public interest
ADVOCACY CENTRE

Submission to AEMC review of stand-alone power systems – priority 1 draft report

13 February 2019

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About the Public Interest Advocacy Centre

The Public Interest Advocacy Centre (PIAC) is an independent, non-profit legal centre based in Sydney.

Established in 1982, PIAC tackles barriers to justice and fairness experienced by people who are vulnerable or facing disadvantage. We ensure basic rights are enjoyed across the community through legal assistance and strategic litigation, public policy development, communication and training.

Energy and Water Consumers' Advocacy Program

The Energy and Water Consumers' Advocacy Program (EWCAP) represents the interests of low-income and other residential consumers of electricity, gas and water in New South Wales. The program develops policy and advocates in the interests of low-income and other residential consumers in the NSW energy and water markets. PIAC receives input from a community-based reference group whose members include:

- NSW Council of Social Service;
- Combined Pensioners and Superannuants Association of NSW;
- Ethnic Communities Council NSW;
- Salvation Army;
- Physical Disability Council NSW;
- St Vincent de Paul NSW;
- Good Shepherd Microfinance;
- Affiliated Residential Park Residents Association NSW;
- Tenants Union;
- Solar Citizens; and
- The Sydney Alliance.

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The Public Interest Advocacy Centre office is located on the land of the Gadigal of the Eora Nation.

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1. Principles

PIAC supports distribution network service providers (DNSPs) pursuing the least-cost option to provide regulated network services. In assessing non-network options to address a need, PIAC considers that DNSPs should consider off-grid solutions, or Stand-Alone Power Supply (SAPS), where they provide a cost-effective alternative to traditional network solutions.

As noted in our contributions to the *Alternatives to grid supplied network services* rule change, PIAC agrees that there may be uncertainty around whether SAPS could be considered as a means of providing a distribution service under the current arrangements.[1] PIAC considers that the current Rules do not explicitly prevent DNSPs from pursuing off-grid systems in these cases, but would welcome clarity to encourage SAPSs being deployed instead of traditional network augmentation where they are the most efficient means of providing regulated network services. This will reduce total network costs for the DNSP, the benefit of which will be passed through to all the DNSP's customers.

PIAC has considered two foundational principles in forming its position:

- Consumers should be supplied essential energy services through the most efficient method possible while maintaining appropriate protections and quality of supply; and
- Consumer protections must reflect the potential harm to the consumer of losing the service rather than being dependant on the method of delivering the service.

These principles underpin our view of network services generally, and inform the positions articulated in this submission.

2. Model of DNSP-led SAPS delivery

2.1 The need for a NEM-consistent model of SAPS delivery

The AEMC has put forward two possible models for the DNSP-led transition to SAPS for a customer or group of customers:

- A NEM-consistency model which, based on the model proposed by AusNet Services, retains the retail relationships with the network business, wholesale market and customer; and
- The integrated service provision model, which is based around the concept of a single provider for all aspects of the SAPS without customer access to retail competition.

Of the two presented, PIAC prefers a NEM-consistency model where the responsibilities and obligations as well as the consumer's experience are as unchanged as possible for the customer transitioned to SAPS supply by their DNSP. As the AEMC notes, the model "seeks to make the customer transition … as seamless and painless as possible."[2]

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1 PIAC, *PIAC submission to AEMC Alternatives to grid-supplied network services rule change consultation paper*, July 2017.

2 AEMC, *Review of the Regulatory Frameworks for Stand-Alone Power Systems – Priority 1: Draft Report*, December 2018, 103.

We consider this to be an essential criterion for selecting a model for SAPS-delivery where the decision to transition the customer to a SAPS is the that of the DNSP and not the customer. In practice, this means that:

- The DNSP is responsible for specifying, providing and maintaining the system(s) to maintain the standard of supply;
- The consumer's standard of supply, in terms of voltage, frequency and outages, is no worse as a result of the change; and
- Other consumer protections remain the same.

The simplest way for consumers to retain existing protections where they are being transitioned to off-grid supply by their DNSP is by retaining their existing retail arrangements. In this scenario, the consumer would retain the existing relationships with their authorised retailer and distributor and hence remain covered by the National Electricity Retail Law and Retail Rules.

There are a range of different physical configurations that may prove the most cost-effective solution to providing off-grid supply to customers – see ATTACHMENT A. Importantly, there are configurations possible which, from the customer's perspective, retain many aspects of their grid-supply arrangements, including a role for an authorised retailer, the use of a revenue meter, and a point of connection that is a demarcation between the customer's assets and the DNSP's assets. This has the benefit of clearly apportioning responsibility for the ownership, maintenance and repair of assets between the customer and other parties including the DNSP. Further, it must be noted that these can be configured in such a way that the components of the SAPS remain on the DNSP's side of the customer's meter – thereby addressing concerns regarding DNSP ownership of behind-the-meter assets.

