



129 Maitland St
Narrabri NSW 2390
Email: hello@geni.energy
Ph: 0408 994 565
www.geni.energy

Geni.Energy Submission to NSW Government's Review of the Consumer Energy Strategy

NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW)
Via email: energy.consumerpolicy@dpie.nsw.gov.au

To Whom It May Concern,

Thank you for the opportunity to provide feedback to the NSW government's consumer energy strategy consultation.

Geni.Energy is pleased to support the development of this strategy to help shift the population towards full electrification, powered by renewables, creating new local employment, business and investment benefits.

We recommend that the Consumer Energy Strategy be created as a part of an overall NSW Gas Substitution Roadmap as promised prior to the election, that we hope is delivered this year.

As an overall comment we would also suggest that "consumer energy strategy" is rapidly becoming an **outdated** term due to the massive and growing proliferation of householders moving to "generators" not just consumers. Perhaps consideration of "Prosumer Energy Strategy" or "Grid Member Energy Strategy" or other terminology might be apt.

Our submission provides four key responses, three general points at the beginning and then a deep dive on the Community Batteries section as Geni.Energy brings a uniquely intricate and practical understanding of this topic.

1. Incentives for Electrification in Rural Areas Needs Better Servicing

Geni.Energy has been educating the community in the full electrification of homes, businesses and farms for the last three years. Electrification, powered by renewables, can create huge energy efficiency outcomes, creating financial savings and emissions savings.

Whilst our region does not have piped gas for household heating the massive price rise in the wholesale gas market has had a flow on effect to household electricity prices and has also caused the reduction of retail energy offerings (essentially sending >1 energy retailer into receivership), leading to less consumer choice.

NSW has been much slower than the ACT and Victoria to offer residential customers decent incentives to move to electrification. Geni.Energy has spent considerable time trying to find ways to deliver the existing programs to our rural area to no avail. Ultimately the incentives from the Peak Demand Reduction Scheme and energy efficiency schemes, when it comes down to the practical delivery, the costs outweigh the incentives.

I have raised with Minister Sharpe (via local member Roy Butler) the issue that all of the Accredited Service Providers (ASP) are city based. Whilst Minister Sharpe reported to me that there have been 466 residential upgrades in Barwon since 2021, **this is a take up of 0.8% of the residential population.** It bears considering that the Barwon electoral division covers 44% of the state's landmass so people can be located over 1,200 kilometres from Sydney. We are not being properly serviced by these programs.

2. Establish Local Renewable Energy Hubs.

As recommended by RE Alliance, Geni.Energy strongly supports the urgent establishment of Local Energy Hubs. As purported by RE Alliance "These would be independent and locally-run Energy Hubs to help rural and regional Australians with all aspects of the switch to renewables.

Hubs would be physical drop-in centres, staffed by well-networked, respected local people, who are independent from industry. Their role would be to demystify changes in our energy system, bolster local engagement in renewable energy projects, and independently facilitate constructive interactions between energy developers and the community.

The hubs deliver programs that are sensitive to local context, including supporting agriculture to develop electrification strategies, supporting community-led energy projects and improving energy literacy to help households and businesses reduce their energy bills.

Local energy hubs would ensure state and federal policy frameworks are made tangible for community groups and individuals at the local level, and help communities identify opportunities to leverage development to pursue their own visions for the future of their regions."

This model has been found to be highly effective in the UK, where taking a 'place-based' approach to climate actions has created outstanding results. Research has "**found that reaching carbon reduction targets this way (using a local place-based approach) could deliver double the socio-economic benefits, at a third of the cost, compared with a national 'one size fits all' approach.**"

3. Utilising the Consumer Energy Strategy to Help Create New Quality job opportunities.

In the northwest region, we face the inevitable closing of coal mines in the coming years. An orderly, planned and properly resourced plan is crucial to the smooth transition of coal workers to the new industries evolving, including through residential electrification upgrades. These jobs must be localised in order to keep our families local, solving for Sydney will not solve for our region.

Government must closely collaborate with locally based industry and unions to deliver local training programs; implement robust accreditation frameworks; improve labour standards; increase the number of apprentices and women in the workforce; and ensure monitoring, compliance and enforcement.

