Donald and Tarnagulla | Energy Futures Forum

Exploring community needs and microgrid opportunities for rural and regional towns

C4NET

CENTRAL VICTORIAN Greenhouse Alliance

Powercor AUSTRALIA

Ovida

LODDON SHIRE

BULOKE SHIRE COUNCIL

1. Welcome

Rob Law, Central Victorian Greenhouse Alliance (CVGA)

Who we are

- James Seymour, Monishka Narayan & Sanaz Tabasi – Centre for New Energy Technologies (C4NET)
- Amy Jaballah and Praneel Pradhan – Powercor
- Rob Law – Central Victorian Greenhouse Alliance (CVGA)
- Brian Bird and Con Dimitrakakis - Ovida

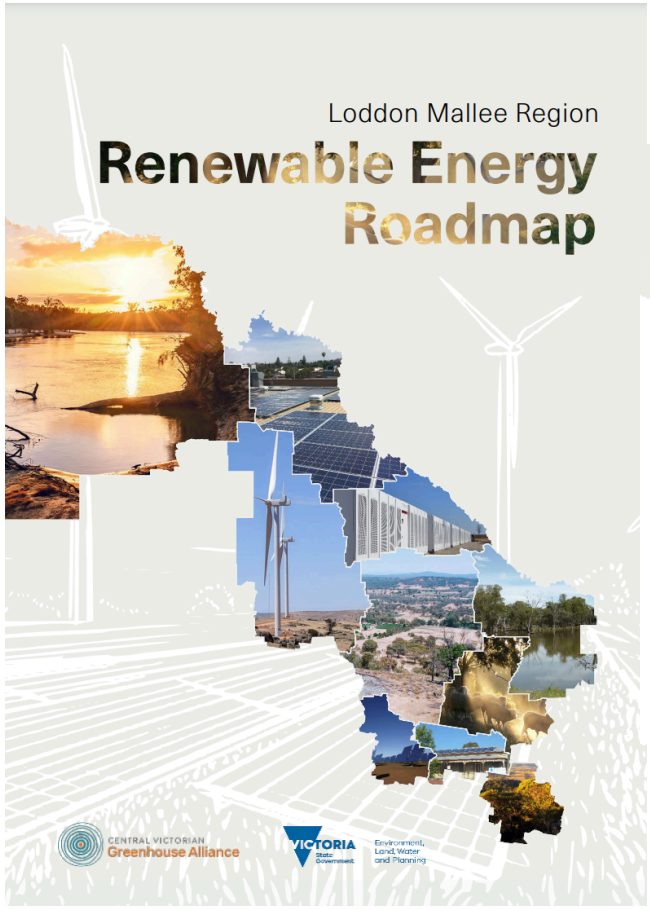
Outline of session

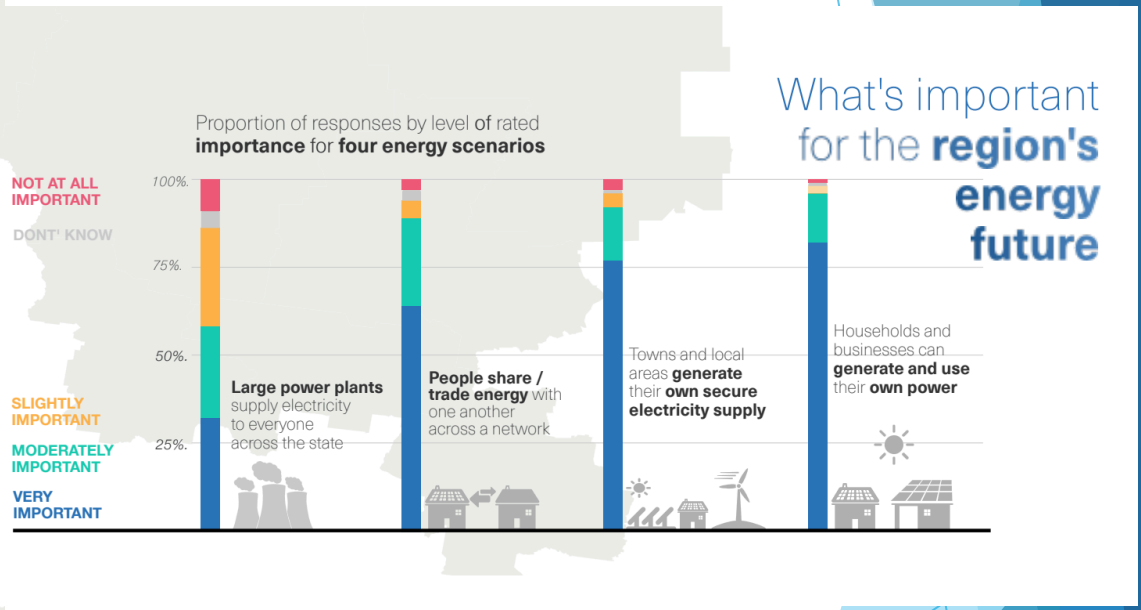
1. Welcome (CVGA)
2. Study Overview (C4NET)
3. The existing energy system in Donald / Tarnagulla (Powercor)
4. Community Needs (CVGA, Powercor)
5. Solar and batteries for residents (CVGA)
6. Solar and batteries for commercial (Ovida)
7. What to expect next?
8. Questions / Discussions

Please note: photographs will be taken during the event

C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

Why Donald and Tarnagulla?





