Ref: [Reference]

5 February 2019

Sherine Al Shallah
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Ms Al Shallah

EMO0037 – Essential Energy submission on the draft report – Review of the regulatory frameworks for stand-alone power systems

Thank you for the opportunity to provide a submission to the Australian Energy Market Commission's (AEMC or Commission) draft report published on 18 December as part of the Review of the regulatory frameworks for stand-alone power systems (the review).

Essential Energy welcomes the Commission's position in the draft report that distribution network service providers (DNSPs) have a vital role to play in the transition of customers to off-grid supply and that stand-alone power systems (SAPS) and microgrids represent a significant opportunity to reduce network costs.

Essential Energy agrees with the principles for SAPS provision as outlined in the draft report. This includes the standards and consumer protections that consumers who are transitioned to off-grid supply by a DNSP should expect, the consumer consent provisions and the proposed arrangements of the inclusion of SAPS investments in the current framework for network planning and investment.

However, further clarity is needed on the service delivery model or models that will be used to supply SAPS customers with their energy needs. We note that the Commission has outlined two potential models for SAPS service delivery in the draft report. However, Essential Energy considers that there are a number of alternative options for the service delivery model that merit further consideration. Two possible alternatives are outlined in our submission which is attached to this letter.

A service delivery model for SAPS should recognise that supplying energy to customers via distributed generation is a different paradigm to the delivery of energy to customers via the traditional wholesale market. Parties face different costs and risks in a SAPS context and this necessitates a change in how energy services are delivered to customers. A service delivery model that reflects the costs of SAPS energy provision also has the potential to reduce costs and therefore may be the most efficient outcome for all consumers. We encourage the AEMC to undertake further consultation with industry on the options for service delivery.

Yours sincerely

Chantelle Bramley
General Manager, Strategy, Regulation and Transformation

Essential Energy submission to the draft report

General comments

Essential Energy is supportive of many elements of the Commission position, as outlined in the draft report.

The recognition that DNSPs have a role to play in the provision of SAPS to high cost-to-serve customers is welcome. We support the proposed changes to the regulatory framework to allow DNSPs to provide SAPS as a regulated service.

Essential Energy also agrees with the general principle that SAPS customers should expect the same reliability standards as grid-connected customers. This would be achieved if the definition of distribution network is changed to include the provision of energy to a customer via a SAPS.

As SAPS customers would be subject the same reliability standards as grid-supplied customers the Commission's draft position that customer consent is not required is appropriate. Essential Energy recognises the importance of customer engagement and therefore agrees with the Commission's position that DNSPs should publish a customer engagement strategy in relation to the transition to SAPS.

Essential Energy agrees that the RIT-D should not be required for SAPS projects that fall under the RIT-D threshold. The proposed minimum project evaluation requirements should be designed to allow for the DNSP to provide SAPS solutions in a wide range of circumstances. The process should be sufficiently flexible so that it is fit-for-purpose relative to the size and scale of the potential solution.

The jurisdictional opt-in provisions proposed in the draft report seem reasonable. Allowing jurisdictions to opt-in to the national framework gives those jurisdictions time to amend their instruments in anticipation of the SAPS framework coming into effect.

Essential Energy agrees that the current process for service classification can accommodate SAPS supply. However, further clarity is needed on the service delivery model to determine how the services associated with SAPS provision would be treated under the current regulatory framework. The issue of service delivery models for SAPS is dealt with in more detail below.

Finally, Essential Energy supports the AEMC's draft position regarding asset transfers and stranded assets, noting that AER oversight of the stranded asset process will provide some level of consistency and efficiency. It is important that the framework for the transition to third-party SAPS includes commercial arrangements and compensation for efficiency losses for DNSPs. Essential Energy also supports that third-parties should be required to gain consent from customers before they can transition them to SAPS. This is because third-party SAPS providers do not have the same reliability obligations as DNSPs and consumers should be aware of and agree to the consequences of moving to a third party-SAPS.

Service delivery models for SAPS

Supplying a customer via a SAPS is very different to the traditional wholesale market supply model. The risks faced by parties in a SAPS context are therefore also different. A comparison of both traditional and SAPS energy supply is provided in Appendix A. The differences in these risks should be reflected in the service delivery model(s) that is used to supply SAPS customers with energy.

Essential Energy considers that an important principle for a SAPS service delivery model is that it should reflect, to the extent possible, the actual cost of supply to customers. Essential Energy has considered two alternative service delivery models that adhere to the principle of providing SAPS customers with appropriate price signals, these are discussed in more detail below.

The importance of cost-reflective tariffs for SAPS service delivery

The key issue associated with the NEM consistency model is that it links SAPS generation costs to the wholesale market price. This is presumably for simplicity but creates problems. These problems relate to the fact that the wholesale price may not reflect the cost or value of energy in the SAPS at that time.

