

Victorian Neighbourhood Battery Initiative

Consultation Paper



Environment,
Land, Water
and Planning

OFFICIAL

Acknowledgment

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it. We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.



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Introduction

Victoria's Neighbourhood Battery Initiative will facilitate trials and demonstrations of new energy storage models in Victoria, from feasibility through to implementation. The Initiative will support our understanding of the role neighbourhood scale batteries can play in Victoria's transitioning electricity system, and demonstrate a range of benefits for Victorian communities, energy users and electricity networks.

Context

The Victorian Government is helping to drive the transformation of our energy system. Legislated renewable energy targets of 40 per cent by 2025 and 50 per cent by 2030 provide a clear direction for the market, while our policy framework embeds energy efficiency and clean energy across the economy.

An important part of the Government's long-term vision for a decarbonised electricity system is the increased uptake of Distributed Energy Resources (DER) such as solar PV, batteries, smart appliances and electric vehicles. These technologies are playing an increasingly important role in our electricity system.

DER offer direct benefits for energy users in the form of lower power bills, but they also offer wider benefits for all Victorians. Not only do they contribute to the decarbonisation of our electricity system, but with the right technological standards and regulatory settings, they will also increase the reliability of supply and reduce energy system costs as we transition to a clean energy sector.

There are challenges that must be addressed to unlock these benefits. Our electricity system was originally designed for large-scale centralised generation and a one-way flow of power. Integrating small-scale, decentralised generation and energy management systems into this system requires changes to infrastructure, regulations and markets. However, these challenges are entirely solvable through strong engagement with energy users, and careful planning and coordination between government, market bodies and industry stakeholders.

The Neighbourhood Battery Initiative is just one way the Victorian Government is supporting clean, reliable and affordable electricity for Victorians.

Different neighbourhood scale battery business models are still developing, and they currently face a range of barriers and challenges that must be addressed to support their deployment. The Neighbourhood Battery Initiative will support the emergence of pilots and demonstrations to overcome these challenges and unlock the benefits of new energy storage models for communities, energy users and the electricity grid.

Neighbourhood Battery Initiative

The objective of the Neighbourhood Battery Initiative is to fund pilots and demonstrations of a broad range of neighbourhood scale battery ownership and operational models, and to inform our understanding of the role of neighbourhood scale batteries can play in Victoria's transitioning electricity system. The initiative is intended to:

- support understanding of the full range of benefits different neighbourhood scale battery models can provide;
- help to overcome barriers and challenges to the deployment of neighbourhood scale batteries;
- inform regulatory reform;
- determine which neighbourhood scale battery models provide the most benefits to Victorian energy users and the electricity system; and
- support the decarbonisation of Victoria's electricity system to tackle climate change.

Purpose of this consultation process

The Department of Environment, Land, Water and Planning (DELWP) is undertaking this consultation process to inform long-term Government strategy and future funding decisions to support neighbourhood-scale batteries.

This consultation paper provides a brief overview of key issues and presents a series of questions for stakeholders who wish to provide insights to inform the program.

We would like to hear from parties such as community energy or sustainability groups, electricity distribution businesses, retailers and aggregators, energy software platform providers, local governments, consumer groups, researchers and community members about the opportunities and challenges associated with neighbourhood scale batteries in Victoria.

The consultation paper has been developed to complement the Application Guidelines for the initial funding of the Neighbourhood Battery Initiative. Organisations interested in applying for funding are advised to visit www.energy.vic.gov.au/new-energy-technologies for more details. Organisations intending to apply for funding are encouraged to participate in this consultation process.

DELWP will analyse and publish a report summarising the responses received through this consultation process and the insights from the business cases and initial projects funded through the initial round of the Neighbourhood Battery Initiative.

By undertaking consultation alongside funding feasibility and pilot projects, the Government is developing a comprehensive understanding of the potential for neighbourhood-scale battery projects in Victoria, the needs of project proponents, and the barriers they are facing which will inform further opportunities for implementation.

Having your say

Stakeholders can respond to this consultation paper via the **Engage Victoria** website at www.engage.vic.gov.au. The consultation offers both a written submission portal and a survey for community members. Respondents may be invited to participate in individual meetings to explore themes in further detail. This consultation process will close on **23 April 2021**.

Please note that this consultation is being undertaken for information purposes only and is not part of any formal funding or procurement process, and no payment is being offered or will be made for participation. Participation in this consultation process will give rise to no advantages or disadvantages to respondents in any future funding process.

