

**From:** [NSW Government](#)  
**To:** [Flood Inquiry](#)  
**Subject:** Floods Inquiry  
**Date:** Thursday, 16 June 2022 3:59:13 PM  
**Attachments:** [Disaster Emergencies in Australia.doc](#)  
[Disaster Emergencies in Australia - references.doc](#)

## Your details

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## Submission details

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<b>I am making this submission as</b>	A member of the general public
<b>Submission type</b>	I am making a personal submission
<b>Organisation making the submission (if applicable)</b>	n.a.
<b>Your position in the organisation (if applicable)</b>	n.a.
<b>Consent to make submission public</b>	I give my consent for this submission to be made public

**Share your experience or tell your story**

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**Your story**

I was not involved in the floods. I live south of Sydney.

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**Terms of Reference (optional)**

The Inquiry welcomes submissions that address the particular matters identified in its [Terms of Reference](#)

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**1.2 Preparation and planning**

I have been researching renewable energy and its growth over the past 10 years. I believe that renewable energy and microgrids etc., are an essential tool that could be put in place to ensure that when the next flood / fire emergency hits and everything "goes down" we are in a better and stronger position to fight and respond. Two documents on the subject are attached below.

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**Supporting documents or images**

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**Attach files**

- [Disaster Emergencies in Australia.doc](#)
  - [Disaster Emergencies in Australia - references.doc](#)
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Adrian Ingleby  
Otford NSW 2508

17<sup>th</sup> April, 2022

What are we going to do about  
**Disaster Emergencies in Australia**

1. On reading the article below, published in Microgrid Knowledge, I felt good about how resourceful the people mentioned in the article have been in regard to their taking action by using their occupational and life experiences to come up with solutions to assist people stranded in life threatening situations during emergency disasters.

2. Here in Australia we have recently experienced overwhelming bush fires, floods and droughts which have been devastating at the time of their arrival and long after the threat has moved away.

3. I believe that the climate emergency has arrived and that future disasters will be worse with the passing of each day, month, year and decade.

4. The federal politicians from the two major political parties have been involved in the ‘climate wars’ for the past 10 to 15 years and they don’t seem to be able to talk publicly about the topic and “the war” means that they are not able to work together on action to confront the climate emergency. Political donations received by both major party’s from the gas, coal and oil lobby is intertwined with this sad situation.

5. Fortunately, the “renewable energy revolution” has arrived and prospered because it is an economic bonanza and at the same time it is the medicine needed to reduce, then stop global warming and climate change.

*“If climate change was cancer, then renewable energy would be the cure.”*

6. Set out, below the Microgrid Knowledge article; are articles published relating to renewable energy and energy storage projects that could be implemented to help reduce the negative impacts during disasters.

7. Many projects, like those in the Microgrid Knowledge article, could be put to use to better protect victims of disaster emergencies when they hit, during the early hard going period and later during the recovery stage.

8. It shows that renewable energy resources [fixed and mobile] have the potential to be a miracle aid during and after disaster emergencies.

ooOoo

[https://microgridknowledge.com/solar-microgrids-ukraine-footprint-project/?vgo\\_ee=ozag2LK3wRDPzLVcPAto60zkASpiHornD%2Fz2wZTd1jg%3D](https://microgridknowledge.com/solar-microgrids-ukraine-footprint-project/?vgo_ee=ozag2LK3wRDPzLVcPAto60zkASpiHornD%2Fz2wZTd1jg%3D)

MICROGRID KNOWLEDGE  
Lisa Cohn – 20220415

## These 2 organizations acted quickly to provide solar microgrids to Ukraine

“We have to do something,” Will Heegaard, operations manager for Footprint Project — a nonprofit that **provides solar microgrids and other emergency power systems to disaster areas** — told Paul Shmotolokha just hours after Russia launched its invasion of Ukraine on Feb. 24.

Heegaard and Shmotolokha — a Ukrainian-American and CEO of **New Use Energy** — are no strangers to disaster. New Use Energy provides **solar microgrids, solar headlamps**, humanitarian aid and other products to regions hit by hurricanes and other crises, **often supplying emergency power systems to Footprint Project**. With the help of New Use Energy and others, **Footprint Project has jumped into action** to provide solar generators for communities affected by [Hurricane Ida](#), for desperate [Texans](#) during the state’s February 2021 deep freeze and other crises.

But Ukraine was a whole new world for the pair, who have only operated abroad a few times.

“Will called me at 7 a.m. after the war started,” said Shmotolokha, whose wife was born in Ukraine. “Will and I knew this would be very big.”

Very big indeed were the challenges the pair faced, including attracting funding, shipping units classified as hazardous materials and finding trusted sources in Europe to provide equipment.

They got to work developing **a coalition of non-profit, government and corporate partners**. Global Empowerment Mission and SmartAid, both global relief organizations, stepped up to bolster the effort, and Shmotolokha’s friends and family in the region offered critical insight into needs on the ground.

## Serving refugees and hospitals

That morning, the pair developed a plan **to send solar microgrids to Ukrainian hospitals and emergency power equipment to a refugee camp** in neighboring Moldova. In these areas, grid power is generally not available because of the war's devastation.

([PowerOutage.com](#) has begun tracking grid outages in Ukraine.) Gas- and diesel-fired generators are being used as backup power, **spewing pollution and noise**. What's more, it's difficult and dangerous to acquire fuels for the backup generators, said Shmotolokha.

**The solar generators are especially helpful in refugee camps, where they offer a quieter and cleaner alternative to fossil fuel generators**, which can undermine the mental and physical health of refugees suffering from post-traumatic stress disorder, according to Shmotolokha. **Solar generators** are also essential in **medical facilities**, where they can provide clean energy to staff members **needing electricity for** light, communications gear and life-saving equipment.

This week, Footprint Project and New Use Energy sent six pallets of **portable solar microgrid equipment** to Ukraine to power medical lighting and communications equipment. The two organizations **are also sending to medical facilities 120 small portable power stations — handheld units** that include **batteries and an inverter**. Thanks to a \$25,000 [matching grant](#) from Mac6—which provides co-working space for businesses, Footprint Project is preparing follow-up initiatives for the region in the coming weeks and months.

A separate shipment from Global Empowerment Mission and SmartAid included **64 surgical headlamps for use in hospitals**. And yet another included **handheld solar lighting solutions and connectivity hardware**.

Heegaard and Shmotolokha have a bigger vision for helping Ukraine — and, eventually, other countries — during disasters and wars. **They want to train local people to assemble and maintain the solar microgrids and emergency power systems**, which, in this case, will employ Ukrainians and get the microgrids on the ground more quickly.

*Will Heegaard will talk about microgrid use in disaster relief during a special session at [Microgrid 2022](#) on June 1, “Microgrids to the Rescue: How a small nonprofit is changing the face of disaster recovery.”*

“It’s exciting,” said Heegaard. “This pilot could offer a unique model of how to do disaster power. **We send stuff initially and get partnerships worked out so we can build there and train a local workforce to assemble and service equipment.** We’re not just dropping off solar generators. This is much more a solution about **how to** train, use, build and maintain the generators.”

For now, **Footprint Project** and **New Use Energy** are delivering flexible portable power stations, solar microgrids and humanitarian aid to Ukraine and Moldova, working with a host of other organizations. Most of the equipment comes from the US; some of it from Europe.

### **Wartime value of solar**

The equipment is especially well suited to wartime use, said Shmotolokha.

The **solar generators range in size from checked luggage to a dishwasher, with solar panels that look like a throw rug.** The **power stations** range from a brick to a briefcase.

“**They can charge outside and be wheeled inside and outside,**” he said. “**They are highly tactical, there’s no glass or frame.** They are lightweight and flat. You can fold them up or charge them on the ground,” he said. **Their mobility allows owners to react to one crisis, then move onto another.** “As the needs shift, we can shift along with them,” he said. “A lot of that’s doable because we put the equipment on wheels. **And I can tuck the 300-watt solar panels under my arm.**”

Footprint Project has been able to take action in Ukraine and Moldova thanks to Shmotolokha’s and his wife’s contacts in Ukraine, including people at a children’s hospital in Ukraine and a former co-worker of Shmotolokha in Moldova. Those contacts have helped identify hospitals’ needs, made connections and have accepted deliveries of equipment.

New Use Energy has plans to build **100 portable solar microgrids and portable power stations** for SmartAID — a disaster relief organization — and Footprint Project. **They’ll be shipped to hospitals** and used for backup power **for critical communications**, according to Shmotolokha. The organizations are now seeking funding for that effort.

The portable power stations **will also provide power for ambulances and first responders.**



*Team preparing to ship portable solar generators to Ukraine. Courtesy of Footprint Project*

Free shipping from the US to Ukraine and Moldova is being provided by AirLink, a nonprofit air shipment partner that worked with New Use Energy to solve the challenge of getting lithium-ion batteries – labeled as hazardous – sent overseas.

## **Trying to assemble in Ukraine**

After the pallets of solar microgrid equipment are delivered this week, the next step is to begin assembling generators in Ukraine, which will provide jobs and clean energy workforce education, said Heegaard.

Using Shmotolokha’s contacts, the two organizations are working to source more equipment in Europe for assembly in Ukraine. But the challenge is ensuring the suppliers can be trusted.

**“It’s so critical to have a chain of command between where the equipment is coming from and who is plugging it in on the front line. It’s critical to any humanitarian mission – making sure the equipment doesn’t become party to the conflict,”** said Heegaard.

The nonprofit organizations' initial efforts were met with gratitude from one hospital's staff, said Tatiana Terdal, a board member of the Ukrainian-American Cultural Association of Oregon and Southwest Washington. For years Terdal has helped the community connect with Medical Teams International, sending containers of medical supplies to Ukraine.

"I contacted people I know at the hospital to see if they could give me feedback on the solar headlamps. They said, 'The lamps are super, surgeons are happy.'"

## **The long view**

Meanwhile, **equipping humanitarian responders with solar microgrids and other emergency response power equipment can set the stage for delivering electricity in new ways**, said Heegaard. Much of the power grid, now destroyed, will have to be rebuilt, and it can be built with renewables.

"Ukraine obviously wants to use as little fuel as possible. This will spur more transformation toward renewables," said Heegaard. "It's a long road and it won't happen overnight."

Several non-profits are participating in the Ukraine effort, including SmartAid, which funded portable power stations, generators, logistics and coordination; Global Empowerment Mission, which funded surgical lights and portable power stations; Lifting Hands International, which paid for a solar trailer for Moldova; Information Technology Disaster Resource Center, which provides communications equipment; Moldova World Children's Fund, a local implementing partner in Moldova; Amurtel, which purchased lights, and United to Light, which donated solar reading lanterns. In addition to New Use Energy, for-profit suppliers include Enova Illumination, which provided surgical headlamps, MPowered, which provided solar lanterns, Sunstream, which built solar lanterns for Moldova, and Skoon, which supplied solar generators.

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9. What happens when the emergency hits:-

### **Flood** [and cyclone]

Creeks and rivers begin to rise  
Creeks and rivers rise much faster than predicted, and now more than ever previously  
Roads become flooded



Vehicles drive into water on flooded roads and break down  
People in vehicles driven into flooded waters have to be **rescued**  
Some people in the vehicles driven into flooded waters are washed away and drown  
Roads and houses become cut off  
**Volunteer rescue services become overwhelmed.**  
Houses have water at their door; followed by inundation  
People are trapped in their houses  
People trapped in their houses move into the roof space or out on top of the roof  
**Official government services [Police/Fire/Ambulance] become overwhelmed**  
Loss of electrical power  
Loss of electronic communication

### **Communication :-** [loss of]

People have their mobile phones [facebook/twitter] which have limited battery charge time. The 000 emergency contact [Ambulance/Police/Fire/SES] is overwhelmed.  
Who do you call?

During the height of the emergency disaster there is virtually no meaningful communication with the official government emergency response agencies for the reasons stated.

### **Power**

People have no electrical power [no food, no water, no sewerage facilities] further, electronic communication resources are failing or gone.

There are little or no emergency power sources nearby.

### **Result:-**

If community members don't help each other when a disaster hits; many people will be left stranded their plight unknown and they will die or will be seriously injured.

## **The Lismore floods are the perfect example!**

### **Fire** [and drought]

The same scenario as above, fire and water are equally destructive. The impacts are the same.