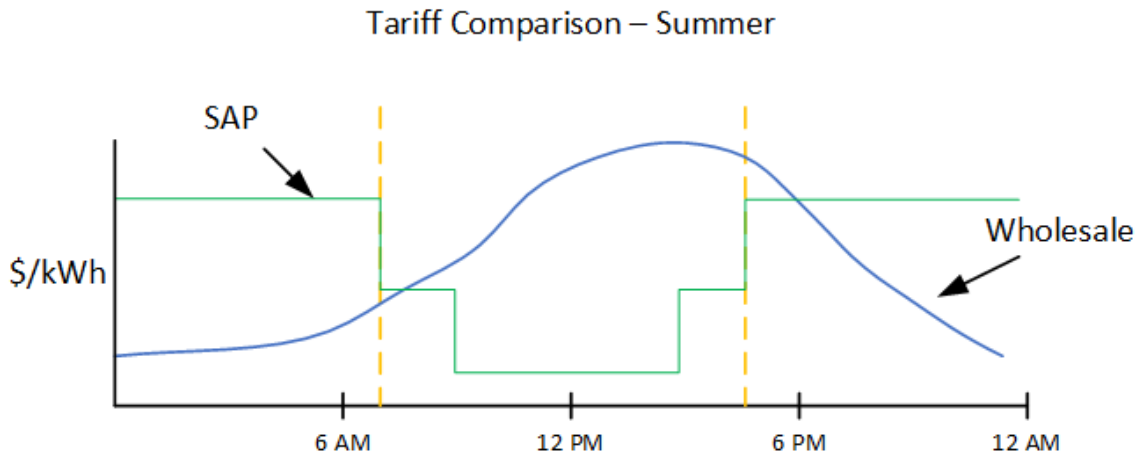
In order to maximise the efficiency of the SAPS some behavioural change may be required from the customers connected to the SAPS. For example, to reduce the size of the batteries or back-up generation required in the SAPS it may be necessary to have customers shift their consumption to the middle of the day, when the output of solar PV is highest. Existing retail tariffs and wholesale prices may not provide sufficient or appropriate price signals to SAPS customers to bring about this behavioural change.

Essential Energy has performed some initial analysis of wholesale prices and the implications of linking SAPS generation to the wholesale market.

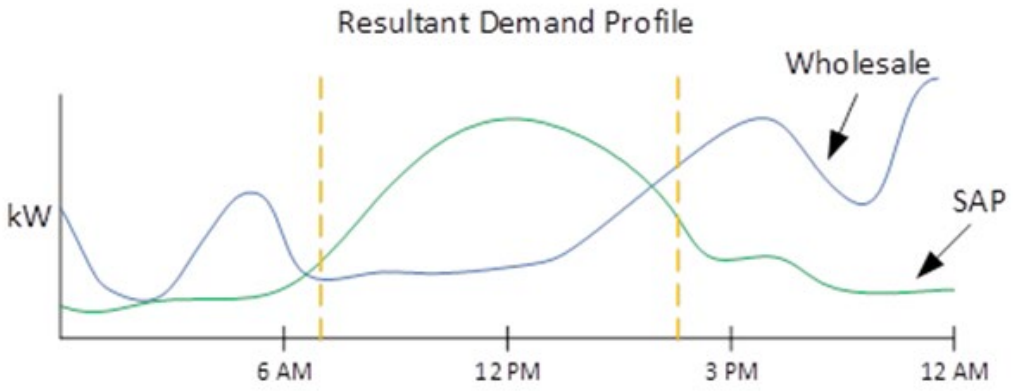
Our analysis of average monthly wholesale prices shows the following:

- In summer months, wholesale prices tend to peak during the day – this is the inverse of the cost structure of generation in a SAPS as solar output is highest during the day. Prices in a SAPS environment should therefore be low during the day to leverage the output of the solar panels and minimise draw on the battery. A wholesale linked SAPS price would signal the opposite with high prices during the day.
- In shoulder months (September - October and April – May) the average wholesale price flattens – this is also unsuitable to SAPS as a minimum price in the middle of the day would again be more suitable to optimising the SAPS unit.
- In winter months there is, on average, a morning and evening peak price. This is more closely aligned with SAPS generation cost structure.

For at least 7 months of the year, a linkage to the wholesale price would provide adverse price signals for effective optimisation of the SAPS unit. The below graphs illustrate this point graphically for summer months. The blue line is the average wholesale price, the green line represents the ideal cost-reflective SAPS tariff and the yellow dotted lines show the least cost period for SAPS generation (by utilising energy generated by solar PV). Areas outside of these dotted lines are typically 5 to 10 times more expensive per kWh as batteries or diesel generator are used to supply energy.



