



ROADMAP to 2030



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EXECUTIVE SUMMARY

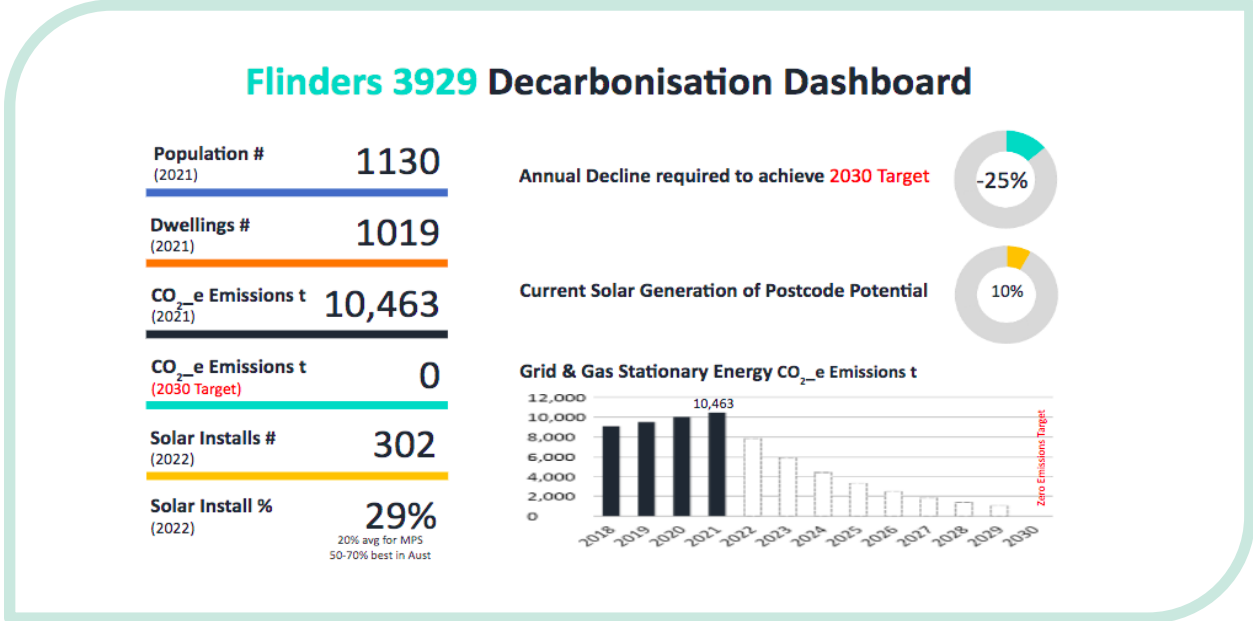
In 2021 a community group was formed titled Flinders Zero Carbon Community Group (FZCC). This Roadmap has been developed to enable the Vision of FZCC:

- 1. To support the Flinders Community to reach zero net energy and zero net emissions by 2030**
- 2. Flinders energy is wholly from renewable sources**
- 3. Flinders is completely carbon neutral**

The ‘community’ refers to all the people who live within, and identify with, the geographic area of the Flinders 3929 postcode, which is located on the Country of the Bunurong/Boon Wurrung people, custodians of this land for many thousands of years. FZCC is a satellite community of Repower Mornington Peninsula.

The Flinders 3929 baseline is depicted in the graphic below. The dashboard represents electricity-only emissions, this does not include gas, wood or transportation.

In order to transition to 100% renewable consumption, the community needs to generate additional 9,311 MWh of renewable electricity per annum to meet the target. This would require an additional 6.8 MW of rooftop solar capacity, or for example a 5 MW grid-connected solar farm. This is compounded by the fact that since 2017 electricity usage has increased by 8-12% on average each year and rooftop solar only grew by 3% in the past year. Replacement of bottled gas, wood for heating, hot water and cooking, and the fuel switch to electric vehicles will easily double the local generation required.



Positive factors to support the communities ambition include that there is capacity to meet 29,700 MWh of electricity through rooftop solar (over 3 times what is currently needed for consumption) and only 10% of the rooftop solar potential has been realised. Going forward, it is vital to consider community batteries, transformer upgrades and microgrids as part of the overall solution to unlock as much rooftop solar as possible.

The proposed Roadmap has two Streams of activities:

- **Stream 1 net-zero energy**
Focusing first on stationary energy: electricity, gas, wood and transportation
- **Stream 2 net-zero emissions**
Tackling the balance of emissions: agriculture, waste and wastewater, land use

The four key focus areas FZCC will initially be working on and supporting to reach net-zero energy are:

FOCUS AREA 1: Using less energy

- Repower Energy Efficiency Program
- Demand management and education
- Finance options for energy efficiency

FOCUS AREA 2: Energy on-site

- Solar and battery homes
- Commercial solar installations
- Community solar installations
- Back-up power sites
- Community battery
- Solar farm
- Microgrid

FOCUS AREA 3: Fuel switch

- All electric homes education
- Fuel switch programs (air conditioners, white goods, EV bulk buys, EV chargers)

FOCUS AREA 4: Generating nearby

- Green electricity sourcing
- Advocacy for Council, Navy site and South East Water to switch to 100% renewable
- fast, public, multibrand EV charging station

This document outlines in further details the community engagement to date, the available baseline data and data gaps, and the role of FZCC taking this Roadmap forward.

BACKGROUND

Flinders is located on the Country of the Bunurong/Boon Wurrung people, who have been the custodians of this land for many thousands of years. Flinders is a coastal community located in the Mornington Peninsula Shire with a population of 1,130 of which there are 300 families.¹

Flinders Zero Carbon Community Group (FZCC) was formed in 2021 as a sub-committee of the Flinders Community Association. The Group was incorporated as a separate incorporated association in 2022. This Roadmap has been developed in order to progress the FZCC Vision which is:

- 1. To support the Flinders Community to reach zero net energy and zero net emissions by 2030**
- 2. Flinders energy is wholly from renewable sources**
- 3. Flinders is completely carbon neutral**

THE MISSION OF THE FZCC

- Take actions to address climate change
- Inform and educate the Flinders community on climate issues and promote positive solutions
- To support Flinders community members in taking responsibility for community climate action
- To join with other like-minded groups to share knowledge, learn and support widespread change



¹ 2021 Census

The following Guiding Principles have been established by the group and are foundational for this Roadmap:

- **Equitable access:** We need to bring everyone along who is interested (not financially based)
- **Respect for nature:** We are a part of nature - not separate from it
- **Engage community for community benefit:** Private & business- we all need to be aware of how we use/rely on energy to eventually be self-sustaining
- **Acknowledge the complexity and inherent connection of earth's ecosystems, and value them for their own worth:** Everything is connected. What we do in one area always has flow-on consequences.

The FZCC aims to show, on a very localised level, the pathway to achieving Net-zero emissions by 2030, whilst collaborating across the broader Local Government Area (LGA) with groups such as Repower Mornington Peninsula and the Mornington Peninsula Shire Council.

The FZCC is a satellite community within the group representing the LGA of Mornington Peninsula – Repower Mornington Peninsula².

The community' refers to all the people who live within, and identify with, the geographic area of the Flinders 3929 postcode.

Repower Mornington Peninsula are a group of engaged local citizens who believe in taking responsibility through 'community decarbonisation'. Their vision for the Mornington Peninsula is to cut energy related carbon emissions by 70% by 2030 (from 2018 levels).

COMMUNITY PERSPECTIVES

Multiple engagement surveys were held by FZCC during 2021-2022 and they show broad local interest in the ambitions of the group.

