes program (announced 10 February 2019) will provide no-interest loans up to \$9,000 for solar or \$14,000 for solar plus batteries. This could save households around \$450 a year even while paying off the loan. See [bit.ly/2UES6QS](https://bit.ly/2UES6QS)

## Energetic Enova



Byron Shire is proud to be home to Australia's first community-owned, award-winning renewable energy retailer, Enova Community Energy. A social enterprise and energy game-changer, Enova is close to opening its first solar garden for renters in which renters buy shares in solar panels installed on other properties and enjoy savings through reductions on their energy bills. In Byron's Arts & Industry Estate, in association with Essential Energy, Enova is developing the shire's first microgrid with battery back-up.

In 2018 Enova delivered around 3,360 MWh of renewable energy to its Byron Shire customers. Around 50% of Enova's Byron customers have solar PV and Enova projects an increase both in solar penetration as well as system size.

## 100 Go Solar



A not-for-profit community campaign to encourage Byron Shire businesses to install solar and save money (and the environment), 100 Go Solar ran for three and a half years and finally reached 100 installed businesses in December 2018 with a total of 1.5MW renewable energy.

## WHAT DO YOU THINK?

If you haven't got solar, what would encourage you to install it?

Do you have ideas to encourage everyone in your street to use less energy, go solar and switch to an ethical energy provider? Would you be a street champion?



# BUILDINGS

ZEB aims to reduce the greenhouse gas emissions produced by commercial and residential buildings in Byron Shire. While emissions for heating/cooling, lighting and cooking are accounted for in 'Energy', building construction and operation create their own carbon footprint. Passive solar buildings help reduce energy and emissions. The built environment covers all aspects of existing and planned buildings within the Shire and includes construction, maintenance, operation and building materials - manufactured or from natural resources.

## Targets

ZEB aims to achieve at least 50% reduction in emissions from the built environment by 2025 and zero by 2030 (assuming it will be slower to achieve zero emissions in buildings).

## Challenges

- Changes are needed to planning codes and BASIX at national and state levels to mandate zero carbon buildings.
- Council planners could encourage optimum building site orientation and passive solar design.
- Progress in the sector is slow due to regulatory challenges, landlords unwilling to change the status quo, industry apathy to learn the economic benefits of sustainable building design and the need to develop community awareness of the carbon footprints of buildings.

## Actions

- Introduce Environmental Upgrade Agreements (EUAs) delivered through Byron Shire Council to encourage owners of commercial buildings to upgrade lighting, conduct energy audits, install solar and become water and waste efficient. EUAs offer loans to building owners repaid through Council rates.
- Set up a short-term working group of design and planning professionals to formulate strategy, communicate and incorporate feedback from stakeholders. Develop new group of professionals and community to carry and implement strategy.
- Shire-wide education and information programs linked to sustainable house days and other opportunities.

## Incentives

Recognise buildings for significant reduction in carbon by rewarding owners with a plaque showing their journey to zero emissions.

Work towards 'carbon reducer of the year' awards  
Set up simple monitoring, incentive and rewards system for homeowners.

## Spell and the Gypsy Collective – leading by example

Spell and the Gypsy's beautiful HQ was transformed from an old timber factory in 2017. Many of the exposed timbers beams which complement the bright creative spaces were kept. An open plan office was designed to encourage collaboration between teams.

Whilst designing the space, Spell had sustainability in mind - they installed solar panels on the roof, eco flush systems in their toilets, and thoughtful insulation and ventilation to minimise the need for air-conditioning and heating. They opted for LED bulbs throughout the space (with the exception of a few Edison bulbs in pendants) to minimise electricity use. Desks were locally handcrafted from steel and timber, a long lasting alternative to many of the cheaper options available.