Which of these is more efficient and acceptable is site-specific and depends on a range of factors, including the number and size of customers to be supplied, their proximity to each other and existing infrastructure, the relative costs of small-scale vs large-scale SAPS equipment, and consumer preferences.

2.2 Concerns about the proposed NEM-consistency model

PIAC supports a NEM-consistency model where the responsibilities and obligations, as well as the consumer's experience, are as unchanged as possible for the customer transitioned to SAPS supply by their DNSP. PIAC put forward 3 potential models in our earlier submission to this review.[3]

AusNet Services' proposed model, as described in the AEMC's draft report, has many elements of PIAC's preferred model.

The treatment of wholesale prices, however, is problematic, as it links NEM spot prices with cost recovery on the part of the consumer even though there is no causal link between those and SAPS cost. This has two main consequences:

- diluting the effectiveness of any retail tariff provided to the customer; and

[3] PIAC, *Submission to review of the regulatory frameworks for stand-alone power systems issues paper*, October 2018, 9-12.

- creating an unnecessary wholesale spot price exposure (and hence hedging obligation) for the retailer.

Under the proposed NEM-consistent model, any alignment between NEM wholesale spot prices and cost of SAPS generation would be coincidental. In fact, analysis suggests they may actually be inversely related – with NEM wholesale prices typically high during the middle of the day and afternoon when SAPS generation costs are typically at their lowest. This is discussed further in Section 2.3.1.

Linking the generation component for a SAPS-supplied customer to the NEM wholesale price also creates an unnecessary hedging requirement on the customer's retailer. Since the generation costs to supply the SAPS customer are not linked to the NEM wholesale market, it is also not exposed to the extreme prices possible in the wholesale market either. Despite this, under this proposed model, retailers would still be required to hedge for such extreme price events. This is not only an unnecessary cost on retailers, it may also impede smaller, more specialised retailers from emerging who may seek to specialise in contracting with such SAPS-supplied customers. This is discussed further in Section 2.3.2.

2.3 PIAC's NEM-consistency model

As noted in our earlier submission, there are a range of potential models. In particular, PIAC highlights an option where the capital and operating costs of the SAPS would be included in the Distribution Use of System charged by the DNSP to the retailer, with no link to the wholesale energy market.[4]

The capital cost of purchasing and installing the SAPS would be rolled into the DNSP's Regulated Asset Base (RAB). The ongoing costs of SAPS primarily consist of regular inspection and maintenance of the SAPS components, the cost of the backup generator's fuel, and replacement of batteries and inverters every 10 to 15 years.[5]

Since the ongoing operating expenditure for SAPS is relatively small compared to wholesale energy costs in the energy market, it is appropriate, and simpler, for the DNSP to not recover these costs directly or exclusively from the customer being served (or their retailer). These operating costs could simply be included in the DNSP's total operating expenditure allowance and hence recovered from all customers as part of the normal Distribution Use of System (DUOS) charges the DNSP applies. This is shown in Figure 1.

4 PIAC, *Submission to review of the regulatory frameworks for stand-alone power systems issues paper*, October 2018, 12-13.

5 A typical stand-alone power system will consist of a number of components including: a primary source of generation, typically solar PV but can also include wind; an energy storage device such as a battery; a backup generation source (typically a diesel genset) for emergency power; and an inverter, which may incorporate other power electronics such as battery chargers and system controllers. A description of a typical SAPS can be found online: http://www.yourhome.gov.au/energy/batteries-and-inverters.