**What resources could be put in place to help the community to respond at the time a disaster emergency arrives?**

10. I have selected the following information from the internet while researching renewable energy. I have no connection with any of the companies or organisations mentioned; there may be other companies who supply the same product, maybe a better product.

11. The purpose of this report is to stimulate discussion and thought on the subject; of building renewable energy infrastructure; leading to constructive actions that better support disaster victims and responders when the next Lismore type disaster arrives.

ooOoo

Overview of electricity storage options

## **THE STORAGE AND DISTRIBUTION OF ELECTRICAL POWER**

### **THE ABILITY TO COMMUNICATE ELECTRONICALLY**

#### **Mini wind turbines to power off-grid communications**

**November, 2020** - The Australian Renewable Energy Agency will provide \$341,990 in grant funding to support the development of mini wind turbines **designed to power off-grid telecommunications towers and remote applications.**

During the 2019-20 summer of bushfires, many regional communities found themselves disconnected from communications systems, including mobile phone networks, when fires caused critical telecommunication infrastructure to be disconnected from the electricity grid.

This led to calls for communications systems to be equipped with standalone power systems, and Diffuse Energy believe their mini wind turbine design could be an ideal solution, boosting reliability and lowering emissions by reducing dependence on the mains grid and diesel backup generators.

**Atlassian co-founder Mike Cannon-Brookes**, partnering with deployable solar provider 5B and battery giant Tesla, [stepped in to roll out a number of remote solar and storage systems](#) to restore power to communities affected by the bushfires.

The inclusion of a wind turbine has the potential to complement other technologies like solar and battery storage **in remote energy systems**, by providing a supply of power **throughout both the night and day**, as well as being deployed in areas where solar panels are impractical. [1]

## Stand Alone Power Systems

**February, 2021** - Western Australia's regional electricity supplier, **Horizon Power**, will partner with a leading provider of **standalone energy systems** as part of a new joint venture, **using next generation designs** that can be **deployed in as little as 90 minutes**.

A **joint venture** will be formed between the Western Australian government owned **Horizon Power** and **standalone power system (SPS) provider Ampcontrol**, and will be known as **Boundary Power**.

Another government owned entity, **Western Power**, [previously replaced network connections with solar and batteries across 52 locations in Western Australia](#), confirming that they were a cost-effective replacement for up to 230km of network connections.

**Ampcontrol** has developed a new generation of **integrated standalone power systems**, that can be deployed in **regional areas** and **producing electricity within less than two hours**, and incorporates **a modular design that allows parts to be easily swapped**, greatly **reducing** maintenance costs.

The new company, **Boundary Power**, will bring together expertise from both **Horizon and Ampcontrol**, which have previously worked together to deploy standalone power systems under an earlier trial. [2]

**October, 2021** - Western Australia is calling for proposals to help develop the state's first "**disconnected microgrids**" – isolated, self-supported networks **powering small towns** that operate independently from the rest of the grid, and comprise **at least 90% renewables**.

The idea is to take whole towns off the grid – saving money from having to upgrade ageing poles and wires that are vulnerable to winds, storms and bushfires.

It is part of Western Power's long mooted "**modular grid**" and is effectively the end of the old hub and spoke model built around large centralised generation that dominated Australia's power system for decades.

It has already been estimated that [tens of thousands of remote and regional customers](#) – individuals and communities – could be served with cheaper, cleaner and more reliable power by having renewables-based micro-grids, rather than relying on power sent from centralised generators hundreds of kilometres away. [3]

**January, 2022** - Western Australian regional power company **Horizon Power** is continuing its rollout of **standalone renewable power systems**, installing off-grid

solar and battery powered systems for another **19 customers** east of the south coast town of **Esperance**.

Esperance is where, six years ago, Horizon Power first began offering certain remote regional customers the option to be powered by a custom built stand-alone solar and battery power system, or **SPS**, after bushfires destroyed more than 320 power poles and hundreds of kilometres of power lines in the region in November of 2015.

At the time, four landowners in the bushfire affected town took up the offer. Since then, Horizon Power has committed to deliver more than **1,000** standalone power systems across the regions and in remote Aboriginal communities as part of a broader **\$75 million Renew the Regions initiative** – itself a part of the Western Australian state government’s Recovery Plan.

Horizon Power has so far received \$45.8 million to deliver **150 systems** across regional WA. Each SPS consists of **solar panels paired with battery storage and combined with a back-up diesel generator**.

Each system is remotely monitored and controlled by Horizon Power, allowing the company to diagnose faults and remotely fix problems where possible, or send out regular on-site maintenance otherwise. [4]

### **Community batteries**

**February, 2021** - New South Wales network operator Ausgrid has unveiled its first community battery in the northern Sydney suburb of **Beacon Hill**, kicking off a two-year trial that aims to soak up consumer generated solar and use it to push down energy prices and help stabilise the local grid.

The Beacon Hill battery, pictured above, is a **150kW/267kWh MTU Energy Pack QS**. The trial is seeking to enlist the participation of Ausgrid customers in the Northern Beaches area who either have solar power systems installed already, or who are about to install one. Eligible customers can register their interest [here](#).

Additional community batteries are planned for the Canterbury Bankstown and Lake Macquarie areas – and these, according to an Ausgrid spokesperson, will likely be supplied by Tesla. But Ausgrid says they could be the first of many as community batteries become the next big thing. [5]

**March, 2021** - The **Victorian government** has unveiled plans to fund a series of “**neighbourhood-scale**” **battery demonstration and pilot programs**, to help unlock the role shared batteries can play in Victoria’s rapidly transitioning grid.

The \$3 million **Neighbourhood Battery Initiative (NBI)** was announced as part of the Labor Andrews government’s broader new energy technologies sector strategy, and launched alongside **an invitation for submissions** to an [NBI Consultation Paper](#).

The scheme hopes to **kickstart a pipeline of community battery projects** by funding scoping, feasibility and business case development; technical, operational, legal/contractual and regulatory advice and services; capital funding for battery deployment; and evaluation studies.

The government said proposed projects would ideally range in size from **100kW to 5MW** (it did not specify hours of storage), would be connected in front of the meter, and could be owned by electricity distribution businesses or third parties like community energy groups, electricity retailers, or local governments.

“A key advantage of neighbourhood scale batteries is that **they can participate in multiple value streams** and provide **a wide range of social, economic and technical benefits,**” the NBI consultation paper says. [6]

**July, 2020 - Community scale batteries** are all the rage, thanks largely to [Western Power’s](#) rollout of 13 of them in southwest WA. And what is not to like?

With economies of scale vis-a-vis home batteries, and without requiring any upfront capital investment, they are generally a more cost-effective alternative for consumers.

For those of us stuck on the east coast, and without the synergies offered by the state government owning the networks as well as the residential retailers, things are not quite so advanced.

In Victoria, [United Energy](#) is **trailing two small pole-mounted batteries** to provide network support — that is, to feed energy back into the low voltage network to power up to 75 houses for up to 2.5 hours in the evening as an alternative to increasing substation capacity where it is constrained. [7]

### **Street network – batteries**

**May, 2021** - New South Wales electricity distribution company **Endeavour Energy** has launched a program to better manage the record numbers of residential rooftop solar systems being installed across its grid. And it does not include a solar export charge.

The program, launched on Monday by **NSW energy minister Matt Kean**, uses the **advanced smart meter technology** of Australia and New Zealand based company **Intellihub**, and is being rolled out across **2,500 homes** in the state’s **Illawarra region** in partnership with 10 local retailers.

The program, called **Off Peak Plus Benefits**, will – as the name suggests – offer a range of possible benefits to consumers in the area, starting with **the ability to share surplus rooftop solar generation** between households to power electric hot water systems.

This “**solar soaker**” function can be **extended in the future** to take in **electric vehicle charging, battery storage**, and load control or **demand response** services,

giving retailers the scope to provide new products for consumers to help reduce peak demand and drive down electricity costs.

For Endeavour Energy, the meters will be used to help replace a 50-year-old system operating from the DNSP's nearby **Albion Park substation**, with each sending energy and network data, **offering greater visibility** of the low voltage network and household connection. [8]

**April, 2021** - Canberra will become host to a **suburban big battery project** as part of a plan to establish one of the **'greenest' new suburb developments** in Australia.

The project is being developed by **Elvin Group**, a Canberra based supplier to the construction industry, which is already planning for further deployments of solar and battery storage projects across the ACT.

The large-scale battery is to be located nearby to the **Ginninderry suburb development**, a greenfield residential development on the edge of Canberra that has sought to exclude the use of gas within homes and has mandated the installation of solar power across each home and business built within the suburb.

The project will use the **Tesla Megapack**, which will provide **2.5MW** and **5MWh of battery storage capacity**, and will be one of the first deployments of a Megapack in Australia.

**Blackadder** said the battery would work to provide reliable supplies of zero emissions **power to Canberra suburbs**, as well as participating in **Frequency Control and Ancillary Services (FCAS) markets**. The battery will also have the capacity to provide around **an hour of backup electricity supply for around 5,400 Canberra households**.

"We are excited by this project. **Not only is it a major 'in-front of meter' installation** in Australia, but it is the first stage of a nationwide move to renewable energy and a wholesale reduction in our carbon emissions," Blackadder said. [9]

**January, 2021** - A series of **community-scale batteries** will be installed across the **inner-city suburbs of Melbourne**, in a joint venture between local network distribution company **CitiPower** and the not-for-profit **Yarra Energy Foundation**.

The project, which is currently **in its first phase of modelling and planning**, aims to develop and roll out a **"new" model** of community battery ownership that will provide customer, community and network benefits, including acting as a **"solar sponge"** in areas of **high rooftop PV uptake**.

**"Shared batteries** are a smart solution to give households and businesses reliable and affordable energy when they need it," said Yarra Energy Foundation CEO Dean Kline in a statement on Tuesday.

For the network, said Kline, the shared battery network would work [to] absorb excess rooftop PV generation during the day and release it during peak times and at night, **offering a grid balancing service** that would also deliver benefits to the broader community, in terms of grid and price stability. The **first battery** is expected to be **trialed later in 2021**. Financial modelling has commenced and the project has already received interest from investors. [10]

**July, 2021** - The **City of Melbourne** is seeking partners to help establish a network of **“neighbourhood-scale” battery energy storage systems**, up to a potential capacity of **5MW** (MWh unspecified), as part of a pilot project planned for 2022.

Dubbed the **Power Melbourne project**, the council-led scheme would install **mid-sized battery systems across the city**, with an initial focus on existing Council infrastructure and the Melbourne Innovation District in the CBD’s north.

City of Melbourne Lord Mayor Sally Capp said the battery rollout promised to pave the way for greater uptake of renewables, create new opportunities for research, training and jobs, and help build Melbourne’s reputation as a centre for clean energy innovation.

“Power Melbourne is one way we can contribute to a greener future, but we won’t be able to do this alone, so we will be calling on government and the private sector to get involved,” Capp said.

The Council has allocated **\$300,000** to deliver the pilot, which **aimed to establish a model for urban battery network development** that would be **replicable** across the country.

“Power Melbourne will deliver a huge amount of **insight and data into how we can best reform our electricity networks** to encourage more renewables and battery storage,” said City of Melbourne environment portfolio lead Councillor Rohan Leppert. [11]

## **EV batteries – 2<sup>nd</sup> life**

**February, 2021** - An Australian world-leading energy storage innovator will repurpose **EV** batteries to power commercial and industrial sites as part of an **[ARENA-supported project](#)**.

**Relectrify** will develop 36 kW/120 kWh ‘Revolve’ energy storage units from batteries that have reached the end of their useful life in Nissan Leaf EVs .

The system will use the company’s **BMS+Inverter** that combines the **traditionally separate inverter and battery management functions** into **one unit**, boosting the life of lithium-ion batteries and reducing the cost of energy storage.

This allows EV batteries to live on once their cycle life drops below roughly 80 per cent of their original capacity, the point when they are generally replaced to improve driving range. The latest Leaf battery is warrantied for eight years or 160,000kms, but according to Nissan the smaller packs in early models last about five years of regular driving before reaching that point

They will roll the product out as individual or multiple 120 kWh hour units, **which have been designed for installations up to 2MWh in capacity.**

“Our pre-sales interest in the product has been very wide, **from community battery storage applications, utilities** looking for backup and outage support for weak rural networks, **and peak shaving for EV charge installs, to construction and mining services** firms interested in stand-alone power supply and genset diesel fuel reduction.”

