

COMMUNITY RESILIENCE AND RELIABLE ENERGY FOR *Venus Bay & Tarwin Lower*



COMMUNITY ENERGY



Australian Government

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Action Plan

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THIS INITIATIVE WAS FACILITATED AND SUPPORTED WITH AND ON BEHALF OF THE **VENUS BAY AND TARWIN LOWER** COMMUNITIES BY THE FOLLOWING PARTNERS:





COMMUNITY
ENERGY
FOR VENUS BAY
+TARWIN LOWER

The graphic features a large, colorful crowd of people forming a path that leads to a stylized house and trees. A green arrow points from the house towards the crowd, and another green arrow points from the crowd towards the house. The text 'COMMUNITY ENERGY FOR VENUS BAY +TARWIN LOWER' is written in a bold, brown, hand-drawn font inside a brown cloud-like shape.

Acknowledgements

Over 200 people from across the Venus Bay and Tarwin Lower communities came together to inquire into and challenge the thinking that went into this plan, to learn with and from each other and ultimately to contribute their ideas, needs and wishes. This plan was community-led and designed all the way and is so rich and robust as a result of this incredible effort. The Project Team feel honoured to have supported such an inspired community and look forward to witnessing this initiative flourish. We thank everyone who attended workshops, meetings, market stalls and the Accountability and Advisory Groups. The sometimes 'invisible' work of community organising must never go un-acknowledged.

People & Place A simple stick figure icon with a circle for a head and a small circle for a nose, positioned to the right of the text 'People & Place'.



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Executive summary

The 12-month community resilience and reliable energy feasibility study began in July 2022 and concluded in July 2023. It has provided a strong foundation for the ongoing energy journey for Venus Bay and Tarwin Lower.

The study identified that serving only essential electricity needs can be achieved with modest investments. It has identified a starting point for delivering these investments and it has highlighted the wealth that can be retained in the local region as it becomes more self-sufficient for energy.

The feasibility study investigated improvements in community resilience that could be achieved during every loss of power event. In recent years the community has been cut off due to floods and fire and has suffered a series of multiday electricity outages.

By ensuring energy is made available locally for the most important energy needs the community can be better served during these events.

The community has prioritised its own critical sites and critical energy needs. As the energy project evolves from feasibility to implementation, these needs and locations will be first to receive energy investment.

The study has raised awareness of the options people have to develop local sources of electricity and use existing backup supplies.

It has highlighted the importance of telecommunications and the increasing reliance on electricity to provide internet, mobile phone and EFTPOS services. The solar battery and generator system at Venus Bay Community Centre has been highlighted in each workshop so residents are more aware of the facilities on offer.

It became clear during the study that much effort was needed on a variety of engagement opportunities to enable the community to get involved and absorb detailed analyses of technical solutions with matching business models and economic outcomes. As such, the original four workshops turned into seven events and these were supplemented by five community market stalls, two online surveys, ~ 10 stakeholder meetings, 12 meetings with each of the Accountability Group and Advisory Group that combined provided the project governance and countless conversations with people everywhere.



Study legacy

Not only did the study involve and engage many people, it also enabled production of many useful resources that together have been compiled into a toolkit – as a record of the Venus Bay and Tarwin Lower Community Energy journey and as a way of sharing these artefacts with other communities so they are better informed and prepared to undertake their own community energy journey. These artefacts, which can be found on the VBCC website, include:

- **Community Energy Information Bulletins**
- **Workshop plans and Harvest Reports**
- **Resilience framework.**
- **Draft Community Action Plan**
- **Technical feasibility report.**
- **Economic feasibility report.**
- **A short film and several film-lets that tell our story in a different way**



Our main drivers

Resilience, reliability, community, connectivity and safety

After the summer of 2019-20, conversations and meetings across Venus Bay and Tarwin Lower demonstrated strong local interest in community resilience and in solving the problems with, and threats to, electricity supply in our rural community. In response, the Venus Bay Community Centre, representing wider community interests, proposed a Community Resilience and Reliable Energy Feasibility Study, which was funded by the Australian Government, Energy Consumers Australia and co-contributions from the project partners.

A community-centred design approach engaged the community in identifying key elements of resilience from the perspectives of residents, business owners, holiday makers and community organisations. How we react or respond to disturbances has everything to do with how prepared and resilient we are as a community. Exploring these challenges got us underway at the project launch and Workshop #1.

The resilience definition co-created by the community early in the study, subsequently framed the research and assessment of possible actions to improve community resilience. We started with a strong focus on reliable energy

supply, but this soon expanded to include how we might strengthen community connectivity and resilience through the establishment of community energy assets.

