KPMG

Sharing community batteries with customers

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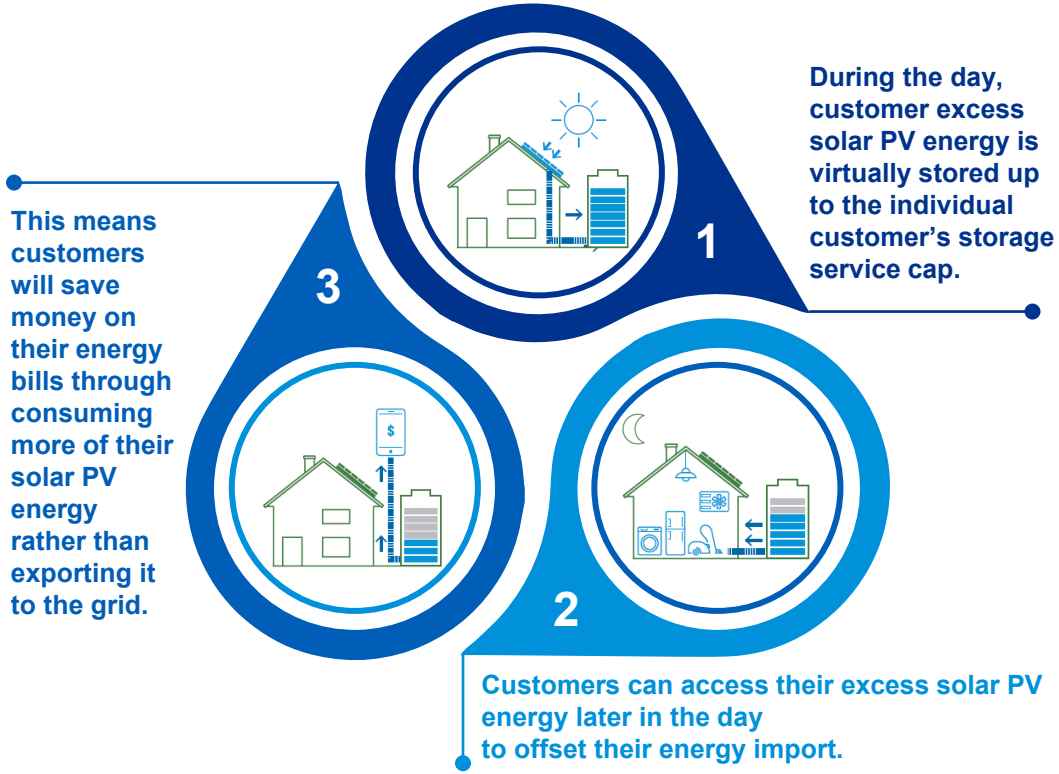
What is the community battery storage service?

A community battery is a relatively new concept in Australia. Ausgrid offers customers a chance to be part of this innovative program. A community battery storage service would allow participating customers with rooftop solar to store their excess solar PV energy up to the service cap, and use that energy later in the day. This would allow customers to capture more value from their solar PV to lower their electricity bills, without investing in home batteries installation. In essence, the customer would access "storage as a service" rather than installing their own device.



Value to customer

- Lower electricity bills through consuming more of their solar PV.
- Avoided risks and costs associated with home installation and maintenance.
- Increased customers access to batteries including renters and those who struggle to afford the cost of a home battery.
- Potential to increase overall levels of solar energy in the electricity system, reducing peak demand and placing downward pressure on electricity costs.

Distribution connected asset

- A community battery is a locally-based shared battery operating on a distribution network 'in front of the meter'.
- There is no direct single connection between a customer premise and the community battery. Accordingly, the storage service is essentially a virtual service.
- Retailers will continue providing customers with their remaining supply balance which is not covered by the storage service.
- The storage service is measured at, and provided to, the customer connection point.

What is the problem that need to be solved?

Currently, the community battery storage service is not a feature of the electricity market. 100 per cent of customer electricity imports and exports are settled by their retailer. The community battery supply would need to be integrated with the existing market settlement and billing processes. Ausgrid has engaged KPMG to consider this issue.

All residential customers in the National Electricity Market have one meter, one retailer and one bill. Given this one-to-one relationship between customer and retailer, the challenge is how to enable commercial models to allow customers to store their energy in shared, distribution connected resources, for re-use later in the day.