The initial 20 site 2.4 MW rollout **will provide a second-life to 180 Nissan Leaf batteries. [12]**

**October, 2020** – Bryce Gatton said, “At the end of my electric vehicle information talks, I often get asked variations on the theme of “Where do old car batteries go to die?”

My answer is they don’t ‘die’! Rather, after seeing eight to 10 years service in a car, they can ‘retire’ to a more gentle life in energy storage systems.

This is because lithium batteries do not catastrophically fail when they have reached the end of their useful vehicle service life. They may become less capable of dealing with the fast charge and discharge rates needed for accelerating a 1 to 2 tonne mass, or accepting a high rate of charge. But there is still plenty of life in them.

In fact, they are still very much capable of meeting the more gentle rates of charge and discharge seen in stationary storage systems for as many, or more, years as they saw life in a car.

I have even suggested that this is **the ultimate solution to cheap 24/7 home storage systems** – and the more likely scenario for providing the majority of the support needed to create a robust renewable energy based electricity grid than the often touted **V2G (vehicle to grid)** type systems.

One of the leaders in researching this type of second-life battery solution is the vehicle manufacturer **Renault**, which has just announced **two new second-life battery programmes** in conjunction with local partners.

One is the **SmartHubs Project in West Sussex, (UK)** and the other is the **Advanced Battery Storage in Douai (France)**. These will be two of the largest projects of their types in Europe.



The SmartHubs project involves the installation of several **360kWh E-STOR systems** (designed by Connected Energy) placed on **industrial and commercial sites**, with some linked to solar panels and EV chargers to help sites reduce energy costs and optimise the use of renewable energy.

The SmartHubs project is one of **four UK government-initiated projects** designed to help design the energy systems of the future. The SmartHubs systems will run alongside other technologies **as part of a local energy system** to help provide cleaner, lower cost energy for use **in social housing, transport, infrastructure, private homes and local businesses.** [13]

**February, 2022** - The Queensland Labor government is ramping up the state's shift to a decentralised and renewable powered electricity network with the help of a new \$6 million **Microgrid and Isolated Systems Test (MIST) facility** in Cairns.

**Renewable energy and battery storage-based microgrids** – both **grid-connected and stand-alone** – will play a huge role in the shift to renewables in Australia, and particularly in bigger states like Queensland and Western Australia, which have previously relied on diesel fuel-based microgrids to help power remote towns and industrial regions.

The MIST facility, which was launched in October 2021 by the Queensland government-owned utility **Ergon Energy**, will **conduct complex testing** of solar and storage microgrids and standalone power systems of up to 1MW.

The facility was officially welcomed by the state government this week, with a visit to the site from state treasurer Cameron Dick and state energy minister Mick de Brenni.

“This is a world-class hub for **energy research and development**,” [said Cameron Dick](#), Queensland's treasurer and minister for trade and investment. “It holds potential benefits for everyone in our power supply chain, from distributors and developers to everyday Queenslanders.

“The state-of-the-art technology housed here allows for the complex testing of solar and batteries, microgrids, standalone power systems, even hydrogen energy storage and carbon reduction.

Queensland's minister for energy, renewables and hydrogen, de Brenni, said, “Regional and remote Queensland is home to world-class renewable resources,” de Brenni said in a statement.

“Our ability to leverage those through microgrids and isolated systems has received a big shot in the arm with this new facility.”

The facility was designed by local architectural firm Clarke and Prince in collaboration with electrical consultants Aurecon and built by local contractors Osborne Construction Solutions and Babinda Electrics. [14]

## Microgrids

Enova is Australia's first community-owned energy retailer. We established as a social enterprise to:

- **build self-sustaining and resilient communities through locally generated and shared renewable energy;**
- assist communities to make the transition to renewable energy without leaving anyone behind;
- keep jobs and profits in local communities; and,
- reduce carbon emissions.

- **A Localised Energy Future.**

Enova has started localising Australia's energy system through innovative projects like **microgrids** and **solar gardens**, where **it's leading communities to generate, distribute and share their own renewable power** and in turn lower their costs.

We are also actively looking at the latest technological developments to help our quest and to incorporate into our projects, **from different types of generation (including solar and wind power) and storage, to energy trading.** [15]

## Renewable energy powered 'Mobile phone' Towers

**June, 2022** - Vodafone has installed and switched on the UK's first off-grid, wind and solar powered mobile phone tower – or mast – on a farm in Pembrokeshire, Wales, to provide renewable powered 4G coverage to the community of the small village of Eglwysrwr. The “self-powering” mast, which can be installed without the need to dig trenches and lay electricity cables, incorporates a **small “smart” wind turbine** from Crossflow Energy, designed to generate power even in light winds.

It also incorporates **solar panels and on-site battery storage**, thus removing the need to connect to the grid and addressing the issue of connectivity in so-called “not-spots” in the UK's most remote and inaccessible locations.

ooOoo

12. Once the emergency disaster hits it is not long before the main electricity transmission lines on the grid go down.

*Stored electricity must be available at this time and it must be able to be distributed locally, even though the main transmission lines are down.*

13. Therefore, **operational battery storage needs to be available nearby** to ‘kick-in’ when the grid goes down. The real-life examples above show that the required battery storage infrastructure has already been designed, it has been built and it is operating now and it works very effectively.

14. What we need is for the state, territory and federal governments to work together to finance, co-ordinate and bring together the available technical experts in the renewable energy storage field, academics, groups, companies and organisations, to plan, select, approve, build and install the appropriate storage support infrastructure in and near the localities prone to emergency disasters. Those disaster locations have been well documented and publicised.

15. Such infrastructure should be built in a location which offers protection, so as to reduce the risk of damage or destruction to the infrastructure by flood, cyclone or fire.

16. An article written by Mark Byrne from the Total Environment Centre on this subject, was published in Renew Economy on 27.03.2022. **I’ll leave the last word to Mr. Byrne :-**

<https://reneweconomy.com.au/what-price-energy-resilience-and-should-it-be-written-into-the-rules/>

RENEW ECONOMY  
Mark Byrne – 20220327

*Mark Byrne is Energy market advocate at the Total Environment Centre*

What price energy resilience – and should it be written into the rules?

One of the laments repeated by residents of the Lismore area after the recent record-breaking floods has been: “We were here in 2017; five years later, **why were we not better prepared?**”

The same question could also be asked about the catastrophic 2019-20 bushfires in southeastern Australia. If a bushfire crisis emerges in 2022 or 2023 that is of a similar magnitude to the last one, would the outcomes for affected households and the electricity system be much different?

To jog your memory, the **national Royal Commission** reported that:

“... more than **280,000 customers** from various energy providers experienced a bushfire-related **power outage** at some point. These outages were largely attributed to fire damaging more than 10,000 power poles and thousands of kilometres of powerlines, including those located underground.

“... In the worst-affected areas, some customers were **without power for up to 10 days**. Essential Energy reported that over 104,000 of its customers were affected (including 4,700 life support customers) and over 3,200 power poles and 4,500 cross arm poles were damaged or destroyed.”

In response to this litany of destruction, the NSW Bushfire Inquiry canvassed (in very general terms) a range of potential ways to build back better, including more vegetation clearing near powerlines; undergrounding some lines; the use of more fire resistant materials in poles and cross-arms; and the potential for some properties and small communities to be served by **stand-alone power systems (SAPS)** and **microgrids** instead of long skinny lines running through heavily forested areas.

So what has happened to prevent a similar outcome next time? Aside from the replacement of some timber poles and cross-arms with more fire-resistant (and expensive) composite alternatives, and the gradual introduction of insulation on some overhead lines, **not much so far, it appears**.

Early in 2020, there was much fanfare around the announcement by **Atlassian gazillionaire Mike Cannon-Brookes** that he would put \$12 million into a new initiative called the Resilient Energy Collective.

It was intended to help supply portable solar and battery systems to local communities which had lost supply in the fires.

It was a worthy initiative, but it appears they actually installed the grand total of **two systems**, and the organisation itself seems to be defunct. **Why? Regulatory hassles, apparently.**

Meanwhile, Essential Energy installed **eight SAPS** on remote properties on the NSW South Coast which lost power for long periods

after the lines supplying them burnt down. These systems were provisionally approved by the AER under ring fencing waivers.

However, an internal analysis subsequently **concluded that the business case for installing SAPS rather than rebuilding the lines like for like could not be justified under** Essential's existing risk assessment framework, which does not factor in the increasing risk of future bushfires. **The SAPS were then removed and the old lines rebuilt.**

Finally, in **Mallacoota**, AusNet Services installed a **1MWh battery** system and generator that were supposed to back up the main line to provide continuous supply during **"unexpected disruptions"**. However, a report for ECA found considerable disquiet among residents about what the battery was supposed to do and how well it was performing, even in short outages.

Total Environment Centre spent much of 2021 **trying – largely unsuccessfully** – to get the Australian Energy Market Commission, the Energy Security Board and ARENA's Distributed Energy Integration Program **interested in the role of local energy resources like SAPS, community batteries and microgrids in increasing system resilience.**

Still, there is hope, in the form of the six distribution networks (in NSW, ACT, Tasmania and the NT) which have started **planning for the next round of five-year revenue determinations.** They are taking **climate resilience very seriously.** There is a **buzz of activity** around climate modelling, risk assessment frameworks, consultations with vulnerable communities and capital investment wish-lists.

These networks are trying to develop a coordinated approach. That is good, **because at the moment there is not even a shared understanding of what is meant by resilience; how it interacts with reliability; who is responsible for achieving** which bits of it; how much users and communities are willing to pay for it; and so on.

At least one government is also getting on the front foot. **The Victorian government is investigating reforms to the state's electricity distribution network regulations** following prolonged

power outages **caused by severe storms** on June 09 and October 29, 2021.

The Distribution Network Resilience Review is considering **how networks can improve their preparedness** for, and response to, prolonged power outages arising from storms and other extreme weather events, and how to strengthen community resilience to prolonged outages.

The pachyderm in this bunker, though, is whether the **Australian Energy Regulator** will allow networks to **frontload** what might be substantial **long-term capital investments** to improve climate resilience (such as SAPS and microgrids) in their revenue proposals. According to the AER itself (in a letter to TEC):

“If a network business considers that the frequency of outages or duration is increasing (or is likely to increase) **due to the increased frequency of extreme climate events**, under the NER, the network business can seek additional funding above that already included in its forecast capital and operating expenditure.”

We’ll have to wait and see how this pans out after the **six networks** submit their **draft revenue proposals to the AER**.

Below this sit a host of other related regulatory issues which are also the responsibility of the AER.

Another issue was **the need for new rules that would allow networks to own and operate SAPS**. This required **changes** to the **National Electricity Law** as well as the **National Electricity Rules**.

The AEMC published its final determinations for the required rule changes several weeks ago. **Unfortunately, it persisted with a model for charging tariffs to SAPS customers** as if they were still part of the retail market, **rather than according to the way customers actually use SAPS**. This, **say the networks**, will make SAPS uneconomic to install and operate.

The **biggest regulatory question of all**, though, **is whether resilience needs to be specifically recognised in the NER**, or even in the

National Electricity Objective, as **one of the criteria relevant to the long-term interest of consumers.**

**TEC has drafted a rule change request** which would recognise resilience in the Rules. It would also **create a context for having some difficult conversations around how much resilience we are willing to pay for**, and who should pay for it. We look forward to progressing the rule change if and when the time is deemed right.

**We now have extensive evidence of the impact of climate change on Australia's electricity system** from bushfires, floods, storms and heatwaves. The damage from each of these is only likely to get worse. If we don't want to change where and how we live, including how we source the power to enable the "electrification of everything", we may have to pay a lot more for electricity from the grid.

Meanwhile, TEC is working with a consultant **on what households, small businesses and communities can do themselves to improve their energy resilience** – independent of networks, regulators and governments – in the context of more chaotic and destructive weather events.

Because, when *la merde* hits *le ventilateur*, **we can't always wait for help to arrive. [16]**

## Disaster Emergencies in Australia – references

[1]

<https://reneweconomy.com.au/arena-backs-mini-wind-turbines-to-power-off-grid-communications-40229/>

RENEW ECONOMY  
Michael Mazengarb – 20201119

### ARENA backs mini wind turbines to power off-grid communications



The Australian Renewable Energy Agency will provide \$341,990 in grant funding to support the development of mini wind turbines designed to power off-grid telecommunications towers and remote applications.