Early community conversations also surfaced safety concerns as being equally important to reliability. This came out of discussions about how disturbances can come in the form of outages and emergencies, but also from vulnerabilities and stresses, such as impacts on the grid as we transition to renewable energy. These vulnerabilities are further exacerbated because our communities are at the end of the electricity supply and Venus Bay has only one road in and out.

Consequently, all engagement activities, research and the iterative design of this community action plan were designed and evaluated through the lens of resilience, reliability, community connectivity and safety. Community values also came along in Workshop #2, but more on that soon.





What went into producing this plan?

The project facilitation team supported community members as they assessed the **social, economic** and **environmental** benefits of different energy options and the delivery pathways for this action plan.

The study comprised four main phases:

<p>1 EXPLORE AND DEFINE COMMUNITY AND ENERGY RESILIENCE</p>	<p>2 CO-DESIGN OPTIONS FOR RELIABLE ENERGY SUPPLY AND THE VALUES TO GUIDE OUR CHOICES</p>
<p>3 DEVELOP A BUSINESS CASE AND DELIVERY PATHWAYS FOR THE PRIORITY OPTIONS</p>	<p>4 CO-CREATE A COMMUNITY-LED ACTION PLAN THAT SPELLS OUT WHAT WE CAN DO</p>



Frameworks

Three key frameworks were employed to guide community involvement and how the study was undertaken. These frameworks covered:

- **Community-led co-design processes and conditions**
- **How value was understood and created for our community**
- **Community resilience and energy reliability**



Workshops

Four core workshops facilitated the main community discussions and development of input to the research, analysis and the plan. A summary of these workshops and what we did follows.



WHAT DOES RESILIENCE MEAN?

To you and for our community.

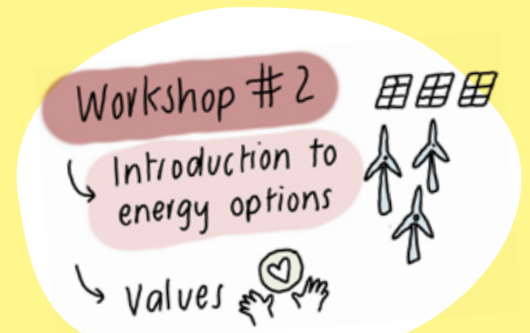
- 24 people participated in this 3-hour workshop.
- We mapped community networks and relationships with energy and infrastructure and identified clusters of buildings that provide important services and would be good to power independently, particularly during prolonged outages and emergencies. This information informed where community energy infrastructure might be sited.
- We identified our household energy needs during short and longer outages and emergencies by ranking the importance of different energy uses, e.g., phone charging and water pumping. This information informed the total energy needs under different outage scenarios and helped with sizing potential community energy systems.



What are our ENERGY OPTIONS in Venus Bay?



- Two workshops were held to discuss renewable energy options.
 - > 13 people participated in a 2-hour workshop at Tarwin Lower Bowling Club on Thursday February 9th, 2023.
 - > 27 people participated in a 2-hour workshop at the Venus Bay Community Centre on Saturday February 11th, 2023.
- Information was presented by the researchers on which energy options are most technically viable at different scales and potential placement of energy systems at the single site, cluster and whole-of-community scales.
- We explored a set of values that could be used to help with deciding and prioritising the best energy options and had a whole group discussion about applying the values to the actual energy options presented at the three potential scales.





Exploring **ENERGY PATHWAYS** and locations



- 36 people participated in a 4-hour workshop - biggest attendance yet, with people that hadn't been before representing a range of businesses, community groups, part-time and full-time residents.
- Information was presented on the five possible energy pathways that could take Venus Bay and Tarwin Lower to a full microgrid. Understanding who uses energy helped us to think about which pathways might achieve the best outcomes.

- With households as a group being the biggest energy consumers in our community, Pathways #1 and #4 are likely to yield the best results for energy use at this scale.
- Renewable energy for community buildings and businesses will address the community desire for increased resilience, through the goods and services they provide and the people they employ within the local community.
- The inclusion of energy efficiency in all pathways ensures the investment in renewable energy will be more cost effective at any scale and offers savings for households, community groups and businesses that can't install rooftop solar or batteries.
- Pathways #4 and #5 also offer access to renewable energy for everyone, including households, community groups and businesses that can't install their own systems. This demonstrates that Equity is a strong value in the Venus Bay and Tarwin Lower communities.



What type of **BUSINESS MODELS** suit our energy options?