— From the technical perspective, the challenge is how to distinguish between:

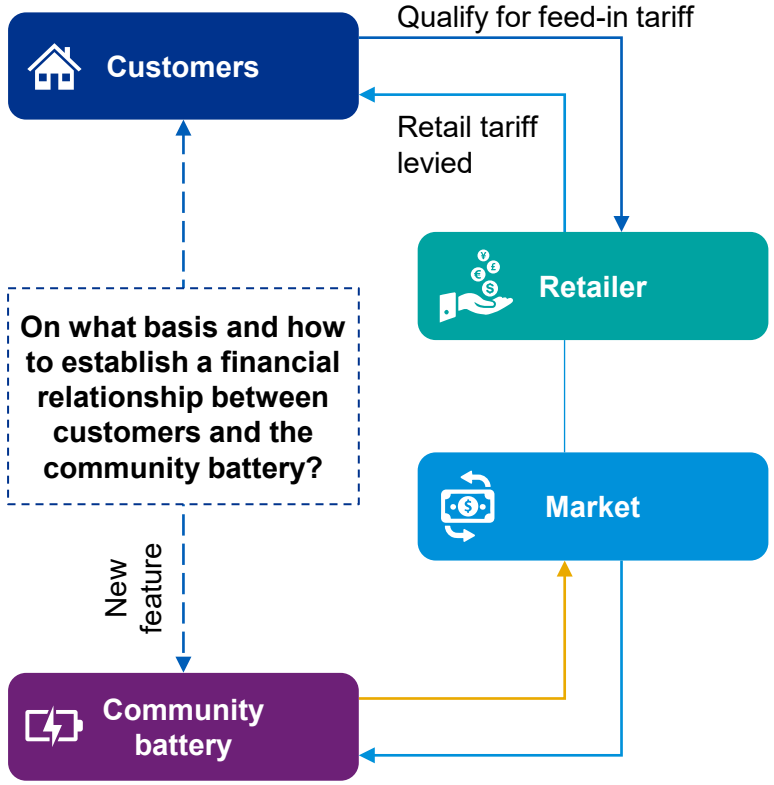
- customer flows to and from the shared battery; and
- customer exports and imports to/from the market through its retailer

and how to account for this in billing and settlement systems – and to do so in a way which promotes a seamless service for customers.

— Resolving this problem is critical to enabling a customer storage service as it allows for the full benefits to be captured by customers. When using its stored energy in the battery, the customer would avoid the full retailer tariff and likewise when the customer is transferring excess solar PV to the battery it does not receive the feed in tariff given that the customer will use that energy over the day.

This presents an opportunity to unlock other different community models for deploying and operating distributed energy resources.

The key question is *how to allocate* the customer's energy consumption and exports to the battery, or to the market (via the customer's retailer).



What is the proposed solution?

The preferred solution is a method that allocates customer flows between the community battery and retailer based on a set of agreed rules. The outcome of this process would be two load profiles for participating customers.

How would the rule book work?

— The rule book would determine what flows to and from the community battery and what remains for a retailer to supply to, or buy from, the customer.
— The allocation of flows would be based on the following assumptions:
  - All customer exports (up to a service limit) would be assumed to go to the community battery.
  - All customer imports firstly would be drawn from the community battery, and then supplied by the market.

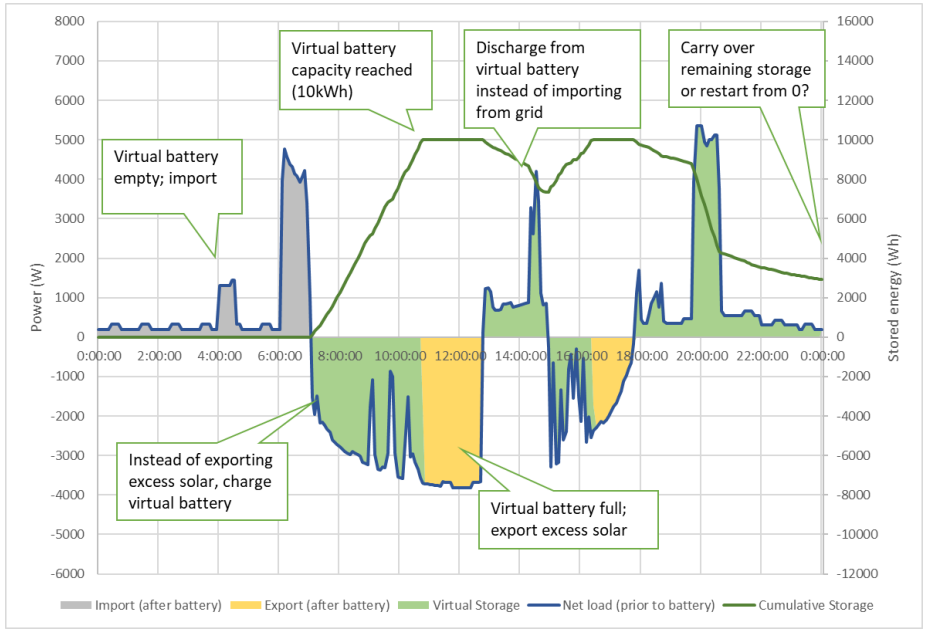
Why the rule book is an efficient solution?