What we are hoping from today?

Introduce ourselves – 3-year project

Get an early idea of what interests you/concerns you about energy (and this project)

Start a dialogue to help shape your towns energy future

Fun history facts

- Towns used to generate and supply own energy – microgrids!
- Nhill was first town in Victoria to get electricity (ahead of Melbourne!)
- Power stations used to close on Sundays
- After 1896 you couldn't share your power without permission

2. Study Overview

Centre for New Energy Technologies (C4NET)

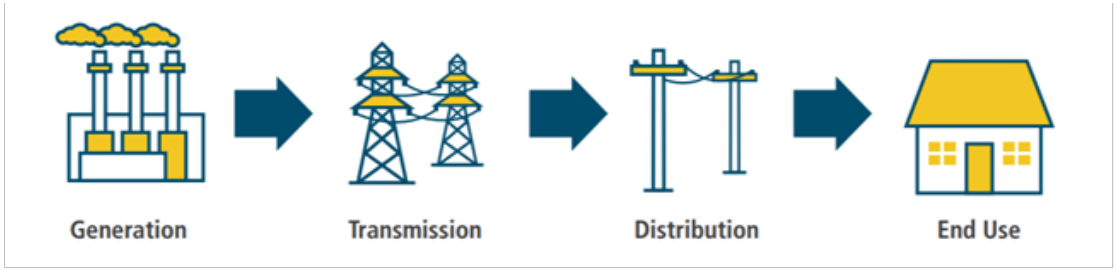
C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

Study introduction

- This feasibility study is supported by the Department of Industry, Science, Energy and Resources and C4NET.
- The consortium of industry-leading organisations and local Governments involved in this Study are:
  - **Powercor** – the distributor for both towns
  - **CVGA** – local engagement and promotion of local residential solar & battery uptake
  - **Ovida** – a commercial PPA provider and promotion of local business & community uptake of solar and battery
  - **Shires of Loddon and Buloke** – Shire councils of the two towns
  - **C4NET** – lead and responsible for the overall Study management and delivery.
  - **Universities -** perform the research and innovation required in this Study
  - **Local community groups**

C4NET Central Victorian Greenhouse Alliance Powercor Australia Ovida Loddon Shire Buloke Shire Council