The Newcastle-based start-up **Diffuse Energy** has developed a **500-watt mini wind turbine**, which will be used as part of a \$922,000 trial to demonstrate the ability to power off-grid communications systems.

During the 2019-20 summer of bushfires, many regional communities found themselves disconnected from communications systems, including mobile phone networks, when fires caused critical telecommunication infrastructure to be disconnected from the electricity grid.



This led to calls for communications systems to be equipped with standalone power systems, and Diffuse Energy believe their mini wind turbine design could be an ideal solution, boosting reliability and lowering emissions by reducing dependence on the mains grid and diesel backup generators.

Atlassian co-founder Mike Cannon-Brookes, partnering with deployable solar provider 5B and battery giant Tesla, [stepped in to roll out a number of remote solar and storage systems](#) to restore power to communities affected by the bushfires.

The inclusion of a wind turbine has the potential to complement other technologies like solar and battery storage **in remote energy systems**, by providing a supply of power **throughout both the night and day**, as well as being deployed in areas where solar panels are impractical.

Diffuse Energy has designed its **Hyland 920 mini wind turbines** to overcome some of the common issues faced by remote deployments, including the challenge of maintaining turbines in remote regions and lower performance due to their smaller scale.

Diffuse Energy is a spin-off of work undertaken by colleagues at the University of Newcastle, and is targeting a global market for remote power systems for telecommunications infrastructure. The company estimates that around **\$3.4 billion** is expected to be spent by the communications industry on distributed energy systems **by 2024**.

“Telecommunication providers depend on secure and resilient energy generation in order to deliver essential communication services,” Diffuse Energy CEO Joss Kesby said. “The industry is also rapidly moving towards net zero carbon emissions creating a very strong demand for innovative, cost-effective renewable technologies.”

“A nationwide rollout of our wind turbine technology to these sites could displace 17 GWh and 33,000 tonnes of CO<sub>2</sub> from fossil fuelled generation per year. Equivalent to \$43.9 million in savings of diesel fuel, transportation costs, and generator maintenance.”

The Australian Renewable Energy Agency will a trial of the mini wind turbines, with ten systems set to be installed across telecommunications towers at different locations across Australia.

“Diffuse Energy’s micro wind technology offers an opportunity for a renewable energy solution to reduce emissions for off-grid telecommunications, while also ensuring the resilience of these towers in being able to operate at critical times such as during bushfires,” ARENA CEO Darren Miller said.

“ARENA is excited to be assisting an Australian start-up in proving the effectiveness of their small wind turbine technology which could have large market potential across many markets and applications. While this particular project is focusing on communications towers, the technology could also have other potential applications including mining, small microgrids and farming.”

Diffuse Energy had previously participated in ARENA’s A-Lab initiative, which served as a way for the agency to incubate potential renewable energy solutions prior to their application for grant funding.

If the trial proves successful, Diffuse Energy hopes to scale up the deployment of their mini wind turbine designs across more locations.

[2]

[Horizon's new solar and battery standalone power systems can be deployed in just 90 minutes | RenewEconomy](#)

RENEW ECONOMY  
Michael Mazengarb – 20210202

Horizon’s new solar and battery standalone power systems can be deployed in just 90 minutes

Western Australia’s regional electricity supplier, **Horizon Power**, will partner with a leading provider of **standalone energy systems** as part of a new joint venture, **using next generation designs** that can be **deployed in as little as 90 minutes**.

**A joint venture** will be formed between the Western Australian government owned **Horizon Power** and **standalone power system (SPS) provider Ampcontrol**, and will be known as **Boundary Power**.

Horizon Power has been trialling the use of standalone power systems, consisting of solar power, battery storage and back up power supplies, as an alternative to maintaining costly network connections for regional and fringe-of-grid energy users.

Installing and maintaining lengthy network connections can be a costly way to supply power to regional communities, and the falling cost of solar and batteries has seen standalone power systems become a cost-effective alternative.

Another government owned entity, **Western Power**, [previously replaced network connections with solar and batteries across 52 locations in Western Australia](#), confirming that they were a cost-effective replacement for up to 230km of network connections.

**Ampcontrol** has developed a new generation of **integrated standalone power systems**, that can be deployed in **regional areas** and **producing electricity within less than two hours**, and incorporates **a modular design that allows parts to be easily swapped**, greatly **reducing** maintenance costs.

The new company, **Boundary Power**, will bring together expertise from both **Horizon and Ampcontrol**, which have previously worked together to deploy standalone power systems under an earlier trial.

Newly appointed Boundary Power director Rod Henderson said that the new joint venture, which **will see a new generation of standalone power systems** developed by Ampcontrol, rolled out across more locations in Western Australia.

“The advanced modularity design makes Boundary Power’s SPS units **easier to transport, quicker to install and more affordable to maintain**,” Henderson said.

“**An SPS Gen 2 can be deployed off the truck** and ready for energy export in just 90 minutes, with onsite maintenance, servicing needs and costs reduced thanks to easily swappable module components.”

“We are confident Boundary Power’s SPS solutions are well suited to meet the **growing demand** we see in the **marketplace**, particularly among power utilities looking for **a reliable off-grid power alternative**,” Henderson added.

Western Australia energy minister Bill Johnston welcomed the partnership, and the continued investment in standalone power systems that will see **a further 45 systems deployed in the state**.

“Western Australia continues to be a world-leader in SPS technology, which is one of the reasons why the State Government is working with industry to capitalise on this emerging market,” Johnston said.

“**Boundary Power’s SPS Gen 2** brings together Horizon Power and Ampcontrol’s market-leading knowledge and expertise, and I look forward to the successful roll out this year.”

[3]

<https://reneweconomy.com.au/whole-towns-to-be-taken-off-the-grid-and-powered-by-stand-alone-renewables/>

RENEW ECONOMY  
Sophie Vorrath – 20211023

Whole towns to be taken off the grid and powered by stand-alone renewables

Western Australia is calling for proposals to help develop the state’s first “**disconnected microgrids**” – isolated, self-supported networks **powering small towns** that operate independently from the rest of the grid, and comprise **at least 90% renewables**.

The idea is to take whole towns off the grid – saving money from having to upgrade ageing poles and wires that are vulnerable to winds, storms and bushfires.

It is part of Western Power’s long mooted “**modular grid**” and is effectively the end of the old hub and spoke model built around large centralised generation that dominated Australia’s power system for decades.

It has already been estimated that [tens of thousands of remote and regional customers](#) – individuals and communities – could be served with cheaper, cleaner and more reliable power by having renewables-based micro-grids, rather than relying on power sent from centralised generators hundreds of kilometres away.

The shift is likely to take place first in Western Australia, but many networks in the eastern states are also looking at the opportunities, [particularly after rules were changed this year that made such decisions much easier](#).

“Western Power’s ageing distribution network ... is approaching end of life in many areas, with replacement cost presenting a significant challenge particularly in remote locations,” says Western Power in [its statement on the issue](#).

“For small rural towns near the edge of the grid, the sustainability issue in replacing the network can be compounded by poor reliability, with customers experiencing frequent power interruptions due to stretches of bare overhead conductor sometimes hundreds of kilometres long.”

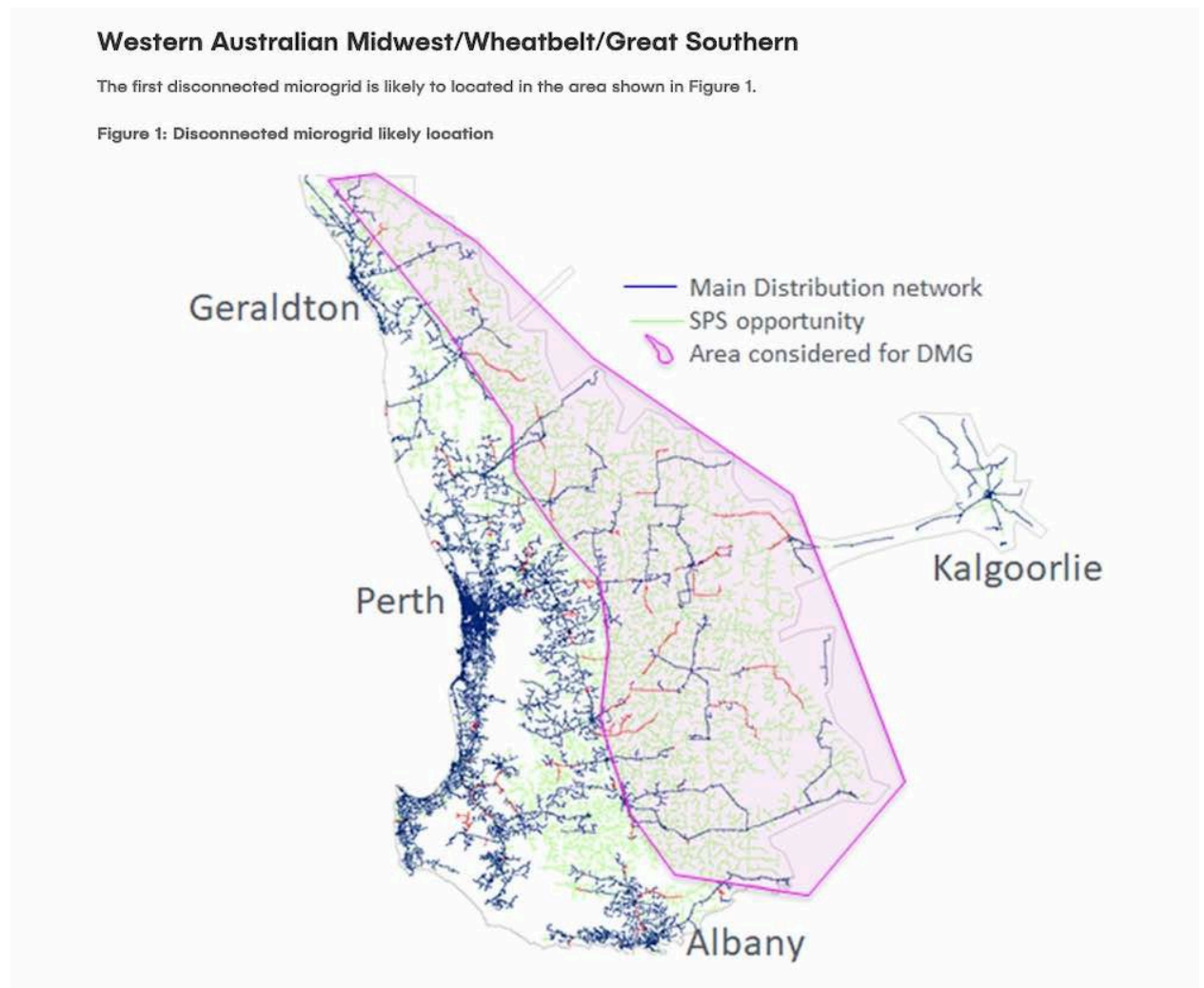
The fall in costs for both solar and battery storage, and the vast improvement in controls that can operate micro-grid reliably and safely, means that cutting off the wires now makes great sense.

Western Power said preliminary feasibility assessments had indicated that, in some cases, rebuilding the grid-connected network presented a “significantly higher cost” option than providing a supply to the same load via a **DMG**.

Already, Western Power and its regional counterpart Horizon Power, have led the country – and in many cases the world – in designing and installing **stand-alone power systems, or SAPS**, for customers in remote locations, or who lost their connection to the grid via a fire or other disaster.

A DMG goes a step further than a SAPS, however, by servicing more than five customers, using a combination of battery providing power control, “significant renewable generation” and a backup conventional diesel generator.

[WA energy minister Bill Johnston](#) says the government and its wholly owned utility are seeking to understand the capability and capacity of the market to develop a DMG, and the aim is to pilot one in the Mid-West, Wheatbelt or Great Southern regions of the state.



The first disconnected microgrid is likely to be located in the area shaded in purple.

These particular parts of the state have been identified for having towns with peak loads in the order of a few hundred kilowatts and

daily average usage of in the order of few hundred kilowatt-hours for the majority of the year.

Western Power, in the scoping document for the ROI, further specifies that “significant” renewables means “90% or more,” combined with the other elements of the DMG to supply a town with load characteristics similar to those noted above.

Further criteria include the ability to provide long term operation and maintenance; and suitability to ensure motor starting for electric motors in the order of 45kW with typical starting current of 450% of full load current lasting for 10 seconds. The ROI documents also suggest preference will be given to local businesses.