- 35 people participated in this 4-hour workshop - with some new people and many following on from Workshop #3.
- We focussed on community wealth building and how to adopt this approach and its principles in the organising and partnering we will need to realise our Community Energy Plan.
- When thinking about applying Community Wealth Building, it was useful to think about the money flows associated with energy. Usually, energy comes into the community and the money spent on energy leaves the community, apart from the small amount of solar currently generated.
- Implementing energy efficiency, flexible use of energy and rooftop solar and batteries, could help capture more of the economy locally, because less energy is imported from outside the community and so less money leaves the community. With more money circulating within the community existing, local businesses and jobs and future enterprise will be more sustainable and viable.





Communications and engagement

Energy Bulletins

Nine energy Bulletins were created, covering topics such as:

- **What is community energy?**
- **What is community-led co-design?**
- **How do community and energy resilience inter-relate?**
- **How do community batteries and microgrids work?**
- **What are our energy options?**
- **How might our values guide our actions?**
- **How do revolving funds work?**
- **What is community wealth building?**
- **What can we learn from other community energy models entities?**

Harvest Reports

Harvest Reports were created and shared after each of Workshops 1, 2, 3 and 4 as a record of the activities and discussions held and input generated from participants. This record was an important way of providing feedback to the community to share what was presented and demonstrate how community input was informing the study and leading research and design of the Community Energy Plan.

Community surveys

Two community surveys were undertaken through the course of the study to enable broader input on particular elements being researched or shared. People were invited to rate:

- **the importance of the things they use energy for, e.g., water, food storage and preparation, communications.**
- **The community values**
- **Input from the surveys was combined with workshop input to guide the study.**

Market stalls

Community volunteers and project team members attended five community markets over 2022-23, held at the Tarwin Lower Hall. The market stalls were an important way for engaging community members who hadn't been able to attend the workshops. At each market stall workshop reports were shared, people were invited to complete various surveys and otherwise provide feedback on key ideas coming through the study, such as the energy pathway options and community wealth building.

Extra meetings and conversations

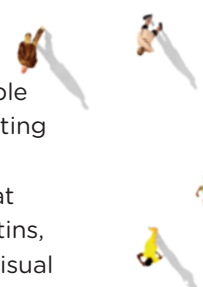
Various members of the Project Team held meetings with critical partners and stakeholders

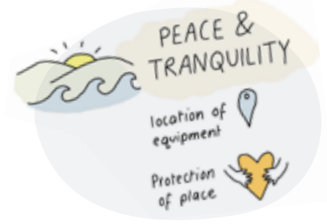
throughout the study. This was either to share information and seek input, to strengthen relationships or to request data relevant to the study, such as energy use data at the community scale. Key meetings held were with local business owners, representatives from local community organisations, Ausnet Services, South Gippsland Shire Council, Telstra and NBN. Speed date an energy expert – complimented the offerings.

Visual media

We started with a branding and communications strategy that created a recognisable, coherent and professional look for the entire project. This included a hero brand image applied to posters, social media posts and handouts in the form of a bookmark featuring a timeline of workshop events to encourage public attendance. This created enduring artefacts linking a suite of existing and emerging energy initiatives and creating a cohesive narrative.

We discovered that combining the rich and technical nature of information about renewable energy with community involvement in evaluating this information, required more than just PowerPoint presentations and conversations at workshops. As such we developed news bulletins, attended market stalls, and produced highly visual reports.





COMMUNITY RESILIENCE AND RELIABLE ENERGY FOR Venus Bay & Tarwin lower



Low and behold, this still was not enough. So we further enriched our presentation of information through the production of several intermediate film-lets, which culminated in a short film that together present the Venus Bay and Tarwin Lower Community energy journey through the eyes of many different people involved.

We then went even further by engaging a digital illustrator who crafted visual notes to document the course of the workshops. This documented the information shared and discussions had through lively and engaging drawings. These illustrations appear through-out this plan and workshop reports.





Our guides for action

Community values

Community values were first discussed at Workshop #2 and further developed at Workshop #3. They were shared with the wider community at the Tarwin Lower Markets and through an online survey. Then they were further tested at Workshop #3 and #4.

Feedback through these channels helped further define and refine our understanding of these values from the perspective of people who live and work in Venus Bay and Tarwin Lower and as they relate to a local transition to renewable energy.

Our values will continue to strongly guide the implementation of this Community Action Plan.