Our electricity grids are evolving



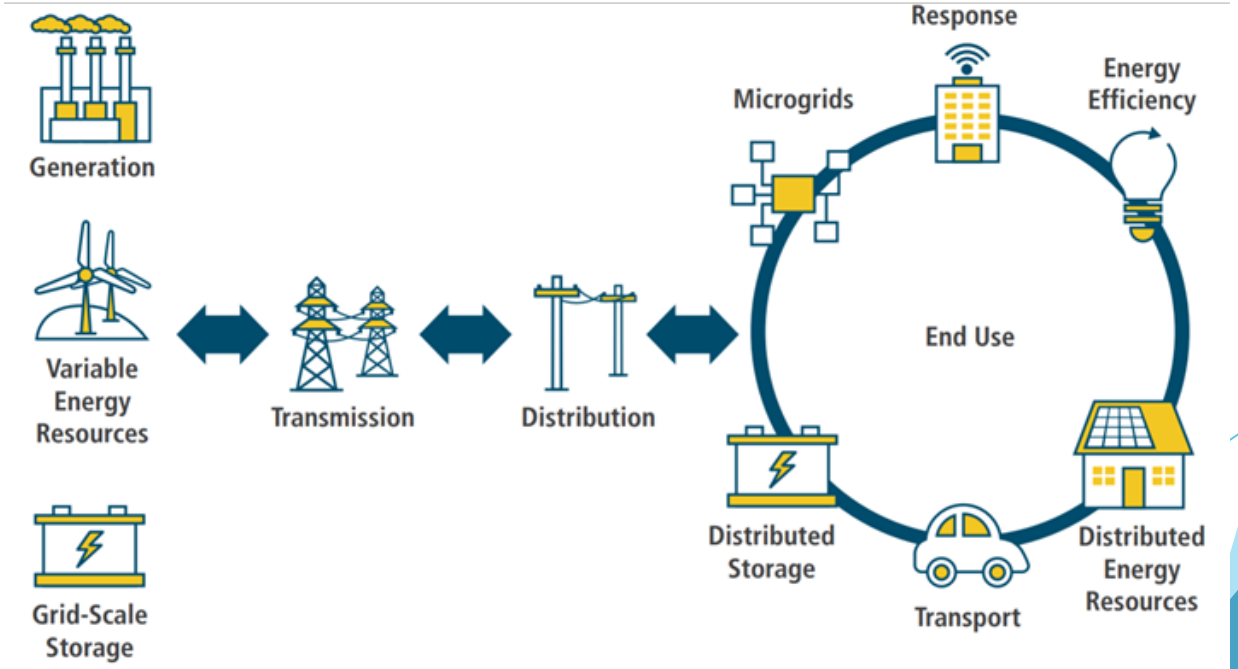
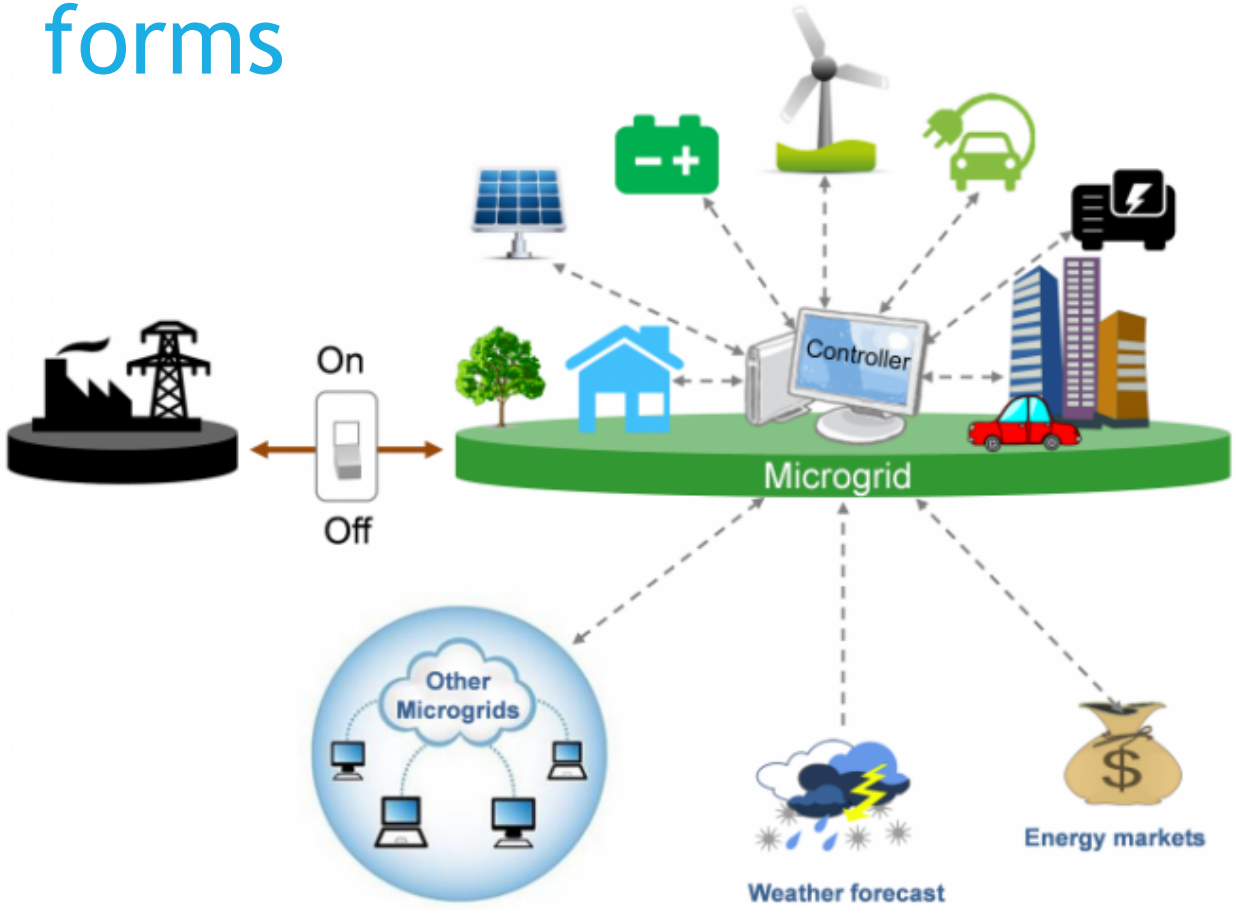


Image Source – US Department of Energy

Microgrids can take many forms



A microgrid and its benefits

- A microgrid can be:
  - Completely isolated from the main grid
  - Typically connected to the grid, but able to be isolated
- They may enable full or partial self-sufficiency
- Microgrids are typically developed for three main reasons:
  - energy security
  - cost savings
  - sustainability
- Microgrids are becoming commercially feasible in Australia due to technical and cost improvements

Microgrid Feasibility

- Communities are increasingly asking about microgrid options to meet their energy needs
- But there are issues:
  - Microgrid analysis is complex, and many options to consider
  - Balancing the community needs, benefits and costs is a challenge
  - Lack of understanding on microgrid reliability, benefits, operation, ownership and the governing market rules
- We do not know whether a microgrid-like solution will be beneficial for Donald or Tarnagulla – but by having a deep dive into the community and power system issues, we aim to address that
- The Study will run for 3 years starting September 2020.

C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

Why this Study is being done?

- The Study is carried out to determine whether setting up a microgrid is feasible for your town.
- The findings within your town will also inform microgrid suitability for other regional and remote towns across Australia and also more globally.
- The Study will tell us the types of variables that matter when it comes to choosing a microgrid in towns like yours.

C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

How the Study is being done?