Some of the highlights in community perspectives were in the survey held in October 2021 with over 50 participants who were highly engaged and showed that:

- 36 of them had solar panels
- 6 battery storage
- 16 solar hot water
- 4 electric vehicles
- Majority with roof insulation and double glazing
- Around 1/3 use wood fire heating
- Around 1/3 are all electric
- Strong support for a community battery in Flinders
- Support for wind and solar farm in Flinders
- Desire for stronger partnership with Council

² <https://repowermornpen.org.au/>

SCOPE

The emissions boundary as described in this Roadmap is Scope 1 (direct) and Scope 2 (indirect) as it relates to stationary energy and transport³.

The three common targets for emissions reductions for communities are listed below, these targets are for climate change mitigation. As FZCC has limited baseline data (currently electricity and transport), the additional areas of waste, land use and agriculture are expected to be relatively small in comparison. It is recommended that these are staged, so that the primary focus is on renewable supply, whilst the community prepares for the other sectors.

1.

100% RENEWABLE ELECTRICITY SUPPLY

100% renewable electricity supply deals with electricity only. This is a common approach for communities with the ambition to reach 100% renewable supply. It should be noted however that the electricity baseline would be captured as a moment in time - each year would vary as usage patterns and technologies change.

2.

NET-ZERO ENERGY

Net-zero energy is defined as a community that reduces and matches its local energy needs with a 100% renewable energy supply. Practically, that means that energy can be imported from the grid or elsewhere, but this needs to be matched by exporting local renewable generation. This calculation is averaged over an annual period of time. This includes stationary energy - electricity, gas, wood, and transportation (fuels).

3.

NET-ZERO EMISSIONS

Net-zero emissions is defined as reaching carbon neutrality, in that the local carbon emissions are reduced, sequestered or offset. The origin of the Flinders emissions would be categorised into:

1. Stationary Energy
2. Transportation
3. Agriculture
4. Land Use Change
5. Waste and Wastewater

Climate change adaptation

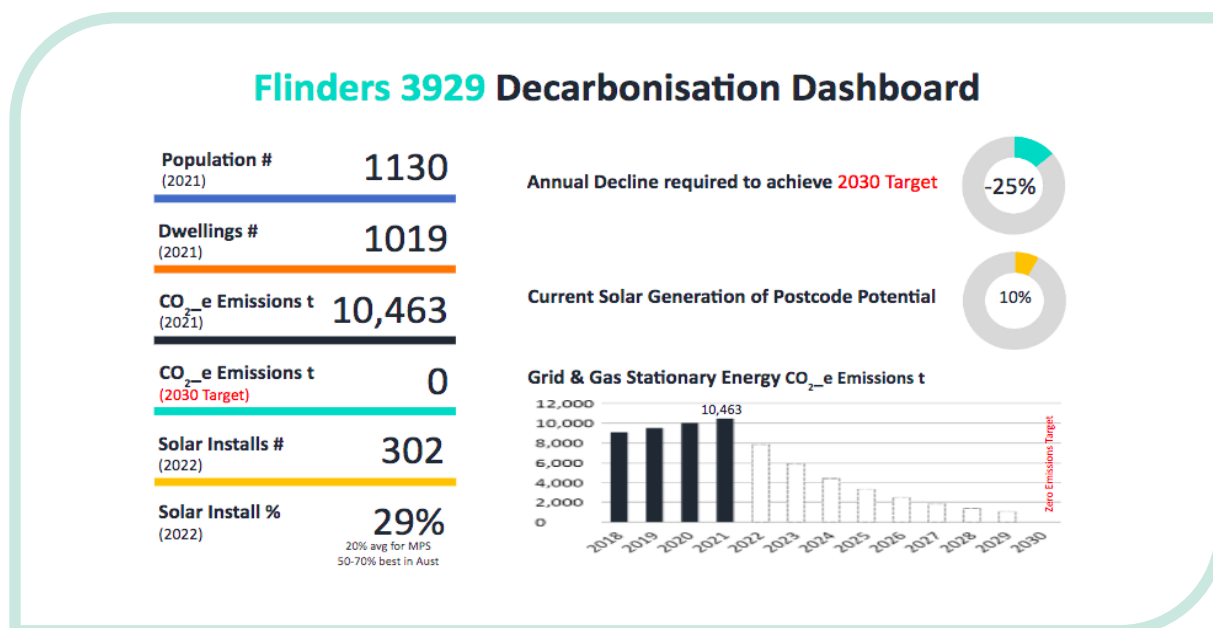
As a coastal community, Flinders is at the coal face of climate change impacts. The community has also expressed an interest in climate change adaptation activities through the 2022 community survey such as:

- water usage and preservation
- supporting Landcare
- plant more local trees, appropriate vegetation and re-vegetation
- grow and share locally grown food as a farm co-op

³<https://www.cleanenergyregulator.gov.au/NGER/About-the-National-Greenhouse-and-Energy-Reporting-scheme/Greenhouse-gases-and-energy>

FLINDERS 3929 BASELINE

The following dashboard represents the overview of electricity only emissions in the postcode region and current solar uptake. It should be noted that this does not include gas, wood or transportation.



The United Energy data shows in FY2021 that 10,463 MWh was imported from the grid locally, with 782 MWh being exported, presumably from local rooftop solar resources. This results in a balance in imports of 9,681 MWh.

The data also shows that this is trending upwards; since 2017 electricity usage has increased by 8-12% on average each year.⁴

Currently the community of Flinders has 29% of its rooftops with solar. This is above the state average, however, it only grew by 3% in the past year, and may be impacted by the majority of homes that are for weekend and holiday usage (56%⁵) as compared to full-time residents.

⁴ Repower MP baseline data 2021

⁵ Census 2021

CONTEXT

GLOBAL CONTEXT

To avoid dangerous climate change the world must transition from emitting high amounts of greenhouse gases (GHGs) to emitting very low, zero, or even ‘negative’ emissions or sequestration. The transition has already begun but needs to expand and speed up considerably if the world is to meet its global emission targets. The majority of the world’s countries have, by signing the 2015 Paris Agreement, endorsed the common goal of keeping global temperature rise below 2°C.

There is now the question of how current state and local governments can achieve their own contributions to the Paris Agreement. Understanding the role and potential of community-led energy transitions will greatly enhance local efforts. Communities taking control of their own pathway to Net-zero emissions can greatly assist these ambitions to become reality.

One of the key strategies for communities to reach a target of zero net emissions is to first transform their energy system to become 100% renewable electricity supply. This is already a global movement with more than 300 cities, municipalities and regions setting political targets for 100%, implementing strategies to ethically address the imperative of climate change.

FEDERAL CONTEXT

The federal 20% Renewable Energy Target has been met in previous years and the change of government in May 2022 is heralding a new phase for climate action. Renewable energy penetration has achieved 34% across the National Electricity Market (NEM)⁶.

In August 2022 the federal government passed the 43% emissions reduction target by 2030.

Additional community energy programs Solar Banks and Community Batteries were pre-election commitments of Federal Labor⁷ and the Flinders area was announced as a potential site for a battery. Further details are yet to be publicly available.

VICTORIAN CONTEXT

From a grid supply perspective, renewable energy sources supplied almost 37% of Victoria’s electricity generation over the past year⁸. This benchmark, and the increasing proportion of renewable energy in the grid over time (i.e. from now until 2030 or 2040) should be factored into any long-term localised strategy to deliver 100% renewable energy supply.

In 2022 the Victorian Renewable Energy Target was increased to 65% by 2030, 95% by 2035 and the Victorian emission reduction target is 75-80% by 2032.

