

Response to:

Inquiry into Tackling Climate Change in Victorian Communities

Legislative Assembly Committee

Please accept our submission to the Inquiry into Tackling Climate Change in Victorian Communities.

Our group is thrilled to contribute to the inquiry and would welcome further input should that be considered useful. We have here offered an overview of a diversity of activities underway to achieve our 100% goal.



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History

Totally Renewable Yackandandah formed as a result of a community energy forum hosted by Indigo Shire in March 2014. From there a small energetic group of locals have focused on a commitment to be 100% renewable energy by the year 2022.

Since that time we have focused very much on identifying and then 'jumping on' opportunities. This opportunity led approach has allowed a broad range of really positive and hopeful actions which we are proud of – and recognise community groups doing the same across Victoria and Australia.

Overview

TRY anticipates achieving our 100% target by:

1. implementing strategies to radically reduce household and business energy consumption;
2. eliminate the consumption of electricity generated from fossil fuels;
3. locally generate, store and share electricity from renewable sources;
4. build community cohesion and resilience in the era of a damaged climate.

In the early stages of our evolution, TRY worked with Mondo to develop a five stage roadmap to transition from business as usual to a 100% target. We continue to use this tool as foundational guidance in our efforts to transition. Put simply, the roadmap plots the transition from our starting point in 2014, through the installation of quality, interconnected solar panels, the progressive adoption of batteries, the introduction of a supportive energy retailer and finally the construction of community-scale generation and storage assets. Please refer to **Attachment One**.

As a means to bind this together, we are working on a series of microgrids across the town connected by a Smart Energy Controller – the Mondo Ubi. The device has capability to visualise, monitor and orchestrate the flows of electricity to optimise the movement of electricity locally to improve local performance, reduce costs, secure a more resilient power supply and optimize the use of local renewable energy.

These interconnected microgrids will form a **minigrid**. We have deliberately been non-prescriptive in the foot-print of our activity since the electricity network is not localised, nor is the cause and effect of climate change; and we hope to provide an exemplar of effective fair and rapid transition. However, generally speaking we do focus our direct efforts on the area within a 14 km radius of Yackandandah. This radius has a population of roughly 2400 people. TRY has also recognised the importance of drawing people together to achieve a 100% target. We therefore have worked consistently and consciously to foster and celebrate **partnerships**.

Moreover, in wishing to draw together people from across the town we have actively worked to be **non-partisan** in our efforts. For that reason, we have focused on a spectrum of values that renewables can bring to a community, beyond that of only carbon emission reduction. But the advancing evidence on climate change and growing acceptance has encouraged us to become more vocal about the urgency of climate change. A fact well reflected by our local Council, Indigo Shire, who one month ago declared a climate emergency, and highlighted how important renewable energy is to positively and actively respond to the visible threat of catastrophic climate change.

Specifically, we have consistently highlighted the cost saving opportunity of renewables and fortunately our town is now populated with a myriad of narratives which highlight how effectively people can reduce costs and cut emissions. Indeed, using the Mondo Ubi, we were able to record a 1 GWh milestone of locally generated energy in the microgrid, saving a calculated total of in excess of \$160,000. TRY is deeply keen to understand what will happen if we continue to reduce spending on electricity and give people opportunity to invest the savings more productively.

Such narratives are captured for example with the following short video – funded by a mini grant from the Department of Environment, Land, Water and Planning: The Power to Change.

<https://www.youtube.com/watch?v=kHOSG8Nic-s&feature=youtu.be&fbclid=IwAR1isVi3rwtUbuzyfLH1BKty0TUXIZZ5Es1abKjO9PmEgNBUBaNLqQHJpw>

Actions

Partnerships

TRY is very fortunate to enjoy a diverse range of very productive relationships with other entities. Mondo, a subsidiary of AusNet Services, North East Water, Indigo Shire Council, CFA, DELWP, Apricus Australia, Selectronic Australia, Solar Integrity, the Yackandandah Folk Festival, the Reichstein Foundation, Into Our Hands Foundation, WAW Credit Union, the Yackandandah Chamber of Commerce, YCDCo (Community Owned Petrol Station in Yackandandah) and a diverse range of other community groups. We are also grateful to have enjoyed a very supportive engagement with the past Member for Indi, Cathy McGowan.

Additionally we hope we have been respectful in our relationships with local people who disagree with the role that renewable energy might hold in the future of our township. So far there has been very few examples of people being upset or offended by the 100% goal. Participation is at all times voluntary.

Very early in our journey we reflected carefully about the diverse range of organisations needed to help us toward 100%. We therefore reached out to a few key stakeholders to understand both how we might support them and to inform our own practice. This notably included, AusNet Services, North East Water and Indigo Shire. We have been very impressed by each of these organisations and their readiness to engage in the new opportunities and challenges offered with renewable energy – and importantly, supporting TRY in its infancy and beyond.