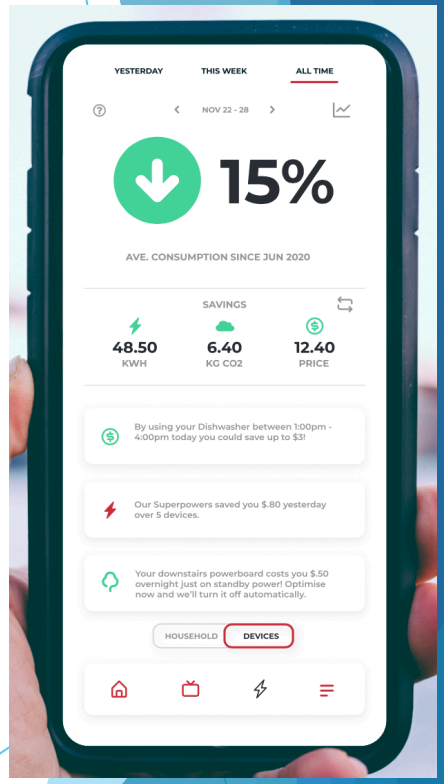
1. Stakeholder launch event
2. Community Engagement
3. Network assessment
4. Area hosting capacity assessment
5. Islanding design and cost analysis
6. Stakeholder impact investigation
7. Microgrid impact study
8. Economic and Risk Assessment
9. Concentrated generation impact (demonstration)
10. Concentrated storage impact (demonstration)
11. Recommendations to regulators
12. Microgrid Assessment Tool development

C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

RedGrid Energy Saver

Makes your home smarter, so it can use less energy and make your life easier.

- Keep an eye how much your appliances are costing you, in real time. Never have bill shock again.
- Earn rewards for using your energy during clean energy periods.
- If you have solar, boost your return on investment to cut down your payback period.
- We provide you:
  - 3 x Smart Plugs and Air Conditioning Controller - no other hardware needed.
  - Connect your community through your plugs to save money together – all automatically by organising energy use
- Proposed Project:
  - feasibility study with C4NET to work with you to find the best options for saving money and building a community-led digital energy grid.

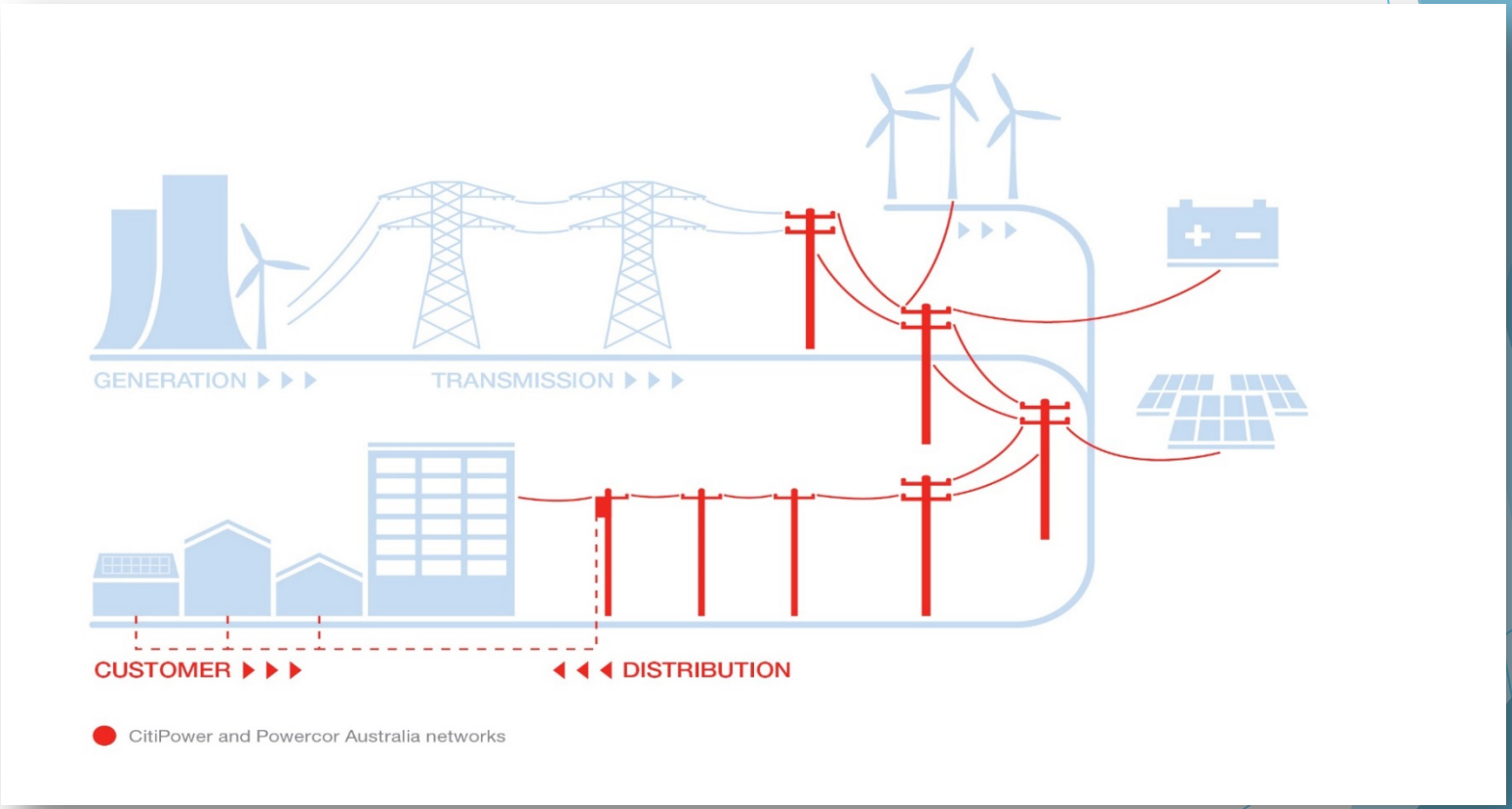


REDGRID

3. Powercor in your community

C4NET
CENTRAL VICTORIAN Greenhouse Alliance
Powercor AUSTRALIA
Ovida
LODDON SHIRE
BULOKE SHIRE COUNCIL

