public interest
ADVOCACY CENTRE

# Submission to review of the regulatory frameworks for stand-alone power systems

**12 October 2018**

Level 5, 175 Liverpool Street, Sydney NSW 2000
Phone: 61 2 8898 6500 • Fax: 61 2 8898 6555 • www.piac.asn.au

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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.

## Contact

Miyuru Ediriweera
Public Interest Advocacy Centre
Level 5, 175 Liverpool St
Sydney NSW 2000

T: (02) 8898 6525
E: mediriweera@piac.asn.au

Website: www.piac.asn.au

Public Interest Advocacy Centre

@PIACnews

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

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**ATTACHMEMT 1: Responses to consultation questions**

**ATTACHMENT 2: PIAC submission to Alternatives to grid-supplied network services rule change consultation paper**

# Summary

PIAC supports distribution network service providers (DNSPs) pursuing the least-cost option to provide regulated network services. Where this option is the use of a Stand-Alone Power Supply (SAPS), this should be facilitated by the regulatory framework.

PIAC considers there are two general cases where a DNSP may lead an existing consumer to be supplied by a SAPS:

- The first is where the consumer has not sought a change to their method of electricity supply and any change is done "behind the scenes" by the DNSP as the most cost-effective way of providing regulated network services. In this case, the arrangements should seek to retain as many aspects as possible of a grid-connected consumer's relationships, interactions and protections, irrespective of the source of supply. The DNSP retains the obligation to maintain comparable levels of supply to the customer as under a tradition grid connection.

- The second is where a consumer foregoes their entitlement to receive energy from the grid in return for a payment from the DNSP. The consumer is then supplied via a SAPS that they own or lease of their own volition. These consumers will require additional protections to those currently afforded to off-grid customers, similar to protections that exist currently under retail and distribution regulatory frameworks but reflecting the greater risk to the customer should the SAPS fail to operate as expected.

PIAC supports consumers having access to both options where appropriate and recommends the AEMC consider both potential paths for a DNSP-led transition to off-grid supply. In our submission, we focus on possible arrangements under the first case – where a DNSP has a continuing relationship and obligation towards the consumer.

It is essential to note that none of these reforms should prevent a customer choosing to switch to an off-grid supply voluntarily.

PIAC has two foundational principles in forming its positions:

- Consumers must be supplied essential energy services through the most efficient method possible while maintaining expected levels of 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.

With regard to the first principle, the AEMC should initially focus on ensuring the regulatory framework is appropriate for DNSP-led transitions of existing customers to SAPS. These connections represent the 'low hanging fruit' for DNSPs, particularly when they are located in rural and remote areas where consumers are expensive to serve through traditional network options and receive relatively poor levels of reliability.

We propose a number of configurations for providing SAPS to single or multiple customers – these are described in Section 5. Many of these include the retention of a retail meter like under a traditional, grid-connected supply. Further, these systems 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 many of the concerns regarding DNSP ownership of behind-the-meter assets.

Which of these configurations is more efficient and acceptable depends on a range of factors, including the number and size of customers to be supplied, their proximity to each other and exiting infrastructure, the relative costs of small-scale vs large-scale SAPS equipment, consumer preferences and the potential for future demand growth or new connection.

With regard to the second principle, PIAC contends that the consumer should see as little change in their electricity supply experience as possible when it is found that a SAPS is more efficient than continuing grid supply. 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 existing interfaces with their authorised retailer and distributor and the customer may remain covered by the National Electricity Retail Law and Retail Rules.

We explore a number of models for ensuring this is the case, some of which involve retaining access to retail competition and therefore consumer protections – these models are described in Section 6.

# 1. Principles

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

As PIAC noted in our contributions to the *Alternatives to grid supplied network services* rule change, we agree that there may be uncertainty around whether SAPS could be considered as a means of providing a distribution service under the current arrangements.[1] While PIAC considers that the current Rules do not explicitly prevent DNSPs from pursuing off-grid systems in these cases, we 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 should be passed through to all the DNSP's customers through an overall lowering of network tariffs (all else being equal).

PIAC has considered two foundational principles in forming its position:

- Consumers must be supplied essential energy services through the most efficient method possible while maintaining expected levels of 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. SAPS in general

Currently, customers who choose a SAPS mostly do so because they are too far from existing grid infrastructure to make a cost-effective grid connection. Increasingly, as the cost of SAPS continues to drop and energy from the grid becomes more expensive, consumers may choose SAPS for other reasons.

As shown in Figure 1, 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.

[1] PIAC includes our submission to the rule change consultation paper as an attachment here.

It is important to note that while there are multiple assets which make up a SAPS and these may be physically housed on or integrated with the site, there is effectively still a single electrical connection from the system to the customer's premises.

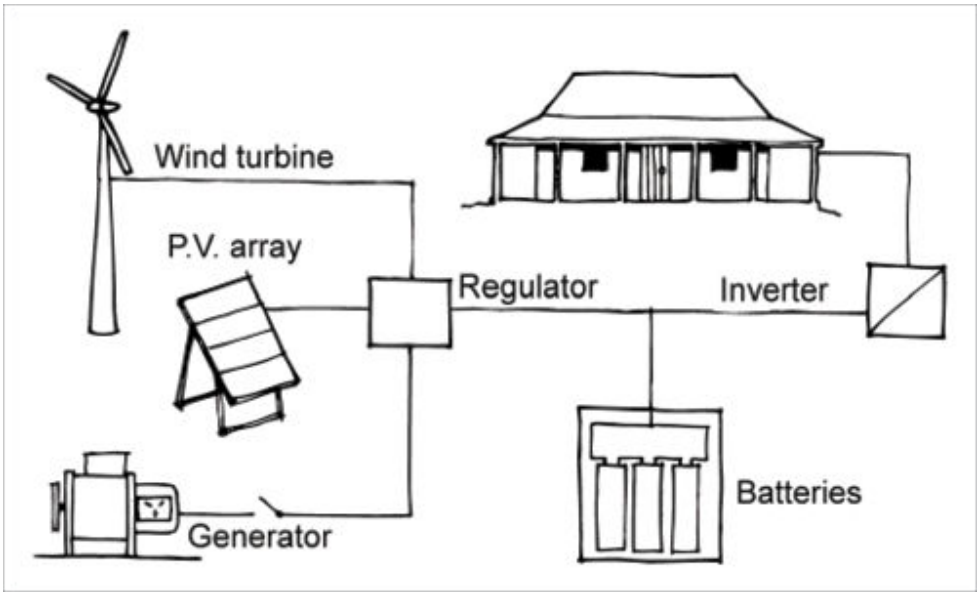


**Figure 1 Typical configuration of a Stand-Alone Power System. In modern systems, the regulator and inverter will often be integrated into a single unit. Many systems may also forgo a wind turbine in favour of additional PV array capacity depending on the economics between the two generation sources.2**