TRY strongly believes the scale of climate change requires new conceptions of partnership that we can only yet imagine and it will require new trust, and new collaborations across all sectors. We feel very strongly we have been given some insight to the possibilities with a very substantial relationship between Totally Renewable Yackandandah and Mondo. We think this partnership has been incredibly enabling – for a business with a DNSP pedigree to understand how communities can respond with competent, calm and aspirational approaches, and in reverse, how corporations can leverage a depth of expertise to action remarkable outcomes. Mondo also extend this support to other communities.

<https://mondo.com.au/community>

Likewise, North East Water have been strong and reliable associates on the journey toward 100%. We feel very fortunate they have invested substantial effort and resources as they themselves understand their trajectory to a zero carbon target by 2050. They have installed a 40 kW solar array and a 42kWh battery at their potable water treatment plant in Yackandandah.

<https://newater.com.au/performance#la-1504263-case-study-yackandandahs-solar-powered-water-treatment-plant>

Yackandandah Health were also a very early active advocate to support the community effort to transition to 100% renewable energy:

<https://www.facebook.com/thegoodenergyau/videos/1317733068381740/>



Public Installations

More recently we are also pleased to report the completion of a series of public solar installations with the purpose of both building an expanding local generation resource but also to limit the operating expenses for community groups. We raised over \$80,000 locally for this project and gratefully received a substantial injection of \$104,000 from the Victorian Government in the Community Renewables Partnerships program. This virtual power plant, linked by Mondo Ubi's consists of 10 public buildings:

1. Yackandandah Public Hall – 11kW of solar and 13 kWh of batteries;
2. Yackandandah Sports Park – 8 kW of solar and 10kWh of batteries;
3. Yackandandah CFA – 6kW of solar and 13kWh of batteries;
4. Yackandandah Museum – 3kW of solar adding to the existing 1.7 kW of solar;
5. Yackandandah Masonic Hall – 4 kW of solar;
6. Osbornes Flat Hall – 3kW of solar;
7. Wooragee Hall – 4 kW of solar;
8. Bruarong Hall – 3kW of solar;
9. Indigo Valley CFA – 3kW of solar;
10. Yackandandah Health Service – 30kW of solar to build on the existing 99kW of solar.

We are particularly proud of the solar and battery system on the Yackandandah CFA. People are extremely proud of the role CFA plays in a safe community and the potential of providing a resilient power supply (capable of off-grid functionality) for emergency events seems critical. At the same time, our firefighters tell us the fires they are fighting are getting worse each year – and decarbonising their energy supply is more than timely to assist their own carbon change efforts.

https://www.facebook.com/thegoodenergyau/videos/647651095727323/?q=the%20good%20energy&epa=SEARCH_BOX

The Yackandandah Public Hall will be a showpiece for visitors to Yackandandah as they seek to learn what is underway here and how this might be implemented in their own community. The hall will provide a terrific base to show people the technologies we are deploying and how it fits together.



Yackandandah Public Hall

As a result of long-term efforts to switch to solar, we can report solar systems on many other public buildings, including: the supermarket (80kW), the petrol station (12kW), the kindergarten, swimming pool, school, council offices (25kW), council depot, gallery and neighbourhood house.

It also seems important to note that Yackandandah is a town with a rich history of creative and innovative thinking. There is considerable evidence of local people identifying important opportunities and then working hard to actualise these opportunities. One such example is the 15 year old community owned petrol station (YCDco). They return 50% of their annual profit, approximately \$20,000, back to the community each year. They employ a wide variety of people and manage the community newsletter, not to mention offering a great community resource. They also sponsored the first community solar panels in Yackandandah by way of a 1.7 kW installation on the newly rebuilt museum in 2007, which had been gutted by a fire.

For more information please refer to their website at: <https://ycdco.com.au/about/>

Minigrid

In 2017 Mondo and Totally Renewable Yackandandah implemented our first microgrid. This consists of 14 houses in a small estate of 22 dwellings. Residents were offered a solar system with a subsidised battery and an Ubi Smart Energy Controller. These homes now have very basic microgrid functionality but do serve as the foundation of a minigrid. Many of the homes with batteries operate on 100% of their own energy for about 70% of the year. The density of solar installed in this area is 72% of residences and when we can locate funds we have a strong aspiration to place a community scale battery at the transformer and work to having the group of houses electrically 'islandable.'