⁶ <https://opennem.org.au/energy>

⁷ https://www.alp.org.au/policies/power_to_the_people

⁸ <https://opennem.org.au/energy>

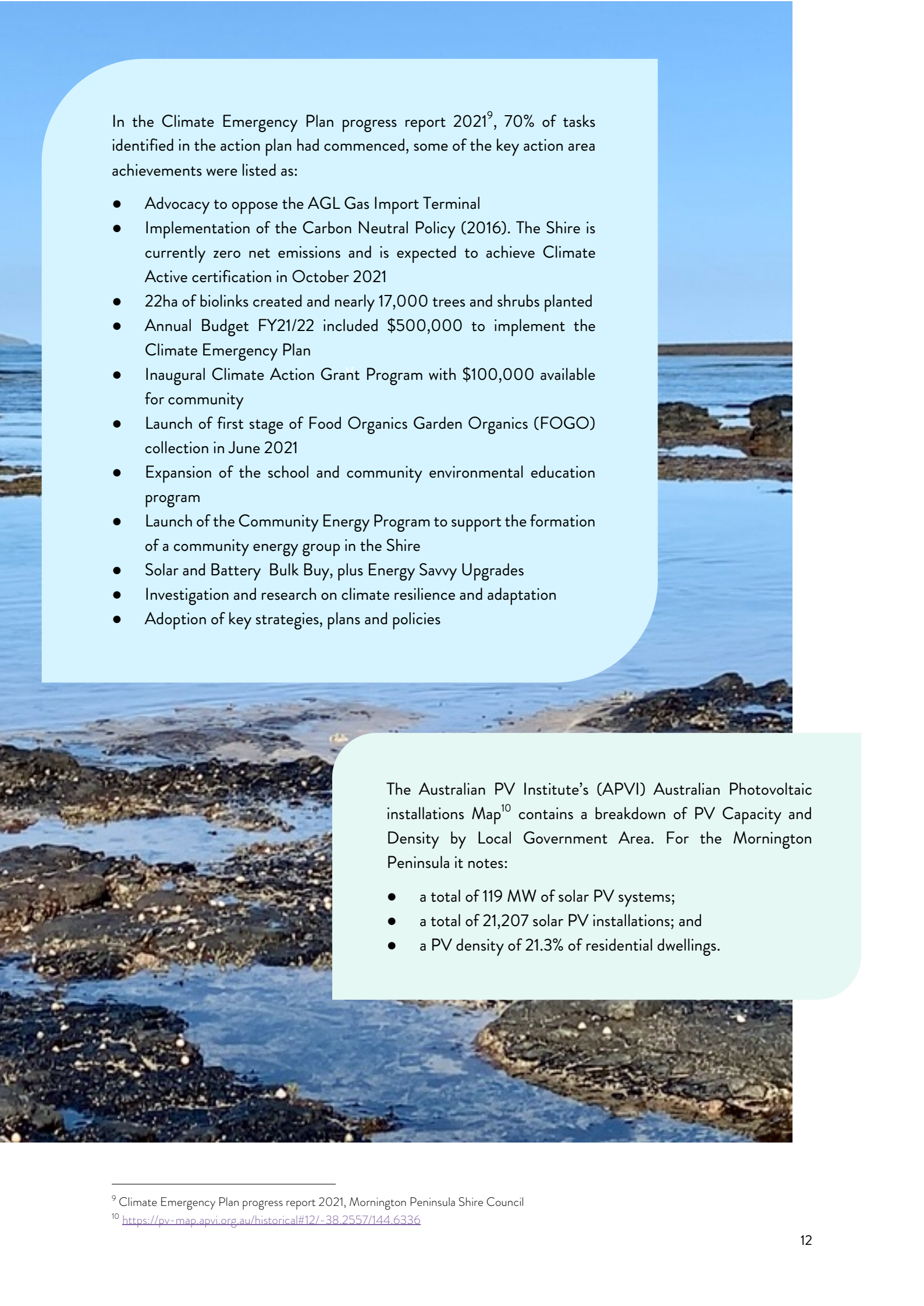
LGA CONTEXT

In August 2019, the Mornington Peninsula Shire declared a climate emergency. In the same year, Council determined the community carbon emissions boundary and calculated the emissions generated in the delivery of Council services. In 2021 Council achieved carbon neutrality.

The key strategic documents of Council that intersect with this Roadmap are:

- Imagine Peninsula 2040
- Community Vision
- Ensuring our Future 2020
- Climate Emergency Plan progress report 2021
- Health & Wellbeing Plan
- Food Economy & Agroecology Strategy
- Economic Development Strategy (planned)
- Beyond Zero Waste Strategy
- Single Use Plastics Policy
- ESD Policy for Council Building and Civil Works
- Waste Contamination Policy
- Integrated Water Management Plan has been developed
- Flood Resilience & Integrated Stormwater Management Strategy
- Integrated Transport Strategy





In the Climate Emergency Plan progress report 2021⁹, 70% of tasks identified in the action plan had commenced, some of the key action area achievements were listed as:

- Advocacy to oppose the AGL Gas Import Terminal
- Implementation of the Carbon Neutral Policy (2016). The Shire is currently zero net emissions and is expected to achieve Climate Active certification in October 2021
- 22ha of biolinks created and nearly 17,000 trees and shrubs planted
- Annual Budget FY21/22 included \$500,000 to implement the Climate Emergency Plan
- Inaugural Climate Action Grant Program with \$100,000 available for community
- Launch of first stage of Food Organics Garden Organics (FOGO) collection in June 2021
- Expansion of the school and community environmental education program
- Launch of the Community Energy Program to support the formation of a community energy group in the Shire
- Solar and Battery Bulk Buy, plus Energy Savvy Upgrades
- Investigation and research on climate resilience and adaptation
- Adoption of key strategies, plans and policies

The Australian PV Institute's (APVI) Australian Photovoltaic installations Map¹⁰ contains a breakdown of PV Capacity and Density by Local Government Area. For the Mornington Peninsula it notes:

- a total of 119 MW of solar PV systems;
- a total of 21,207 solar PV installations; and
- a PV density of 21.3% of residential dwellings.

⁹ Climate Emergency Plan progress report 2021, Mornington Peninsula Shire Council