While there may be financing options available, a customer voluntarily opting for off-grid supply would typically procure the physical assets from one of a number of suppliers each offering markedly different products. This is in contrast to a grid-connected supply where the customer is procuring a more or less identical service from a retailer via the single interface of "the grid". This distinction between procuring an asset and a service is an important one when considering the appropriate allocation of responsibilities.

When off-grid customers are procuring the assets and not a service, they are effectively charged for the capacity of their system rather than based on their usage (notwithstanding ongoing costs for maintenance, repairs, replacements and fuel costs for any use of a backup generator). Therefore, they will often not have a revenue meter. By contrast, a grid-connected customer who is procuring a service will have a revenue meter and be charged based on their usage (in kWh and/or kW).

However, PIAC contends it is possible for SAPS to retain aspects of a grid-supplied system, most notably a metered connection with access to retail competition and the relevant consumer protections. These are outlined in Sections 5 and 6. In PIAC's view, this should be done where the customer is not necessarily choosing to transition to an off-grid supply themselves, but is being transitioned by the DNSP as a more cost-effective alternative to providing the same network services (i.e. a DNSP-led transition).

2 http://www.yourhome.gov.au/energy/batteries-and-inverters

# 3. Transition to off-grid supply

In PIAC's view, the AEMC should initially focus on ensuring the regulatory framework is appropriate for DNSPs to identify where they can more efficiently provide services through a SAPS to existing customers. These connections represent the 'low hanging fruit' for DNSPs, particularly when they are located in rural and remote areas where consumers are expensive to serve through traditional network options and receive relatively poor levels of reliability.

While it may be desirable for new connections to have services provided by SAPS in the future, these arrangements are likely to be more complicated and should be considered separately.

## 3.1 Consumer-led transition to off-grid supply

The regulatory framework for any DNSP-led transition to off-grid supply must not prevent customers voluntarily deciding to use SAPS, either individually or as a community. These consumers will require additional protections to those currently afforded to off-grid customers, similar to protections that exist currently under retail and distribution frameworks but reflect the greater risk to the customer should the SAPS fail to operate as expected. These protections are as discussed in more detail in Section 6.3.

PIAC understands that consumer-led transitions to SAPS will be covered by Phase 2 of this review and so we focus on potential arrangements for a DNSP-led transition to off-grid supply in this submission.

## 3.2 DNSP-led transition to off-grid supply

As noted earlier, PIAC supports DNSPs pursuing the least-cost option to provide regulated network services. The key factor behind the DNSP proposing a SAPS solution would be to reduce costs in either network augmentation or replacement expenditure. The DNSP is best placed to see the true costs of providing network services to a customer (or group of customers) and, in the absence of locational distribution network pricing, or another incentive for the consumer (for example as part of an agreement for any customer/s to forego their entitlement to receive energy from the grid), the customers will have insufficient economic signal to install a SAPS themselves.

PIAC considers there are two general cases where a DNSP may lead an existing consumer to be supplied by a SAPS:

- The first is where the consumer has not sought a change to their method of electricity supply and any change is done "behind the scenes" by the DNSP as the most cost-effective way of providing regulated network services. In this case, the arrangements should seek to retain as many aspects as possible of a grid-connected consumer's relationships, interactions and protections, irrespective of the source of supply.

- The second is where a consumer foregoes their entitlement to receive energy from the grid in return for a payment from the DNSP. The consumer is then supplied via a SAPS that they own or lease of their own volition. These consumers will require additional protections to those currently afforded to off-grid customers, similar to protections that exist currently under retail and distribution regulatory frameworks but reflect the greater risk to the customer

should the SAPS fail to operate as expected. These protections are as discussed in more detail in Section 6.3.

PIAC supports consumers having access to both options where appropriate and recommends the AEMC consider both potential paths for a DNSP-led transition to off-grid supply. In our submission, we focus on possible arrangements under the first case – where a DNSP has a continuing relationship and obligation towards the consumer.

# 4. Planning for a SAPS

PIAC contends that the regulatory framework will need to include provisions to ensure that opportunities to supply existing customers with SAPS are identified and delivered efficiently.

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 recent *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 $5 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[3], many of the potential projects where consumers might be more effectively supplied by SAPS will be less than 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.

In the interest of identifying the most cost-effective measures to supply existing consumers, in PIAC's view, a less detailed investment test than a RIT-D should be applied for any projects of less than $5 million that only supply a small number of customers. Noting the SAPS cost of $50,000, an appropriate threshold for this might be $100,000 per customer served.

# 5. Multiple potential models for SAPS

There are a range of different configurations that may prove the most cost-effective solution to providing off-grid supply to customers. These are summarised in Figure 2. In some cases, particularly local microgrids, it may utilise a hybrid of these configurations. Where SAPS are being considered, the most efficient solution will often be a system with no connection to the broader grid.

[3] Such as reconductoring, pole replacement, upgrading distribution transformers, installing switchgear and so on.

Which of these is more efficient and acceptable 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.

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 many of the concerns regarding DNSP ownership of behind-the-meter assets.