**“Disconnected microgrids** could play a crucial role in improving reliability for regional businesses and homeowners,” minister Johnston said in a statement last week.

“Stand-alone power systems and microgrids remove the risk of outages caused by power supplies travelling long distances, which are exposed to plant and animal impacts, lightning, high winds, and bushfires,” he added.

“The McGowan government is committed to creating new jobs for Western Australians and exploring technological innovations that will help shape our State’s future power supply.”

For more information or to register interest, visit <https://www.westernpower.com.au/suppliers/tenders-and-registrations-of-interest>. ROIs close 4pm AWST, Friday January 07, 2022.

[4]

[WA swaps another 120km of poles and wires for solar and battery storage - One Step Off The Grid](#)

RENEW ECONOMY  
Joshua S Hill – 20220113

WA swaps another 120km of poles and wires for solar and battery storage

Western Australian regional power company **Horizon Power** is continuing its rollout of **standalone renewable power systems**, installing off-grid solar and battery powered systems for another **19 customers** east of the south coast town of **Esperance**.

Esperance is where, six years ago, Horizon Power first began offering certain remote regional customers the option to be powered by a custom built stand-alone solar and battery power system, or **SPS**, after bushfires destroyed more than 320 power poles and hundreds of kilometres of power lines in the region in November of 2015.

At the time, four landowners in the bushfire affected town took up the offer. Since then, Horizon Power has committed to deliver more than **1,000** standalone power systems across the regions and in remote Aboriginal communities as part of a broader **\$75 million Renew the Regions initiative** – itself a part of the Western Australian state government's Recovery Plan.

Horizon Power has so far received \$45.8 million to deliver **150 systems** across regional WA. Each SPS consists of **solar panels paired with battery storage and combined with a back-up diesel generator**.

Each system is remotely monitored and controlled by Horizon Power, allowing the company to diagnose faults and remotely fix problems where possible, or send out regular on-site maintenance otherwise.

A total of **45** standalone power systems are set to be deployed in the Esperance region **by March**, allowing a number of large commercial farms at the fringes of Horizon Power's overhead network the opportunity to transition to off-grid power.

The latest 45 standalone power systems will lead to the removal of 120km worth of poles and wires from private paddocks, an added benefit that has proven attractive to farmers operating increasingly large farming equipment requiring them to navigate around electrical infrastructure.



“Horizon Power is committed to creating safe and reliable renewable energy alternatives for our regional and remote customers,” [said Stephanie Unwin](#), Horizon Power chief executive officer.

“Horizon Power pioneered standalone power solutions in Western Australia in response to the impacts of the 2015 Esperance bushfires. They provide improved reliability and reduce the risk of fire and safety incidents on farms caused by machinery connecting with the overhead network.”

The installation of the Esperance standalone power systems follows on the heels of a number of other completed installations over the past few months under the Renew the Regions program.

Back [in August 2021](#), a \$5.2 million solar and battery storage rollout was completed in the remote Kimberley region town of Derby, which saw a total of 283kW already installed across 13 community buildings and a 40kW solar shade installed at the local pool.

The north-western Western Australia town of Marble Bar installed [in November](#) a 582kW/583kWh battery energy storage system to be paired with the Marble Bar solar farm which generates more than 1,000MWh of electricity annually. The new battery is also expected to release 100kW of extra rooftop solar hosting capacity for residents sometime this year.

And [in December](#), Horizon Power confirmed that two batteries in the WA coastal resort town of Broome were on track to be operational early in the near year, and would free up more than 1,400kW of new rooftop PV hosting capacity to residents and businesses of the Kimberley town in February of 2022.

[5]

[Ausgrid installs "first of many" community batteries on Sydney network | RenewEconomy](#)

RENEW ECONOMY  
Sophie Vorrath – 20210215

Ausgrid installs “first of many” community batteries on Sydney network



New South Wales network operator Ausgrid has unveiled its first community battery in the northern Sydney suburb of **Beacon Hill**, kicking off a two-year trial that aims to soak up consumer generated solar and use it to push down energy prices and help stabilise the local grid.

The Beacon Hill battery, pictured above, is a **150kW/267kWh MTU Energy Pack QS**. The trial is seeking to enlist the participation of Ausgrid customers in the Northern Beaches area who either have solar power systems installed already, or who are about to install one. Eligible customers can register their interest [here](#).

Additional community batteries are planned for the Canterbury Bankstown and Lake Macquarie areas – and these, according to an Ausgrid spokesperson, will likely be supplied by Tesla. But Ausgrid says they could be the first of many as community batteries become the next big thing.

Like other such trials being conducted around Australia, Ausgrid's plan is to offer access to shared storage on parts the grid where rooftop solar uptake is high, allowing households to get more bang for their solar buck without having to shell out for a battery system of their own.

At the same time, the community battery will also work to soak up excess solar in the middle of the day, storing it for use when the sun goes down and the air-conditioners go on, thereby helping to smooth demand and cut the energy costs of the broader community.

The trial comes [two years after being flagged by Ausgrid](#), as a way to get "closer to consumers" and help usher in the next stage of the energy transition.

"I see a world where I am sitting at home with an app, seeing opportunities to trade, to arbitrage price movements, and all this can be done while I am sitting watching Game of Thrones," Ausgrid CEO Richard Gross told RenewEconomy in late 2018.

At the unveiling of the Beacon Hill battery on Monday, Gross hailed the launch of the Beacon Hill community battery as "an exciting milestone for Ausgrid" and a first step towards keeping downward pressure on energy prices, while also supporting the use of renewable energy.

"We believe community batteries are the most cost effective way to bring renewable energy into the grid," Gross said.

"They provide a service to the residents, allowing them to store their solar, a service to the community by supporting the local network and they provide system security benefits by helping to firm renewables wherever they are generated.

"We are confident the trial will show that community batteries have a huge role to play in the low-cost transition of our energy system." He said the batteries would cost around \$400,000 each, and would deliver annual savings of between \$100 and \$300 a year to consumers.

NSW energy minister Matt Kean was also present at the battery's launch, describing it as a win for the community, a win for the

environment, and as a first for the “Superpower State,” where rooftop solar is being installed at a rate second only to Queensland.

“It’s exciting to see Ausgrid share the vision we have in NSW to use technology and innovation to deliver some of the cheapest, cleanest and most reliable electricity anywhere in the world,” Kean said at the launch.

“We’ve seen a huge uptake in rooftop solar, but consumers haven’t had a lot of choice when it comes to storing and sharing that cheap energy – community batteries like this could be the solution to that problem.”

Certainly, this has been the thinking in Western Australia, where Western Power and Synergy have [kicked off a third community battery trial](#), this time offering up to 600 homes virtual solar storage via nine new Tesla PowerBank installations.

And in Melbourne, network distribution company CitiPower [announced last month](#) that a series of community-scale batteries would be installed across the inner-city suburbs in a joint venture with not-for-profit Yarra Energy Foundation.

[6]

[Victoria to fund "neighbourhood-scale" battery projects up to 5MW | One Step Off The Grid](#)

ONE STEP OFF THE GRID  
Sophie Vorrath – 20210303

Victoria to fund “neighbourhood-scale” battery projects up to 5MW



A community battery installed as part of a W.A. trial. Source: Western Power

The Victorian government has unveiled plans to fund a series of “neighbourhood-scale” battery demonstration and pilot programs, to help unlock the role shared batteries can play in Victoria’s rapidly transitioning grid.

The \$3 million **Neighbourhood Battery Initiative (NBI)** was announced as part of the Labor Andrews government’s broader new energy technologies sector strategy, and launched alongside **an invitation for submissions** to an [NBI Consultation Paper](#).

The scheme hopes to **kickstart a pipeline of community battery projects** by funding scoping, feasibility and business case development; technical, operational, legal/ contractual and regulatory advice and services; capital funding for battery deployment; and evaluation studies.

The government said proposed projects would ideally range in size from **100kW to 5MW** (it did not specify hours of storage), would be connected in front of the meter, and could be owned by electricity distribution businesses or third parties like community energy groups, electricity retailers, or local governments.

“A key advantage of neighbourhood scale batteries is that **they can participate in multiple value streams** and provide **a wide range of social, economic and technical benefits**,” the NBI consultation paper says.

“The Neighbourhood Battery Initiative provides an opportunity to support trials of different tariff arrangements to understand how they shape the behaviour of participating customers, battery feasibility and operation, as well as equity considerations associated with new tariff models.”

As the consultation paper notes, **the benefits of shared storage are already being tested – and even realised** – through various schemes and pilots that are already being rolled out on the National Electricity Market, as well as on the Western Australia grid.

For network companies, in particular, community batteries are presenting themselves as a quick and ready **fix to grid “congestion” issues** being experienced in areas where large amounts of rooftop solar have been installed.

A [recent Victorian trial](#), a joint venture between DNSP CitiPower and the **not-for-profit Yarra Energy Foundation**, is testing a model of community battery ownership that will provide benefits to both the network and customer by acting as a **“solar sponge” in rooftop PV heavy neighbourhoods**.

And in **Western Australia**, the state’s third and largest-yet network-led community battery trial was [announced last month](#), offering up to **600 solar households access to shared or “virtual” energy storage** as well as the opportunity to **“bank”** their shared storage.

In Victoria’s NBI, a **first stream** of funding will provide up to **\$150,000 for projects** that develop feasibility studies and business cases for battery trials, and/ or commission technical, regulatory, legal and/ or contractual advice or services **to support the planning and implementation of a battery**.

A **second stream**, focused on implementation-ready projects, will supply funding of up to **\$800,000** for the implementation of a neighbourhood scale battery trial and projects **that demonstrate the ability to access multiple value streams**.

In its consultation paper, the government says the initiative hopes to gain insight into the full range of benefits that neighbourhood-scale batteries can provide, to overcome some of the barriers to their deployment, and to drive necessary regulatory reform.

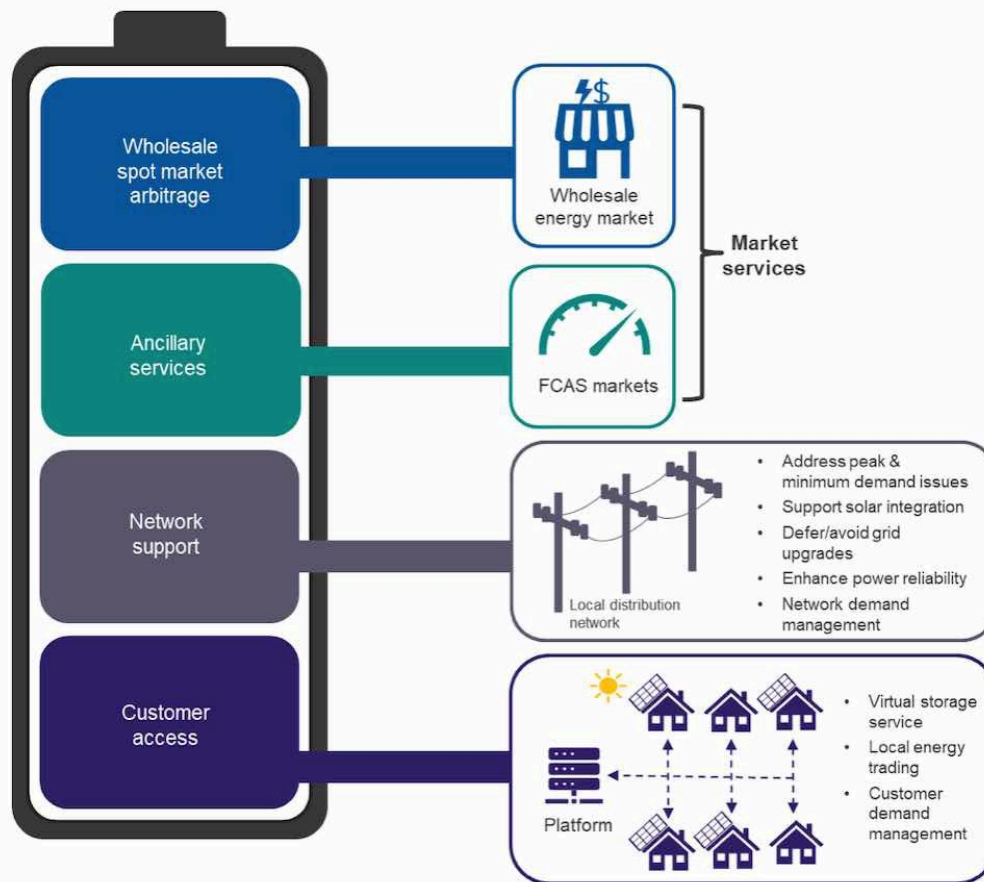


Figure 1 Examples of potential value streams that neighbourhood scale batteries can access. Note not all batteries will access all potential value streams, and how the battery optimises across different value streams will vary based on the operational model and network needs. Source: DELWP.