See more of Spell's inspiring story in the Waste section



Interior of Spell and the Gypsy Collective's renovated building

# WASTE

In ZEB's baseline report, waste was calculated as 2% of Byron Shire's emissions, although the baseline data did not include waste from Byron Shire Council's Sewage Treatment Plants (STPs). Organic waste is a key contributor to GHG emissions through the process of anaerobic decomposition, which is caused as food and other organic waste breaks down in compacted landfill environment. The calculation would be much higher than 2% if methane was not captured, but as Byron Shire's landfill waste is transported to the Ti Tree Bioenergy facility, Byron Shire can claim a larger percentage of methane captured.

The main waste issue for ZEB is diverting organics from landfill. Organics are defined as food and garden waste, scrap timber, paper and cardboard. Organic waste in Byron Shire is sourced from three operational streams, Domestic (Residential), Commercial/Industrial and Construction/Demolition.

All waste streams created within Byron Shire, besides a small amount of green/garden waste collected and processed at the Myocum Resource Recovery Facility, leave Byron Shire for processing. Waste for recycling also leaves the Shire.

## Targets

ZEB aims to reduce organic waste to landfill to zero by 2025.

## Challenges

When organic matter breaks down in the absence of air, it produces methane, a greenhouse gas with a global warming potential 25 times higher than carbon dioxide. Byron Shire Council captures methane at its Myocum waste facility landfill site which no longer operates as a landfill facility. The flare is capturing 'historical' methane. At present the methane is flared, significantly reducing methane released to the atmosphere but it is released to some degree.

ZEB would prefer all organic waste created in Byron Shire to be composted. Byron Shire Council is investigating siting bioenergy facilities at its STP properties to process various feedstock materials.

## Actions

ZEB's waste mitigation strategies include

- Work with programs to divert food waste from landfill to composting or use as animal fodder and encourage on-farm composting
- Encourage composting and other non-invasive practices
- Run education campaigns to increase community awareness of food waste
- Review, recycle, re-use – community education programs

Beach Hotel Byron Bay: Food waste is collected by ZEB member Revolve Your World and transported to Lismore Composting Facility by Byron Shire Council/ Solo Resource Recovery.



## WHAT DO YOU THINK?

What improvements can be made to building and planning? What do you think of all-electric buildings? Could you give up bottled gas?



## Spell and the Gypsy Collective's Waste story

"When we opened the doors to our head office, we gifted each of our staff a ceramic keep cup in celebration of a team decision that the office would be free of the top four single use plastics (coffee cups, water bottles, straws, and plastic bags).

Beeswax or reusable silicon wraps replace single use plastics in the kitchen, and we always use eco cleaning products, recycled toilet paper, printing paper and tissues, and provide jars and stainless steel straws for staff heading out of the office for smoothies and juices on lunch breaks.

We installed a bike rack with a few communal bikes, encouraging the team to ride to and from work when possible - or at least to meetings and out to lunch around the industrial estate.

Recently, we built a beautiful compost station that utilises the amazing Subpod system. All our organic waste is able to be processed on site - reducing harmful emissions through landfill and transporting waste.

We have 50+ passionate eco-warriors in our office who know that if we all make these small changes here, as well as in our homes, we can help make a difference for our planet."

### WHAT DO YOU THINK?

How easy will it be for you and your family to consciously keep food waste out of the bin?

Where should we put our efforts in reducing emissions from waste - do you think we need more technology, or should we encourage behaviour change?

## Sasha Mainsbridge

Sasha Mainsbridge, a founding member of ZEB and of award-winning Mullum Cares, is at the forefront of waste reduction campaigns. Earlier this year she founded the Library of Stuff, working out of Byron Community College in tandem with other groups, to hire a wide variety of everyday items, from tools to toys. Visit [libraryofstuff.com.au](http://libraryofstuff.com.au)



## Brookfarm - reducing emissions from waste



Brookfarm's popular muesli products are sold world-wide but macadamia muesli isn't the only thing for which Brookfarm is known. The business is supported by sustainable practices including 288 solar panels on the bakehouse. Operations manager Will Brook is aiming for zero waste at Brookfarm's five sites. Soft plastics, paper and cardboard are baled up to be recycled, making it more efficient for waste contractors. Food waste unsuitable for human consumption is sent to Brooklet Springs Farm to be fed to pigs. Products that are packaged badly, but still edible, are sent to programs such as Liberation Larder. Brookfarm is working with its packaging supplier to eliminate non-recyclable plastic waste and to find alternative packaging materials.