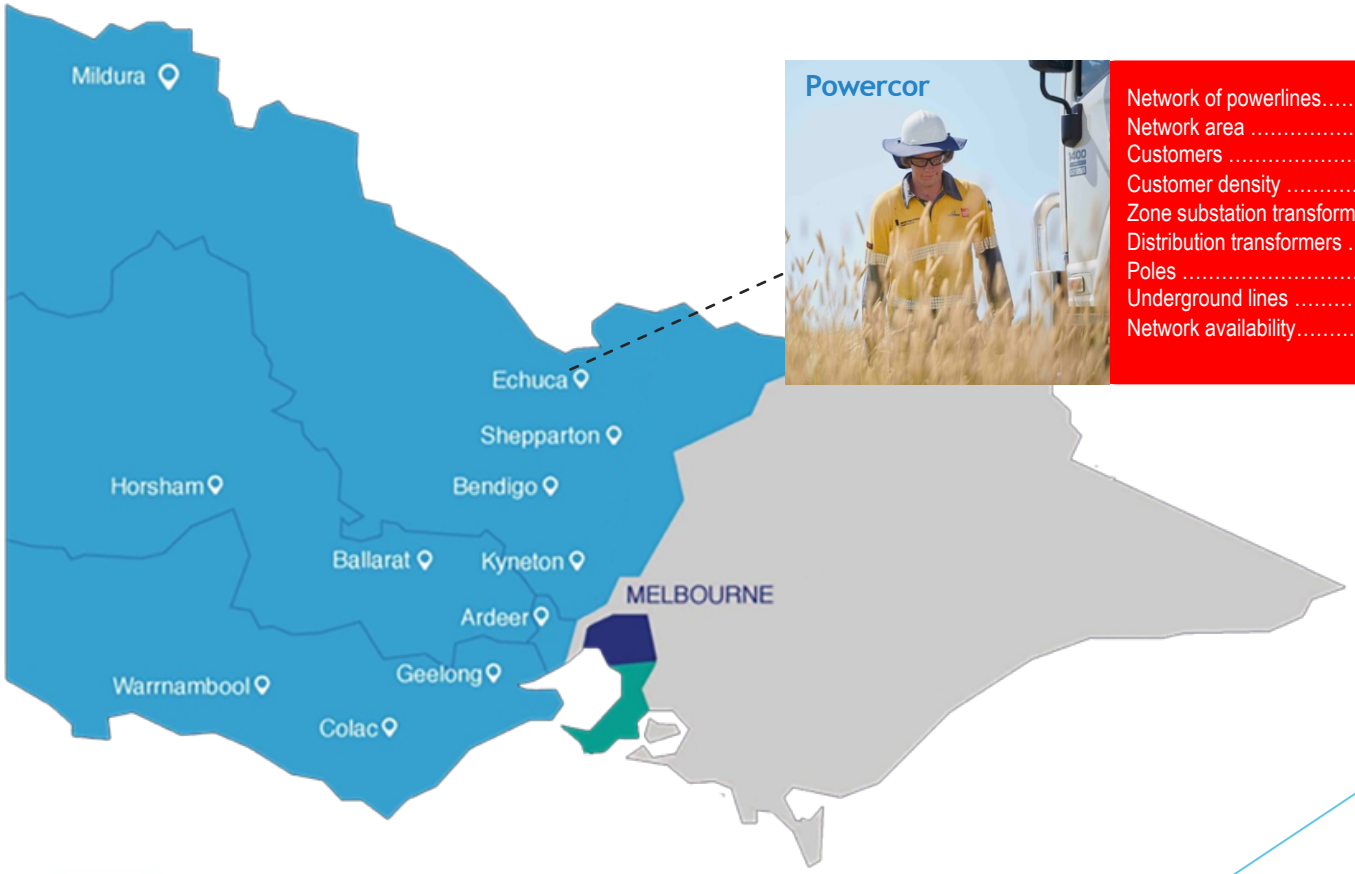
How is electricity delivered in Victoria?



Powercor AUSTRALIA | Good people in power

Victorian Power Networks |

Servicing 1.1 million metro an rural customers



Network of powerlines	88,406km
Network area	145,651 sq.km
Customers	838,234
Customer density	5.76c/km
Zone substation transformers	144
Distribution transformers	86,296
Poles	582,903
Underground lines	15.2%
Network availability	99.97%