One of the key issues, as the paper notes, is that neighbourhood-scale batteries **will need to manage multiple contractual relationships**, depending on their ownership and operational model.

This may include relationships between the battery owner, distribution business, retailer, participating customers and energy platform provider. Who gets the benefits, and how value streams are accessed, can also be complicated.

“Trade-offs need to be recognised – prioritising one value stream may limit the ability to fully access another value stream,” the paper says.

“Distribution businesses can own neighbourhood scale batteries for the purpose of providing network support, but cannot use them to provide market services (e.g., wholesale energy and ancillary services).

“They may be able to lease battery capacity to a retailer for this purpose, with an appropriate waiver from the Australian Energy Regulator.

Distribution businesses can also pay third party owned batteries for network support.

“Third parties can own neighbourhood scale batteries and provide market services through a retailer or appropriate registered market participant. To provide network services, a network support contract needs to be in place with the relevant distribution business.”

The government says applications for funding from the NBI – as well as submissions to the Consultation Paper – are now open, until 5pm, 11 April 2021. Successful recipients will be announced in May 2021.

Stakeholders can respond to the Consultation Paper via the [Engage Victoria website](#), through either a survey or a written submission, and may be invited to participate in individual meetings to explore ideas further.

[7]

<https://reneweconomy.com.au/one-in-all-in-making-community-scale-batteries-work-in-the-nem-19295/>

RENEW ECONOMY

Mark Byrne – 20200730

*Mark Byrne is an energy market advocate at the Total Environment Centre.*

## One in, all in. Making community scale batteries work in the NEM

**Community scale batteries** are all the rage, thanks largely to [Western Power's](#) rollout of 13 of them in southwest WA. And what is not to like?

With economies of scale vis-a-vis home batteries, and without requiring any upfront capital investment, they are generally a more cost-effective alternative for consumers.

For those of us stuck on the east coast, and without the synergies offered by the state government owning the networks as well as the residential retailers, things are not quite so advanced.

In Victoria, [United Energy](#) is trialling two small pole-mounted **batteries** to provide network support —that is, to feed energy back into the low voltage network to power up to 75 houses for up to 2.5 hours in the evening as an alternative to increasing substation capacity where it is constrained.



This is a good use of United's innovation allowance, but it is small beer. The real value in community scale batteries (**that is, batteries from 100kWh to 1MWh, usually connected to the low voltage network in front of customers' meters**) comes from realising the value of as many benefits as possible, including:

- 
- Solar energy excess to daytime household needs that is exported to the grid to be stored for evening use.
- Network support.
- Frequency control and other ancillary services.
- Wholesale market arbitraging (charging when wholesale prices are relatively low and discharging into the market when prices are high).

They can also allow networks to **overcome the need to impose export limits on rooftop solar**. And there are non-economic benefits, including **the ability to share energy between neighbours**, some of whom may not have PV, and **the reduction in emissions when charging is from solar alone**.

Given that community scale batteries are hardware that will sit on the distribution network (potentially alongside existing kerbside kiosk substations or inside larger substations), **it might seem obvious that they should be owned by networks**.

They could use part of the capacity themselves for **network support**, adding the capital cost of that part to their asset base, **and lease out the rest of the capacity** to other parties like homeowners for solar storage and to market participants (retailers, generators or aggregators) for market purposes.

The glitch is that, in the **NEM, networks are not allowed to own generation assets, and cannot buy or sell energy** (although they can own and operate these assets via ring fenced affiliated entities).

The **alternative argument** goes that if they owned batteries, networks would **monopolise** the market by virtue of their superior knowledge (for example, of network constraints and the best locations to install batteries) **to muscle out** other parties — even

though the largest part of the value stack lies in market participation).

**A property developer** could, for instance, locate them out the back of shopping malls to manage demand when the sun is not shining on the facility's solar array—or in the middle of a new residential estate to manage PV and grid power flows. **A community group** could use one to store and share the output of a multi-owner solar garden.

**A grid-connected microgrid operator** could use one to match supply and demand between residential and commercial customers with different generation and load profiles. The possibilities are many.

A recent report by **Oakley Greenwood for TEC** found that under current regulations **third parties like retailers** are best placed to take advantage of the multiple value streams, mostly because they play in the wholesale market, which all the recent studies show is likely to be the biggest value stream.

**On the other hand, third-party ownership** may create **problems** around retail contestability, because any single retailer is unlikely to be able to contract with enough downstream customers on any single LV feeder to make the project financially viable.

**A third alternative is ownership by community energy groups.** Oakley Greenwood found that all three ownership options (network affiliate, retailer or community group) significantly outperformed individual household battery ownership **in terms of the financial returns to the owners.**

Who should own and control them is only one of the regulatory issues facing the commercial rollout of community scale batteries in the NEM. **(Another report soon to be released by Ausgrid\*** identified no less than **11 regulatory issues** which need to be resolved for a commercial rollout.)

The other big issue is **network tariffs.** Because **they sit in front of** customer meters but are themselves **classified as connection**

points, they currently attract full network charges or **DUOS in both directions (charging and discharging)**, making them uneconomic vis-a-vis home batteries. With lower network tariffs, the tables are turned.

Ausgrid has proposed a number of regulatory reforms to overcome these issues, potentially including:

Recognising a customer battery storage service as a distribution service (so that networks could offer them to customers).

- Multiple trading relationships or subtractive metering (to overcome the double payment issue).
  - Local Use of System (LUOS) charges (in order for network charges to reflect the limited use of the system).
- A stakeholder working group is about to be established to pursue a way forward to overcome the regulatory obstacles as soon as possible.

From TEC's perspective, this process should begin by developing a set of guiding principles, **beginning with the objective that the regime should be ownership-neutral** (ie, it should not prevent any party from participating in this new part of the market by favouring others).

**Second**, we want to maximise opportunities for energy to be shared between solar and non-solar households, **so that community scale batteries function like solar gardens**, only better (because they will provide energy at night, too).

**Finally**, we would also prefer that these batteries were not charged from the grid (as well as rooftop solar), **given it is still powered two-thirds by coal**. However, **because environmental outcomes are not part of the current national electricity objective**, this outcome may be difficult to achieve.

The hope is that we can sort out these regulatory issues next year so that **community scale batteries can start being rolled out on a commercial basis** in the NEM from 2022.

[8]

[NSW smart meter program to soak up solar with "everyday batteries" | RenewEconomy](#)

RENEW ECONOMY  
Sophie Vorrath – 20210524

NSW smart meter program to soak up solar with “everyday batteries”

New South Wales electricity distribution company **Endeavour Energy** has launched a program to better manage the record numbers of residential rooftop solar systems being installed across its grid. And it does not include a solar export charge.

The program, launched on Monday by **NSW energy minister Matt Kean**, uses the **advanced smart meter technology** of Australia and New Zealand based company **Intellihub**, and is being rolled out across **2,500 homes** in the state’s **Illawarra region** in partnership with 10 local retailers.

The program, called **Off Peak Plus Benefits**, will – as the name suggests – offer a range of possible benefits to consumers in the area, starting with **the ability to share surplus rooftop solar generation** between households to power electric hot water systems.

This “**solar soaker**” function can be **extended in the future** to take in **electric vehicle charging, battery storage**, and load control or **demand response** services, giving retailers the scope to provide new products for consumers to help reduce peak demand and drive down electricity costs.

For Endeavour Energy, the meters will be used to help replace a 50-year-old system operating from the **DNISP’s nearby Albion Park substation**, with each sending energy and network data, **offering greater visibility** of the low voltage network and household connection.

On this level, the meters will detect serious safety issues with neutral connections, detect when power is out and provide insight on voltage fluctuations resulting from solar power flowing back into the grid.

This will, in turn, enable more rooftop solar to be safely installed behind the meter at homes and businesses.

“Australians are installing solar panels faster than anywhere else in the world in our franchise area,” said Endeavour Energy’s chief assets and operating officer, Scott Ryan.

“We have **200,000 customers that have solar panels** on their roofs, we expect that to **double in four years, triple, by 2030**, and if we don’t do something about it now, we’re going to face network issues into the future – so Off Peak Plus is great in that regard.

“**We’re getting a lot more information than we’ve ever had before.** We can dynamically control the voltage on your network to optimise it for our customers and to make the network run much more efficiently. It’s a win for everybody,” Ryan said.

“The reason we call it Off Peak Plus is that it can do a whole lot more than just the hot water systems, so classic example is we could use that same solar energy **to charge customers electric vehicles.**”

“We’re very excited about the ... program because this is just the start,” he added. “We’re going to roll this out across Western Sydney and down the south coast in the months ahead.”

Intellihub CEO Adrian Clarke said the smart meters meant a range of households could participate in the program, **including those without rooftop solar.**

“This is the technology that brings the everyday battery to life... It allows everyone from the people with solar on their roof **to people with hot water systems to be a key part of this.**”

[9]

[City of Melbourne plans "neighbourhood-scale" battery network | One Step Off The Grid](#)

RENEW ECONOMY  
Sophie Vorrath – 20210727

## City of Melbourne plans “neighbourhood-scale” battery network

The **City of Melbourne** is seeking partners to help establish a network of “**neighbourhood-scale” battery energy storage systems**, up to a potential capacity of **5MW** (MWh unspecified), as part of a pilot project planned for 2022.

Dubbed the **Power Melbourne project**, the council-led scheme would install **mid-sized battery systems across the city**, with an initial focus on existing Council infrastructure and the Melbourne Innovation District in the CBD’s north.

Future battery locations would be proposed for areas where network demand was constrained or was expected to increase over the coming decades, the Council said.

For now, however, the business case for the pilot battery network was being developed with a potential future capacity of 5MW (MWh not specified) by 2024.

City of Melbourne Lord Mayor Sally Capp said the battery rollout promised to pave the way for greater uptake of renewables, create new opportunities for research, training and jobs, and help build Melbourne’s reputation as a centre for clean energy innovation.

“Power Melbourne is one way we can contribute to a greener future, but we won’t be able to do this alone, so we will be calling on government and the private sector to get involved,” Capp said.

The Council has allocated **\$300,000** to deliver the pilot, which **aimed to establish a model for urban battery network development** that would be **replicable** across the country.

“Power Melbourne will deliver a huge amount of **insight and data into how we can best reform our electricity networks** to encourage more renewables and battery storage,” said City of Melbourne environment portfolio lead Councillor Rohan Leppert.

“Energy storage will help make more efficient use of the network, and will play an important role in accelerating our transition to a highly renewable electricity grid and low carbon economy.

“The neighbourhood-scale batteries **will be coordinated to deliver sustainable energy back into the grid** when it is needed most,” Leppert said.

The City of Melbourne has been a strong supporter of renewables and, in early 2019, [became Australia’s first capital city council to be powered by 100 per cent](#) renewable energy, via a ground-breaking energy procurement scheme.

That scheme, [first launched back in 2014](#), gathered together other large energy users and used the collective buying power to attract competitively priced renewable energy proposals.

The **MREP – Melbourne Renewable Energy Project** – was a resounding success, resulting in a [first tender, for 88GWh a year of renewable energy](#), which helped to underwrite construction of Pacific Hydro’s 80MW Crowlands wind farm, near Ararat.

A [second tender, for 113GWh a year](#) of renewable energy generation, was kicked off in November of 2019, combining the purchasing power of seven large energy users to source their electricity from a large scale solar or wind project in Victoria.

[10]

[Community battery "solar sponges" to be trialled across Melbourne network | One Step Off The Grid](#)

ONE STEP OFF THE GRID  
Sophie Vorrath – 20210127

Community battery “solar sponges” to be trialled across Melbourne network



A community battery installed by Western Power in Western Australia.  
Image: Supplied

A series of **community-scale batteries** will be installed across the **inner-city suburbs of Melbourne**, in a joint venture between local network distribution company **CitiPower** and the not-for-profit **Yarra Energy Foundation**.