Given the different price signals provided by the wholesale and SAPS prices the resultant demand profiles for both types of customers will be different. This is shown in the graph below.



Using cost-reflective pricing structures can have a significant impact on the capital costs of a SAPS. If the appropriate price signals are provided a portion of energy used by appliances such as space cooling/heating, washing machines, dishwashers and hot water systems could be shifted from high cost periods to low cost periods.

During a typical summer peak day approximately half the daily energy requirements can be shifted to align to the lower cost solar PV period resulting in a SAPS with a battery one half to one third the size that compared to a SAPS with a typical wholesale tariff.

Alternative service delivery models for SAPS supply

The AEMC has proposed two possible service delivery models for SAPS supply. These models represent two points on a possible spectrum of options for how SAPS services could be delivered by the DNSP to customers. One model preserves retail market competition and the other represents an integrated service delivery model where all services are provided by the DNSP.

Essential Energy has considered potential alternative service delivery options that achieve the same outcomes as the options presented in the draft report but that reflect the true cost of the provision of energy via a SAPS. These options are:

- SAPS generation costs reflected in DUOS charges
- Integrated service offering where the customer purchases their own diesel.

SAPS generation costs reflected in DUOS charges

In designing this potential supply model that preserves a link to the retail market, some assumptions should be noted. These are:

- The customer will remain a customer of the DNSP after the transition to the SAPS. As such, the customer can expect the same reliability outcomes as grid-supplied customers and have a single point of contact, in the form of the network, for maintenance and fault and emergency support.
- The SAPS assets can be owned by the DNSP or by a service provider that has a contract with the DNSP.
- The customer will continue to be supplied with a bill by a retailer and therefore the same consumer protections as grid-supplied customers will apply.
- The SAPS customer should not be unduly disadvantaged by the transition to off-grid supply and therefore should expect to pay a similar price for their energy use as grid-supplied customers (however the components that make up the customer's bill may be different under a SAPS supply model).

Under this model:

- The SAPS would be owned by the DNSP or by a third party under contract with the DNSP.

    - The choice of who would own the system would be determined by the "minimum project evaluation requirements", as proposed in the AEMC's draft report.

- Maintenance of the SAPS system would be performed by the asset owner and funded via DNSP operating expenditure ("opex") and recovered via DUOS. This would be equivalent to the current operating expenditure spent by DNSPs to maintain lines, although the quantum of spend is expected to be lower for a SAPS.
- As DNSPs would be responsible for meeting reliability standards they would respond to customer calls for urgent rectification of faults.
- The costs of SAPS generation would be recovered **via a DUOS charge** that includes the costs of the SAPS.
    - The SAPS costs would be driven by the size of the system, which reflects the customers expected load. In this model the generation cost would be the amortised cost of the SAPS system.[1]
    - There is scope to structure this DUOS charge so that it incentivises the behaviour described in the previous section by setting a SAPS cost-reflective tariff that varies over the day reflecting the green line in the graphs above.
    - Different tariffs could be designed to meet differing load profiles through the tariff design process and would be approved by the AER as part of the usual tariff-setting process (the Tariff Structure Statement).
    - Any costs associated with the SAPS that are not recovered through the SAPS DUOS charge would be funded by the DNSP through DUOS charged on other customers.
- Under this service delivery model, the retailer does not face wholesale price risk and does not need to enter into financial hedges to manage this risk. The retailer would still be subject to credit risk (the risk that the customer does not pay their bill), but this is the case for all customers as energy is provided at time of use and paid for in arrears.
- The SAPS customers' energy use would be metered but would not be settled through the wholesale market. Some changes to systems may be required to facilitate this change. As this is the case, the definition of retailer could be revised, or different categories created for those retailers not actively engaged in wholesale market activities.
- Under this model the retail relationship is retained, however the activities performed by the retailer are different:
    - There would be no wholesale component to the SAPS customers' retail bill.
    - The DUOS charge that the retailer would pay would be different than for grid-supplied customers.
    - The retailer would pass-through the DUOS charge from the DNSP to the customer as this charge is designed to optimise the performance of the SAPS. There is some scope for the retailer to tailor a product for SAPS customers so long as the price signals provided by the DUOS charge are preserved.
    - The retailer would provide traditional billing, complaint handling and consumer protection functions.