Currently local trainees must attend TAFE in Tamworth to gain their accreditation. At a practical level this means working parents often have to get up at 5am in order to take their child to Tamworth and be able to be back in time for work - because there is also a total lack of public transport. It is an impractical solution that is hampering our region's opportunity to participate in the transition.

4. Consumer Energy Strategy for Households - Community Batteries Section

Narrabri Community Battery Trial Project - Background

The federal government has committed to funding [400 community batteries](#) with the federal DEECCW awarding 51 in round one in 2023, 16 of which were provided to NSW, including one secured by Geni.Energy to be built at [Narrabri](#) - The Narrabri Community Battery Trial Project. The remainder of the 349 community batteries are expected to be announced soon by ARENA.

Geni.Energy is one of only a handful of projects funded under the community battery funding that will be owned and operated by a not-for-profit organisation based in the community.

It is expected the battery will be installed by mid 2024 and will provide storage for excess day time solar generation, that can be used in the evening when there is the greatest demand on the grid.

Narrabri Shire Council is now planning the ***Narrabri Renewable Energy Hub*** in the centre of Narrabri which will feature the Narrabri community battery, along with EV charging stations, a solar covered car park and other community facilities.

Narrabri LGA is equal first in the Essential Energy network for its level of rooftop solar. It has 44% PV (photovoltaic) penetration, which is why we advocated in 2022 that we were an ideal location for a community battery.

Essential Energy Network - Background (all of the following data is from this Essential Energy source document)

Essential Energy predicts rooftop solar in its network will double by 2029, from 1,900GWh/year in 2022 to 4,000GWh/year in 2029. It has identified that "efficient management of power flows from distributed generation is the key electrical network performance focus for 2024-2029 period". Unfortunately for consumers, this usually leads to curtailment of their rooftop PV (i.e. inverters are ramped down to stop electricity export to the grid from homes).

In 2022 48GWh per year was curtailed (which was about 2.5% of total generation) in the Essential Energy network. By 2029, depending on levels of take up of batteries, predictions

of curtailment range from 90GWh (2.2% of 4,000GWh), through to 220GWh (or 5.5% of total generation curtailed). By 2037 the high prediction scenario sees 12% or 400GWh curtailed. This is essentially, completely wasted electricity.

Local area networks will see widening voltage swings and widening peak demand and peak generation. Unique to small rural substations, voltage breaches are seen when average consumer PV is only 2.4kW of solar per solar customer (compared with 6.3kW in urban areas).

The Essential Energy network is highly unique in that 65% of the network is “small rural” which is highly susceptible to voltage breaches (even though this is only 16% of its customers).

27% of the Essential Energy network has solar and the network already has huge voltage constraints. 83% of over-voltage events happened during solar peak generation hours of 10am to 4pm. Essential Energy has modelled 8 interventions to help manage overvoltage causing curtailment and one of these is the use of community batteries.

So it is clear, that community batteries solve a real and growing problem in our grid, especially in rural areas.

Essential Energy’s modelling found that installing a community battery can reduce the average demand profile in the middle of the day from -55kW to -5kW and reduce average demand in the evening from 100kW to 50kW.

4.2.1.9 Community BESS

As the assessment was limited to just the solar capacity enablement benefit of community BESS to LV network sections, the dispatch of the BESS was pre-scheduled for the BESS to charge during the peak solar generation windows and discharge during the evening peak.

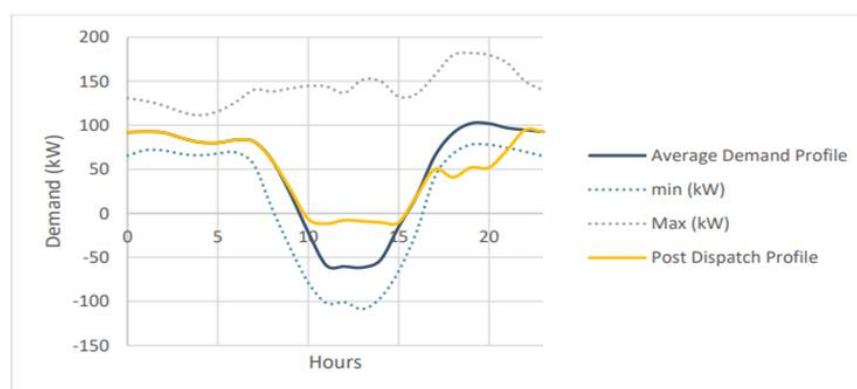


Figure 41 – Defined dispatch profile for assessment of Community BESS solar enablement benefit