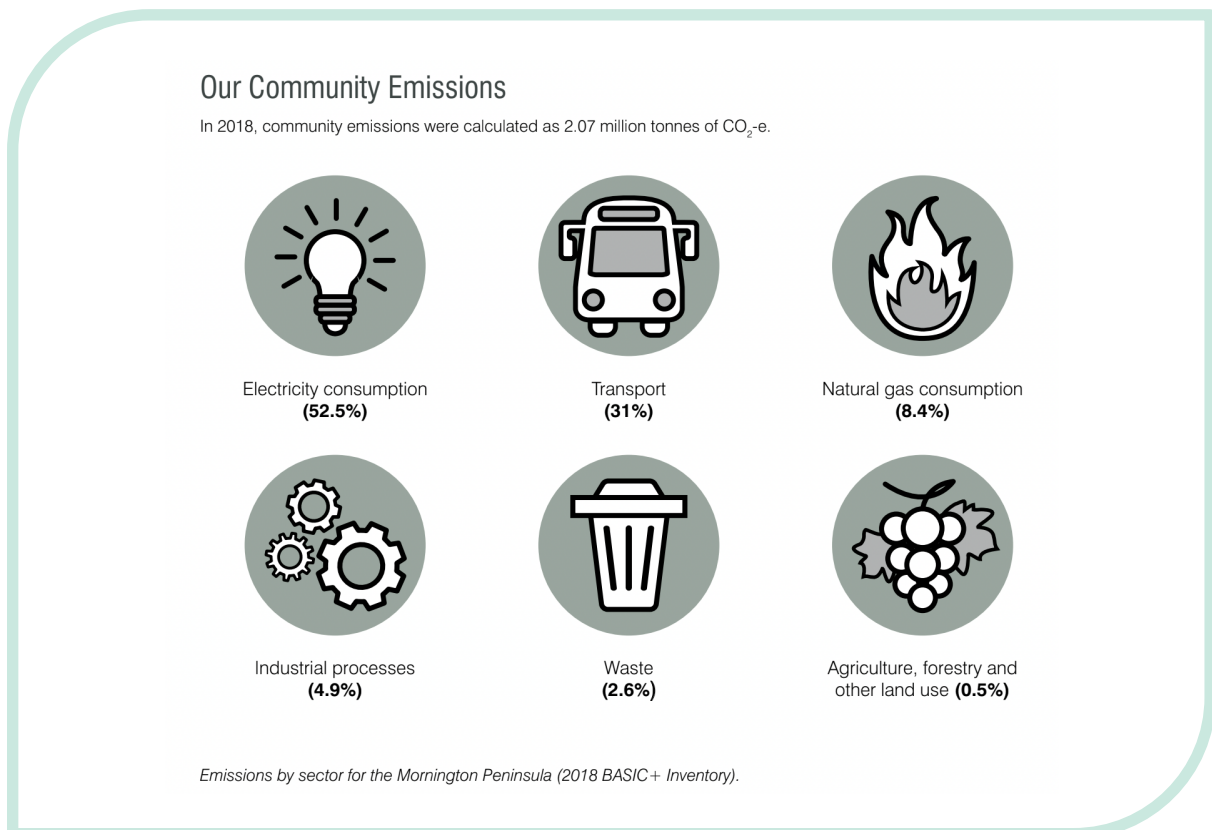
¹⁰ <https://pv-map.apvi.org.au/historical#12/-38.2557/144.6336>

STAGING THE MANDATE

DEVELOPING THE BASELINE FURTHER

Currently, there are significant gaps in data in order to fully deploy a Net-zero emissions strategy for Flinders. The data available for the Shire and through the Repower MP baseline is a good enough representation to show what the primary action areas are (electricity and transport).

The following graphic outlines the sectors and footprint of the Mornington Peninsula Shire 2018 baseline.



Gas and firewood

The community survey of a sample of residents in 2021 showed that there was approximately 30% of houses in the locality are all electric, however, as the locality is not serviced by piped gas there is low data available for this. Likewise the use of local firewood.

By deploying another more detailed household survey in 2022 FZCC was able to ascertain the relevance of wood and gas to their 3929 baseline. It is significant and in the future, the data gaps are strongly recommended to be filled through a collaboration with Repower MP and Council.

The data gaps to be filled are:

a.

Obtain bottled gas data estimations from **local LPG bottle suppliers** and add to this data with inputs from a **household survey with a minimum take-up of 10% of homes.**

b.

Obtain firewood consumption data estimations from **local firewood suppliers** and add to this data with inputs from the **household survey.**

c.

Understand local appliances that could be fuel-switched through the **household survey.**

The 2022 sample survey of 31 homes (3% sample) provides some insights into the current context of gas, wood and appliance opportunity. The following trends could be assumed:

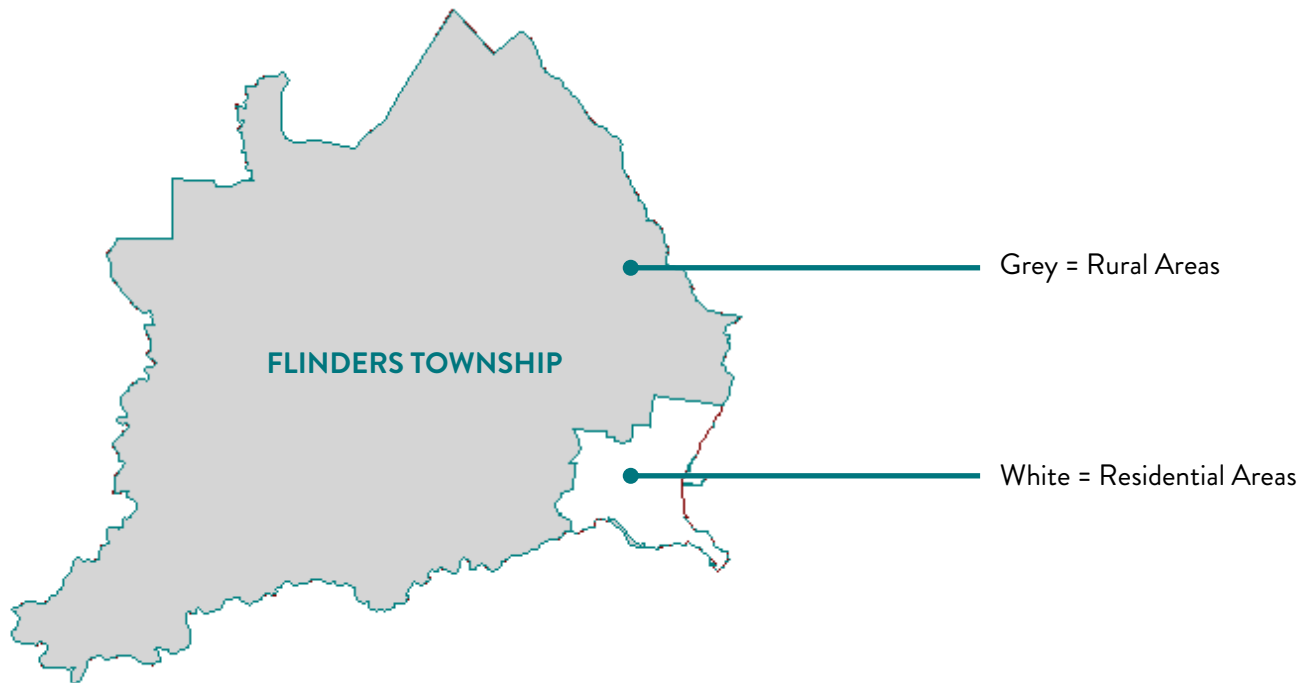
- 13% use bottled gas as their main heating source
- 32% use wood as their main heating source
- 48% of heaters were over 10 years old and therefore suitable for fuel switching
- 62% of wood fire users, used less than 1 tonne of wood per year
- 33% of gas users, used 1-2 bottles per year
- 48% of owners cool their home in summer and 100% use a reverse cycle split system or ducted
- 16% use gas for their hot water service

As complementary to developing local energy generation solutions, it is also vital to encourage the transition to all-electric configurations (wood and gas for heating and/or hot water to transition to split-cycle air conditioner and heat pumps).



Land use and agriculture

Another gap in the data that may not translate through the Shire level baseline is land use and agriculture. This is due to the fact that 94% of Flinders township is rural, with 346 or approximately one-third of properties being located in this classification. This can be noted on the map below with white representing residential properties and grey representing rural areas.



Establishing the community boundary

It is important to establish the boundary of responsibility and the sphere of influence for the FZCC. In particular, it is proposed that the Council operations should be carved out as by 2021 Mornington Shire Council was carbon neutral. The South East Water sites and Royal Australian Navy should also be excluded given the low possibility of community influence, and the overarching responsibility of the authorities and state government for these sites.

The annual additional generation needed to achieve 100% renewable electricity is in the order of 9,681 MWh per annum. Under the proposed sphere of responsibility called 'Community Boundary' in the table on the following page, this includes what is proposed to be the shared community actions under the umbrella of the FZCC.