The project, which is currently **in its first phase of modelling and planning**, aims to develop and roll out a **“new” model** of community battery ownership that will provide customer, community and network benefits, including acting as a **“solar sponge”** in areas of **high rooftop PV uptake**.

On the customer side of the equation, the newly announced project will help to overcome one of the key barriers to home battery uptake in Australia – prohibitive cost.

**“Shared batteries** are a smart solution to give households and businesses reliable and affordable energy when they need it,” said Yarra Energy Foundation CEO Dean Kline in a statement on Tuesday.

For the network, said Kline, the shared battery network would work [to] absorb excess rooftop PV generation during the day and release it during peak times and at night, **offering a grid balancing service** that would also deliver benefits to the broader community, in terms of grid and price stability.



For Australian network companies, finding ways to manage the rapidly growing share of rooftop-generated solar power has become a race against time, particularly in hotspots like Western Australia and South Australia, the latter of which [has seen solar provide more than 100 per cent of local demand](#).

CitiPower says the penetration of rooftop solar on its Melbourne low-voltage network is currently relatively low, at around 5% of 332,000 customers, but was expected to reach 24% by 2026.

“With this renewable energy source growing it is a good time to be investigating the potential for connecting batteries to support the whole community,” said CitiPower’s general manager of electricity networks, Mark Clarke.

“By sharing the batteries, customers can make the most of their investment in solar. It benefits all CitiPower customers, even if they don’t have rooftop solar, as batteries help reduce the cost of building network capacity to accommodate more power and manage localised peak demand, particularly in summer.”

The **first battery** is expected to be **tried later in 2021**. Financial modelling has commenced and the project has already received interest from investors.

The project is said to be a first for Victoria, but [a similar community battery program has been rolled out in Western Australia](#) as part of a state government bid to improve the electricity supply to parts of the Western Power grid without adding more poles and wires while also offering virtual home energy storage.

[11]

[City of Melbourne plans "neighbourhood-scale" battery network | One Step Off The Grid](#)

RENEW ECONOMY  
Sophie Vorrath – 20210727

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[12]

[End-of-life EV batteries live on in commercial-scale storage - Australian Renewable Energy Agency \(arena.gov.au\)](#)

ARENAWIRE  
20210226

## End-of-life EV batteries live on in commercial-scale storage

An Australian world-leading energy storage innovator will repurpose [EV](#) batteries to power commercial and industrial sites as part of an [ARENA-supported project](#).

**Relectrify** will develop 36 kW/120 kWh 'Revolve' energy storage units from batteries that have reached the end of their useful life in Nissan Leaf EVs .

[Relectrify Launches Revolutionary BMS+Inverter - YouTube](#)

VIDEO

Relectrify Launches Revolutionary BMS+Inverter

The system will use the company's **BMS+Inverter** that combines the **traditionally separate inverter and battery management functions** into **one unit**, boosting the life of lithium-ion batteries and reducing the cost of energy storage.

This allows EV batteries to live on once their cycle life drops below roughly 80 per cent of their original capacity, the point when they are generally replaced to improve driving range. The latest Leaf battery is warranted for eight years or 160,000kms, but according to Nissan the smaller packs in early models last about five years of regular driving before reaching that point

[ARENA is contributing \\$1.49 million](#) towards the \$3.3 million project that will **support Relectrify to finalise and certify their new product** ahead of the roll out of **20 units**, building on past support to develop the inverter technology.

ARENA CEO Darren Miller will reduce costs and improve pathways for battery storage **to be installed at commercial scale**, particularly in **industrial settings**.

“Battery storage is already playing a crucial role in supporting the transition to renewable energy within industry, however, **we need to do more to make it commercially viable**,” Darren Miller said.

“**Second-life batteries** have significant potential to drive down costs, and **Relectrify’s battery management and inverter technology** can provide what is needed to transform them into valuable assets for businesses looking to make the switch.”

## Going global

Relectrify was founded in 2015, developing their technology in Melbourne where co-founder and CEO Valentin Muenzel had moved to from Germany to complete his PhD.

The company set out **on a mission is to make energy storage affordable**, achieving this with their unique battery management system **which controls cells individually**, getting the most out of each rather than being limited by the single weakest cell.

They **launched** the combined battery management system and inverter at the **Cleantech Forum in San Francisco in early 2020**, alongside American Electric Power Co (AEP) and Nissan North America **who are partnering on a US pilot project**.

At the time Muenzel told ARENA that their system offers multiple benefits “surprisingly and counterintuitively, instead of the typical tradeoff between better control and lower cost, in this case, electronics with more control can actually be built at less cost.”



*Relectrify's founders with a battery storage unit.*

Relectrify says the new Revolve system “comes in 30% to 50% lower than comparable products on the market, while offering an expected lifetime of 3000 cycles”.

They will roll the product out as individual or multiple 120 kWh hour units, **which have been designed for installations up to 2MWh in capacity.**

## **Emerging market**

Muenzel said the **commercial and industrial energy storage market remains underserved**, with few offerings on the market to meet growing customer demand.

“In some ways, we didn’t want to develop this product, but the market really pulled it out of us,” he said.

“Our pre-sales interest in the product has been very wide, **from community battery storage applications, utilities** looking for backup and outage support for weak rural networks, **and peak shaving for EV charge installs**, to **construction and mining services** firms interested in stand-alone power supply and genset diesel fuel reduction.”

The initial 20 site 2.4 MW rollout **will provide a second-life to 180 Nissan Leaf batteries.**

[13]

<https://thedriven.io/2020/10/24/where-do-old-electric-vehicle-batteries-go-to-die/>

THE DRIVEN

Bryce Gaton – 20201024

Bryce Gaton is an expert on electric vehicles and contributor for The Driven and Renew Economy. He has been working in the EV sector for 10 years, and also is editor of the Australian Electric Vehicle Association newsletter.

Where do old electric vehicle batteries go to die?



At the end of my electric vehicle information talks, I often get asked variations on the theme of “Where do old car batteries go to die?”

My answer is they don’t ‘die’! Rather, after seeing eight to 10 years service in a car, they can ‘retire’ to a more gentle life in energy storage systems.

This is because lithium batteries do not catastrophically fail when they have reached the end of their useful vehicle service life. They may become less capable of dealing with the fast charge and discharge rates needed for accelerating a 1 to 2 tonne mass, or accepting a high rate of charge. But there is still plenty of life in them.

In fact, they are still very much capable of meeting the more gentle rates of charge and discharge seen in stationary storage systems for as many, or more, years as they saw life in a car.

I have even suggested that this is **the ultimate solution to cheap 24/7 home storage systems** – and the more likely scenario for providing the majority of the support needed to create a robust renewable energy based electricity grid than the often touted **V2G (vehicle to grid)** type systems.



SMARTHUB E-STOR SYSTEM. IMAGE: GROUPE RENAULT

One of the leaders in researching this type of second-life battery solution is the vehicle manufacturer **Renault**, which has just announced **two new second-life battery programmes** in conjunction with local partners.

One is the **SmartHubs Project in West Sussex, (UK)** and the other is the **Advanced Battery Storage in Douai (France)**. These will be two of the largest projects of their types in Europe.

The SmartHubs project involves the installation of several **360kWh E-STOR systems** (designed by Connected Energy) placed on **industrial**

and **commercial sites**, with some linked to solar panels and EV chargers to help sites reduce energy costs and optimise the use of renewable energy.

A large **E-STOR Cluster system** using around **1,000 second-life batteries** to store 14.5 MWh of energy will also be installed. This will rapidly charge and discharge to help balance the electricity network. It will store enough energy to power 1,695 average homes for a full day.

The SmartHubs project is one of **four UK government-initiated projects** designed to help design the energy systems of the future. The SmartHubs systems will run alongside other technologies **as part of a local energy system** to help provide cleaner, lower cost energy for use **in social housing**, transport, **infrastructure**, private homes and **local businesses**.



ADVANCED BATTERY STORAGE SYSTEM-DOUAI, FRANCE. IMAGE: GROUPE RENAULT

In **Douai, France**, the first Advanced Battery Storage has just been installed at the **Renault Georges Besse** plant with a capacity to store **50 MWh across several sites**.

The energy storage systems make it possible to regulate and stabilise the network by charging the batteries when demand is low, then



returning the energy contained in these batteries back into the network as soon as demand is high again.

The Advanced Battery Storage system uses **second-life batteries**, as well as new batteries stored for future aftermarket use, for a total capacity close to 5 MWh. The Advanced Battery Storage system is being set up in collaboration with partners Banque des Territoires, Nidec, The Mobility House, Demeter, and the Ecological Transport Modernisation Fund.

Together, these projects show how the move to electric transport can **assist the development of an integrated energy economy**, helping us all move towards a cleaner and more robust energy system.

Mind-you, these innovations do involve significant investment in research, planning and, in particular, overall direction settings that encourage them.

The sorts of things that national governments can, and in fact should, take the leading role in – through transport and emissions policies for instance. A pity our federal government seems not to be interested in such things where it comes to dealing with the emissions from our current electricity grid or transport fuel sources.

[14]

[Queensland gears up for shift to renewables and decentralised power with microgrid R&D hub | RenewEconomy](#)

RENEW ECONOMY

Joshua S Hill & Sophie Vorrath – 20220222

Queensland gears up for shift to renewables and decentralised power with microgrid R&D hub

The Queensland Labor government is ramping up the state's shift to a decentralised and renewable powered electricity network with the help of a new \$6 million **Microgrid and Isolated Systems Test (MIST) facility** in Cairns.

**Renewable energy** and **battery storage-based microgrids** – both **grid-connected** and **stand-alone** – will play a huge role in the shift to renewables in Australia, and particularly in bigger states like Queensland and Western Australia, which have previously relied on diesel fuel-based microgrids to help power remote towns and industrial regions.

The MIST facility, which was launched in October 2021 by the Queensland government-owned utility **Ergon Energy**, will **conduct complex testing** of solar and storage microgrids and standalone power systems of up to 1MW.

The facility was officially welcomed by the state government this week, with a visit to the site from state treasurer Cameron Dick and state energy minister Mick de Brenni.

“This is a world-class hub for **energy research and development**,” [said Cameron Dick](#), Queensland’s treasurer and minister for trade and investment. “It holds potential benefits for everyone in our power supply chain, from distributors and developers to everyday Queenslanders.

“The state-of-the-art technology housed here allows for the complex testing of solar and batteries, microgrids, standalone power systems, even hydrogen energy storage and carbon reduction.

“By finding solutions that will reduce emissions and put further downward pressure on energy prices, Queensland will continue to lead the renewable energy revolution.”

Ergon’s principal engineer of technology innovation, Alan Louis, said the MIST facility’s super-computer allowed for real time digital simulation of a large array of connection options.

“Testing in simulated conditions before you deploy saves times and money, which is especially important for rural and remote communities,” he said.

“Our work is helping to maximise the performance of solar installations and battery storage systems before they’re installed, which is good for the environment and the back pocket.

“With a facility of this calibre, we can prepare Queensland customers, communities, and our workforce, for the future,” Louis said.

“We’re also proud to have strong working relationships with institutions like James Cook University and Central Queensland University, creating more opportunities for local graduates and researchers.”

Queensland’s minister for energy, renewables and hydrogen, de Brenni, said the state’s publicly-owned energy companies had been powerhouses of innovation, and the MIST facility continued that tradition.

“Regional and remote Queensland is home to world-class renewable resources,” de Brenni said in a statement.

“Our ability to leverage those through microgrids and isolated systems has received a big shot in the arm with this new facility.”

The facility was designed by local architectural firm Clarke and Prince in collaboration with electrical consultants Aurecon and built by local contractors Osborne Construction Solutions and Babinda Electrics.

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<https://www.enovaenergy.com.au/about-us/our-story>

Enova Community Energy

### **Our Vision**

Enova's vision is to be Australia's leading social enterprise enabling self-sustaining communities.

### **Our Mission**

Enova is Australia’s first community-owned energy retailer. We established as a social enterprise to:

- **build self-sustaining and resilient communities through locally generated and shared renewable energy;**
- assist communities to make the transition to renewable energy without leaving anyone behind;
- keep jobs and profits in local communities; and,
- reduce carbon emissions.

- **New Business Model.**
- We have flipped traditional energy retail on its head and created a new business model dedicated to helping communities become energy independent using their own renewable energy supplies.