# TRANSPORT

After energy, transport is the highest producer of emissions in Byron Shire. It's now evident that total transport emissions have been underestimated as calculations excluded emissions from tourist vehicles.

Emissions from transport will continue for some years beyond zero emissions in other sectors. Many predict the coming electric vehicle (EV) revolution will be overwhelming. EVs, autonomous and on-demand vehicles are set to change the nature of public transport, but cost, range and charging stations are still significant factors.

## Targets

ZEB aims to reduce transport emissions towards zero as fast as possible towards zero.

## Challenges

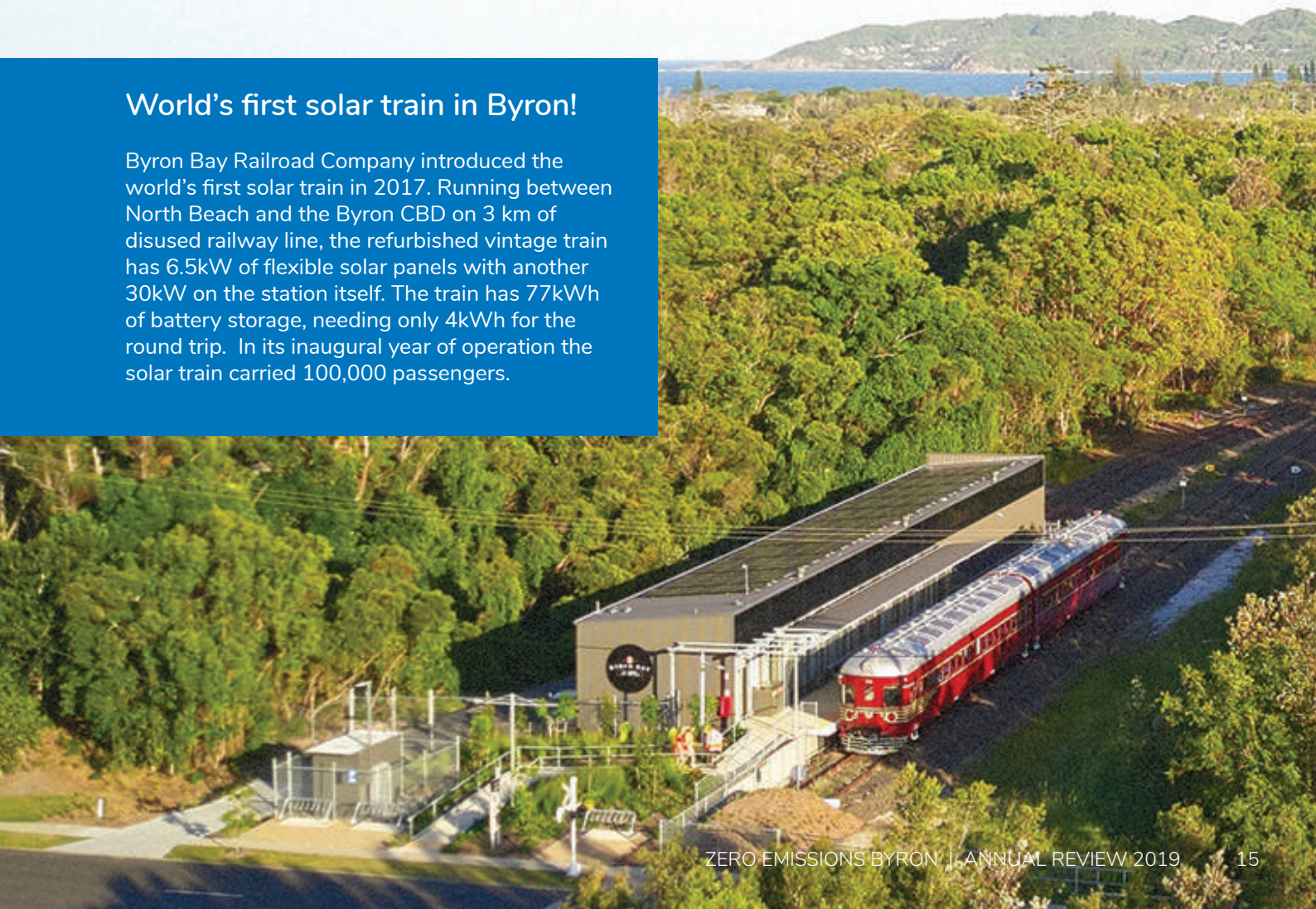
- Finding ways to reduce vehicular traffic in Byron Shire, particularly in town centres.
- Educating the community on low-impact ways of moving around such as cycling, walking, car-pooling, seeking public transport options.