*A community plan
for community energy*



Our plan for action

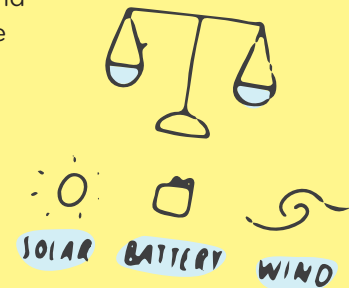
Five energy pathways

Five possible pathways for co-ordinated installation of renewable energy that could result in a microgrid for Venus Bay and Tarwin Lower.

When the pathways are combined, we can reach a target of OMW of energy imported from the main grid, increasing our resilience and self-sufficiency.

The benefit of developing Pathways #1, #2 and #3 early could result in significant savings in energy costs for households, community organisations and local businesses.

Pathways #4 and #5 can support the households, businesses and community facilities that are not able to install rooftop solar and batteries and provide the balance of electricity for everyone.



P1

Households

full-time, part-time residents and visitors



OVER 80% OF THE ELECTRICITY CONSUMED IN VENUS BAY AND TARWIN LOWER IS USED IN HOMES.

IT IS ESTIMATED THAT AROUND 1100 HOMES HAVE FULL TIME RESIDENTS AND USE 42% OF THE ELECTRICITY.

THE REMAINING 1050 HOMES ARE USED BY PART-TIME RESIDENTS ON WEEKENDS AND HOLIDAY PERIODS AND BY VISITORS. ENERGY USE PEAKS IN THE JANUARY HOLIDAYS AND THE EASTER WEEKEND WITH APRIL SCHOOL HOLIDAYS DUE TO THE INCREASE IN VISITOR NUMBERS.

HOUSE NUMBERS ARE INCREASING, ESPECIALLY IN VENUS BAY AS SITES ARE DEVELOPED. ROOFTOP SOLAR IS ALSO INCREASING. AROUND 1.4MW OF HOUSEHOLD SOLAR PANELS GENERATE 24% OF THE ELECTRICITY USED BY HOUSEHOLDS.

IT IS ESTIMATED THAT HOUSEHOLDS SPEND ALMOST \$2M PER YEAR ON ELECTRICITY, \$1M ON LPG AND OVER \$3M IN TOTAL.

What is important to people?

Feeling safe in emergencies, charging phones, access to light, water, petrol, money are considered essential. Creating the skills and knowledge for a future energy system will assist everyone in the community to transition.

Resilience is improved by:

- an increase in the number of people with access to batteries and stored energy,
- more efficient energy use so it is less expensive to serve essential energy needs,
- more control over energy use so it is easier to serve essential energy needs,
- support for everyone leading to more inclusive access to reliable energy,
- stronger connections between people, their neighbours and the broader community.

Working with households will have the largest impact because changing the way households use energy is the best way to use more local renewable energy and become more self-sufficient for energy as a community.

Services to help households reduce energy bills can be designed to provide cost-savings directly to community members and also to generate some value back to a community-led program.

Equity can be improved with program design that offers additional support to households without the capital to invest or tenants without permission to invest.

Working with households is also the best way to increase community involvement.

What is possible?

Increasing rooftop solar to 4MW will increase local energy usage to 37%. Investments in energy efficiency offset the increased consumption from converting cooking and hot water to electricity. Flexible use of energy and the investment in controlling energy use so that it can occur when there is surplus solar can bring local energy use up to 60%.

Hot water systems are the main energy users that need to be upgraded. Some households will choose to invest in batteries to further use surplus solar and provide energy reliability.

In future, further solar investments would be justified by high levels of electric transport in the community and 80% of electricity use could come from local renewable electricity.

What would it cost and save?

Investment in transforming the energy use within homes will cost around \$20m, 30% of which could be spent on local installers. The investment will be returned as savings over 10 years. Some savings will rely on electricity retailing arrangements.

Feeling safe in emergencies, charging phones, access to light, water, petrol and money are considered essential. Creating the skills and knowledge for a future energy system will assist everyone in the community to transition.





P2 Community buildings

Criteria Ratings
to select facilities



LESS THAN 5% OF THE ELECTRICITY CONSUMED IN VENUS BAY AND TARWIN LOWER IS USED IN COMMUNITY BUILDINGS. THE LARGER BUILDINGS HAVE SOLAR PANELS ALREADY (AROUND 60KW TOTAL).

MOST COMMUNITY MEMBERS ARE CONNECTED TO ONE OR MORE OF THESE ORGANISATIONS AND SOME, LIKE THE SURF LIFESAVING CLUB, HAVE SIGNIFICANT REACH TO THE PART TIME AND VISITOR POPULATIONS.