11. A. What are the key barriers to rolling out community batteries?

The barriers are many and varied.....

Financial

- Extra costs of ancillary components such as; metering boards and boxes to contain them, flood proof plinth for mounting, software and hardware for energy management and freight to deliver batteries, reduce viability
- Even though the cost of batteries is rapidly decreasing, it is difficult to systemise installs and as every site has unique challenges that add cost and time
- It has been difficult to realistically model the revenue returns. Modelling can only be done based on historical data of the electricity market. In 2021/2022 the market was extraordinarily volatile, so it can be hard to know if this is what the future will look like. We undertook a 2 year university research project valued at over \$50,000 for our initial modelling which lacked real world application.
- It is common that community batteries' value stack substantially relies on the FCAS market, however the future of this market is very difficult to predict. FCAS revenues could drastically increase or drastically decrease, depending how this massive upheaval to the market pans out
- There is such a disparity and disconnect between the wholesale and retail electricity markets. The wholesale market reacts almost instantly to the demand and supply activities at all times, whilst retail customers must have a set price. This makes it very difficult for small business models, such as community batteries to participate in the retail market.
- Direct feedback from retailers that we have asked to provide a retail deal to locals, utilising the battery have declined for two reasons: One is that the number of retail customers we are talking about is so small (20-50) and the second is that the margin for retailers on solar customers is so slim due to the wholesale pricing that is it not worth their while.
- Ultimately incentives and disincentives for behaviour should be passed through to customers to empower them to act in a way that supports the grid and the transition, however this disconnect between wholesale and retail and the slow response time for tariffs makes this very difficult.
- For community batteries in the Essential Energy network, new tariffs currently being assessed should create this incentivised environment that allows community batteries to support the grid. But this will not be proven out until later this year.

Regulatory

- Time delays in the development application process are significant. We started negotiating our Development Application with Council in June 2023, 8 months ago and it is still under consideration
- Some of the NEM rules seem prohibitive, such as not being able to cross across land boundaries with electricity. This is limiting to some innovative response to issues and it doesn't seem to be logical from the community's perspective
- Live testing for FCAS market must now be done in-situ, rather than on a technology whilst it is still in the factory. This creates an extra impost of time and cost to have to have these specialists in the field (often in rural areas) for some time to undertake this FCAS compliance step. It would be more cost effective and simpler if this testing and compliance could be based on the technology, not the site.
- The State Environmental Planning Policy (Transport and Infrastructure) 2021 (the ISEPP) currently lacks accurate characterisation for battery-only projects, particularly smaller scale proposals such as community batteries.

ISEPP Detail:

The below is my understanding and experience only, please seek professional advice.

Whilst section 2.35 lists a Definition of small-scale battery system, it is then only mentioned again in 2.41 Exempt Developments in Note (5) (e) where it describes small-scale batteries as batteries under 20kWh.

Most of the federally funded community batteries are 100kWh or more (up to 1,000kWh I think) so this is not a relevant definition. Batteries of this scale are therefore not listed as Exempt Developments, Permissible Developments nor Developments Requiring Consent.

Only battery projects that have a generation component (that is, a solar and battery project together behind the meter) seem to have a clear direction in the SEPP1. This makes it difficult to secure Development Approvals for battery-only projects, of which community batteries usually are.

In our situation, in partnership with Narrabri Shire Council, we developed a project that included a generation component of a solar carpark but this was a time consuming workaround simply because the SEPP1 did not have a proper characterisation of a community battery. However this will make for a much more user friendly and exciting project!