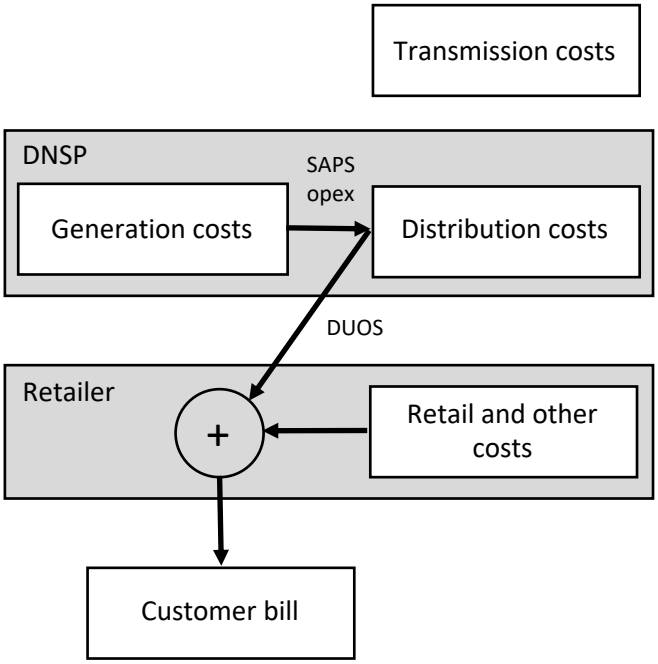


Figure 1 Proposed alternative for DNSP-led SAPS - including SAPS generation costs in the DNSP's total Distribution Use of System charges for all its customers

Under this model, the SAPS is owned and operated by the DNSP or by a third-party contracted by the DNSP. Regardless of which is used, the DNSP remains responsible for maintaining appropriate levels of reliability and security of supply, as it would have been had the customer continued to be supplied by their grid connection.

The customer would continue to receive a metered bill from an authorised retailer. As such, they retain the various protections offered including: obligations regarding the accuracy and frequency of bills, access to payment and hardship support, access to rebates (such as the NSW Energy Accounts Payment Assistance scheme), and access to external dispute resolution through the energy ombudsman.

The retailer not having to pay separate generation cost for the SAPS-supplied customer, would further reduce costs for the customer's retailer compared to a grid-supplied customer and more effectively encourage retail competition for such off-grid customers.

This model is in the interest of all customers wherever it would result in a net reduction in the DNSP's total cost of operating its network and hence a lower DUOS charge for all customers. The relatively low SAPS generation costs being recovered across the DNSP's customer base will in most cases not render an otherwise economically efficient SAPS network replacement to be inefficient.

2.3.1 Cost-reflective tariffs and behavioural change

Based on the capital and operating costs for serving the consumer, the DNSP may use the existing tariff principles and tariff-setting processes to develop a suitable cost-reflective tariff for customers who have been transitioned to SAPS supply.

The primary cost driver of SAPS is energy capacity (i.e. kWh, a feature of battery and solar system capacity) rather than ability to meet peak demand (i.e. kW, a feature of inverter and backup generator capacity). A cost-reflective (with respect to marginal price) tariff for SAPS customers would be a two-part tariff with 'off-peak' tariff windows aligned to times of peak solar generation output in the middle of the day. This is in contrast to a grid-connected customer whose primary limitation is peak demand and hence a peak demand tariff would be more appropriate.

Providing a suitably designed time-of-use tariff for SAPS customers may help drive a degree of behavioural change and assist in optimising the efficiency of the DNSP-provided SAPS. However, a more effective mechanism to reduce the cost of a SAPS, especially when the use is nearing the capacity of the SAPS, is through energy efficiency and appliance upgrades.

2.3.2 Retailer response

Under PIAC's NEM consistency model, since the retailer does not have to pay a generation cost for the SAPS-supplied customer, the costs for the customer's retailer are lower than for a grid-supplied customer. In other words, a group of SAPS-supplied customers are more profitable for retailers than a grid-connected customer. We anticipate this will encourage retail competition for SAPS-supplied customers.

Further, the lack of wholesale component would reduce the retailer's exposure to the extreme price events and general volatility in the NEM wholesale market compared to the AusNet services model. This would reduce the hedging costs for such a retailer, and remove a significant potential hurdle for new retailers seeking to enter the market.

Retailers may need to set up different systems for billing and settling such SAPS-connected customers, however:

- PIAC anticipates that the combination of above-noted two factors would encourage retailers – particularly specialist authorised retailers – to serve SAPS-supplied customers.
- While it would not be prudent, for a retailer to upgrade or overhaul their entire systems for a relatively small number of customers, retailers periodically schedule upgrades to their systems as a matter of course. Any changes to retailers' systems to allow for SAPS customers that are incremental costs on top of any other periodic upgrades are likely to have a low cost. Therefore, over time, more retailers would be able to take on SAPS-supplied customers.

2.4 Payment from DNSP to cede grid-connection

PIAC considers it appropriate that customers can be offered the opportunity to cede their entitlement to existing grid-connected supply in exchange for a suitable payment or incentive from the DNSP. If accepted, the consumer is supplied via a SAPS that they own themselves or lease from a third party. This customer, or their third-party provider, would then be responsible for their electricity supply, rather than the DNSP.

These consumers will require additional protections to those currently afforded to existing off-grid customers, that reflect the relative complexity of the decision they are making and the greater risk

to the customer should the SAPS fail to operate as expected. This is described in more detail in Section 3.