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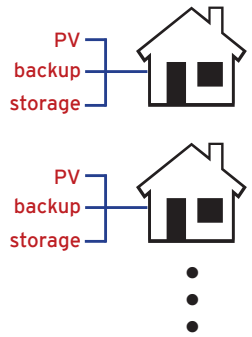
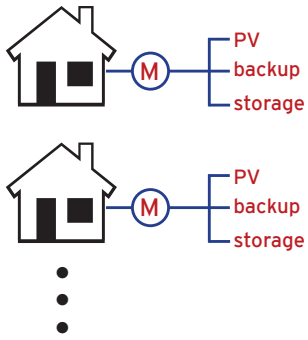
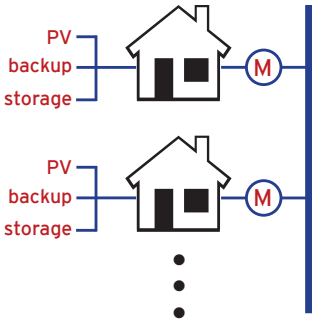
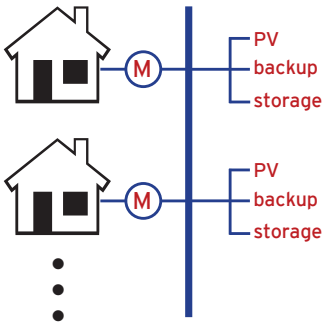
|---|---|
|  | **1) Unmetered individual SAPS**<br>• All SAPS equipment is effectively integrated into the premises – there is no meter between the system and the premises<br>• Customer pays for the capital cost of the assets making up the SAPS<br>• Cost is not necessarily related to the level of electricity usage<br>• Similar to many current off-grid systems<br>• No role for any energy retailers or DNSP |
|  | **2) In front of the meter individual SAPS**<br>• Similar to (1) except SAPS equipment is separated by a revenue meter – similar to meter used in grid supply<br>• Customer is charged for energy usage, as per normal grid connection<br>• Role for retailers and/or DNSP |
|  | **3) Microgrid with behind the meter generation**<br>• Similar to (1) except customers are connected in a microgrid to allow sharing between premises<br>• Revenue meter for use of the microgrid<br>• Some customers may have larger or smaller capacity of generation and storage onsite<br>• Some customers may be net importers and others net exporters<br>• 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

**Figure 2 Potential configurations for Stand-Alone Power Systems (SAPS) including those which use a metered connection to the premises and hence can retain existing retail arrangements.**

Importantly, there are configurations possible which, from the customer's perspective, retain many aspects of their grid-supply arrangements including a role for a retailer as in grid-connected supply and the use of a revenue meter as a line of demarcation between the customer's premises and the DNSP's network assets and infrastructure. 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. Where customers are transitioned to off-grid supply as a more cost-effective alternative, PIAC recommends the AEMC consider options that retain as many aspects as possible of a grid-connected customer's relationships, interactions and protections. This is discussed in further detail in Section 6.

In the event that a microgrid is deployed, a mix of centralised and decentralised generation is possible. For example, it may be more cost effective to deploy distributed PV and storage devices throughout the microgrid, potentially at or near each customer's premises or in public space, while a single large backup generator is installed to supply the entire microgrid with power in the event of sustained generation shortfall or equipment failure.

# 6. Consumer experience

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

- The DNSP is responsible for sizing and maintaining the system(s) to maintain the standard of supply;
- The consumer's standard of supply remains comparable in terms of voltage, frequency and outages; and
- The consumer's protections remain the same.

## 6.1 Continuing consumer protections

PIAC is particularly concerned with the level of consumer protections afforded to consumers with DNSP-installed SAPS. The Alternative Technology Association (ATA) recently produced a report

assessing consumer protections in emerging energy markets.[4] In this report, they produced a list of fundamental protections, stating that all consumers should be confident that:

- They will be able to connect to an energy supply;
- Their energy supply will meet minimum reliability, quality, and safety standards and they will be compensated if it doesn't;
- Sufficient notice will be given for any planned interruptions to supply, and special consideration given to people reliant on life-support systems;
- They will be given clear information about the service they are purchasing, a cooling-off period for any contract they sign (for more novel supply arrangements), a limited right to exit a contract and revert to their previous contract;
- The basis of all energy supply charges is clear and subject to regulatory oversight;
- They have access to historical billing data;
- They have access to discounts on their energy costs if they are eligible for concessions;
- If they come into payment difficulties, they will be given support and flexibility and only disconnected as a last resort and according to a regulated process;
- They have access to an external dispute resolution service if they are unable to resolve a dispute with their energy supplier;
- During billing disputes, they can stay on supply and not have to pay the disputed amount; and
- If their supplier ceases trading, their supply is uninterrupted.[5]

PIAC contends that these protections should always apply to both customers who are supplied via a standard, grid-connected supply as well as those under a DNSP-led transition to off-grid supply.

## 6.2 Retention of existing retail arrangements

In PIAC's view, 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 existing interfaces with their authorised retailer and distributor and the customer may remain covered by the National Electricity Retail Law and Retail Rules.

Where energy is still delivered to the customer as a metered service (such as under configurations 2 to 4 in Figure 2 above) PIAC considers there are a number of potential options that allow the customer to still access retail competition which are outlined below.

Under a standard grid-supply configuration, the retailer combines the generation costs from the NEM wholesale market, the network charges from the DNSP (which includes the transmission costs) and its own retail costs to create the final bill for the customer. This is summarised in Figure 3.

4 ATA, *Empowering the future – Appropriate regulation and consumer protections in emerging energy markets*, 2016.
5 Ibid, 8.