THIS CATEGORY ALSO INCLUDES EMERGENCY AND HEALTH SERVICES AND PUBLIC FACILITIES LIKE TOILETS, PLAYGROUNDS AND JETTIES.

THE VENUS BAY COMMUNITY CENTRE RECENTLY EXPANDED ITS SOLAR SYSTEM AND ADDED A BATTERY AND GENERATOR TO PROVIDE A POWERED SPACE FOR ANYONE TO USE WHENEVER THERE IS A COMMUNITYWIDE OUTAGE. THE RECREATION RESERVE AND ANGLERS CLUB HAVE BEEN IDENTIFIED AS POTENTIAL SMALL CLUSTERS (SEE PATHWAY 4).

COMMUNITY BUILDINGS SPEND \$50,000 TO \$100,000 PER YEAR ON ENERGY, PRIMARILY ELECTRICITY.

What is important to people?

Community buildings are the priority investment to create reliable energy spaces because they can be welcoming spaces, providing public services to anyone in need.

Community members happily support community organisations because they are nonprofit and benefits can be enjoyed by everyone.

The Venus Bay and Tarwin Lower community has prioritised:

- communications including device charging and phone and internet that work
- light, food, hot water and comfort
- drinking water because pumps don't work
- refrigeration, cooking during longer outages
- access to money and petrol

Resilience is improved by:

- safety in emergencies with spaces to gather, communicate, access electricity, water, phone and internet. Up to 800 people could be helped across the 5 largest buildings.
- access to reliable energy and services at other times if there is none at home,
- better energy support for emergency services during emergencies,
- stronger community organisations,
- lower operating costs and broader services,
- stronger relationships with community members and between organisations.

What is possible?


Community buildings are candidates for grants to invest in energy upgrades. These investments will save a modest amount for the community organisation but will provide their true value during events when energy and other utilities are unavailable elsewhere.

Solar panel expansion, backed by a battery and generator, with an investment in energy efficiency and control is recommended for key buildings. Each organisation would need to think through the services it would like to offer. In future this might include electric vehicle charging, creating the opportunity of additional revenue.

What would it cost and save?

An investment of \$200,000 across the highest priority community buildings would kick start the program and return around \$15,000/yr in electricity bill savings. A battery for all the clubs in the recreation reserve is covered under Pathway 4.

Community safety and access to reliable energy has a flow on effect to households and for visitors. Tourism potential is enhanced because visitors appreciate the additional services available across the community. The projects provide visible showcases of technology and can educate everyone who uses the community buildings.

Identify groups 

P3 Working with local business



INSTALL RENEWABLES AT BUSINESS SITES

AROUND 15% OF ELECTRICITY USE OCCURS IN THE SHOPS, HOTELS AND CARAVAN PARK THAT SERVE VENUS BAY AND TARWIN LOWER. THE MOBILE PHONE TOWERS, NBN NODES AND TELECOMMUNICATIONS EXCHANGES ARE INCLUDED IN THIS FIGURE. MANY BUSINESS ACTIVITIES OCCUR FROM HOMES OR INCLUDE RENTING HOMES TO VISITOR BUT ARE NOT INCLUDED IN THIS CATEGORY.

THE IGA, GENERAL STORE AND THE CHEMIST HAVE ALL INVESTED IN GENERATORS TO MITIGATE THE IMPACTS OF UNRELIABLE ENERGY SUPPLY. APPROXIMATELY 200KW OF SOLAR PANELS IS INSTALLED ON BUSINESSES.

THE VENUS BAY AND TARWIN LOWER SHOPS HAVE BOTH BEEN IDENTIFIED AS POTENTIAL SMALL CLUSTERS (SEE PATHWAY 4). IN TARWIN LOWER THIS WOULD INCLUDE THE PETROL STATION WHICH HAS BEEN IDENTIFIED AS A CRITICAL SERVICE DURING EMERGENCIES.

BUSINESSES USE MAINLY ELECTRICITY AND SPEND AROUND \$400,000 PER YEAR.

What is important to people?

Many services offered by businesses are valued highly, especially during outages and emergency events. Food outlets have facilities to cater for many people and offer a warm or cool space to relax.

Businesses are wary of being obligated to open up and offer services if participating in an energy project. Community members are wary of supporting businesses to develop energy investments, only for the businesses to make profits from the projects. A business program needs to find the right balance.

Resilience is improved by:

- access to services, especially food, petrol, telecommunications, and money,
- stronger relationships between businesses and the community they serve,
- stable businesses with lower operating costs, that can offer broader services,
- better support for visitors and tourism.