DELWP may publicly release responses to this consultation paper; respondents should indicate where any material is commercial-in-confidence and should not be released.

Why neighbourhood scale batteries?

What are neighbourhood scale batteries?

Neighbourhood scale batteries are a relatively new energy storage model with the potential to provide multiple benefits to consumers, communities and the electricity system. They are considerably larger than household batteries and range in power capacity from approximately 100 kilowatts (kW) to five megawatts (MW), and are connected in front of the meter to the electricity distribution network. They are sometimes referred to as community or grid-scale batteries.

What are the benefits?

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.

Network benefits: Neighbourhood batteries can provide benefits to the network by managing voltage, overload and minimum or peak demand issues, which can help to defer or avoid expensive infrastructure upgrades. This may enable all consumers to save on bills through lower network charges.

Supporting solar integration: Neighbourhood batteries can help to support the integration of more solar PV onto the electricity network by helping to manage network conditions, and storing electricity generated by solar systems during the day and discharging it during the evenings when demand is highest. This can enable consumers to generate and consume more renewable energy locally.

Provision of wholesale energy and ancillary services: They can be used to participate in spot price arbitrage in the wholesale electricity market, helping to place downward pressure on electricity prices, and can provide services in Frequency Control Ancillary Services (FCAS) markets to help maintain the security and reliability of the electricity system.

Reliability in outage-prone areas: Customers in remote, outage-prone areas may benefit from local neighbourhood scale batteries providing backup power and improving reliability of supply.

Virtual storage service for customers: Batteries operated to provide a retail storage offering to customers may help to expand consumer access to the benefits of storage, including providing access to DER to people who may not otherwise be able to install these technologies themselves. These types of services may also facilitate local peer-to-peer trading and other innovative local energy models. Participation in shared storage schemes may also be cheaper, more efficient and more flexible than purchasing an individual household battery, avoiding installation and maintenance costs, as well as relocation constraints.

Figure 1 illustrates some of the key value streams that neighbourhood scale batteries can access.

Who can own and operate neighbourhood scale batteries?

Neighbourhood scale batteries can be owned by electricity distribution businesses or third parties such as community energy groups, electricity retailers, aggregators, private investors and local governments.

The potential benefits a neighbourhood scale battery project can provide, who these benefits flow to, and the value streams accessed by the battery, will depend on who it is owned by and how it is operated. Trade-offs need to be recognised – prioritising one value stream may limit the ability to fully access another value stream.

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.

A neighbourhood scale battery will need to manage multiple contractual relationships depending on its ownership and operational model. This may include relationships between the battery owner, distribution business, retailer, participating customers and energy platform provider.