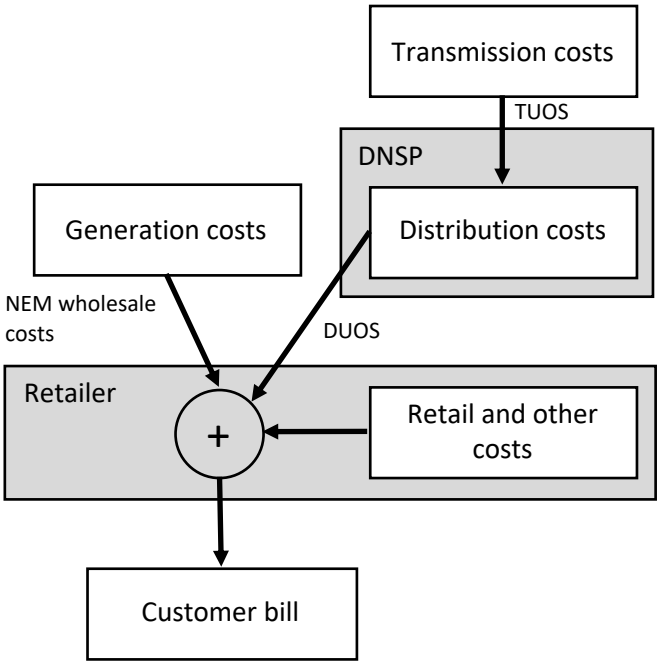



**Figure 3 Cost flow for a standard, grid-connected supply**

In the case of a DNSP-led transition to off-grid supply, one of the pertinent questions to consider is how to treat the generation costs (i.e.: the ongoing operating expenditure) for a SAPS given that it now no longer comes from the wholesale market. A number of potential arrangements are described below.

### Linking SAPS generation cost to regional wholesale price

In this model, the cost which the DNSP can recover for operating the SAPS is linked to and/or capped by the regional wholesale price for energy as shown in Figure 4. This model would provide some consistency for the retailer between the treatment of on-grid and off-grid customers.

The specifics of how the SAPS price would be linked to the regional wholesale price (e.g.: immediate pass through of settlement prices to the retailer, monthly averages of prices, etc) would require further investigation to ensure the DNSP is able to recover efficient costs while also not receiving windfall gains.

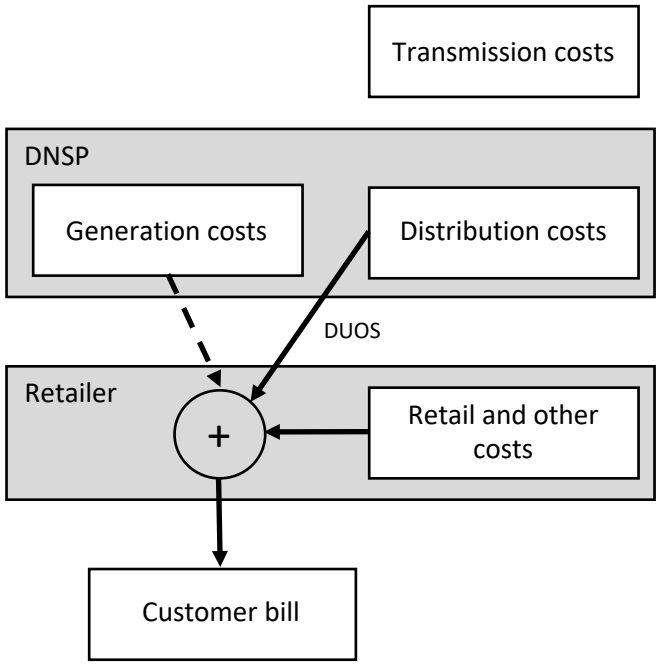



**Figure 4 Proposed alternative for DNSP-led SAPS - generation price linked to wholesale price**

## Regulating a price cap for SAPS generation cost

In this model, the cost the DNSP can recover for operating the SAPS is regulated at a level reflecting the efficient operation of an off-grid system as shown in Figure 5. This provides the DNSP with an incentive to provide the service at or below the regulated prices.

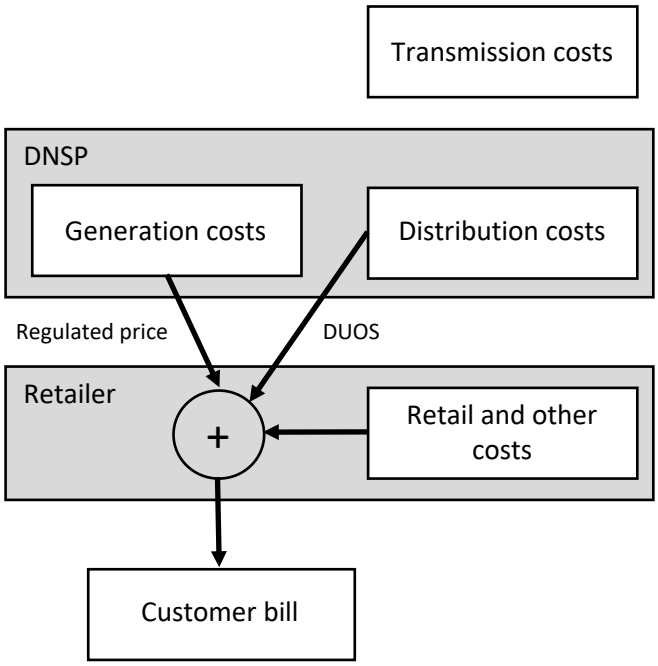



**Figure 5 Proposed alternative for DNSP-led SAPS - regulated price for generation**

However, it would impose additional obligations on the AER or jurisdictional regulators to set and monitor these benchmark efficient operating costs. Further, there may need to be a range of prices to be determined which reflect different possible scales and configurations of off-grid systems.

### Including SAPS generation cost in DNSP's DUOS charges

Where the operating expenditure for the SAPS is relatively small, it may be appropriate for the DNSP to not recover these costs directly from the particular customer or retailer being served. Instead, these operating costs may be included in the total operating expenditure allowance in the DNSP's revenue proposal 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 6.