A second microgrid was implemented in the farmland on the south eastern side of Yackandandah in 2018. This program was implemented as a research trial with the University of Technology Sydney, funded by ARENA and orchestrated by AusNet Services. Of 85 eligible households, 14 elected to take on the solar and subsidised battery package connected-together with Mondo Ubis. This microgrid tested the way in which distributed energy resources can be used to manage network performance in a constrained single wire earth return (SWER) line. This project went on to be recognized by the Clean Energy Council, who awarded AusNet an innovation award in being able to better manage voltage swings in the network.

With the benefit of funds from the Department of Environment, Land, Water and Planning TRY is also preparing to install solar and battery systems for a third microgrid program. This time the Ubi will be the integral piece in the construction of software in order to facilitate the micro-grid. We have recruited 8 homes out of an eligible 33 homes. Additionally, hot water systems are being subsidised as we have recognized how much power is being consumed overnight by traditional electric resistive systems.



Yackandandah microgrid

TRY holds the view that microgrids hold a crucial opportunity in supplying clean, reliable and resilient electricity and do so with substantial local benefits. This is in stark contrast to reliance on distant large scale solar or wind developments, since their complexity and cost is beyond the scope of local energy groups and citizens. We therefore are very positive that not only will microgrids provide a really robust mechanism to reduce reliance on fossil fuels, but they also provide the ability to engender a power supply resilient in the face of increasing natural disaster and temperature anomalies.

As growing evidence of the success we can now boast a very high solar installations density. In total the Australian Photovoltaic Institute (APVI) have recorded that at least 55% of buildings in Yackandandah now have solar in them, with Osbornes Flat recording 65% of buildings.

Energy Efficiency

Despite our best ambitions we have been less successful at really pushing the energy efficiency program in Yackandandah. We have attempted various energy efficiency workshops but the attendance has been poor. This is perhaps because without more far reaching leadership at a government level people are reluctant to undertake initiatives that require more effort and have the potential to significantly change their current way of life. It is possible that much more needs to be done around education, both of the real benefits (both economic and emissions-wise) of energy efficiency measures and the necessity to undertake some lifestyle modifications in order to achieve important outcomes.

More successfully however, we did run a hot water bulk-buy program in 2018. In this program we sold 20 solar hot water systems. This success has encouraged us to roll out a new offering – for Natural Refrigerant CO2 heat pumps. We are thrilled by the energy saving opportunity and feel it is very much under explored as a mechanism to radically increase usage of daytime ‘spill-over’ solar generation and reduce the voltage pressure on the grid overnight. A win-win-win, noting the rapid payback for efficient hot-water services.



Reclaim Energy CO2 Heat Pump

This hot water replacement program is now underway across the region and takes advantage of the forward-thinking state government with the hot water rebate. We have learnt however that people are somewhat reluctant to part with working hot water services, even when they are operationally expensive and causing lots of carbon emissions.

TRY have also just launched an Energy Coaching program. Volunteer coaches are now available to go into people's homes to help people understand their own opportunities to save money and improve livability. We are fortunate that a group of retired, semi retired and practicing building professionals have volunteered their time to advance the cause. This includes building designers, architects, builders and building engineers.

Indigo Power

Indigo Power will become a key instrument of our renewable energy future. The unlisted public company is working to be a critical, social enterprise to broker the movement of electricity around the area in a way that returns 50% of proceeds back to community. Step four of our renewable energy roadmap includes the addition of a retailer as a critical enabling feature of successful local energy. The constitution of the enterprise explicitly states that it intends to drive a 100% renewable energy goal for the region.

Fortunately, TRY received funds from the Victorian Government under the New Energy Jobs Fund to do much of the original research and it is now working to be self-sustaining with a very lean budget and in a very competitive energy retail environment. Indigo Power also has within its scope a range of community scale renewable energy assets, including power purchase agreements for commercial businesses and a signature project to install a 70 kW solar garden with 200 kWh of battery – to feed power into the community in the evening to reduce reliance on dark grid power.

https://www.youtube.com/watch?v=_5fdApu_E4Y

Indigo Power is independent of TRY but there is much exchange of effort, intellectual capital and donated capacity to get it off the ground.

North East Community Energy Network

Members of Totally Renewable Yackandandah have also been strong advocates for other community energy groups both locally and across the State. This includes groups like Totally Sustainable Tallangatta, Totally Renewable Beechworth and Totally Renewable Phillip Island. More formally the North East Community Energy Network (NECEN) works to assist groups to get started on their energy journey. Originally inspired by Cathy McGowan AO (past Independent Member for Indi), the network provides a learning community to share ideas, resources and provide support to aim for a Totally Renewable Indi.

Currently NECEN is rolling out a whole-of-region hot water replacement program in partnership with Indigo Power. This program aims to create step change in the energy efficiency performance of the region's hot water fleet. It would be helped if electric storage hot water services could be subject to a Government-led rolling program of enforced retirement for old systems!