What is possible?

Businesses often have high daytime usage and, in Venus Bay and Tarwin Lower, high operating costs coincide with the high levels of solar power that can be generated in summer. An investment in battery power may not be cost-effective for businesses so sharing the risk of this type of investment with the community makes sense.

Batteries for the main clusters of shops in Venus Bay and Tarwin Lower are covered in Pathway 4.

Businesses could use an additional 500kW of solar. A significant and thoughtful effort in energy efficiency and flexible load investments would improve the solar utilisation and reduce business bills.

What would it cost and save?

An investment of \$1m across businesses is recommended with savings of around \$200,000 per year to halve current costs.

The balance between private investment and community investment will need to be developed. Businesses often prefer leasing to owning so that cashflow can be managed and energy costs are no exception.

A stable financial base for business can have a positive impact on the community. For example, the local businesses provide much of the sponsorship for local events.

Tourism benefits the community. Growth in visitor number and expenditure rely on its ability to provide the services that visitors want.

(\$?) Get quotes for first sites



P4 Small clusters

VENUS BAY AND TARWIN LOWER HAVE 42 TRANSFORMERS THAT PROVIDE LOW VOLTAGE ELECTRICITY TO AN AVERAGE OF 50 CUSTOMERS EACH. A FURTHER 60 TRANSFORMERS, PRIMARILY IN ESTATE 3 AND MORE RURAL SETTINGS, SERVE INDIVIDUAL SITES OR 2-3 HOMES.

EACH GROUPING OF HOUSEHOLDS (AND SOMETIMES OTHER ORGANISATIONS) CAN BE CONSIDERED A SMALL CLUSTER. THE SIZE OF THE TRANSFORMER PLACES A LIMIT ON THE AMOUNT OF SOLAR ELECTRICITY THESE CLUSTERS CAN EXPORT AND THE PEAK LOAD THAT CAN BE DRAWN FROM THE GRID.

AUSNET ALREADY LIMITS SOLAR EXPORTS IN SOME STREETS. THIS REDUCES THE BENEFITS THAT NEW SOLAR PRODUCERS CAN GAIN FROM THEIR PANELS. AS HOMES INCREASE ELECTRICITY USE, ESPECIALLY FOR TRANSPORT NEEDS, PEAK LOAD MIGHT ALSO CAUSE EXTRA COSTS.

SOLVING THESE CHALLENGES AT THE STREET-LEVEL IS THE IDEA BEHIND NEIGHBOURHOOD BATTERIES.

What is important to people?

In emergencies, neighbours are often the first people helping each other.

Many express willingness to share surplus solar power and to help those who can't install solar. Modelling of neighbourhood batteries shows that a shared battery can be much smaller than the battery power needed by every individual home.

As the energy system transitions we don't know what is best provided at the street-level, and it is likely that some collective investments will be valuable - to locals and also to the system as a whole. Venus Bay and Tarwin Lower have shown a willingness to explore possible innovative solutions by applying for a grant under the Neighbourhood Battery Initiative with a separate application to the ARENA program.

Investments at the street level will improve resilience by:

- providing equitable and cost-effective solutions to everyone,
- the proposed batteries will provide backup power during outages,
- Ausnet will be involved in discovering if the batteries can be used as microgrids for the whole street,
- building neighbourhood cohesiveness through stronger relationships,
- social learning prompted by a shared local showcase project.

What is possible?

The battery feasibility study proposes four battery investments as small clusters, each of which could become a microgrid. A secondary option to power a smaller group of sites with less reliance on Ausnet has been identified in each case:

- Venus Bay shops - 100kW/300kWh. The feeder includes all shops and 75 homes.
- Recreation Reserve - 60kW/150kWh. The feeder includes clubs, school, health centre and 47 homes.
- Fishing club in Estate 2 - 50kW/100kWh. The feeder includes 67 homes.
- Tarwin main street - 100kW/300kWh which includes the fire station, the telephone exchange, the IGA and other shops.

The increase in solar power (400kW) and flexible energy use (all hot water), to improve the economics of each battery is also identified in the feasibility study.

What would it cost and save?

The four batteries represent \$1.2m of investment and are only likely to proceed with significant grant funding. A further \$200,000 grant has been requested to progress design, business model development and community engagement. These projects could generate \$400,000 of local work.