## Actions

- Push for more EV chargers throughout the Shire, EV car sharing and EV car hire
- Demystify EVs by example and education: ZEB is hosting a transport forum with speakers, stalls and EV trade show at the Cavanbah Centre on 8 June
- Support Byron Shire Council's transport strategy
- Encourage use of cycleways, car share schemes and EV car hire
- Support electric bike hire throughout the Shire
- Encourage bus companies to convert to electric buses and trial autonomous buses
- Support moves to extend the solar train

## World's first solar train in Byron!

Byron Bay Railroad Company introduced the world's first solar train in 2017. Running between North Beach and the Byron CBD on 3 km of disused railway line, the refurbished vintage train has 6.5kW of flexible solar panels with another 30kW on the station itself. The train has 77kWh of battery storage, needing only 4kWh for the round trip. In its inaugural year of operation the solar train carried 100,000 passengers.





## Electric vehicle chargers – where are they?

Electric vehicles may be charged at home, with varying rates depending on domestic power and vehicle type. If you're caught short or you're travelling, it's useful to know in advance the location of chargers.

Some local public EV chargers are hidden from public view. Here's what's available:

Where	Type
Byron Shire Library	Tritium Veefil
Habitat Byron Bay	Chargefox
The Macadamia Castle	Tesla
The Macadamia Castle	Chargepoint
Woolworths	Schneider

As with all emergent technologies, the way forward is not always smooth. The Library and Macadamia Castle use CCS1 chargers whereas the industry has progressed to CCS2 chargers. Clearly, the older chargers need updating.

### Destination chargers:

If you're not a guest, the accommodation provider may charge for use

Byron at Byron Resort & Spa	Tesla
Brunswick Motor Inn	Tesla
Beach Suites Byron Bay	Tesla

NRMA is running out a charging superhighway in NSW, much like the Tritium-powered Queensland super highway.



The Veefil charger at the Byron Shire Library powered by Enova



New-generation electric bikes carry Bluetooth connectivity and an app for self-guided tours

## Extending solar bike hire: Sunshine Cycles, 100% emissions-free!

Byron's first solar bike hire is on the move. Plans are afoot to extend Sunshine Cycles' solar-powered electric bikes with six purpose-built Sunpods at locations throughout Byron Shire. At present, Sunshine Cycles operates at Elements of Byron and The Terrace Reserve, Brunswick Heads.

Sunpods are made of recycled plastic and each one houses five bikes that are charged from solar panels with battery storage. In what is claimed as a world-first, the system operates via Bluetooth technology. The small amount of remaining embedded energy will be offset through local rainforest projects.

## WHAT DO YOU THINK?

What incentives should be implemented to reduce transport emissions?