<https://www.facebook.com/TRBeechworth/videos/353893972155397/>

Other non-renewable energy responses

Yackandandah also has an informal but very active program to install bespoke sculptural water bubblers throughout town. They explicitly intend to allow the abandonment of bottled water sales throughout town. Built by a local sculptor, The Agency of Sculpture, the accessible bubblers can also fill water bottles and provide pet water. At the same time they will eventually punctuate a self-guided educational walk around the town to explore the diversity of sustainability activities underway – including the local community food garden.



Yackandandah Sculptural Water Bubbler

Well known waste reduction group Waste Wise Yackandandah are also leading a campaign to eliminate plastic waste recognizing the broad environmental impact. They have a wide diversity of progressive strategies underway to reduce our reliance on plastics. Importantly however they are constructing an events trailer which will have a commercial dishwasher

onboard and include reusable food service equipment, in order to reduce the amount of disposable items used at public events.

Our folk festival also has a zero-carbon target and have heavily contributed to Totally Renewable Yackandandah. This zero-carbon target includes funding 3kW of the solar installation at the petrol station, which provided sufficient generation to meet the electricity needs of the main festival venues. The festival has since grown, and hence the significant contribution they have made to the main halls around town in the virtual power plant. They also have a zero-waste target by 2023.

We are however a little down hearted in Yackandandah as the town of about 500 houses is threatened by a planned 130 lot subdivision that is in no way supportive of efforts across town to create a more sustainable village. Unfortunately the low bench mark 6-star rating and low expectations for ambitious solar passive design captured by the State Planning Rules, means our efforts over ten years will be undermined by terrible new housing that leaves their occupants vulnerable to heat extremes with:

- thermal mass being placed on the wrong side of the wall (external brick veneer);
- dark roof tops that will absorb heat;
- poor compliance checks for insulation;
- low expectations for quality of hot water services and fixed appliances;
- poor accounting for passive solar design, orientation, no eaves and natural ventilation;
- dependence on gas – a fuel we must phase out.

Surely in the era of climate change we must do better than allowing new buildings of such poor design that will be the emergent slums of the not too distant future.

Government Actions

The inquiry has invited comment about what action the actions might take in order to meaningfully respond to climate change. It is disappointing to members of TRY that the evidence on climate change has been so conclusive for so long that there is still not a robust societal level response that matches the magnitude of the threat. Analysts and commentators frequently highlight how we need to adopt a war footing to respond to runaway climate change – we think this is the intensity of the action that must be embraced.

The following points relate to items highlighted previously in the document, but the question of changes needed by state government is worthy of a different discussion paper and indeed a whole rethink on priority. Unfortunately, the level of consensus is of course is not unanimous!

This list is not intended as a comprehensive commentary of options for improvement overall, more a reflection on some of the obvious changes related to our efforts.

- Align state planning rules with current and emerging climate reality;
- Phase out domestic electric and gas storage hot water;
- Mandate progressively higher efficiency standards and actively support low income homes to improve the quality of their appliances
- Tie government grants for solar systems and hot water systems to strict quality / performance criteria and include smart technology to ensure they are future ready.
- Find ways to actively support a broader and rapid uptake of storage.
- Urgently require action from all Government departments to switch to renewables – the VRET a good start; but all departments receiving robust RET with tight time frames.
- Stop cutting down native forest and urgently expand carbon farming programs!

Conclusions

Totally Renewable Yackandandah has used a multi-pronged, multi-stage approach to tackle the imperatives of climate change. This is partly in order to maximise results across a community with diverse people and situations as well as trying to meet the many challenges of implementing a 100% renewable energy transition. This has meant forming collaborations with local government, utilities, businesses, research organisations and many other community groups, along with actively promoting our experiences at regional and national levels. It has meant not only promoting and trialling new technologies and strategies but also utilising existing techniques around energy efficiency and usage to leverage significant multiple benefits.

In all it has become very clear to us that we do not really have a technology problem, instead we have a volition challenge. The technology and knowledge is available and well-tested in other locations around the world and in smaller, self-contained Australian situations. The reasons to act are beyond compelling. What is needed is the political and societal 'ticker' to apply these techniques in all situations and lead community to participate and take up the challenges. There are innumerable benefits to communities and society in doing so, completely apart from the imperatives of climate change.

This is particularly so in rural and regional areas.

The many other benefits of the 100% transition have been used as a way of widely engaging the community and avoiding the very partisan nature of the climate change debate. These many additional benefits help to refresh communities that were previously struggling economically and socially, actively engages them and provides a greater sense of control over their fate.

Attachments

Attachment One Five Stage Roadmap