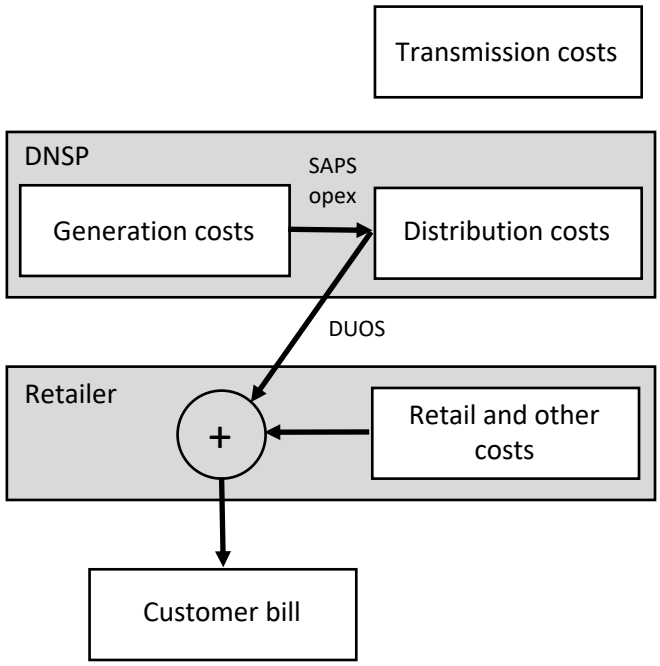



**Figure 6 Proposed alternative for DNSP-led SAPS - including SAPS generation costs in the DNSP's total Distribution Use of System charges for all its customers**

This would further reduce costs for the off-grid customer's retailer and more strongly encourage retail competition for such off-grid customers. Despite the SAPS generation costs being shared across with the rest of the DNSP's customer base, it would be beneficial for them as it would still result in a net reduction in the DNSP's cost of operating its network and hence a lower DUOS charge for all customers.

The appropriateness of this model would likely need to be reviewed in the case where DNSP-supplied off-grid systems become more common such that the revenue associated became a material part of the overall network revenue.

## 6.3 Specific consumer protections for consumer-led transition to SAPS

This section considers the situation where a customer has opted to transition to an off-grid supply either voluntarily or in response to a payment from the DNSP. In this case, the DNSP is no longer responsible for the provision of energy services as a regulated service. Instead, the customer is responsible. While PIAC supports the application of existing consumer protections to SAPS consumers, we also consider it necessary to apply some protections specific to the risks faced by these consumers.

In general, PIAC supports a harm-cognizant, impact-based approach to consumer protections. The level of protection provided for a given service must be commensurate with the potential impact to the consumer from losing access to that service. It must be impartial to the method and technology involved in delivering the service.

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 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 which 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.

There is also potential for the customer's load to change in excess of the off-grid system's capacity to provide. This may be due to growth in demand and/or energy, changes in the time of usage or changes in the required level of security and/or reliability of supply such as the need for life support. Upgrading an off-grid system to meet this higher load requirement may require considerable capital investment, unlike the case if the same customer were to have retained their grid-connection. Therefore, it is important that customers who are transitioned to off-grid supply are made aware of such implications so they are able to make a fully-informed choice or are appropriately protected from these costs.

Given these specific risks for customers who own or lease a SAPS of their own volition, particularly where they are used to the nature of supply from the grid, additional consumer protections are required above those received by consumers who remain grid-connected.

It is important to remember that, currently, SAPS are typically provided by small businesses (often sole traders) who, because they are not selling energy, have no obligations to comply with retail licencing or exemption arrangements or any other aspects of the National Electricity Rules. The only redress consumers have with SAPS providers is under Australian Consumer Law (ACL), which has no energy specific consumer protections. Research undertaken for PIAC suggests that the warranties for many residential batteries, which form a crucial part of any SAPS, may not fully comply with the ACL.[6]

In a consumer-led transition to off-grid supply, PIAC considers that the SAPS systems should include:

- Performance guarantees regarding the frequency and duration of system outages;
- Educating the customer about the differences between living with a grid connection and living with a SAPS;
- Clearly demonstrating the Explicit Informed Consent of the customer, with particular emphasis on the customer's understanding of the differences between living with a grid connection and living with a SAPS;
- Clear and fair contract terms with a cooling off period;
- A transition period for customers where the premises is electrically isolated but not yet physically disconnected from the grid. This will allow the customer to trial the SAPS for a period and, if they opt out of using the SAPS and instead decide to retain the grid connection, the customer will not need to establish new grid connection infrastructure from scratch;
- Full disclosure of detailed product information to allow for straightforward repairs and identification of the correct replacement parts;
- Independent dispute resolution and recording and reporting of disputes to the AER; and
- A prudential fund or insurance against the failure of the system.

# ATTACHMENT 1: Responses to consultation questions

# ATTACHMENT 2: PIAC submission to *Alternatives to grid-supplied network services rule change* consultation paper

[6] Dr Penelope Crossley for PIAC, *Ensuring Consumer Protections for Purchasers of Residential Battery Storage Systems*, 2017.

# Attachment 1 Stakeholder feedback template

The template below has been developed to enable stakeholders to provide their feedback on the questions posed in this paper and any other issues that they would like to provide feedback on. The AEMC encourages stakeholders to use this template to assist it to consider the views expressed by stakeholders on each issue. Stakeholders should not feel obliged to answer each question, but rather address those issues of particular interest or concern. Further context for the questions can be found in the consultation paper.

Organisation: Public Interest Advocacy Centre
Contact name: Miyuru Ediriweera
Contact details (email / phone): mediriweera@piac.asn.au / (02) 8898 6525

| Questions | | Feedback |
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| **Question 1 – Jurisdictional opt-in provisions** | | |
| (a) | Should the arrangements supporting the transition to off-grid supply include an explicit mechanism to enable jurisdictions to determine when the national framework for SAPS would come into effect for DNSPs in their jurisdiction? | No.<br><br>PIAC supports implementing a nationally consistent framework in a timely manner. However, we suggest there may be benefit in allowing jurisdictions in adopting it earlier if required. |
| (b) | Should this mechanism provide jurisdictions with the flexibility to opt-in to the national framework on a more bespoke basis e.g. on a regional or distribution area basis, rather than state or territory wide? | No. PIAC does not consider there are sufficient differences between jurisdictions or distribution areas which would justify creating bespoke arrangements.<br><br>National consistency should be the primary goal. A national framework should be robust enough to cater for any differences and hence not require many deviations. |
| **Question 2 – Efficiency pre-condition** | | |