P5

large clusters / whole community

Essential
Enough
Everything

CREATING A MICROGRID WAS THE ORIGINAL PROVOCATION FOR THE PROJECT. MICROGRIDS ARE RESILIENT, STAND-ALONE ELECTRICITY SUPPLIES. THEY CAN BE BUILT AT THE SITE LEVEL, THE STREET LEVEL, TO SERVE A WHOLE ESTATE OR AT THE LEVEL OF THE WHOLE COMMUNITY. THE LATTER WOULD SERVE ALL THREE VENUS BAY ESTATES AND THE TARWIN LOWER TOWNSHIP.

DEVELOPING THE ELECTRICITY NETWORK SO THAT IT CAN TURN INTO A MICROGRID WHEN NEEDED REQUIRES:

- **ADEQUATE GENERATION**
- **ADEQUATE FLEXIBLE ENERGY USE AND CONTROL**
- **ADEQUATE STORAGE**
- **A DISCONNECTION POINT ON THE NETWORK TO ISOLATE THE COMMUNITY FROM THE (FAILED) GRID.**

THIS PATHWAY EXPLORES THE VALUE OF COMMUNITYWIDE PROJECTS AND RECOMMENDS THAT VALUE BE DELIVERED AT THE INDIVIDUAL SITE LEVEL BEFORE PLANNING A COORDINATED SOLUTION FOR THE WHOLE COMMUNITY.

What is important to people?

Large projects feel easier than thousands of small building transformations. Large projects are still significant undertakings but can attract grants and benefit from economies of scale. Communities that own large generators have often created a revenue stream to employ staff and keep energy projects active in a community.

Wind turbines make sense at the whole community level. Wind is a sensitive topic in Venus Bay and Tarwin Lower which is within sight of Bald Hills wind farm. Wind is a good complement to solar because it blows at night and during winter.

A microgrid at this scale will be the only way to improve energy reliability for the whole community in a single project. It can fill the gaps from Pathways 1-4 for delivering on other community values such as sustainability, selfsufficiency, equity and innovation.

What is possible?

The technical analysis has identified:

- 3.2MW of additional solar will provide enough local generation and can largely be installed on rooftops.
- A 2MW wind turbine might supplement solar but its electricity will cost almost twice as much. A smaller 100kW turbine near the telephone tower would improve reliability but at very high cost.

- Flexible use of energy is needed to move over 20% of energy consumption into times of surplus solar and, in winter, times of cheap surplus wind on the energy market.
- The additional control and flexibility considerably reduces the size of battery storage needed to provide for essential needs in all conditions.
- Under 30% of normal energy use is essential.
- 700kW of battery capacity with four hours of storage would be sufficient to underpin a microgrid design if developed after the flexible use of energy has been maximised.
- This is one quarter of the size (and cost) that would be needed if efficiency and flexibility weren't implemented first.
- Ausnet own the electricity network and need to be a partner in any microgrid implementation. Mallacoota microgrid, which includes diesel generators, is one of the few examples of this type of electrical design.

What would it cost and save?

A large project requires a dedicated connection. A microgrid requires a point where the system can be disconnected. Beyond the investments identified in Pathways 1-4, around \$1m needs to be allowed for electricity grid investments.

Venus Bay and Tarwin Lower would become a showcase community for new energy





Community Wealth Building

The current energy transition is a unique opportunity to create an energy system that delivers reliable energy, resilience and wealth for communities. This can be amplified through community wealth-building approaches. There are many approaches, more than we can list - each approach answers the question, **‘how can we keep more of the economic benefit locally and keep it recirculating locally?’**.



Five Pillar Questions for the Venus Bay & Tarwin Lower Community

The five pillars of community wealth building provide the core frames for thinking about this.

Enterprises - How could a community owned enterprise crowdfund or support community ownership?

Spending and Supply Chains - How can we work with local suppliers where the benefit is retained locally?

Assets - How can community assets benefit and accelerate the energy and economic transition?

Workforce - Can we find funding to employ volunteers, or make businesses more viable in tough times?

Finance - Can we convert a one-off grant into a revolving fund by sharing the benefits? Can we raise local investment finance to accelerate these projects and keep returns local?

Benefits

By using community wealth-building approaches and other community interventions, such as flexible energy use, efficiency and electrification measures, the following benefits could be achieved. Adding solar to 500 households would save \$1.2 m p.a. collectively. Savings from solar on community facilities and business would add another \$215,000. Even if ten per cent of this is captured locally; this would have a significant impact on the local economy. A local energy advisor and coordinator

could save the community over double their salary through the promotion of energy efficiency measures, arranging bulk buy initiatives and helping businesses with grants. Utilising local tradespeople (and the multiplier effect of their local spending) and supporting financing via a community facility could all capture more of the economic benefit locally.