Responsibility	Overview
South East Water Operations	40,556 kWh per annum (0.4% of total imports)
Royal Australian Navy	<p>The West Head Gunnery Range is 16 ha of land in Flinders. The Range was originally used by the Army in the 1890s as a shore battery and was taken over by the Royal Australian Navy in 1958. The base is used as a live fire platform for close and medium-range weapons. The property contains waste oil sumps and small above-ground diesel storage tanks.</p> <p>It is important to note that WHGR is a relatively small location with respect to energy usage in comparison to broader Defence operations. Defence has a centralised retail electricity contracting strategy, as such, it would not make sense to isolate a location for the purposes of a local project.</p> <p>The total annual consumption is:</p> <ul style="list-style-type: none"> ● 301,271 kWh (3% of total imports)
Council operations/facilities	<p>Current Council meters include:</p> <ul style="list-style-type: none"> ● Unmetered Street lights 26,431 kWh ● Metered lighting 1,262 kWh ● Total: 27,693 kWh (0.3% of total imports)
Community Boundary	9,311 MWh per annum remains



Proposed staging to 2030

The following staging is proposed for the Roadmap.

Stream 1: Net-zero energy	Stream 2: Net-zero emissions
<p>2022</p> <ul style="list-style-type: none">● Analysis● Roadmap● Project feasibility● Program design and partnerships established● Organisation established <p>2023-2024</p> <ul style="list-style-type: none">● Promote, educate, engage● Project implementation● Gas and wood baseline <p>2025-2030</p> <ul style="list-style-type: none">● Promote, educate, engage● Project implementation● Evaluate progress	<p>2022-2024</p> <ul style="list-style-type: none">● Align and support partnership programs relating to agriculture, waste, biodiversity and carbon offsetting, that contribute to the goal of net zero emissions <p>2025</p> <ul style="list-style-type: none">● Working with Council and Repower MP on a more detailed baseline - may include surveying to acquire bottom up data or to utilise the Snapshot¹¹ profile● Determine new priority areas● Analysis● Roadmap● Project feasibility <p>2026-2030</p> <ul style="list-style-type: none">● Promote, educate, engage● Program design and partnerships established● Project implementation● Evaluate progress

¹¹ <https://snapshotclimate.com.au/locality/municipality/australia/victoria/mornington-peninsula/>

STREAM 1: NET ZERO ENERGY

Harvesting local project ideas

The broad technology options available to Flinders are:

- Rooftop solar PV
- Microgrids & Virtual Power Plants
- Residential & Community Scale Battery
- Micro wind
- Mid & Large Scale Wind (Inland & Offshore)
- Tidal & Wave Power
- Bioenergy
- GreenPower
- Energy Efficiency/Fuel Switching/Demand Management

For further details on these technology options see **Appendix 1 Technology Options**.

In 2021 the community survey showed the following 'Big ideas' for Flinders:

- Solar farm
- Wind turbine
- Solar on community buildings
- Electric vehicle charging
- Education on renewables and energy efficiency

In 2022, the community survey showed the following insights from the sample group that help to form the focus areas:

- 74% state it is extremely or very important to save energy around the home
- The top reasons why are to help the environment at 77% and to reduce energy bill at 55%
- In regards to support that could help unlock more energy efficiency activities, the group stated the following activities:
 - Information and assistance with choosing appropriate actions 53%
 - Rebate or other financial incentives 43%
 - Accurate data on financial payback of actions 43%
 - Local access to energy efficiency products 23%
 - Being part of a group taking action together 20%
 - Case studies of others who have undertaken action 17%
 - Official or independent endorsement of products or suppliers 20%
 - Favourable financing options 7%
- In regards to communicating local opportunities, 80% stated email as their preferred method.

FZCC has had success already with securing a feasibility study into a community battery for Flinders by Yarra Energy Foundation, as well as a pre-election commitment from federal Labor to deliver it.

Scenarios to Net-zero energy

Generating an additional¹² 9,311 MWh of electricity usage per annum from local solar PV would require an additional 6.8 MW of rooftop solar capacity¹³, or could be provided for example through a single 5 MW AC grid-connected solar farm.

Importantly this level of electricity imports does not include stationary energy use associated with the replacement for the use of gas (bottled LPG) or wood for heating, hot water and cooking purposes or the fuel switch to electric vehicles. Were these loads converted to electricity using efficient heating, hot water technologies, and EVs, this could easily double the level of local solar generation required to supply those new electrical loads.

In regards to the local capacity of rooftops, APVI¹⁴ shows that there is the local capacity to meet 29,700 MWh of electricity through rooftop solar, which is over 3 times what is currently needed for consumption (including if you account for the existing solar exports of 782 MWh), and means that with fuel switching for heat and transport there is enough rooftop capacity to support those needs into the future. In addition, the APVI site shows that there is the potential for around 24 MW of installed capacity via 155,540m² potential rooftop space; currently, 2.2 MW is installed. Therefore, only 9% of the rooftop solar potential has been realised. It is important to note, however, that the grid will start experiencing voltage issues and the network operator will enforce zero export limits once 40% of homes have rooftop solar. It is vital to be considering community batteries, transformer upgrades and microgrids as part of the overall solution.

The four key focus areas to reaching net zero energy are:



Key actions and responsibilities for these are explored in the tables below in alignment with the key focus areas.

¹² i.e. additional to the existing level of solar generation within the study area.

¹³ At 3.7 kWh/kW/day.

¹⁴ <https://pv-map.apvi.org.au/historical#9/-38.4170/145.0278>

Focus area 1: Using less energy

Action	Stakeholder responsibility	FZCC responsibility
Repower Energy Efficiency Program - with local provider Green Moves for residential and business	<p>Repower MP To establish resources for the local community on suitable options and local providers. Provide promotional materials.</p> <p>Green Moves</p> <ul style="list-style-type: none"> • Provision of Scorecard Assessment for residential properties for a fee. • Provision of home renovation and build reviews to ensure energy efficiency in design. • Provision of small business energy assessments for a fee. • Provision of Winery/Brewery/Medium Business Energy Audits for a fee. 	Act as the community partner and promote the program and support the recruitment of suitable homes and businesses. Particular focus on large users Golf Club, bowling club, Flinders Hotel, General Store, Farms, etc
Education program and remote switching option for weekender properties around switching off when properties are unoccupied	<p>Council/Repower MP To coordinate the partnership with WattWatchers (or similar) for a trial. Provide promotional materials.</p>	Act as the community partner and promote the program and support the recruitment of suitable homes.
Finance options for upgrades	<p>Council/Repower MP To determine and assess the availability of finance to local residents and businesses in order to participate in programs. Provide promotional materials.</p>	Advocacy and promotion to enrol homes into the retrofitting process.



Focus area 2: Energy on-site

Action	Stakeholder responsibility	FZCC responsibility
Solar and battery homes - preferred local suppliers list	Repower MP To select and promote local installers (taking full advantage of all existing incentives, particularly those via Solar Victoria). Ideally, negotiate a community benefit to community facilities from referrals. Provide promotional materials.	To promote going solar
Commercial solar installations - preferred local suppliers list	Council/ Repower MP To promote local installers (taking full advantage of all existing incentives, particularly those via Solar Victoria). Ideally, negotiate a community benefit to community facilities from referrals. Provide promotional materials.	To promote going solar
Advocacy for community solar installations	Council To work with FZCC and Committees of Management for facilities in Flinders to be enrolled in the Council zero interest loan program for the following sites <ul style="list-style-type: none"> ● Flinders Civic Hall (40kW solar) ● Flinders Cricket Pavillion ● Flinders Preschool and Playgroup ● Flinders Tennis Club Pavilion 	To advocate and support funding applications with CoM where appropriate.
Back-up power sites - Energy United - Energy Resilience Project	United Energy Delivering a proposal to DELWP for a site in Flinders.	To provide inputs into consultation on sites and how to manage barriers and impacts. To ensure it aligns with other objectives.
Community battery	Partners yet to be formalised, but current engaged stakeholders include: United Energy; YEF; South East Water.	Promoting the concept and benefits, advocating for a community battery,
Solar farm	Partners yet to be formalised.	Seek funding to undertake a feasibility analysis for the site. Assess potential sites and landholdings.
Microgrid	Partners yet to be formalised.	To be determined.