Integrated service delivery model

This model is the simplest way for a distributor to deliver energy to a customer via a SAPS. There is no separate retail function. However, the simplicity of the model means that customers would not have

[1] This model was also proposed by PIAC in their submission to the Issues Paper. See https://www.aemc.gov.au/sites/default/files/2018-10/PIAC%20-%2020181012.PDF p.12.

access to retail competition and associated consumer protections as they are currently structured. This model is based on the Base Power product provided by the New Zealand DNSP PowerCo.[2]

Under this model:

- The DNSP would supply the customer with the generation, storage and management services for the equipment on their property.
- The equipment is owned and maintained by the DNSP.
- Maintenance is done by the DNSP on a yearly cycle. The performance of the unit is remotely monitored, and the customer has access to 24/7 fault line.
- Customer pays a maintenance fee to the DSNP and does not bear the capital costs of the SAPS.
- Customer is responsible for buying diesel and refuelling the back-up generator, as required although this could also be done by the DNSP.
- There is no retailer involved.
- Customer remains a customer of the DNSP.

This model was designed for customers in remote, hard-to-access or heavily-vegetated areas with limited customer numbers. It may therefore represent a proportionate solution for small-scale and relatively simple SAPS installations.

Essential Energy notes however the Commission's position in the draft report that:

- In order to preserve consumer protections for SAPS customers, retail activities should be performed by entities in possession of a retail authorisation from the AER; and
- If a service delivery model were to exclude the possibility of retail competition, new retail price protections may be needed. This is to ensure that customers are not financially disadvantaged as a result of the move to SAPS supply.

To ensure that customers supplied via a SAPS were not disadvantaged by the transition to off-grid supply under this sort of model, the AER or jurisdictional regulator (for example, IPART) could determine a SAPS reference price. This would be the maximum amount a DNSP could charge a SAPS customer and would be based on the cost to supply a SAPS customer. This would be a relatively simple calculation based on capital costs and annual operating costs. This price cap could be reviewed regularly and given this equipment is increasingly ubiquitous efficient procurement and installation costs would be relatively easy to ascertain.

[2] For more information see: https://www.powerco.co.nz/get-connected/base-power/

Appendix A: Risks faced by parties in traditional wholesale supply and SAPS

	Traditional supply	SAPS supply
Generator	**Source:** Large, transmission-connected generators. Supplied via gross-pool wholesale market. **Risks:** Generator must manage wholesale market risk. Enters into financial contracts to provide revenue certainty. Must cover contracted position and will adopt a hedging strategy that covers risk of unplanned outages while also allowing possibility for generating when spot price spikes. Hedging strategy dependent on generator technology type.	**Source:** Small-scale SAPS on site. System size will be based on local conditions (solar resource) and tailored to expected load of the customer. Given current technology costs system most likely to be solar and batteries with backup diesel generation. **Risks:** Asset utilisation risk, SAPS generation owner will aim to "right-size" the SAPS asset. That is that it sufficiently small so as not to waste capital on a system that is too large and sufficiently large such that the system performs as expected for as long as expected. Life span and performance of asset is reasonably well known
Network	**Source:** Electricity transmitted through transmission and distribution network and costs are recovered through NUOS. **Risks:** Under open access NSPs must issue an offer to connect to all potential customers. If a customer chooses to connect (and bears the capital costs of their connection) the NSP has an obligation to reliably serve every customer. In some areas the cost of serving customers is far in excess of the revenue recovered (due to "postage stamp" pricing) – this increases network charges for all customers.	**Source:** No transmission infrastructure is required. SAPS will sit either on customer premises and not involve any distribution network assets or be closely located and small traditional network poles and wires asset. **Risks:** In a SAPS context the DNSP's risk becomes primarily asset utilisation risk (as discussed above under generation). This is borne by DNSPs directly (through asset ownership) or indirectly (through contract with SAPS service provider). Overall, SAPS provision likely to reduce network risks.
Retail component	**Source:** Retailers purchase energy on behalf of their customers through the wholesale market and bill the customer for energy and network charges. **Risks:** Retailers must manage wholesale market risk and enter into financial contracts to cover their expected retail position in the NEM wholesale market. Retailers must also provide credit support to AEMO to cover any risk of a shortfall in recovered revenue in the event of a retailer default event.	**Source:** Retail relationship is focused on billing and performance of the system. **Risks:** A traditional retailer's role would be reduced to a billing function, and if providing the SAPS on behalf of the network, would include customer service around system performance, energy management options etc.

	Traditional supply	SAPS supply
Customer experience	Customer has access to retail competition and has the ability to switch retailers on the basis of retailers differentiating themselves on risk management, product structure and customer service levels. Customer has the following relationships: • For billing, hardship programs and complaints the customer contacts their retailer. • For faults and emergencies the customer contacts their local DNSP.	Customers are being asked to accept supply from a direct source where risk management involves effective management of an asset (not a market exposure). Their choices relate to product structure, and if not DNSP-led, SAPS provider and customer service. In a DNSP-led environment product structuring innovation can be overseen through a usual Tariff Structure Statement process. Tariffs will be designed to optimise use of the asset and so align with cost reflective pricing principles. In that sense it should be expected to impose limitations on customers in a similar way to existing changes to tariffs like demand and TOU charging.