The opportunities for this can be identified through a RIT-D or similar planning and cost-benefit process. The option of a payment to cede grid-connection could therefore be canvassed or proposed by (or on behalf of) a customer as a non-network alternative to a traditional network option or DNSP-provided SAPS option.

The payment provided to cede grid connection must, as a minimum, cover the costs to the customer of obtaining and operating a SAPS over a period comparable to the life of an equivalent network asset (say, 40 or 50 years) and a prudent premium to allow for risk, inconvenience and potential other cost impacts, such as any impact on property prices that arises from the absence of a grid connection.

However, it must not provide an inefficient, windfall profit.

PIAC supports consumers having access to either option, of forgoing or retaining supply from a DNSP, and recommends the AEMC consider both potential paths for a DNSP-led transition to off-grid supply.

3. Protections for consumer with their own SAPS

The risks for off-grid consumers are different to those who retain a grid connection and specific consumer protections are required which reflect these. If a customer has behind the meter generation and storage on their premises but has retained their grid-connection, the consequences of a failure of their system will not involve losing access to essential electricity services. It will likely involve higher electricity bills for a period as a greater portion of their energy usage is supplied through their network connection rather than from their behind the meter system.

By contrast, in the case where a customer has gone completely off-grid with their own SAPS, and foregone their connection to the network, the consequences of the SAPS failing are considerably more severe. If there is no backup generator as part of the SAPS, it may mean losing access to essential electricity services for a week or more while awaiting repair or replacement. Even if there is a backup generator which will allow for some electricity services to be provided, it can involve hundreds of dollars in fuel costs per week and may be limited in operation by the capacity of the generator or its noisy and polluting nature.

In either case, the failure of the SAPS results in a significant impact to the customer through the loss of an essential service. This may result in the customer losing heating and cooling in remote areas with more extreme weather or losing refrigeration of food and medicine. Of greatest concern would be if it meant losing power supply to life support services.

3.1 Negotiation of some standards and protections

Certain consumer protections must be considered as unalienable and not able to be traded. For example, compliance with safety regulations, access to independent dispute resolution processes, compliance with minimum warranty obligations and access to support for consumers

experiencing financial hardship should be non-negotiable. This is not a definitive list of protections which should not be traded away.

PIAC supports some other protections being negotiable, such as reliability and quality of supply provided to the consumer. However, in any such negotiations, it is essential that the consumers are fully aware of the implications of any rights and protections they forgo. Therefore, it is imperative, if any consumer protections are to be negotiated, that the provider obtain the Explicit Informed Consent of their customer.

This would not preclude offering higher levels of protections or quality of service – for instance through a higher level of warranty coverage or reliability, which could allow providers to differentiate their product or service from competitors by providing a "premium" service or to meet the needs or preferences of particular consumers.

3.2 Customer engagement for transition

As noted earlier, where it is found that a SAPS is more efficient than continuing grid supply, PIAC considers that the consumer should see as little change in their electricity supply experience as possible. In practice, this means that:

- The DNSP is responsible for specifying, providing and maintaining the system(s) to maintain the standard of supply;
- The consumer's standard of supply, in terms of voltage, frequency and outages, is no worse as a result of the change; and
- Other consumer protections remain the same.

If the DNSP is providing the SAPS supply as a regulated service, the DNSP would take responsibility for maintaining comparable levels of supply to the customer's connection point. In this case, PIAC does not consider there is a need for Explicit Informed Consent (as used in the Rules). However, we consider it would be good practice for the DNSP to engage with the customer before, during and after the transition. Therefore, PIAC strongly supports the development and use of a robust and effective SAPS customer engagement strategy.

As noted in the AEMC's draft report, consumers may have a range of concerns regarding being transitioned to a SAPS. Further, there may also be non-energy related reasons for or against being transitioned to a SAPS, for example: lower resale value of a property; improved land amenity due to the removal of poles and wires; reduced fire risk; and improved reliability and resilience.[6]

Where the responsibilities and obligations to maintain supply lies with the DNSP, the affected consumer(s) would therefore not hold a right of refusal over the method of providing that supply – i.e.: whether it is grid-connected or through a SAPS. These consumers do, however, retain the right of refusal for access to their property for the installation and use of a SAPS beyond what access the DNSP current has for the maintenance of network assets and vegetation management.

6 AEMC, *Review of the Regulatory Frameworks for Stand-Alone Power Systems - Priority 1 draft report*, December 2018, 53.