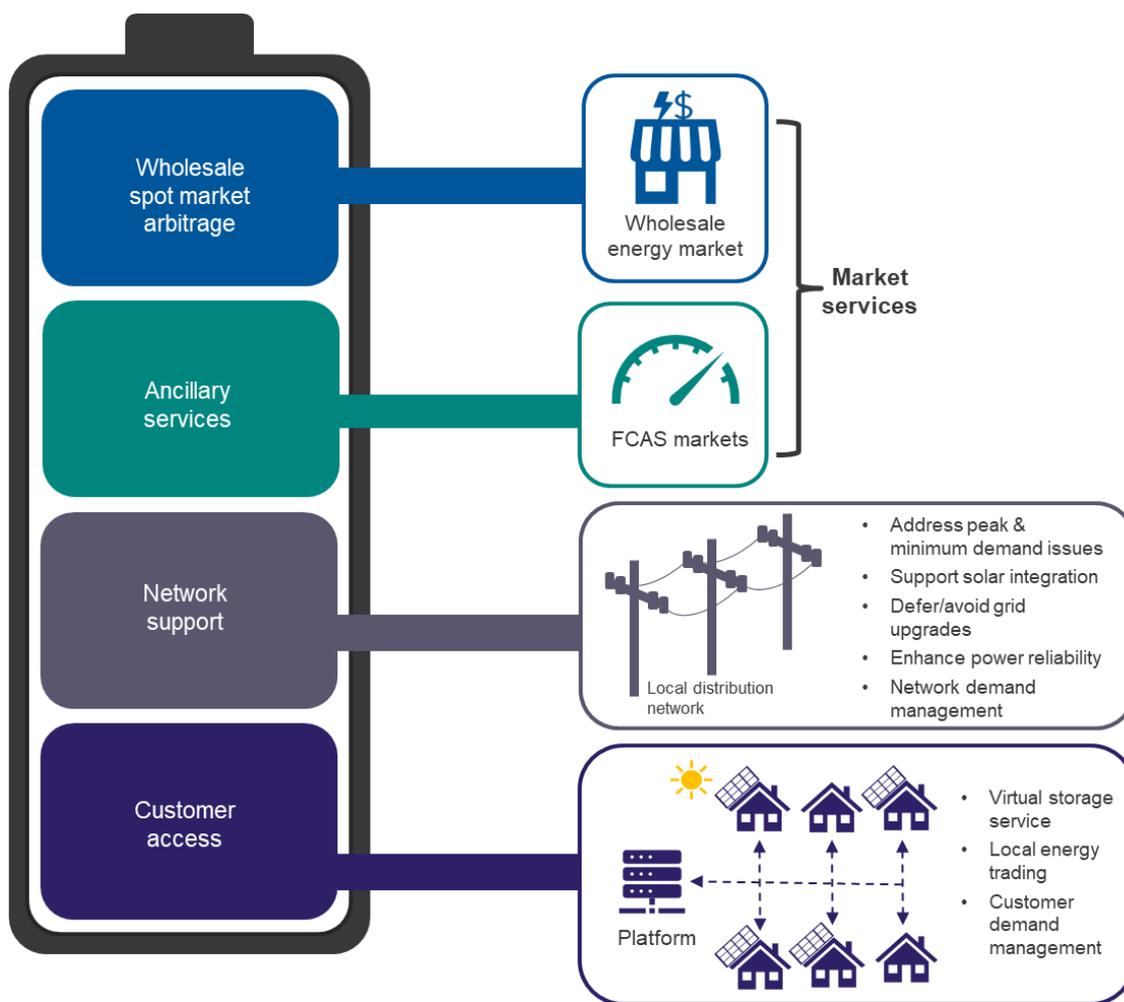


Figure 1 Examples of potential value streams that neighbourhood scale batteries can access. Note not all batteries will access all potential value streams, and how the battery optimises across different value streams will vary based on the operational model and network needs. Source: DELWP.

Neighbourhood scale batteries in the National Electricity Market (NEM)

There are only a few examples of neighbourhood scale batteries currently operating in the NEM, most of which are owned by distribution businesses for the purpose of providing network services. Victorian examples include two 30 kW / 75 kilowatt hour (kWh) pole-mounted batteries installed in constrained parts of United Energy's network in February 2020 as a trial. In May 2020, Jemena installed a 100 kW / 200 kWh battery energy storage system on its low voltage network, as part of a trial supported by the Australian Renewable Energy Agency (ARENA).

There are presently a number of third party-owned neighbourhood scale battery projects under development in the NEM. For example, Enova Community Energy, a community electricity retailer based in Byron Bay, has recently launched its Beehive Project¹ which will feature a 1 MW / 2 megawatt hour (MWh) shared community battery located in the town of Kurri Kurri. The battery will be paired with an online platform, developed by Enosi, which will enable peer-to-peer trading and sharing for participating solar and non-solar households situated anywhere in NSW. The Beehive Project has a knowledge sharing partnership with the University of Newcastle, which will collect and analyse data to capture and share the outcomes of the pilot.

Western Australia, which is not part of the NEM, has several operational neighbourhood scale batteries (see Case Study on following page).

1. <https://www.enovaenergy.com.au/shared-community-battery>

Case study: PowerBanks in WA – an example of a virtual storage service for customers²



Figure 2 Western Power PowerBank battery. Source: Western Power, WA.

Through a partnership between WA's distribution business, Western Power and retailer Synergy, 13 trial community PowerBanks have been established in constrained areas of the network with high solar penetration. The first PowerBank trial commenced in October 2018, with batteries installed in the suburbs of Meadow Springs and Falcon, 70km south of Perth.

In addition to providing network support, these batteries offer a virtual retail storage service for local customers where they can 'bank' their excess solar energy and draw on it in the evenings, helping them to save money and consume more clean energy.

Participating customers with solar pay a fixed daily charge of between \$1.20 and \$1.40 to access a fixed amount of storage capacity that can then be drawn on after 3pm. Power left in the battery is paid out to customers at the Renewable Energy Buyback Scheme (REBS) rate.

Western Power notes that the batteries will help to defer expenditure on new electricity infrastructure, give participants more choice in how they manage their solar energy, and support the network to integrate more solar generated electricity onto the grid.