Enova believes Australia's current energy system is outdated. It's a 20th century model where there's large scale generation plants, long distance transmission and distribution... all the energy flowing one way into the household - with money flowing back the other way to large scale generators and retailers.

Enova is advocating for a better alternative and is helping the future to be decentralised... where we no longer have solely large scale generation, but instead, electricity is generated, stored and shared amongst communities.

### **A Localised Energy Future.**

Enova sees the future **as one where the consumer is also a producer** - who shares in both producing the power and benefitting from it. It's providing an alternative to the old energy model so that economic benefits don't flow out of every region, but money stays and circulates locally, making for stronger communities and stronger regions.

Enova has started localising Australia's energy system through innovative projects like **microgrids** and **solar gardens**, where **it's leading communities to generate, distribute and share their own renewable power** and in turn lower their costs.

We are also actively looking at the latest technological developments to help our quest and to incorporate into our projects, **from different types of generation (including solar and wind power) and storage, to energy trading.**

Enova hopes more communities will soon adopt the localised energy approach so that there will be many regionally self-sufficient systems throughout Australia in which consumers play a strong role and are sharing the benefits.

[16]

<https://reneweconomy.com.au/what-price-energy-resilience-and-should-it-be-written-into-the-rules/>

RENEW ECONOMY  
Mark Byrne – 20220327

*Mark Byrne is Energy market advocate at the Total Environment Centre*

What price energy resilience – and should it be written into the rules?

One of the laments repeated by residents of the Lismore area after the recent record-breaking floods has been: “We were here in 2017; five years later, **why were we not better prepared?**”

The same question could also be asked about the catastrophic 2019-20 bushfires in southeastern Australia. If a bushfire crisis emerges in 2022 or 2023 that is of a similar magnitude to the last one, would the outcomes for affected households and the electricity system be much different?

To jog your memory, the **national Royal Commission** reported that:

“... more than **280,000 customers** from various energy providers experienced a bushfire-related **power outage** at some point. These outages were largely attributed to fire damaging more than 10,000 power poles and thousands of kilometres of powerlines, including those located underground.

“... In the worst-affected areas, some customers were **without power for up to 10 days**. Essential Energy reported that over 104,000 of its customers were affected (including 4,700 life support customers) and over 3,200 power poles and 4,500 cross arm poles were damaged or destroyed.”

In response to this litany of destruction, the NSW Bushfire Inquiry canvassed (in very general terms) a range of potential ways to build back better, including more vegetation clearing near powerlines; undergrounding some lines; the use of more fire resistant materials in poles and cross-arms; and the potential for some properties and small communities to be served by **stand-alone power systems (SAPS)** and **microgrids** instead of long skinny lines running through heavily forested areas.

So what has happened to prevent a similar outcome next time? Aside from the replacement of some timber poles and cross-arms with more fire-resistant (and expensive) composite alternatives, and the gradual introduction of insulation on some overhead lines, **not much so far, it appears.**

Early in 2020, there was much fanfare around the announcement by **Atlassian gazillionaire Mike Cannon-Brookes** that he would put \$12 million into a new initiative called the Resilient Energy Collective.

It was intended to help supply portable solar and battery systems to local communities which had lost supply in the fires.

It was a worthy initiative, but it appears they actually installed the grand total of **two systems**, and the organisation itself seems to be defunct. **Why? Regulatory hassles, apparently.**

Meanwhile, Essential Energy installed **eight SAPS** on remote properties on the NSW South Coast which lost power for long periods after the lines supplying them burnt down. These systems were provisionally approved by the AER under ring fencing waivers.

However, an internal analysis subsequently **concluded that the business case for installing SAPS rather than rebuilding the lines like for like could not be justified under** Essential's existing risk assessment framework, which does not factor in the increasing risk of future bushfires. **The SAPS were then removed and the old lines rebuilt.**

Finally, in **Mallacoota**, AusNet Services installed a **1MWh battery** system and generator that were supposed to back up the main line to provide continuous supply during "**unexpected disruptions**". However, a report for ECA found considerable disquiet among residents about what the battery was supposed to do and how well it was performing, even in short outages.

Total Environment Centre spent much of 2021 **trying – largely unsuccessfully** – to get the Australian Energy Market Commission, the Energy Security Board and ARENA's Distributed Energy Integration Program **interested in the role of local energy resources like SAPS, community batteries and microgrids in increasing system resilience.**

Still, there is hope, in the form of the six distribution networks (in NSW, ACT, Tasmania and the NT) which have started **planning for the next round of five-year revenue determinations.** They are taking **climate resilience very seriously.** There is a **buzz of activity** around

climate modelling, risk assessment frameworks, consultations with vulnerable communities and capital investment wish-lists.

These networks are trying to develop a coordinated approach. That is good, **because at the moment there is not even a shared understanding of what is meant by resilience**; how it **interacts with reliability**; who is responsible **for achieving** which bits of it; how much users and communities are willing to pay for it; and so on.

At least one government is also getting on the front foot. **The Victorian government is investigating reforms to the state's electricity distribution network regulations** following prolonged power outages **caused by severe storms** on June 09 and October 29, 2021.

The Distribution Network Resilience Review is considering **how networks can improve their preparedness** for, and response to, prolonged power outages arising from storms and other extreme weather events, and how to strengthen community resilience to prolonged outages.

The pachyderm in this bunker, though, is whether the **Australian Energy Regulator** will allow networks to **frontload** what might be substantial **long-term capital investments** to improve climate resilience (such as SAPS and microgrids) in their revenue proposals. According to the AER itself (in a letter to TEC):

“If a network business considers that the frequency of outages or duration is increasing (or is likely to increase) **due to the increased frequency of extreme climate events**, under the NER, the network business can seek additional funding above that already included in its forecast capital and operating expenditure.”

We'll have to wait and see how this pans out after the **six networks** submit their **draft revenue proposals to the AER**.

Below this sit a host of other related regulatory issues which are also the responsibility of the AER.

Another issue was **the need for new rules that would allow networks to own and operate SAPS**. This required **changes** to the **National Electricity Law** as well as the **National Electricity Rules**.

The AEMC published its final determinations for the required rule changes several weeks ago. **Unfortunately, it persisted with a model for charging tariffs to SAPS customers** as if they were still part of the retail market, **rather than according to the way customers actually use SAPS**. This, **say the networks**, will make SAPS uneconomic to install and operate.

The **biggest regulatory question of all**, though, **is whether resilience needs to be specifically recognised in the NER**, or even in the National Electricity Objective, **as one of the criteria relevant to the long-term interest of consumers**.

**TEC has drafted a rule change request** which would recognise resilience in the Rules. It would also **create a context for having some difficult conversations around how much resilience we are willing to pay for**, and who should pay for it. We look forward to progressing the rule change if and when the time is deemed right.

**We now have extensive evidence of the impact of climate change on Australia's electricity system** from bushfires, floods, storms and heatwaves. The damage from each of these is only likely to get worse. If we don't want to change where and how we live, including how we source the power to enable the "electrification of everything", we may have to pay a lot more for electricity from the grid.

Meanwhile, TEC is working with a consultant **on what households, small businesses and communities can do themselves to improve their energy resilience** – independent of networks, regulators and governments – in the context of more chaotic and destructive weather events.

Because, when *la merde* hits *le ventilateur*, **we can't always wait for help to arrive**.



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[No more data "not spots," as Vodafone pilots off-grid mobile phone tower - One Step Off The Grid](#)

ONE STEP OFF THE GRID  
Sophie Vorrath – 20220616

## No more data “not spots,” as Vodafone pilots off-grid mobile phone tower

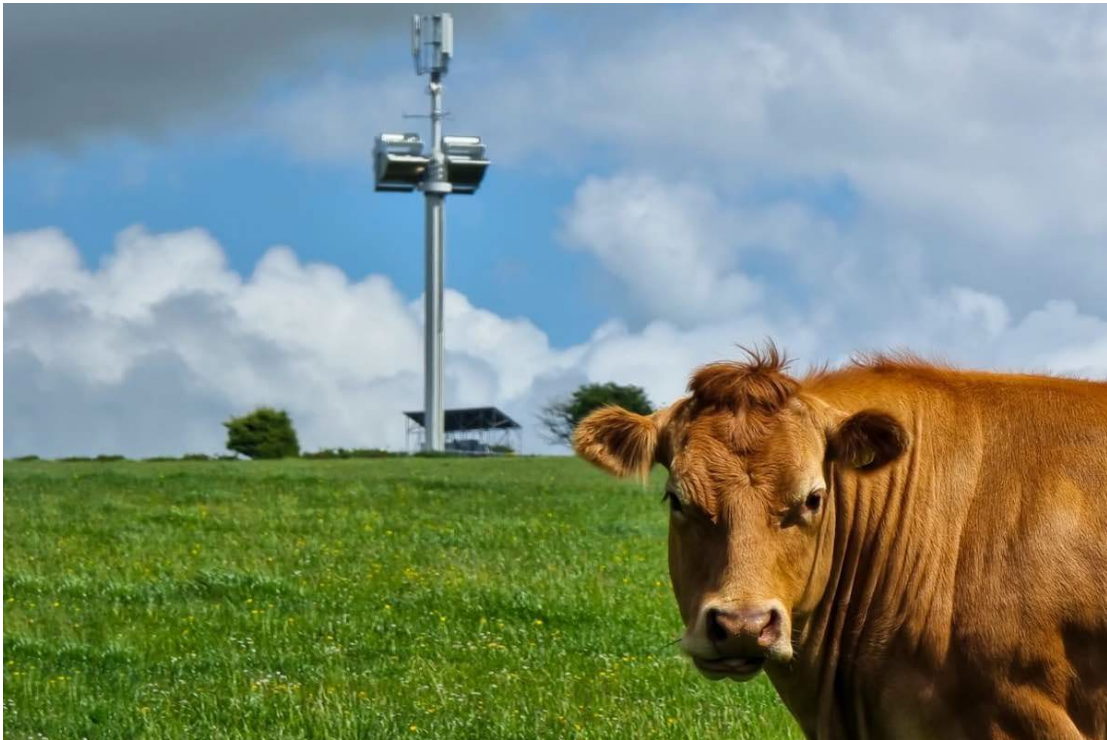


Image Credits: Alexander Viner

Vodafone has installed and switched on the UK’s first off-grid, wind and solar powered mobile phone tower – or mast – on a farm in Pembrokeshire, Wales, to provide renewable powered 4G coverage to the community of the small village of Eglwysrwr.

The “self-powering” mast, which can be installed without the need to dig trenches and lay electricity cables, incorporates a small “smart” wind turbine from Crossflow Energy, designed to generate power even in light winds.

It also incorporates solar panels and on-site battery storage, thus removing the need to connect to the grid and addressing the issue of connectivity in so-called “not-spots” in the UK’s most remote and inaccessible locations.

The turbine is also said to be “extremely quiet,” and safe for birds due to a design that Crossflow says allows it be “filtered out” as a solid object by radar, birds and bats, and thus easily avoided.



Image credits: Alexander Viner

“Until now, the use of ‘small wind’ turbines in the race to net zero has been limited due to issues of performance, reliability, and planning concerns, such as noise, vibration, and damage to ecology,” [said Crossflow Energy CEO Martin Barnes](#).

“The unique design of our wind turbine addresses all these challenges head on. We believe that one day its use could be as widespread and commonplace as solar panels.”

Vodafone is hoping for a similar outcome, noting that the installation of masts in coverage “not spots” without an existing electricity connection has so far presented a significant financial and logistical challenge to the telco.

“Connectivity is vital to everyone, no matter where you live,” said Vodafone chief network officer and development director Andrea Dona.

“This self-powering mobile phone mast, with on-site battery storage, could help us connect places that were previously impossible to reach. It will also help us reduce carbon emissions and minimise our impact on local environments.

“If this trial is a success, we would like to roll out more ‘self-powering’ masts, with a focus on areas with poor or no coverage,” Dona said.

Vodafone says the off-grid trial, which is being conducted in partnership with Crossflow Energy and mobile infrastructure partner Cornerstone, will run for two years and data gathered will help optimise the technology and determine the suitability of future sites for the “self-powering” masts.

In the UK, Vodafone has committed to reaching net zero operations by 2027, led by a switch to 100% renewable electricity underpinned by a 10-year power agreement with three local solar farms.

In Australia, TPG Telecom, which is the owner of Vodafone Australia, [has committed to source all of its electricity from renewable sources by 2025](#), following a similar plan announced by Telstra in 2020.