Legal

- Bespoke legal agreements have been required, meaning they needed to be assessed by legal experts adding cost and time. We have now been negotiating our Services Agreement for ten months (starting in May 2023) and it is not yet completed. Fortunately this work was undertaken pro bono by our lawyers undoubtedly saving us at least \$20,000 in costs.
- It is likely that as more of these project roll out, these legal agreements will become more standardised but as new and different business models emerge, bespoke agreements are needed

Technical

- Distribution network processes for knowing where a good connection is likely to be has been difficult. Whilst constraints mapping is now available from Essential Energy, it is still not well known. Furthermore, this mapping identifying constrained transformers and substations is still not all that you need to know to ensure you have a successful connection agreement process. The opportunities for negotiation during this process appear to be limited so you could take all the steps, time and expenses of submitting a connection application only to have it rejected. The constraints mapping still lacks real granularity and can be incorrect when getting down to a transformer level - for example one substation of interest in our community is mapped as being "Not Constrained" and yet the details list the Recorded kVA as 0 and the Estimated Peak kVA of minus 2000

- In the Essential Energy network the penetration of Smart Meters is as low as 30% which makes detailed understanding of localised energy flows opaque and difficult
- Ideally community batteries should be to support a suburb or road that has poor connectivity, providing back up in black outs. This form of islanding is not commonly available and should be explored more.
- Network tariffs are playing catch up to drive community behaviour, due to 5 year turnaround time for new tariffs to be approved. Incentivisation of customer behaviour suffers lag time of five years

Physical

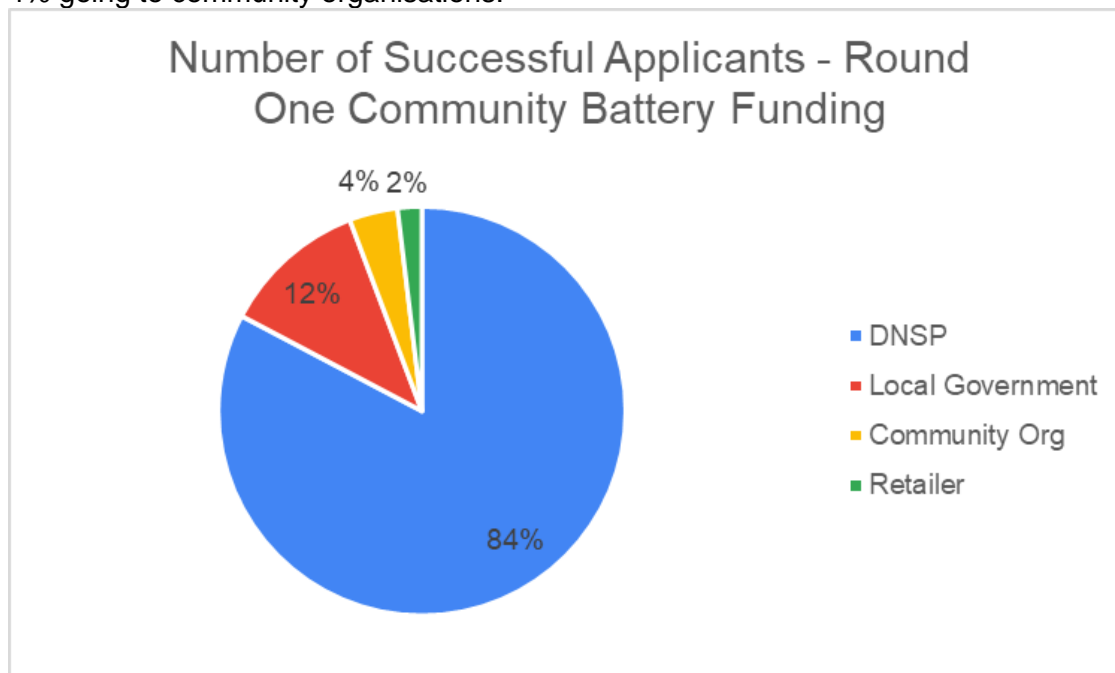
- In urban areas there is a large constraint around suitable land area/sites and more streamlined shaped batteries are being discussed to solve this
- Noise in urban areas is a consideration as well, requiring noise reducing walls etc which also add cost
- Insurance is almost impossible to secure at the moment with community batteries viewed as high risk and a specialty area

11.B. Which proponents are best placed to provide community batteries and why?