Questions

1. How can the Neighbourhood Battery Initiative help to ensure a level playing field across different types of proponents and operational models?
2. What support do proponents need to be able to deploy neighbourhood scale batteries and access key value streams?
3. What can the initiative do to build capacity for parties interested in establishing a neighbourhood scale battery, particularly community energy groups?
4. What is the best way to share learnings from this initiative?

2. <https://www.westernpower.com.au/our-energy-evolution/projects-and-trials/powerbank-community-battery-storage/>

Customers and community

Community engagement

Research demonstrates that communities are interested in generating and sharing their renewable energy locally and having more control over their energy future.³ Neighbourhood batteries can play a role in supporting communities to achieve their sustainable energy goals and improve local power system resilience.

It is critical that proponents of neighbourhood scale battery projects, regardless of ownership or operational model, undertake meaningful and ongoing engagement with their local community and involve the community in key decisions from the beginning. This will help to create strong social licence for the project to operate long-term in the community.

Community engagement will be a key consideration in evaluating project proposals through the Neighbourhood Battery Initiative. There are a range of ways communities could benefit from neighbourhood scale battery projects⁴, such as: co-investment, co-ownership or other innovative financing models; regional economic development through local jobs and contracting; innovative products, including virtual storage models or peer-to-peer trading; and investment of returns in local community projects and sponsorships. Depending on the operational model of the battery, the local community may benefit from power quality and reliability improvements and increased solar hosting capacity. It is important that these benefits are communicated effectively to communities, to support understanding of the purpose and value of the battery.

Customer participation in virtual storage models

Some neighbourhood scale battery projects may seek to trial virtual storage services for customers, as well as innovative local energy trading models such as peer-to-peer trading. These models are largely untested in Victoria and trial proposals will need to demonstrate that appropriate consumer protections are in place and that consumers are properly informed about the risks and responsibilities of participation, as well as the costs and benefits that may accrue. Where participating consumers are sharing data, it is critical that appropriate data privacy and security arrangements are in place. Consumers must be informed about how their data will be used and protected, and how they can raise concerns or complaints. Equity impacts, particularly between participants and non-participants, are also a key consideration.

Recruiting participants for trials can be challenging, and proposals will need to demonstrate enough interest from potential participants and/or a credible recruitment strategy for customer participation models.

The participant interface with the battery is also an important consideration to ensure participants can engage effectively with the battery storage model and maximise their value from participation. For example, participants will need enough information to understand how they can shape their energy use to maximise savings from their participation. At a minimum this information could be integrated into their retail electricity bill, but could also be achieved through an app providing more granular information and feedback.

Questions

5. How can the Neighbourhood Battery Initiative ensure that all projects are developed with meaningful engagement with the local community?
6. What are the key consumer protection issues associated with virtual storage models? How can consumers be supported to make informed decisions about their participation in such models? What are the consumer data requirements for participation?
7. What are the most effective strategies to communicate with consumers to support effective engagement with the battery?
8. How can the initiative support customer recruitment into neighbourhood scale battery trials?
9. What do you as a consumer expect from interaction with a neighbourhood scale battery?

3. H. Ransan-Cooper (2020) Stakeholder views on the potential role of community scale storage in Australia, available at <https://arena.gov.au/projects/community-models-for-deploying-and-operating-distributed-energy-resources/>.

4. Victorian Government (2015) Guide to Community-Owned Renewable Energy for Victorians, available at https://www.energy.vic.gov.au/_data/assets/pdf_file/0030/57945/Community-Energy-Projects-Guidelines-Booklet-A4_-WEB.pdf.

Barriers and challenges to deployment of neighbourhood scale batteries

There are a range of financial, technical, logistical and regulatory challenges impacting the development of neighbourhood scale batteries in the NEM. The Neighbourhood Battery Initiative aims to better understand these challenges, support proponents to facilitate trials and inform policy development and regulatory reform.

A significant challenge to the financial viability of neighbourhood scale batteries is that current electricity tariff arrangements are not designed to support two-way electricity flows and localised generation, storage and consumption of electricity.⁵ For example, in the case of a battery operating to store customers' excess solar generation during the day and discharge it in the evening when it is required, current arrangements mean that full network tariffs are levied both when customers export electricity into the battery, and again when it flows back to the customer.

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. One example is 'local use of system' charging arrangements which reduce the network tariff for electricity generated and used locally.