By contrast, if the customer chooses to take responsibility for the SAPS system and forgo retail competition then it is essential their Explicit Informed Consent is obtained and appropriate consumer protections put in place which reflect this delivery model. For instance, where a customer has opted to transition to an off-grid supply either voluntarily or in response to a payment from the DNSP (and hence the customer assumes responsibility for sizing, operation, maintenance, etc rather than the DNSP), additional protections are required which reflect the potential harms faced by these consumers. These are outlined in our previous submission to this review.[7]

4. Regulatory oversight

Generally, it is likely that projects to transition existing customers to SAPS supply will be driven by a replacement or other investment needs of the DNSP's network. The *Replacement expenditure planning arrangements* rule change made by the AEMC enhances transparency on DNSPs' replacement expenditure in both their Annual Planning Reports and Regulatory Investment Test for Distribution (RIT-D). Further, the AER has ex post powers as part of a DNSP's revenue determination process to review and remove inefficient expenditure and capitalisation.

PIAC considers that the above arrangements, along with a DNSP's ring-fencing requirements, provide transparency about their options evaluation process to ensure that customers are transitioned to off-grid supply only where it is found to be the most cost-effective option for projects that are above the cost threshold for conducting a RIT-D which is currently $6 million.

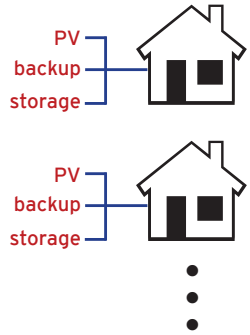
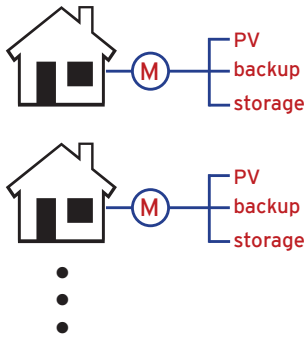
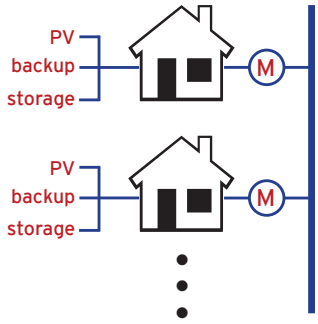
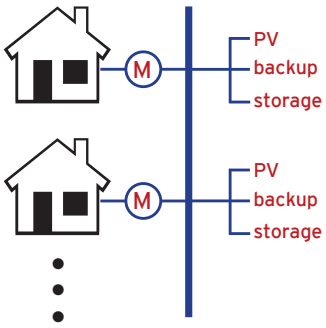
However, PIAC expects that due to the nature of smaller distribution upgrades that effect supply to a limited number of consumers at the fringe of the grid[8], the value of many of prospective network projects where consumers might be more effectively supplied by SAPS will be below the RIT-D cost threshold. PIAC notes that a SAPS system with a capital outlay of around $50,000 would supply a typical regional or remote residential user, with a level of reliability at least as high as what they receive from the grid, for a lower operating cost (and significantly lower when the cost of energy supply from the grid is considered).

As such we support the AEMC's recommendation to establish an additional set of minimum SAPS evaluation requirements for cases where a RIT-D is not done. We look forward to working with the AEMC and other stakeholders in further developing the content of these.

7 PIAC, *Submission to review of the regulatory frameworks for stand-alone power systems issues paper*, October 2018, 13-14.

8 Such as reconductoring, pole replacement, upgrading distribution transformers, installing switchgear and so on.

ATTACHMENT A – Potential physical configurations for DNSP-delivered SAPS

	**1) Unmetered individual SAPS** • All SAPS equipment is effectively integrated into the premises – there is no meter between the system and the premises • Customer pays for the capital cost of the assets making up the SAPS • Consumer bill is not necessarily related to the actual level of electricity usage in the billing period • Similar to many current off-grid systems • No role for any energy retailers or DNSP
	**2) In front of the meter individual SAPS** • Similar to (1) except SAPS equipment is separated by a revenue meter – similar to meter used in grid supply • Customer is charged for energy usage, as per normal grid connection • Role for retailers and/or DNSP
	**3) Microgrid with behind the meter generation** • Similar to (1) except customers are connected in a microgrid to allow sharing between premises • Revenue meter for use of the microgrid • Individual customers may have generation, storage, both or neither onsite • Some customers may be net importers and others net exporters • Role for retailers and DNSP
	**4) Microgrid with in front of the meter generation** • Similar to (2) except customers are connected in a microgrid to allow sharing between premises • SAPS equipment can be a mix of distributed and centralised (eg: multiple, distributed PV sites but single, centralised back-up generator) • Customer charged using revenue meter similar to grid supply • Role for retailers and DNSP