I believe this is an important part of the question. Consumers have always taken electricity (and the equitable provision of it for a fair price) for granted. What we are now asking of the majority of the nation is to take some responsibility for climate impacts and therefore the urgent need to transition to renewable energy as our primary source of energy, and thus the need for batteries. This is a massive hurdle for many people and I believe the only way they can begin to accept this is by being engaged and getting benefits from this change. One way to do that, is to participate in community energy projects, such as community batteries.

Current Proponents

Of the first round of the federal DCCEEW grants there were 52 community batteries awarded, with 82% going to DNSPs, 12% to local governments, 2% to an energy retailer and 4% going to community organisations.





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A diversity of ownership is important to assist in resilience and in ongoing innovation, not to mention as a way to engage community in the need for community batteries. We see our community battery as a sandbox for the practical application of storage for businesses and farms. Participation in the project will lead to innovative ways to use the technology and innovative flow-on technologies. If community is not engaged directly in these projects, it is difficult for them to create new solutions that will benefit them.

Community Battery Benefits Sought

The premise of the federal funding was “community batteries for household solar” with the stated benefits being:

- lower electricity bills
- support more households to install rooftop solar
- allow households who cannot install solar panels to enjoy renewable energy
- reduce pressure on the electricity grid
- absorb excess energy that might cause voltage spikes in the electricity grid
- lower emissions.

Whilst community batteries achieve these benefits at a conceptual level, the reality is that creating direct benefits for householders’ bills is constrained by the NEM rules and by energy retailers. Seeing this list of benefits, locals have assumed the community battery project will deliver a better retail arrangement for them, an increase in Feed-In-Tariff and decrease in cost per kWh.

Our community listed the benefits that it sought from the community battery when it was first announced:

THE BENEFITS OF

the Narrabri Community Battery

DIRECT FROM LOCALS (V2)

- 1 IMPROVE ACCESS TO BATTERIES AT LOWER COST (THAN HOME BATTERY)
- 2 TO CREATE INDEPENDENCE FROM ENERGY RETAIL COMPANIES
- 3 LEARN MORE ABOUT RENEWABLES & STORAGE
- 4 INCREASE RELIABILITY OF RENEWABLES (BY PROVIDING STORAGE)
- 5 TO PROVIDE CHEAPER POWER AT NIGHT TIME
- 6 BUILD COMMUNITY "FEEL" AND CONNECTEDNESS
- 7 TO INCREASE FEED-IN-TARIFF OR REDUCE F.I.T. FEES (NOW & FUTURE)
- 8 BUILD RESILIENCE (PROVIDING ELECTRICITY DURING OUTAGES/EMERGENCY)
- 9 PARTICIPATE IN THE TRANSITION TO GREEN ENERGY (TO HELP CLIMATE)
- 10 TO ALLOW THE SHARING OF EXCESS ENERGY & BETTER UTILISE IT, POSSIBLY LEADING TO NEW INDUSTRIES
- 11 BETTER UTILISE OUR EXISTING ROOFTOP SOLAR
- 12 MAKE US MONEY AS INVESTORS

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As can be seen, it was seen as a panacea for a lot of issues. It is interesting to note that community saw community batteries as another way to learn about residential batteries as well.

Consistent anecdotal feedback has been that people want to see a return to the days of 60c feed-in-tariff. They frequently mention a reducing feed-in-tariff as their main complaint with the solar sector.

So providing a retail arrangement for locals became a high priority for us and we tried to find a solution in many ways and met with a number of energy retailers and have now come to the conclusion that this is not possible. The model we are now working on is that the community battery will access the wholesale and FCAS markets and not offer a retail offering.

For everyday people to understand this, they need to understand that the electricity market is that, a market, like a share market with distortions between the wholesale price and the retail price.

The irony is that the only way they could hope to understand this is by being involved in a local community battery project!