Focus area 3: Fuel switch

Action	Stakeholder responsibility	FZCC responsibility
All electric homes education program	<p>Council To support local skills development through webinars and education programs, including the sustainable house program and Eco Living Centre.</p> <p>Repower MP Provide promotional materials.</p>	To support and seek funding for the program, promote
Recommended suppliers or bulk buys to support fuel switch (could include air conditioners, white goods, EV bulk buys, EV chargers)	<p>Repower MP To select and promote local installers (taking full advantage of all existing incentives). Provide promotional materials.</p>	To act as the community partner and promote
Fast, public, multibrand EV charging station (expanding on the Tesla and slow charger available currently)	<p>Council To provide a host site such as the Flinders Community Hub for public charging and to work with commercial providers to service the location.</p>	To advocate for a high speed multibrand local charging station.



Focus area 4: Generating nearby

Action	Stakeholder responsibility	FZCC responsibility
Green electricity sourcing - marketing partnership with a retailer	Repower MP To investigate options and models. To support the community to understand its options.	Supporting the partnership and advocating locally
Advocacy for Council operations to go 100% renewable	Council To supply 100% of council operations with renewable electricity. Currently only 10% with 9 GWh remaining. Target of 2023.	Advocacy to Council
Advocacy to Navy site to switch to 100% renewable	Defence To supply defence operations sites with 100% renewable.	Advocate to Navy where appropriate.
Advocacy to South East Water to switch to 100% renewable	South East Water Has the mandate to reach 100% renewable by 2025.	Advocate to South East Water where appropriate and where they may be mutual benefits.



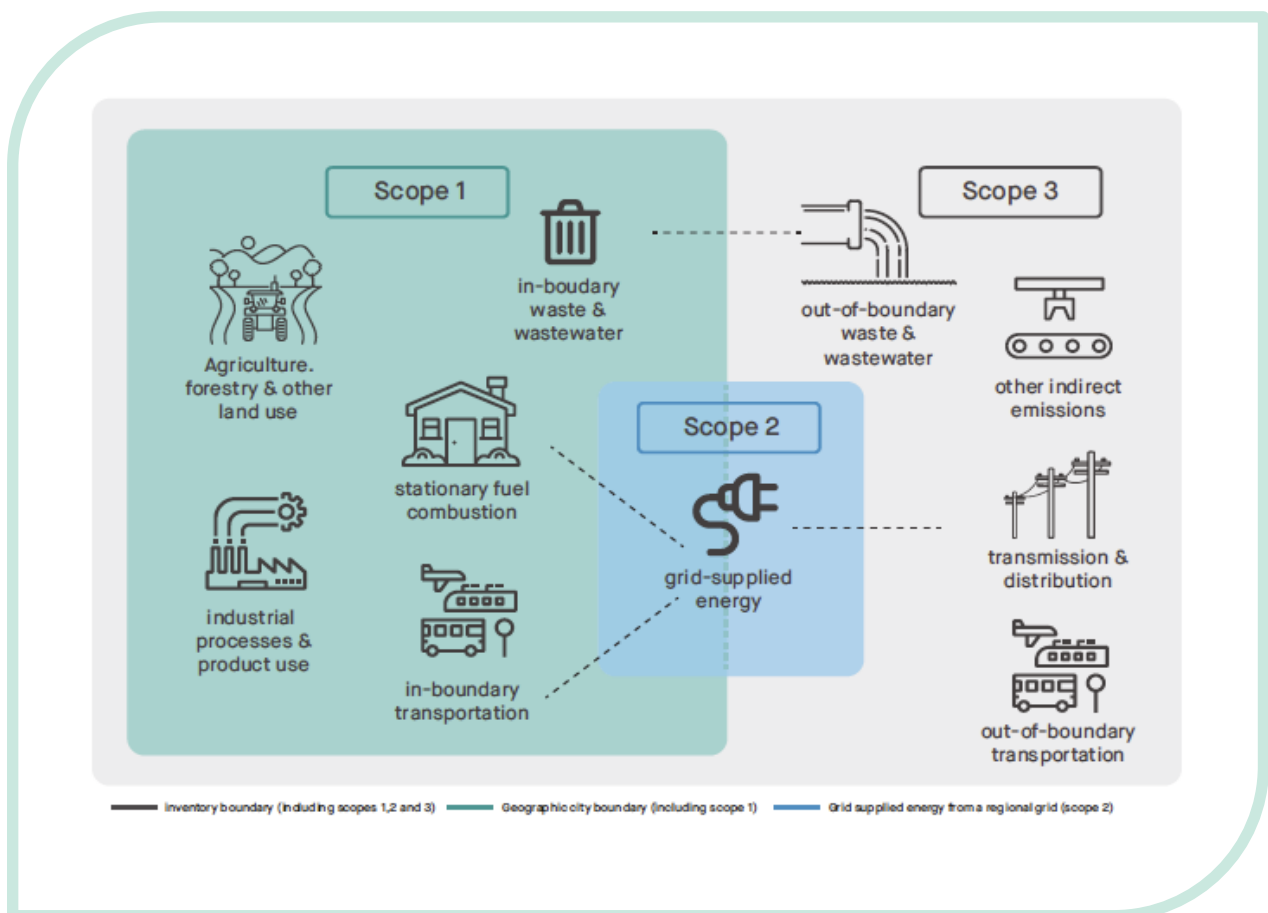
STREAM 2: NET ZERO ENERGY

Baselining emissions

It is recommended to work with Council and Repower in 2025 to recalculate baseline data sets. The origins of Flinders emissions have been categorised into:

- Stationary Energy
- Transportation
- Agriculture
- Land Use Change
- Waste and wastewater

The focus areas are Scope 1 and Scope 2 as shown in the chart below¹⁵.



¹⁵ Greenhouse Gas Protocol: Global Protocol for Community-Scale Greenhouse Gas Emission Inventories. An Accounting and Reporting Standard for Cities.

Activities to support Net-zero emissions

As per the approach with Net-zero energy, FZCC can be collating project ideas and options from now until 2025 that deal with emissions more broadly. In addition, the group could act as a connector to grants, support and subsidies that may align with these sectors and engage with partnership programs that align with the goal of Net-zero emissions. Some such programs that Council will be engaging in would include waste and composting initiatives, food economy opportunities, carbon credit and biodiversity programs.



DEPLOYING THE ROADMAP

Identifying and engaging key stakeholders

Stakeholder mapping is a process of identifying relevant stakeholder types and specific contacts for a given project, with an emphasis on the local community. Stakeholders can be understood to be all those with an interest in or influence on the project. They can be individuals, businesses, organisations and governments.

Not all stakeholders will need, or want to, be engaged in the same way. In addition, not all stakeholders have the same level of interest or influence in the project. For further details on stakeholder mapping and templates to use, please view the [Community Engagement and Benefit Sharing in Renewable Energy Development Guide](#)¹⁶.