Other key considerations and challenges may include:

- the high capital cost of batteries;
- size and technical equipment requirements for participation in FCAS markets;
- metering & settlement issues;
- recruitment of participants for virtual storage model trials;
- accessing an appropriate location and landholder agreement, and zoning and planning permissions;
- managing contractual relationships with multiple parties, accessing and stacking multiple value streams and optimising the battery's operation to balance provision of different services;
- if required, registration in appropriate market participant categories for provision of market services (e.g., where the proponent is not a retailer and does not have a partnership with one);
- revenue uncertainty, due to difficulty in forecasting market value streams (particularly FCAS);
- for third party battery proponents, identifying and accessing opportunities to provide network support services to distribution businesses as well as navigating grid connection processes; and
- for distribution businesses, accessing the appropriate waivers and/or commercial partnerships to enable the battery to access market value streams for financial viability.

Questions

10. How can the Neighbourhood Battery Initiative facilitate partnerships between third parties and distribution businesses to trial network support arrangements, and identify network locations where neighbourhood scale batteries can deliver value?
11. How can the initiative best support proponents to address these challenges? What interim arrangements are available where solutions require longer-term or regulatory change?
12. What network tariff models could be trialled through the initiative? What are the key considerations associated with trialling innovative tariffs?
13. What are the key technical and operational considerations for neighbourhood scale battery proposals?
14. What role can the Victorian Government play in addressing challenges or barriers faced by neighbourhood scale battery projects?

5. M. Shaw (2020) Operating a community-scale battery: electricity tariffs to maximise customer and network benefits, available at <https://arena.gov.au/projects/community-models-for-deploying-and-operating-distributed-energy-resources/>.

About the Neighbourhood Battery Initiative

The Neighbourhood Battery Initiative has a range of objectives, including to:

- facilitate and provide funding support for pilots, trials and demonstrations of a range of neighbourhood scale battery ownership and operational models, including customer battery access services and innovative local energy trading models;
- address barriers to neighbourhood scale battery deployment in the NEM both in the short term to facilitate trials and through longer-term regulatory reform;
- engage effectively with customers and the broader community to ensure their perspectives are heard and considered as part of trial development;
- understand the impacts of different network tariff arrangements on the viability of customer retail storage models and battery operation; and
- understand the viability and benefit flows for different ownership/operational models and ensure the community benefits of neighbourhood scale batteries are maximised.

The Neighbourhood Battery Initiative funding program aims to support a pipeline of neighbourhood scale 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.

Funding will be open in parallel with this consultation process, and both the current and potential future funding will draw on the lessons learned through this consultation.

The initiative will also include a research and information sharing component to support the future development of neighbourhood scale battery projects.

Questions

15. What are the key research and evaluation questions the Neighbourhood Battery Initiative should be seeking to answer through the trial program?
16. How can the initiative best support the deployment of neighbourhood scale battery projects at all stages of project development?

Does your organisation have a neighbourhood scale battery project under development?

If your organisation has a neighbourhood scale battery project under development and would like to seek funding through the Neighbourhood Battery Initiative, visit www.energy.vic.gov.au/new-energy-technologies for application guidelines and further detail.

If your organisation has a project under development but is not yet ready to apply for funding, we are interested to hear more about your project and support needs. Contact neighbourhood.batteries@delwp.vic.gov.au and we will set up time for a discussion. We would like to hear more about:

- What stage is your project at and when do you expect it to be completed?
- What is the ownership and operational model of the battery? What revenue streams will it access?
- What engagement has the project had with the relevant distribution business?
- Does the battery have a preferred location? If so, what site selection and planning considerations have been undertaken?
- What technology considerations have been undertaken (e.g., battery model, size, specifications)?
- What community engagement activities are planned? To what degree will the local community be involved?
- Does the model involve a customer participation element? If so, how will customers be recruited? How will consumers be protected?
- What key barriers or challenges has your project encountered?
- What type of support does the project require?
- What partnerships and contractual relationships are required for the project?

Summary of consultation questions

1. How can the Neighbourhood Battery Initiative help to ensure a level playing field across different types of proponents and operational models?
2. What support do proponents need to be able to deploy neighbourhood scale batteries and access key value streams?
3. What can the initiative do to build capacity for parties interested in establishing a neighbourhood scale battery, particularly community energy groups?
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14. What role can the Victorian Government play in addressing challenges or barriers faced by neighbourhood scale battery projects?
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