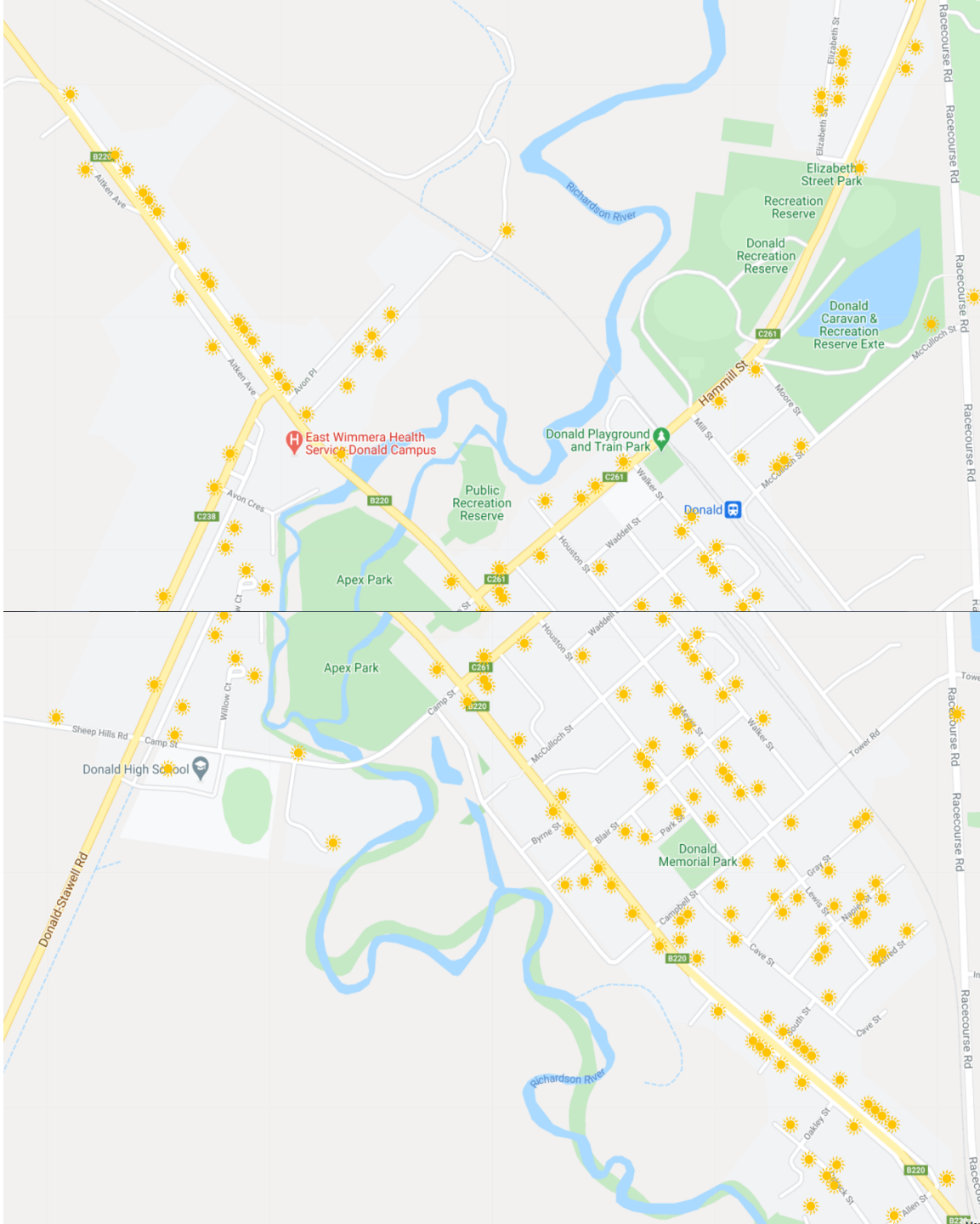
Powercor AUSTRALIA | Good people in power

Solar PV | Check before you connect

- We're seeing huge growth in the number of customers in our network installing rooftop solar photovoltaic (PV) systems. It's a popular way of taking control of energy reliability and costs in your home and there are great incentives available through the Victoria Solar Homes Program.
- On the days when you generate more solar electricity than you need, then you may be able to export this excess power back to our network and receive money in the form of a feed-in tariff shown on your electricity bill.
- Our networks take electricity to and from your home. This means we need to balance the amount of power flowing from large-scale generators as well as private solar PV systems, in order to keep the electricity supplies reliable for all our customers.
- In many areas though, the ability of the network to absorb the solar PV exports can be limited. It doesn't stop anyone from installing a solar PV system but it can affect the amount of exports available.