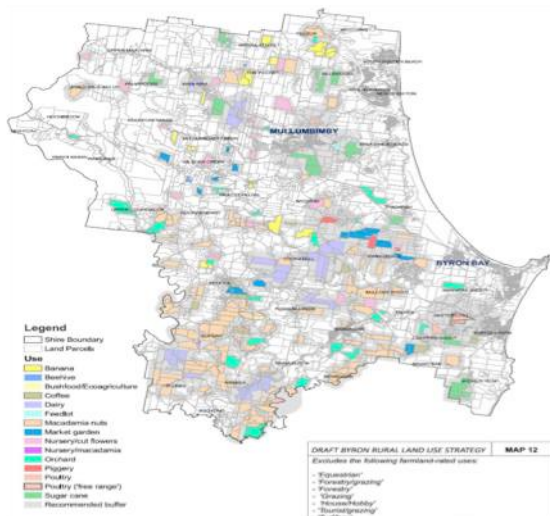
What would encourage you to take public transport, car share or cycle?

43%  
OF THE SHIRE  
HAS REFORESTATION  
OR BIO-SEQUESTRATION  
POTENTIAL

## LAND USE

Within the shire, grazed or cleared land amounting to a total of 23,155 hectares (43% of the shire), has reforestation or bio-sequestration potential.

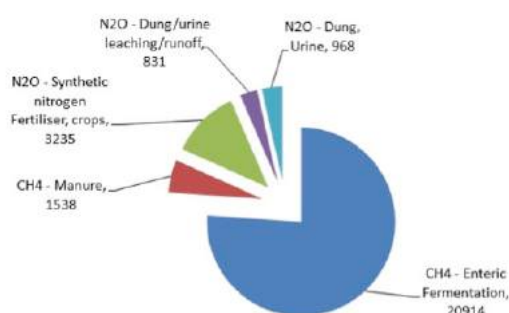
### Assessable Land: Sensitive Farmland-rated Uses and Recommended Buffers



Agricultural emissions for Byron Shire were calculated as 27,485 tonnes CO<sub>2</sub>-equivalent, 11% of the total greenhouse gas emissions for the Shire. The principle sources of agricultural emissions in Byron Shire are:

- Enteric fermentation by beef and dairy cattle
- Manure
- Synthetic fertilisers
- Crop residues (sugar cane in particular)
- Farm management practices (piggeries, open range cattle, dairies, poultry)

### Agricultural Emissions by Gas (tonnes CO<sub>2</sub>-e)



### Strategies and Targets

ZEB considers carbon sequestration in trees, vegetation and the soil, and carbon accounting to be the most important aspects of emissions reduction initiatives. Actions with potential to reduce emissions in these areas are:

- Regenerative agricultural practices through education and best practice.
- Enteric fermentation – amending diets and selective breeding.
- Reducing fertiliser use to zero.
- Composting manures from dairy, pig and poultry production.
- Revegetating 1,030 hectares or 4.5% of suitable land.

### Challenges

- Improve carbon counting, starting with soil carbon.
- Raise sufficient funds to meet the target of planting and maintaining 1.8m trees by 2025.
- The dilemma of camphor as sequester of carbon, yet regarded as a weed.
- Setting standards to manage an accreditation scheme for farmers and landowners.

### Actions

- Utilise Byron Shire Council's GIS mapping to identify areas for improvements in agricultural practice.
- Implement RePlant Byron's strategies by working with existing stakeholders and practitioners.
- Investigate the need for educational courses in regenerative agriculture.
- Work to achieve agricultural and food waste reduction strategies.



## Trees for koalas

A number of initiatives to restore habitat for koalas is under way, one of them being Bangalow Koalas. Active in plantings on private land to create koala corridors, Bangalow Koalas works around the shire from Bangalow and Coorabell to Ewingsdale and areas in between. By June 2019 over 12,000 trees will have been planted in 18 months. A great community effort inspired by Linda Sparrow.

## It's all in the soil

Recently-launched Subpod is the world's first modular in-garden compost system, turning food waste into nutrient rich food. The neat design doubles as a garden seat. Already installed in 'garden ships' in Habitat and Spell and the Gypsy Collective and destined for Byron at Byron, Subpod encourages local food production while helping to reduce food waste to landfill.