Which ever pathway leads and however they intersect, there is the potential to capture and recirculate a significant proportion of the millions of dollars of savings and investment in Venus Bay & Tarwin Lower Communities.





What will it take for this action plan and longer-term outcomes to be realized?

Many ideas were shared, and actions co-created at Workshops #3 and #4 that form the basis of the suggested immediate next steps and longer-term activities for achieving our community energy goals. Much detail has been written up in the supplementary tables in Appendix A, which cover the critical elements of any successful community energy initiative, as listed below.



These action plan tables will be the main focus of Workshop #5, where participants will be offered the opportunity to focus in on the specific parts of the plan that most interest them and discuss how they might be involved.

SHORTER TERM

- Overall co-ordination and implementation
- Organising - existing organisations and partnerships
- Community Champions
- Working Groups for the pathways
- Communicating and engaging
- Financial resourcing

LONGER TERM

- Capacity building
- A potential new legal entity
- Further research
- Undertaking pilots
- Communicating and engaging
- Financial resourcing

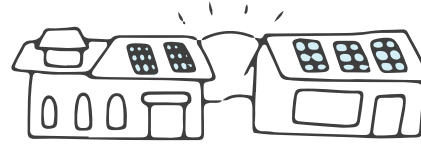
Monitoring and review

A co-ordinating group and several working groups are the most likely ways of organising and governing the implementation of this plan. Advisory Group members and additional community members are invited to continue their involvement and how they choose to monitor and evaluate this plan will be determined by them, based on final agreed action plans. The suggested starting point for co-ordinating, monitoring and evaluating action is bi-monthly working group meetings for Pathways 1, 2 and 3, and quarterly combined meetings of the Working Groups with the Co-ordinating Group. Quarterly community updates on progress and an annual event focussing on what's been achieved and what's next to do are also recommended.





Proposed Strategies



Small Clusters

1. Establish a Working Group to develop small cluster opportunities.
2. Progress clusters currently identified as priorities.
3. Research and develop new showcase opportunities involving the sharing of energy and equitable management of costs and benefits.
4. Communicate the value of trials to disseminate knowledge and learning

Whole of Community

1. Establish a Working Group to maintain whole of community ambitions.
2. Develop customer base for business models that require investors or energy purchasers.
3. Investigate wind options and determine those that would achieve social licence.
4. Develop strategies for integrating emergency services and telecommunications into energy project.

Establish working groups & representatives

Coordination

1. Establish an overarching Co-ordinating Group to support implementation of the Community Energy Action Plan, whilst further research and development of partnerships and new entities are underway.
2. Seek resourcing for co-ordination and Pathway implementation
3. Establish and support a Working Group for this Pathway

Households

1. Facilitate information sharing and learning opportunities about renewable energy options for households
2. Facilitate the design and roll-out of energy efficiency assessments, advice and upgrades support.
3. Facilitate cost effective ways of increasing uptake of solar and batteries by households
4. Enable equitable access to renewable energy for households that cannot install their own solar
5. Monitor, evaluate and communicate benefits and outcomes

Community Buildings

1. Establish a Working Group for this pathway
2. Facilitate the design and roll-out of a support program for community groups to install renewable energy systems

Business

1. Establish a Working Group to activate and facilitate this pathway.
2. Test business interests in working together to supply affordable renewable energy
3. Research and develop supporting information to illustrate to local businesses what opportunities exist to partner with VB & TL Community Energy
4. Research and develop legal entity types and revenue streams that could enable this pathway
5. Facilitate a pilot with a small number of businesses to test and refine the approach
6. Continue researching and refining the technical options that might support individual businesses or clusters of businesses, connecting with Pathway #4
7. Design and roll-out a longer-term plan for all businesses wanting to install renewable energy systems

References

All reports for the Resilient community and reliable energy feasibility study for Venus Bay and Tarwin Lower can be found here:

<https://www.vbcc.org.au/finalreports>

The Draft Action Plan draws from the work of all four workshops. See:

- **Workshop 1 Harvest Report**
- **Workshop 2 Harvest Report**
- **Workshop 3 Harvest Report**
- **Workshop 4 Harvest Report**

See Appendix A - Action Plan tables for each pathway.

See Appendix B - Technical Report for deeper technical analysis, sizing of generation, flexible use of energy and storage and the development of costs for all five pathways.

See Appendix C - Economic Report to understand how Community Wealth Building principles and pillars shaped the economic analysis.



**COMMUNITY
ENERGY**

for Venus Bay & Tarwin lower