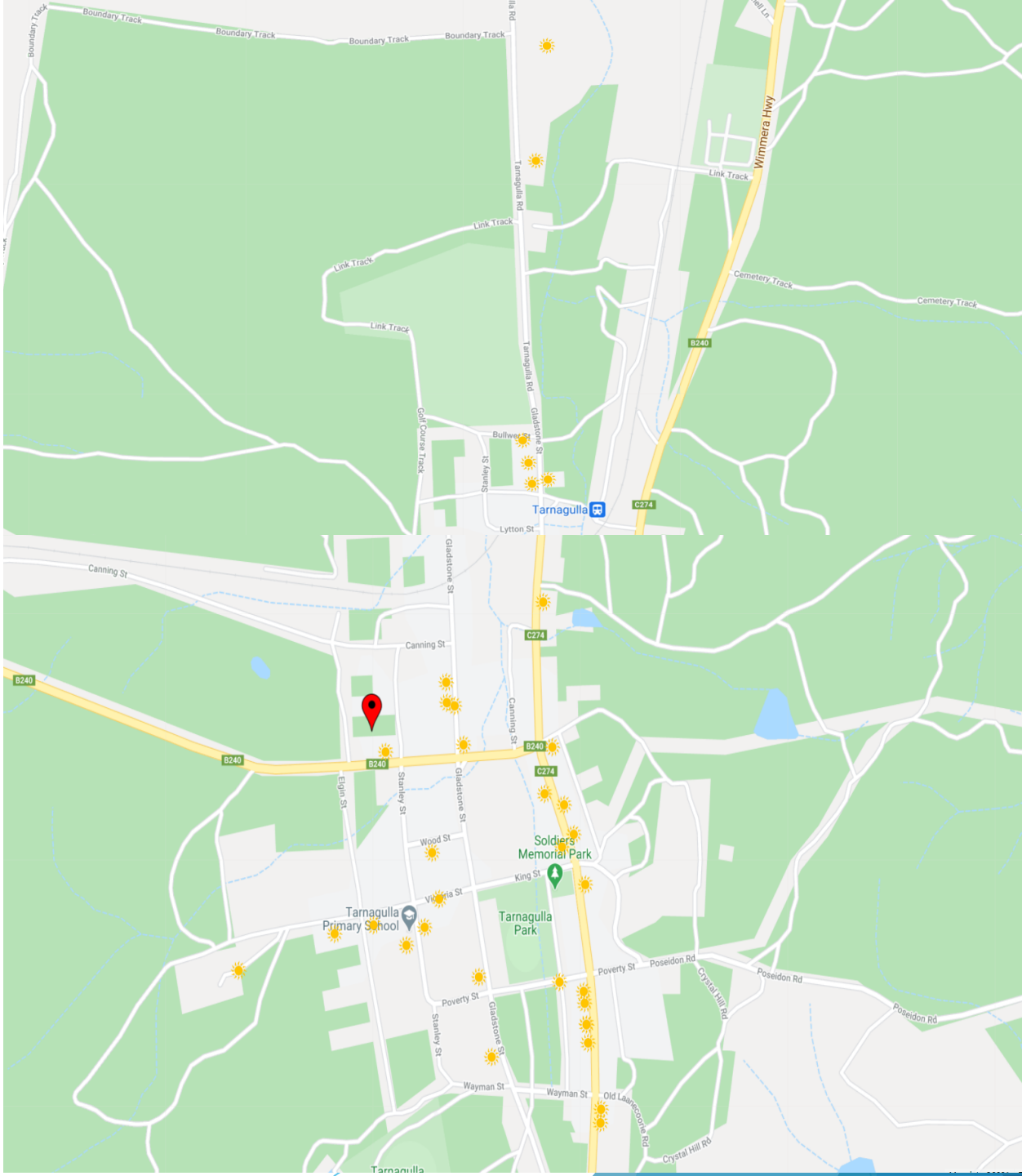
Powercor AUSTRALIA | Good people in power

Donald | Solar Uptake



Powercor AUSTRALIA | Good people in power

Tarnagulla | Solar Uptake



Powercor AUSTRALIA | Good people in power

4. Community Needs

CVGA, Powercor

Group discussion

- What are your experiences of energy in Donald?
- What excites/concerns you about the idea of a microgrid in your town?
- What is most important to you regarding energy?

C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

5. Solar and Batteries for Residents

CVGA

C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

Community solar bulk buy

- 1500 solar rooftops on homes in Central Vic
  - 20,000 panels
- CO_2 emissions cut
  - 9000+ tonnes/yr
- Bill savings for households
  - $1,000,000/yr
- Community solar bonus
  - 14 free systems for schools & community groups

MASH
More Australian Solar Homes

MALLEE SUN
Solar Bulk Buy

How it works

- We're a not-for-profit
- Supported by local councils & sustainability groups
- Well-proven
- We've done the homework for you
- High quality systems, good-value prices
- Warranties: above average
- Expert advice. No hard sell
- Support local jobs
- Give back to your community

Community benefit sharing

Solar supplier & installer

Specialized SOLAR SOLUTIONS

- Selected through competitive tender
- CEC Approved Solar Retailer
- Vic family-owned business
- Safe working practices: COVID-19

CLEAN ENERGY COUNCIL APPROVED SOLAR RETAILER

Batteries

Battery rebates

- Solar Victoria rebate of $4174
- Eligible for households with 5kw+ solar
- Further reduction of $250 from bulk buy
- Additional $500 reduction if agree to share data
- **So how much??? It depends!**

Finding out more

- Head to www.mash.org.au
- Fill out a request for quote

6. Solar and Batteries for Commercial & Industrial Customers

OVIDA

C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

Who are Ovida?

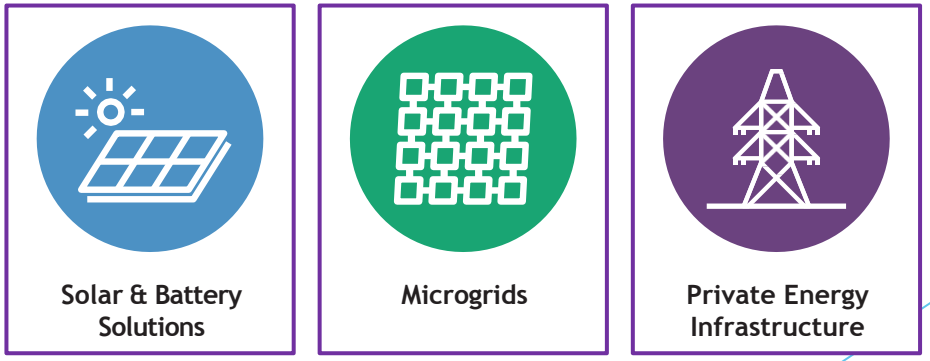
We are an Australian energy services company focused on meeting the future energy requirements of Australian businesses.

Our expertise provides Australian businesses with choice and access to innovative energy solutions as a service.

We remove the need for a customer to invest their own capital, whilst minimising, development and delivery risks.