Key stakeholders include:

- **Utilities**
 - United Energy
- **Federal Government**
- **State Government:**
 - Department of Environment Land, Water and Planning
 - Sustainability Victoria
 - Solar Victoria
 - Mornington Peninsula
- **Local businesses, organisations and industry:**
 - Tourism and services industry
 - Transport
 - Health
 - Water
 - Government
 - Shopping centres
 - Community health and emergency service facilities
- **Nongovernmental organisations (NGOs):**
 - Repower MP
 - local progress associations or chambers of commerce
 - environmental and conservation organisations
 - sporting groups
- **Residents and community groups**
- **Community Champions**
 - local sustainability or climate action groups
 - individuals
- **Local Aboriginal Traditional Owners representatives, organisations and elders**

¹⁶ Lane, T. and J. Hicks (2017) *Community Engagement and Benefit Sharing in Renewable Energy Development: A Guide for Applicants to the Victorian Renewable Energy Target Auction*. Department of Environment, Land, Water and Planning, Victorian Government, Melbourne.

Education and awareness raising

Perhaps the most important role that FZCC will play is in regards to education and awareness raising. The group sees itself as a momentum builder and aims to become a trusted local reference point.

In order to effectively communicate the Roadmap as well as the program opportunities, a communications and engagement strategy should be developed as a next step. Local opportunities such as events and markets can be utilised as engagement opportunities.

In particular, there could be opportunities to partner with Repower MP and other satellite communities to develop marketing materials that are relevant to the Shire but also to distinct communities. Developing communications materials to support the groups should be a part of all program development activities.

The FZCC group should also look to recruit a social media volunteer - this could be a young person who could also consider how to best engage youth locally and their families.



Governance

The volunteer committee that makes up FZCC is currently underway and has established itself as an incorporated association. Model rules have been utilised for the purposes of incorporation with the regulatory body Consumer Affairs Victoria. A not-for-profit structure can serve the group well in its mission to acquire funding and deploy a mixture of projects and programs towards this aim. However, it should be noted that should there be a suitable auspice in Flinders, often it can be less onerous for a small group to work via an auspice, particularly in the formative years, but also this can be a permanent status. Repower is one such organisation that can also act as a local auspice agent on behalf of the group. There are also informal methods to collective organising, such as collaborative governance which can also support initiatives without the need for a formal organisation.

It is vital that the FZCC prevents burnout from its volunteers and seeks to delegate accordingly. Any governance structure should support the long-term goals of the group whilst also ensuring that it isn't overly burdensome.

In regards to alignment with Repower Community Decarbonisation Inc, ordinary members are elected under rule 53 of the model rules. These additional ordinary members may take on non-executive roles such as:

- Satellite group liaison
- Satellite Group Quadrant Representative

Any local community residents or business owners within the geographical area of a Mornington Peninsula community/post-code are eligible to join the organisation as an associate member, and if they wish, to become part of a post-code specific satellite group.

Associate members do not have voting rights, although the leader of each/any satellite group is able to be nominated as one of the four Satellite Group Quadrant Representative ordinary members of the core group.

Leaders of postcode specific satellite groups are able to be nominated as an ordinary member of the core group, to represent postcode satellite groups in their quadrant of the Peninsula.

Network meetings will occur monthly or bi-monthly to share information, best practices, report on progress, seek feedback for improvement and explore new ideas. Network meetings will include the core group (or part thereof) and 1 representative of each satellite group.

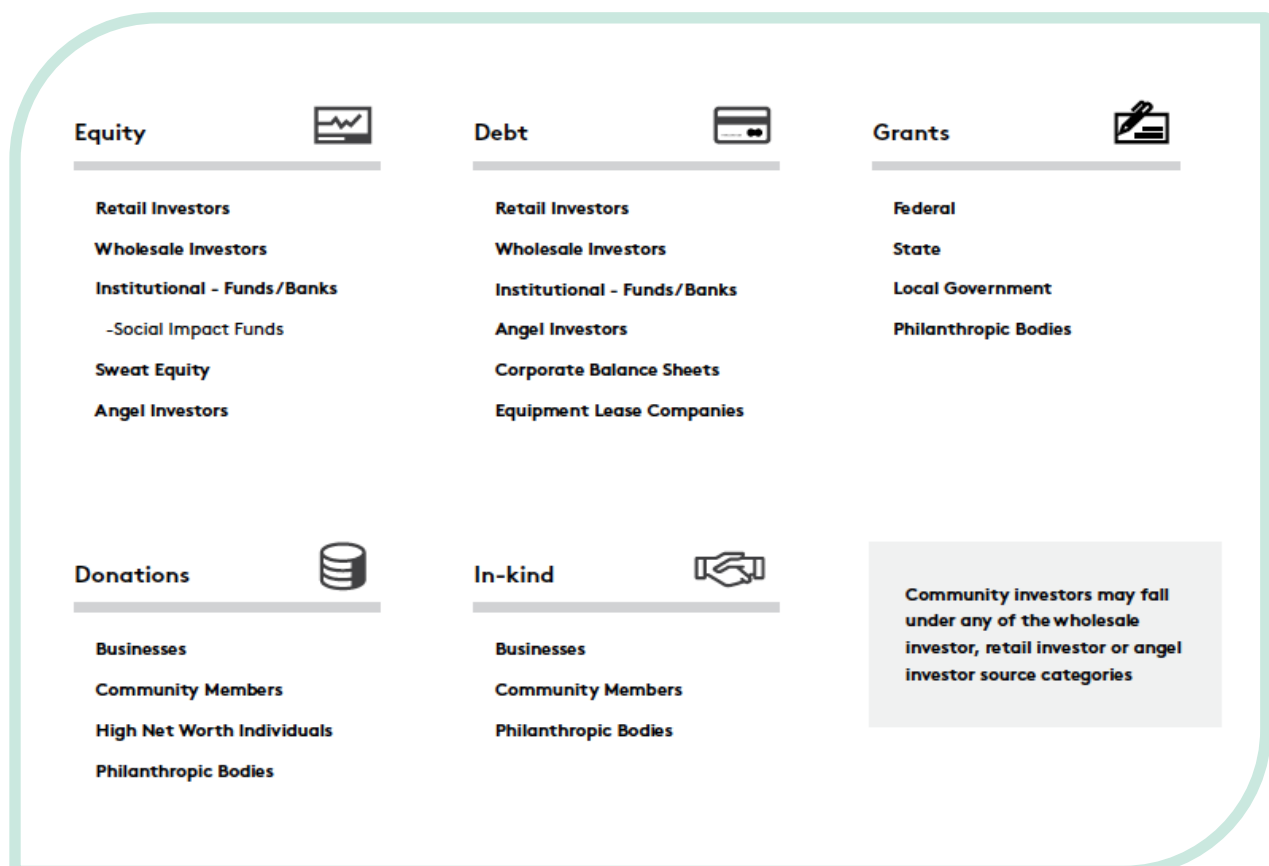
Therefore it is in the best interests of FZCC to have a representative whose sole purpose is to serve on this group as the quadrant representative, to ensure the needs of the group are expressed and supported.

Finding and Securing Funding

Initial needs for the group is financial support for communications materials and associated marketing strategy. Some support for marketing materials may be acquired from Repower. Local businesses could play a role in sponsorship for marketing materials and should be a target.

FZCC already has a potential pipeline of community project ideas. Feasibility studies can be progressed and then followed by business case for funding. It is ideal to seek initiatives which may be self-funding over time, or after an initial investment. Some of the key components to include are objectives, goals, baseline, program options and surrounding analysis, and recommended options for policy makers.