## WHAT DO YOU THINK?

What value do you place on agriculture in Byron Shire?

Is agriculture in Byron Shire at risk from expanding towns?

Do you think there should be more locally-produced food?

## An ambitious target

Through RePlant Byron, ZEB aims to plant 1.8 million trees between September 2019 and December 2025 to offset the agricultural sector's emissions. ZEB will work with stakeholders including Brunswick Valley Landcare, Big Scrub, Forest Designs, Firewheel Nursery, Bangalow Koalas and others. The plantings, mostly on degraded or permanently wet areas unsuitable for agriculture, will help sequester carbon, contributing to climate change mitigation and environmental conservation. Benefits will flow to the Shire's 33,000 residents and 2.1 m tourists. People without access to land may be able to participate in community tree planting days.



Volunteers at a Bangalow Koalas planting day

# TAKE ACTION

## Climate Change Challenge - Eliminate use of Fossil Fuels.

Zero Emissions Byron has devised a positive 12-step action plan that you can take now to reduce your impact on the planet.

- **Use less grid electricity and save money:**

Be aware of energy use.  
Switch off lights and appliances.  
Get energy-friendly light bulbs.  
Minimise air conditioning.  
Dry clothes in the sun.  
Reducing your energy lowers demand for coal-fired power.

- **Install solar panels (and batteries) when possible:**

Use appliances eg dishwasher, washing machine during the day to minimise night time use of coal-fired power.

- **Electric vehicles:** When EVs become affordable, trade in your petrol car, buy an EV and charge it from your solar panels.

- **Divest from fossil fuels:**

Change to ethical, fossil-fuel free investments.  
Change from banks who invest in fossil fuels.  
Check out:

[marketforces.org.au/info/compare-bank-table](https://marketforces.org.au/info/compare-bank-table)

- **Plant trees:** join your local Landcare group or seek others with active tree-planting programs.

- **Switch to a local ethical energy supplier:**

Compare 'greenest' energy companies at [greenelectricityguide.org.au](https://greenelectricityguide.org.au)

- **If you're renting, check out solar for renters:**

There is a range of programs in development such as the solar garden concept in Byron Shire.

- **Get active** and join a local group taking action to reduce emissions, working with communities to address climate change (there are over 70 local groups in Australia). Get involved in a wider campaign taking action: eg any of the stopadani.com campaigns, gasfield-free campaigns, The Next Economy [nexteconomy.com.au](https://nexteconomy.com.au)

- **Get political:** Ask your local candidates what action their party will take in government to address climate change impacts.

Vote for the political party that pledges to take practical action on climate change.

Write letters to politicians – snail mail if you can.  
Form a letter-writing group. Keep up the pressure demanding a National Action Plan on Climate Change

- **Talk it up!** Talk to family, friends, work colleagues about climate change and the practical steps you can take in your everyday lives. Share articles on Facebook.

- **Keep informed:** Read everything you can and check out organisations such as the Climate Council: [climatecouncil.org.au](https://climatecouncil.org.au). Subscribe to RenewEconomy (daily online news [reneweconomy.com.au](https://reneweconomy.com.au)).

- **Keep positive:** Awesome things are happening in local and regional Australia, so join the dynamic movement addressing climate change (with projects such as solar farms, tree planting, waste reduction, local food and farmers' markets, alternative transport, energy efficiency and more). Exciting times need exciting action!

## People power creates change

**REPOWER BYRON SHIRE** aims to grow the number of locals who have switched to ethical renewable electricity. Together, we can divest from fossil fuel power, increase local renewable power generation, and reduce excess power use. Led by COREM, Enova Community and Zero Emissions Byron, **REPOWER BYRON SHIRE** switches on people power to encourage a more equitable and clean energy system for the future.





Zero Emissions Byron aims to reduce Byron Shire's emissions to zero by 2025 across the energy, buildings, land use, waste and transport sectors.

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