In partnership with government, community and business, Ovida have demonstrated our ability to deliver market leading solutions for the Australian energy sector.

Our team of forward-thinking product developers, technical specialists and energy experts are committed to **making energy easy**.



Ovida's Solutions

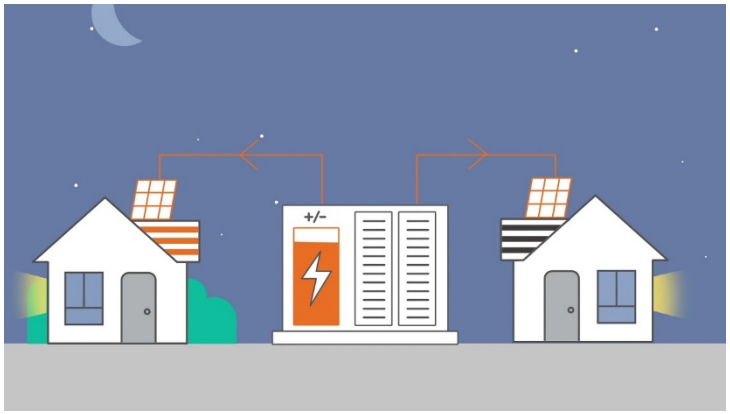
- We have the ability to tailor solutions to meet the energy requirements of businesses, communities and governments
  - Solar PV systems
  - Battery energy storage systems
  - Standalone power systems – including solar, batteries and backup generation
  - Microgrids
  - Private energy infrastructure

C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

Our aims

Ovida is eager to assist the Project and the community to convert the ideas and research findings on microgrids into a tangible outcome

- Is there a way to bring the business community together to share and host the energy solution in a way that meets commercial & regulatory requirements?
- Is community solar viable? How big should it be? Is there an optimum location to install and connect it? Who would buy the energy from it?
- Would a community battery improve grid reliability and stability? Where can it be placed and connected?



Our value proposition

To help make this happen, we want to get interest and ideas from local community:

- What the solution should look like to improve the town's energy outcomes
- Help guide the development and delivery of the solution
- Use our industry expertise and connections, and our financial backing, to make it happen

Importantly, there may be government funding available to subsidise the solution – and the earlier it's installed, the more funding available

Benefits of renewable energy

- **Decarbonise**

  to tackle climate change

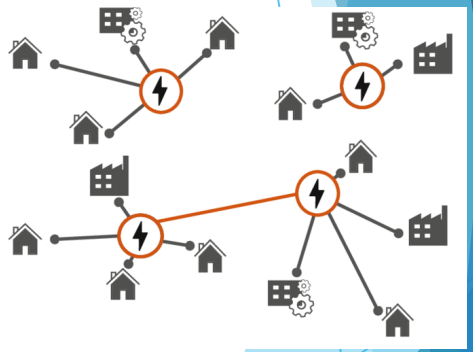
- **Decentralise**

  to produce energy closer to where it's used

- **Digitise**

  to make the grid smarter and more useful

- Economic benefits
  - Can be cheaper than grid energy
  - Provide financial boosts to businesses



Benefits of microgrids supported by renewables

- Allow for communities to take more control of their energy needs
  - Sharing the benefits of energy-generating systems
  - Increasing local generation and consumption
- Communities that can come together and agree to form their own microgrids will benefit
  - Better reliability of power supply
  - Increased energy resilience
  - More clean, renewable energy
  - Lower energy prices compared to grid energy

Community-scale Solar and Batteries

- Towns across Victoria are already moving to pursue community-scale renewable energy
  - Bring the benefits of renewable energy to lots of people at once
  - Benefits, and costs, shared amongst the community
  - Take charge of energy supply and improve on what's in place already
- Executing community solar and battery can be tricky
  - Lots of regulations to consider
  - Agreements between stakeholders to negotiate
  - Support of electricity distributors and retailers needed to connect to grid and bill customers

breaze BALLARAT RENEWABLE ENERGY AND ZERO EMISSIONS

Sustainable Upper Ovens.

RAW ENERGY Renewable Albury-Wodonga Energy

Renewable Newstead

Totally Renewable Yackandandah

Totally Renewable BEECHWORTH 3747

Community Level Batteries

- Several trial projects underway across Australia
- Community-scale energy storage systems can offer a wide range of benefits:
  - Improve solar self-consumption
  - Stabilise the local network
  - Provide backup energy
  - Reduce energy costs
  - Increase network capacity for renewables
- Battery prices have dropped a long way over the last 10 years – and are now becoming more viable

How can we help?

If you're a business customer, community group or local government organisation that wants to access to renewables then we can discuss options.

7. What to expect next

- We will try to understand your energy needs through your community groups and engage with you regularly.
- Reports will be published every 6 months on latest findings.
- Newsletters will be sent to you to inform on what the latest findings of the Study are.

- For more information:

https://c4net.com.au/microgrid/

- To contact us, please use the following email:

microgrid@c4net.com.au

8. Questions / Discussions

C4NET CENTRAL VICTORIAN Greenhouse Alliance Powercor AUSTRALIA Ovida LODDON SHIRE BULOKE SHIRE COUNCIL

Thanks


C4NET
CENTRAL VICTORIAN
Greenhouse Alliance
Powercor
AUSTRALIA
Ovida
LODDON
SHIRE
BULOKE
SHIRE COUNCIL