The Community Energy Funding Toolkit¹⁷ is a good resource for community members to grasp how to potentially fund the transition. The toolkit currently consists of two guidebooks: the Funding Basics Guidebook and a Behind the Meter Solar PV guidebook. The following graphic describes an overview of the types of funding sources that community energy project can attract.



¹⁷ <https://www.frontierimpact.com.au/toolkit>

The following table outlines the funding pathways known to date, in alignment with the Roadmap objectives.

Opportunity	Scope	Frequency	Amount
MPSC - Community Grants¹⁸	Climate Action Grant Depending on exact activities, additional funding pools could be accessible such as: Community Events Grant; Community Placemaking Grant; Community Support Grant	Twice per year	\$5,000 small grant \$10,000 large grant
Federal Government	Community battery	TBD	Pre-election modelling forecast \$600k per 500 kWh battery
Federal Government	Solar Bank - for mid-scale solar farm	TBD	Pre-election modelling forecast \$250k development, \$900k per installed MW
DELWP	Neighbourhood Battery Initiative	3rd round to be released in late 2022	TBD, last round needed 20% co-contribution
Local businesses	Sponsorship for events and marketing materials	Ad hoc	Smaller amounts <\$1000 on average

¹⁸ <https://www.mornpen.vic.gov.au/Community-Services/Grants-and-Awards/Grants-and-Funding>

MEASURING, EVALUATING AND EVOLVING THE PLAN

It is impossible to manage something that is not monitored. Keeping track of how things are going throughout the project is essential to know if the aims, goals and programs are being met effectively and how the baseline is changing. It is also powerful to be able to convey the levels of project support and investment and what has been achieved (e.g. planning and engagement activities, volunteer hours and in-kind contributions).

In regards to reaching 100% renewable, undertaking an annual electricity baseline in partnership with Repower MP is key to assessing the progress of the Roadmap. United Energy has stated that they are in progress with a network tool that will provide free, live data on a postcode and regional level. The provision of this tool should mean that an annual electricity audit can occur with ease.

An annual progress update would also include an internal assessment of progress against the net zero energy Focus Areas 1-4. A simple traffic light assessment could be done to assess 'on track', 'delayed/needs attention', 'no action'. Projects that are completed or redundant can be moved from the focus areas, and new projects can be added.

In regards to broader emissions monitoring, Council and South East Water will have the data available annually for waste and wastewater. Council will be utilising the Snapshot update going forward for the balance of emissions. This is likely to become increasingly sophisticated in particular for transport. However, the gap will remain for agriculture and land use in particular and this should be a focus for FZCC from 2025.

ADDITIONAL RESOURCES

Repower MP: <https://repowermornpen.org.au/>

Snapshot: <https://snapshotclimate.com.au/locality/municipality/australia/victoria/mornington-peninsula/>

<https://www.mornpen.vic.gov.au/Home>

Community Battery Feasibility Study

https://www.flinderszero.org.au/files/ugd/564649_06ae930d4615496f84a5a6194ca586e0.pdf

APPENDIX 1 - TECHNOLOGY OPTIONS

Rooftop solar PV

Rooftop solar panels are located primarily on residential or commercial rooftops. Scales are generally around 6kW for residential properties and under 100kW for commercial properties.

Mid-scale Solar Banks

Mid, large or "utility" scale solar PV uses the same technology as rooftop solar panels. The size varies from 1 MW for a small farm up to hundreds of megawatts for large farms. Solar Gardens are an ownership/subscription variation on the model.

Microgrids & Virtual Power Plants

Microgrids help participants use distributed energy resources like solar and batteries more effectively. This ability to share resources improves the return on investment and enables penetration of renewables. Microgrids are connected to the wider electricity network but are able to island off in times of need. In other states, they are common on islands and remote areas and increasingly common in Victoria on a street-by-street basis.

Virtual Power Plants (VPP) is a similar concept to microgrids except it is less constrained by geography. VPPs use internet technologies to aggregate consumption and production from multiple households and businesses: this allows distributed energy resources (DERs) like solar, batteries and 'flexible' loads to participate in markets for energy generation and grid support services.

Residential & Community Scale Battery

Batteries allow electricity from the grid or electricity generated on-site (solar or wind) to be stored and used either as backup, or to 'smooth out' the variable supply from renewable energy (i.e. when the sun isn't out and the wind dies down). Batteries have traditionally been used 'off-grid' however declining system costs are driving their introduction to grid-connected households and businesses, either as standalone devices or in combination with solar PV. Batteries can also be used at a community and distribution network level to store electricity for managing variable renewables supply, improve reliability and to reduce network upgrade requirements.

Micro Wind

Micro or mini wind is household or business scale wind power generally between 1-30 kW and always under 100 kW. Micro wind is a well-proven technology however, long-term operations and maintenance costs are an issue and barrier for take up. Micro wind is around 3-5 times more expensive than solar PV which has limited its uptake and no subsidies are available in Victoria.

Mid & Large Scale Wind (Inland & Offshore)

Wind power captures the energy of the wind by turning the blades of a wind turbine, which drives a generator that in turn produces electricity. Wind power is one of the fastest growing and most cost-effective renewable energy sources. Mid-scale wind is challenging to connect into the grid, projects under 5 MW are less complicated. Large scale wind (inland and offshore) needs to be located near transmission

infrastructure to be able to export energy back into the electricity grid. Mid-scale wind (800 kW – 5 MW) is often only viable with significant behind-the-meter consumption (such as Wannon Water with their 800 kW turbine). Large scale wind is highly viable but needs sufficient wind and land resource. Offshore wind needs certain factors to be viable and is unproven in Australia

Tidal & Wave Power

Wave and tidal power are forms of ocean energy. Wave energy is generated by converting the energy within ocean waves (swells) into electricity. Tidal stream (or current) technologies capture the kinetic energy of currents flowing in and out of tidal areas (such as seashores). Tidal stream devices operate in arrays, similar to wind turbines. All forms of energy from the ocean are still at an early stage of commercialisation.

Bioenergy

Energy generation from biomass uses the burning of organic matter (e.g. crop waste) to produce heat energy at all scales (e.g. firewood is a type of biomass). At large (commercial) scale biomass is burnt to produce either heat to supply district heating or to produce steam for power generation.

The creation of biogas (from the breaking down of biomass) is undertaken either actively in a biodigester, or passively by capturing ‘waste’ biogas from landfill sites or from the treatment of sewage. Bioenergy is generally positively perceived but is not a well-established industry in Australia.

GreenPower

Many renewable energy sources already exist in Australia. This option involves the purchase of energy from existing renewable sources. Renewable electricity is usually accredited through the government’s GreenPower Program. It can be purchased through a purchase agreement directly with a renewable energy supplier, choosing GreenPower from an energy retailer or using an offset product. GreenPower is the only voluntary, government-accredited program that enables consumers to match their electricity usage with certified renewable energy.

Energy Efficiency/Fuel Switching/Demand Management

Energy efficiency generally involves installing an appliance or measure that reduces input energy use. Typically, there are upfront (capital) costs associated with installing the measure and then reduced energy usage, bills and emissions accrued over time.

Fuel switching involves the replacement of an appliance with a new appliance that uses a different fuel input. The most common and preferred fuel-switching applications for households involve a switch from gas or wood-based (combustion) technologies to electrical technologies – that both have higher efficiencies and can be powered/supplied from renewable energy (either on or off-site).

Demand management typically involves the management and ideally reduction of maximum electrical (power) demand. Demand management measures are typically targeted at short-duration events – such as maximum demand levels on extreme heat days in summer. Demand management may be targeted at a site (e.g. household) level, or across a region or part of a network, and it can involve the use of technological or behavioural approaches.