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| (a) | Is the RIT-D and supporting consultation process appropriate in the context of SAPS, including in respect of the different models of SAPS supply (that is, microgrids and IPS)? | Broadly, the process is appropriate. However, the cost threshold may need to be modified to ensure that all potential projects that could be more efficiently addressed by a SAPS are captured. Many of these projects may fall below the $5 million RIT-D cost threshold. We propose a cost threshold per customer served (such as $100,000 per customer) may be appropriate to conduct a less detailed alternative to a full RIT-D. (see Section 4 of PIAC's submission) |
| (b) | To ensure they remain fit-for-purpose in the context of SAPS, what (if any) amendments may be required to:<br>• the RIT-D test (including to the classes of market benefits and costs)<br>• the RIT-D consultation process and information requirements (including in relation to the non-networks options report), and<br>• the AER's application guidelines? | See above (and Section 4 of PIAC's submission) |
| (c) | Is there a need to develop a light handed, targeted test to apply where the RIT-D is either not applicable or not proportionate? What might this test and/or assessment process look like? | Yes. See above (and Section 4 of PIAC's submission) |
| **Question 3 – Consumer consent provisions** | | |
| (a) | Is a requirement for customer consent necessary? If existing consumer protections can be maintained for SAPS customers, is consent necessary? If so, should this be based on a unanimous or majority consent model? What are the implications and issues associated with each model? | 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 referred to 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.<br><br>By contrast, if the customer is expected to take responsibility for the SAPS system and forgo retail competition then it is essential their Explicit Informed Consent is obtained. In this case, the |

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| | | discussion below is relevant in considering the consumer protections required.<br><br>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.<br><br>By contrast, in the case where a customer has gone completely off-grid 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.<br><br>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. |

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| (b) | Are customers equipped to make informed decisions, particularly with respect to understanding what they are agreeing to in terms of reliability and security, and potentially price, outcomes? Should explicit informed consent be required before DNSPs transition customers from the grid to supply via a SAPS? | 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.<br><br>By contrast, if the customer is expected to take responsibility for the SAPS system and forgo retail competition then it is essential their Explicit Informed Consent is obtained.<br>In general, PIAC considers that, when properly informed, consumers are well-equipped to make efficient decisions regarding reliability, security and price.<br><br>It is critically important that the consent requirement is for Explicit Informed Consent to ensure that consumers are able to make these decisions. |
| (c) | Where consent is considered appropriate, could incentives be offered by DNSPs to secure the consent of affected customers? What might these be (and could the benefits of a SAPS be shared)? | PIAC considers it appropriate that customers can be offered the opportunity to cede their grid-connected supply in exchange for a suitable payment or incentive from the DNSP. If accepted, this customer would then be responsible for their electricity supply, rather than the DNSP. The payment provided should cover the costs to the customer of obtaining a suitable SAPS.<br><br>The benefits of this would be a more efficient network expenditure and hence lower distribution charges for all customers. |
| (d) | What alternative mechanism(s) could be used to ensure the long-term interests of affected customers are met? | Various models of SAPS service provision are available and appropriate in different circumstances – some which retain access to retail competition. These models are explored in Section 5 and Section 6.2 of PIAC's submission. |

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| **Question 4 – Regulatory oversight role** | | |
| (a) | Is there a need to incorporate a formal oversight and/or approval role by the AER (or other appropriate body) in relation to the transition arrangements for DNSP-led SAPS? | There is a role for the AER in providing oversight including monitoring and reporting on outcomes.<br><br>However, this must not be limited to only the transition to off-grid supply. It must also extend to the ongoing operation and maintenance of the system including operating the system in the most efficient way with respect to changes in demand behaviour (e.g.: installing new PV generation capacity where it is the most efficient option when demand increases rather than just relying on longer running diesel generation).<br><br>The AER must also be provided with the appropriate enforcement powers.<br><br>There is also a potential role for minimum accreditation standards – such as DNSP-led transition to SAPS can only be done by accredited parties. PIAC notes that good accreditation would also include ongoing monitoring and not be limited to only installation. |
| (b) | Who would be best placed to perform such a role? | No comment. |
| (c) | If the AER is the appropriate body, what additional benefits might be provided by giving the AER additional powers in relation to SAPS, given it is already responsible for monitoring, investigating and enforcing compliance with various aspects of the energy laws and rules? | It is essential to ensure not only that SAPS are installed efficiently, but that they are also maintained to that level.<br><br>This must be beyond just fixing breakdowns, as described in our response to 4a), it must include operating the system in the most efficient way with respect to changes in demand behaviour (e.g.: installing new PV generation capacity where it |

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| | | is the most efficient option when demand increases rather than just relying on longer running diesel generation). |
| **Question 5 – Grid-connection pre-condition** | | |
| (a) | Should new customers or developments without an existing grid-connection be eligible for SAPS provision facilitated by a DNSP? Why or why not? | No. New customers can still get SAPS under the current arrangements.<br><br>The AEMC's initial focus should be on existing grid-connections. This is the low-hanging fruit for DNSPs. While it may be desirable for new connections to have services provided by SAPS in the future, these arrangements are likely to be more complicated and should be considered separately.<br><br>See Section 3 of PIAC's submission. |
| (b) | Would new customers always have a financial incentive to obtain SAPS from the competitive market? Could implementation of a SAPS for a new customer or group of customers by a DNSP result in network savings? | Yes, new customers may have a financial incentive to obtain SAPS from the financial market where it is more efficient for them to do so.<br><br>PIAC does not consider that DNSPs providing SAPS to new customers would result in network savings. |
| (c) | Would enabling DNSPs to consider and potentially implement a SAPS solution as an efficient alternative to grid connection for new customers damage the competitive market for SAPS? In answering this question, consider new customers located in remote areas where a competitive market for SAPS may not be established. | Yes. It would be an unnecessary extension of the current ring-fencing guidelines to allow DNSPs to do this.<br><br>Further, PIAC notes that it is highly unlikely for there to not be a competitive market for SAPS in remote areas. |
| (d) | What are the potential issues associated with DNSP obligations to connect where SAPS are regulated under the national framework? | PIAC considers that DNSPs should give new connecting customers the option to connect to existing SAPS or interconnected grid where available. In doing so the DNSP must consider the efficiency of either option. |