— The rule book is an efficient solution because:
  - while enabling the storage service, there would be no physical changes for customers; and
  - will set the right incentives and provide an accurate solution to support financial settlements.

How to implement the rule book allocation?

— KPMG recommends off-market implementation, with a commercial arrangement to trial the rule book. A trial:
  - provides flexibility to test different variations at lower cost,
  - paves the way to local markets, and
  - minimises constraints on battery operation.
— Stakeholders did not support the rule book implementation through changes to market operator systems because of complexity, high costs and required constraints on the battery operation.

Figure: Community battery customer usage example



How can Ausgrid's current and future trials help develop the rule book?

— Test different allocation rules to develop and refine the rule book
— Understanding of how customers use the battery will inform the rule book
— Ensure the rule book complements the customer service offerings

What would the solution mean for different parties?

The storage service and recommended solution are designed to minimise additional costs or impacts on participating customers. Under the proposed commercial model, retailers would decide whether to participate in the scheme – and consumer choice of retailers would be limited to participating retailers. No significant impacts were identified on battery use cases.

Participating customers

There would be no impact on customers in terms of their solar or meter installation, or consumption patterns requirements.

There may be an impact on the customer's choice of retailers, which will be limited by the number of retailers participating in the scheme. The degree of impact on will depend on how many retailers participate, which is determined in turn by any incentives for retailers to participate.

There may need to be a greater sharing of the value between participating customers and retailers in order to create an attractive commercial proposition for the service.

Battery operation

The community battery operator would have operational flexibility to maximise revenue from market services. This will help lower costs for customers.

Retailers

Implementing the rule book via a commercial agreement may require retailers to be incentivised to participate in the community battery scheme.

This is due to the impacts on retailers, which are:

— continued exposure to the customer gross load profile over the day for settlement (price risk);
— less volumes sold to customer at the different times of the day; and
— potential avoidance of feed-in-tariff payments to participating customers (similar to other options).

It is likely that under the proposed commercial arrangements, retailers would no longer be liable for feed-in-tariff for local flows from the consumer to the battery, which would be an advantage to the retailer.

A regulated off-market solution would impact more retailers. This would need to be considered when assessing any proposed regulatory scheme.

Centralised market operation

No identified impact on wholesale market systems.

What are the implementation considerations?

After the trial stage, the enduring solution to enshrine a community battery storage services as a feature of the electricity market is likely to require a degree of regulatory change to facilitate the service. Some of the key implementation issues to be considered are outlined below.

Issues for consideration

Retail regulation

Potential barriers include:
- billing regulation
- regulated pricing
- feed-in-tariff regulation (where applicable)

Potential enablers include:
- regulated service offering

Equity issues include:
- impact on concession customers
- hardship customers

Implementation issues might vary by jurisdiction

Data access regime

Potential barriers include:
- existing data regulation in the NEM

Potential enablers include:
- rights to access metering data for battery service operators
- regulating minimum data specifications to support the rule book (supported by existing metering infrastructure)
- changes to existing data streams that support network tariffs

Network regulation and charges

Potential barriers include:
- restrictions under the NER regarding setting of network tariffs for local flows
- ring-fencing may add transaction costs to distribution networks continuing to facilitate this service

A rule change may be required to address these regulatory issues

The nature and extent of reforms required will depend on a range of factors including:

1. Scale of market
2. Bilateral or common exchange arrangement
3. Which customers are eligible to participate and what is driving customer behaviour
4. Commercial viability/feasibility for retailers
5. Jurisdictional arrangements

Eamonn Corrigan
Principal Director
+61 2 9335 8555
ecorrigan1@kpmg.com.au

Tess Fitzgerald
Director
+61 3 9838 4656
tfitzgerald3@kpmg.com.au

KPMG.com.au

KPMG scope of work

KPMG was engaged to articulate and assess the potential options to measuring and settling a community storage service between customers and a battery (and their retailer/battery operator), and to recommend an approach which could underpin a future community storage service.

The report presents a recommended solution and summarises a suggested pathway forward for testing and implementation. This includes analysis on what elements to the solution (or combination of elements) could achieve the objectives of the project, and areas of the existing regulatory arrangements that may need to change to implement the recommended options.

The metering and settlement arrangements for community batteries is only one of a number of areas crucial to the concept. This work will inform future projects initiated by Ausgrid that seek to address other priority areas such as customer protections and local use of system network tariffs.