The benefits to community then become about engagement and education, the artwork on the battery and feel-good connection and a grant program from the profits.

In our case, the community battery will generate a small profit (hopefully) which will fund further local projects. If a community energy group was not the proponent, this would be a lost opportunity for a community to fund other projects.

As a community energy group that is highly accessible in the community we also have access to direct feedback about the project and its solutions, which can be used to further refine the project.

A great benefit of the scale of community batteries is that they can utilise the existing LV network. This means no new transmission lines are required, reducing the community upheaval and landholder opposition.

However, empowering community energy groups to undertake community batteries is a slower solution due to the lack of resources and specialised skills that these groups face. But if network providers are the only ones tasked with the job of community batteries it could be argued that the direct community benefits will be decreased. You could also envisage that if the sole role of the community battery is to provide network support and decrease constraints, then it could be viewed that the only beneficiaries are the networks and therefore they should fund it, rather than public funding.

Demand For Community Energy

There is a demand within the Narrabri and northwest community for community energy projects. A survey we undertook in 2021 with 150 respondents found that:

- 73% would (agreed and strongly agreed) opt in to join a community energy project
- 91% agreed and strongly agreed that they liked the idea of a community managing its own energy
- 91% thought this would help keep money in the region
- 64% thought it could help strengthen our local First Nations community and
- 75% thought community energy projects were a good way to have an impact on global warming.

Assessment of Possible Proponents

Networks do have better access to insurance, specialised skills for implementation and management and access to capital to help projects be successful. Below is a table that compares the key issues with the likely proponents and how each deliver. Please note that this is a broad generalisation, plagued by a short timeframe and small resources!

| Key Issues | Local Govt | Energy Retailers | Community Orgs | Network Providers |
|--|------------|------------------|----------------|-------------------|
| Insurance | ✓ | | | ✓ |
| Physical Maintenance | ✓ | | | ✓ |
| Access to finance | ✓ | ✓ | | ✓ |
| Community engagement | ✓ | ✓ | ✓ | ✓ |
| Community benefit | ✓ | | ✓ | ✓* |
| Direct community feedback | ✓ | | ✓ | |
| Profits returned directly to community | ✓ | | ✓ | |
| Planning Development | ✓ | | | ✓ |
| Direct Opportunities for innovation | | ✓ | ✓ | |
| Project Management capability | ✓ | ✓ | ✓ | ✓ |
| Energy capability and knowledge | | | ✓** | ✓ |

* Essential Energy is unique in that it is not a for-profit DNSP, unlike the other network providers

** doing this project is building our energy capability and knowledge

Potentially, the best solution could be hybrid models. Community energy groups could sort the technical solutions, engage and educate the community and operate the project, driving innovative solutions and putting profits back into local projects. Essential Energy or Local Governments could administer the funding, and help identify, develop and manage the site and the hard infrastructure. In this way potentially, community batteries could be scaled through a network.

Both Yarra Energy Foundation and Net Zero Noosa use models like this I believe. Hepburn Wind is a unique community group in that it has vast energy sector expertise, access to finance, insurance and the physical infrastructure elements as it is an already functioning wind farm.

11.C. Are the roles and responsibilities to supply community batteries clear? If not, how could they be improved?

NA

11.D. What type of information do consumers need about community batteries to access them?

There are a growing number of resources available to consumers about community batteries. In particular is a very thorough resource from ANU's Neighbourhood Battery Knowledge Hub (<https://bsgip.com/neighbourhood-battery-knowledge-hub/>). There is a monthly network meeting where the majority of community battery proponents gather to share information.

In correspondence from Min Penny Sharpe (MD23/5725) I understand that the Department of Energy and Climate Change will also be developing a knowledge sharing hub that Geni. Energy will contribute to. We are also gathering our own information to share with others as part of our funded project.

Consumers, when discussing community batteries instantly jump to the individualised benefits they can access which leads to an incorrect expectation for what community batteries do. Consumers need to understand that the electricity market is a market that is highly regulated by a range of rules and that the current transition is the most extensive change to a system that we have ever seen.