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| | | The full cost of connecting new customers, including any cost to upgrade existing SAPS to which they are connecting, must be recovered from that customer. |
| **Question 6 – Right of reconnection** | | |
| (a) | Should existing reconnection rights apply unchanged to DNSP-SAPS customers wishing to seek reconnection to the grid? Alternatively, should the SAPS arrangements include special rights for DNSP-SAPS customers seeking to reconnect/revert? | If the customer has taken a payment from the DNSP to go off-grid or has done so of their own volition, they should be treated the same as any new connection.<br><br>If the SAPS is provided by DNSP as a regulated service, then the DNSP retains the obligation to maintain appropriate levels of supply to the customer. In this case, the application to reconnect to the grid would be a question of quality of supply and hence treated under those existing remediation arrangements. However, PIAC does not consider this likely as SAPS can be fixed or upgraded and should not be ongoing problem. |
| (b) | Should the reconnection rights of DNSP-SAPS customers who have provided consent (where applicable), or new customers, differ from the rights of customers who have not provided their consent to be moved? | See answer to 6a). |
| (c) | What might a “return to grid process”, including charges, look like for DNSP-SAPS customers | See answer to 6a). |
| (d) | Would a mechanism need to be designed to avoid any potential to burden other customers with the costs of reconnection? | No. Cost-reflective connection practices in general should be sufficient. |
| **Question 7 – Defining the SAPS system service(s)** | | |
| (a) | Should the national framework be designed around one model of SAPS service provision which could accommodate various circumstances? What might this model look like? | No. Various models of SAPS service provision are available and appropriate in different circumstances. These models are explored in Section 5 and Section 6.2 of PIAC’s submission. |

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| (b) | If the answer to the previous question is no, should this review focus on establishing a framework that allows DNSPs to pursue a variety of approaches to SAPS service provision, depending on the circumstances at hand? Why or why not? | Yes. Which model is more efficient and acceptable depends on a range of factors, including the number and size of customers to be supplied, their proximity to each other and exiting infrastructure, the relative costs of small-scale vs large-scale SAPS equipment, consumer preferences and the potential for future load growth and new connection. The regulatory framework should not determine this in a top-down fashion (see Section 5 of PIAC's submission) |
| (c) | In what circumstances (if any) might it be appropriate for a DNSP to own/operate a vertically integrated SAPS solution? | Various models of SAPS service provisions are available and appropriate in different circumstances. Some of these may include the DNSP owning and operating a vertically integrated SAPS – but does not include the DNSP providing retail services.<br><br>These models are explored in Section 5 and Section 6.2 of PIAC's submission. |
| (d) | When (that is, at what stage point in the process) would contestability in the provision of SAPS be tested and by who? | No comment. |
| **Question 8 - Role of the distributor** | | |
| (a) | Are the issues identified in the contestability of energy services rule change applicable in the context of SAPS? | No. PIAC considers these issues can be avoided as long as these SAPS remain an 'in front of the meter service' and the DNSP doesn't charge for energy or the energy charge is regulated.<br><br>As shown in Section 5 of PIAC's submission, there are a range of potential configurations for a SAPS. Many of these can be configured in a way such that the DNSP-provided components of a SAPS remain 'in front of the meter.' This is true even for systems which include PV on the roof of the customer's house.<br><br>As described in Section 6 of PIAC's submission, there are multiple methods of transparently dealing with charging the customer for the energy. |

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| (b) | Is it necessary and appropriate to restrict the ability for DNSPs to earn a regulated return on behind-the-meter and/or in-front-of-the-meter assets specifically associated with the provision of SAPS? Why or why not? | As discussed in our answer to 8a), there are multiple models which retain access to retail competition and where the SAPS provided by DNSP can remain in front of the meter. |
| (c) | In what circumstances (if any) might it be appropriate for a DNSP to own/operate a vertically integrated SAPS solution (that is, to seek an exemption (where relevant) from restrictions on asset ownership)? | PIAC does not consider this relevant. As discussed in our answer to 8a), there are multiple models which retain access to retail competition and where the SAPS provided by DNSP can remain in front of the meter.<br><br>Where it provides a more efficient alternative to traditional grid supply, PIAC considers it would be appropriate for DNSPs to own and operate all parts of a SAPS as long as it is in front of the meter. |
| **Question 9 – Provision of retail services** | | |
| (a) | Is it likely to be feasible to design arrangements to provide SAPS customers with access to retail competition? What might these arrangements look like? | Yes. As noted in the AEMC's Issues Paper, there are a number of models where SAPS customers could continue to access retail competition. We outline these in more detail in Section 5 and Section 6.2 of PIAC's submission.<br><br>Also note AEMC noting of our models in its consultation paper |
| (b) | What specific retail services would need to be provided to customers supplied via a SAPS model of supply? | Where a DNSP-led transition of off-grid supply retains retail competition, PIAC considers that all the retail services should still be provided to the customer. |
| (c) | Is there a need for a separate retailer role (distinct from the provision of other services) within the SAPS model of supply? Why/why not? | In PIAC's view, 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:<br>• retain existing interfaces with their authorised retailer and distributor; |