11. E. What is the role for government in relation to community batteries?

Government should not use community batteries as a panacea to solve all problems. They should be billed as a tool to help communities understand the role of batteries in the grid and to understand the importance of the transition. For this reason, proponents closely linked to the community are crucial and resources to support these proponents to work with the community is crucial. All new energy transition projects should include a portion of funds to educate and engage the community and they should request the ways that localised benefits will be created.

Provision of funding for community batteries still seems necessary in order for community batteries to stack up. Government could also support local community energy hubs which could facilitate local community battery projects, it is important to resource them for this role. It is a role to educate community about the need for transition and the role of storage in the grid.

Government could assist with the provision of suitable insurance products for community batteries and also help with decommissioning at end of life, removing these cost

burdens. There needs to be further round table discussions with retailers to identify ways to make localised retail arrangements with community batteries available, appropriate and provide a return for the community energy groups operating them.

Government can make the changes to the SEPPI to allow for smoother DA processes. Government could advocate for NEM rule changes and for FACS testing to be at the factory (see details above).

11. F. How can community battery value stacks be better unlocked?

The challenge with community batteries is that the asset base is decreasing in value and is expected to have a ten year lifespan. If you consider the capital cost as a sunk cost, we model about a 3% Return On Asset. So provision of funding for the capital cost becomes crucial.

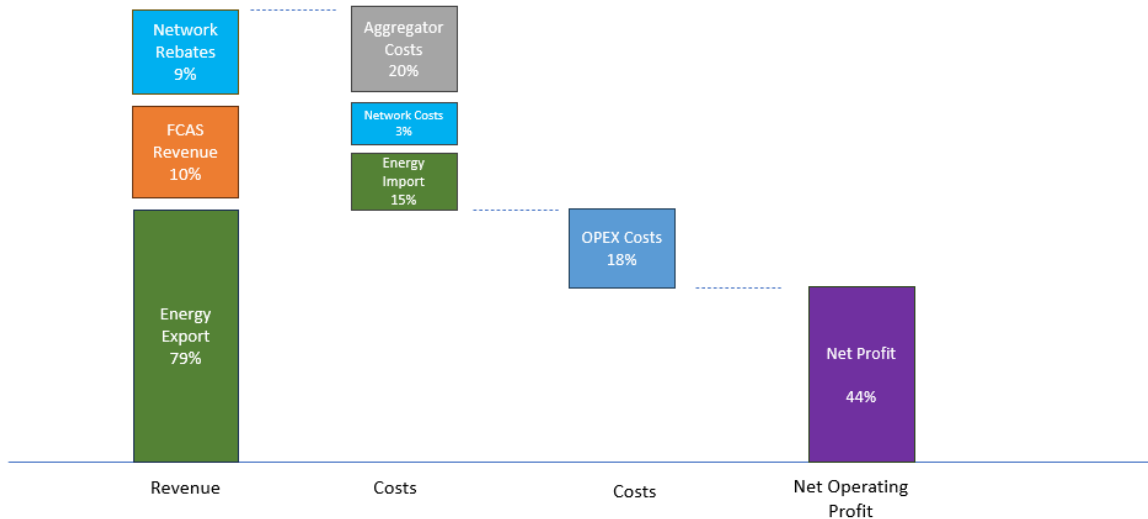
The value stack that we have modelled creates about 10% of revenue from FCAS, about 9% of revenue from rebates from networks (based on proposed new tariffs, yet to be approved) and 79% generated from the sale of energy into the wholesale market.

The costs are made up of Network costs, around 3% of revenue, the cost of buying the energy from the wholesale market, about 15% of revenue and Aggregator costs of 20% of revenue.

Operating costs are still very much unknown, with some assumptions being made, particularly around the cost of insurance. Better revenues could be secured if cheaper insurance was available.

Modelling shows a small annual profit from the Narrabri Community Battery Trial Project.

100kW/500kWh - Revenue Portion



More work needs to be undertaken to identify improvements to the value stack. The solution could come from appropriate retail arrangements for local retail deals that engage with the community battery.

Thank you for the opportunity to provide feedback and i look forward to further discussions on this important topic.

Regards

Sally Hunter
Managing Director, Geni.Energy