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| | | • remain covered by the National Electricity Retail Law and Retail Rules; and<br>• retain access to the competitive retail market.<br><br>This issue is explored on Sections 6.1 and 6.2 of PIAC's submission. |
| (d) | Should retail services be managed by an authorised retailer? | Under the SAPS models where retail services are still provided, PIAC considers it appropriate for the authorised retailer to continue to play this role. Retail issues are explored in more depth in Section 6.2 of PIAC's submission. |
| **Question 10 – Other roles/responsibilities specific to stand-alone power system provision** | | |
| | Who are the key stakeholders within a SAPS model of supply (other than the DNSP and the retailer) and, specifically, what would be their key roles and responsibilities? | Where the DNSP provides SAPS as a regulated service, there are likely to be third parties who are contracted by DNSP to install, maintain and operate the SAPS. Despite the DNSP contracting with such parties, the obligation to provide certain standards of service to the customer remains with the DNSP.<br><br>As noted in our response to 4a), PIAC considers there is a role for the AER in providing ongoing oversight and monitoring.<br><br>PIAC does not consider there is a role for AEMO other than for metering standards - we do not consider there is necessarily a role for AEMO in metering data or settlement. |
| **Question 11 – Treatment of existing market participants** | | |
| (a) | Which existing market participants (if any) may be impacted by a DNSP's decision to transition a customer (or group of customers) to a SAPS model of supply? | Given that SAPS supply necessarily involves on-site generation, all models for DNSP-led transitions to SAPS supply impact generators by removing consumers from supply by the wholesale electricity market. |

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| | | Further, under some models for DNSP-led transition, consumers may be removed from the retail market.<br><br>The different models for SAPS supply are explored in Section 5 of PIAC's submission. |
| (b) | Should DNSPs be required to consider the impact of transitioning a customer (or group of customers) to a SAPS on these participants? Why or why not? Via what mechanism? | The National Electricity Objective must be chief consideration. The long-term interests of consumers may be aided by the retention of access to retail competition and associated consumer protections as discussed in Sections 6.1 and 6.2 of PIAC's submission.<br><br>PIAC considers that the DNSPs should be mindful of the impact on retailers with respect to the need for any systems and billing changes for the SAPS-supplied customers. |
| (c) | Is it necessary to put in place special arrangements for market participants, including embedded generators or retailers, who may be affected by a DNSP's decision to transition customers to a SAPS model of supply? What might these arrangements involve? | PIAC considers that the DNSPs should be mindful of the impact on retailers with respect to the need for any systems and billing changes for the SAPS-supplied customers. |
| **Question 12 – Roles of AEMO and the AER** | | |
| (a) | What role could/should the AEMO play within the framework for SAPS provision by a DNSP? | PIAC does not consider there is a role for AEMO other than for metering standards - we do not consider there is necessarily a role for AEMO in metering data or settlement. |
| (b) | What role could/should the AER play within the framework for SAPS provision by a DNSP? | Given PIAC's view that SAPS consumers should retain the consumer protections afforded to standard supply customers, PIAC contends that the AER should play its existing monitoring and enforcement role in relation to these protections.<br><br>As discussed in our response to 4a), this must not be limited to the transition to off-grid supply alone. It must also extend to the ongoing operation and maintenance of system including operating the system in the most efficient way with respect to changes in demand behaviour |

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| | | Further, if the framework allows consumers to retain access to retail competition, the AER will necessarily retain its retail regulatory roles in relation to those consumers. Retail issues are explored in more depth in Section 6.2 of PIAC's submission. |
| **Question 13 – Retail price protections** | | |
| (a) | If retail competition is not possible in SAPS, what alternative protections may be appropriate (e.g. retail price controls) for customers receiving supply via SAPS? | In these rare circumstances, the DNSP could be a retailer and meter provider of last resort and provide a regulated price to the customer (e.g.: linked to a fair default offer). |
| (b) | Would applying the pricing condition from the AER's retail exempt selling guideline to not charge more than the standing offer price that would be charged by the local retailer be appropriate for SAPS, if retail competition does not apply? Is there an alternative price control that would be more appropriate? | PIAC does not consider the current standing offers to be a suitable default offer for any customer.<br>An alternate price control is described above in 13a). |
| (c) | In the areas that currently have price regulation, is extending that price regulation to customers in SAPS an appropriate approach? | Yes. PIAC contends that customers transitioned to SAPS by the DNSP should see as little change in their electricity supply experience as possible. Therefore, consumers in areas with price regulation should continue to pay the regulated price. |
| **Question 14 – Other national energy-specific consumer protections** | | |
| (a) | The Commission has suggested a general principle that energy-specific consumer protections for customers being supplied via a DNSP-led SAPS should be equivalent to those for grid-connected customers. Are there any significant provisions that wouldn't apply, or would require amendment for customers under a DNSP-led SAPS model of supply? | PIAC agrees with this principle. This issue is discussed in more length in Section 6.1 of PIAC's submission. |
| **Question 15 – Consumer protections specific to SAPS customers** | | |
| (a) | Are there any additional consumer protections that may be necessary for SAPS customers? | Where the SAPS is being provided by the DNSP as a regulated service, the DNSP would take responsibility for ensuring the SAPS maintains appropriate levels of service to the customer. This applies not only to the installation and commissioning, but also |

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| | | ongoing operation and maintenance of the system and ensuring it remains fit for purpose for any changes in demand.<br><br>In other cases where the SAPS is not provided as a regulated service (i.e.: where a customer has elected to go off-grid voluntarily or in response to a one-off payment from the DNSP), these obligations lie with the consumer themselves. In these cases, the following applies:<br><br>PIAC contends that the level of protection given to a particular consumer should be commensurate with the level of potential harm to that consumer. 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.<br><br>By contrast, in the case where a customer has gone completely off-grid 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.<br><br>In either case, the failure of the SAPS results in a significant impact to the customer through the loss of an essential service. |

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| | | This may result in the customer losing heating and cooling in remote areas which 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.<br><br>In this context, PIAC considers that SAPS-specific consumer protections should include:<br><br>▪ Performance guarantees regarding the frequency and duration of system outages;<br>▪ Educating the customer about the differences between living with a grid connection and living with a SAPS;<br>▪ Clearly demonstrating the Explicit Informed Consent of the customer, with particular emphasis on the customer's understanding of the differences between living with a grid connection and living with a SAPS;<br>▪ Clear and fair contract terms with a cooling off period;<br>▪ A transition period for customers where the premises is electrically isolated but not yet physically disconnected from the grid. This will allow the customer to trial the SAPS for a period and, if they opt out of using the SAPS and instead decide to retain the grid connection, the customer will not need to establish new grid connection infrastructure from scratch;<br>▪ Full disclosure of detailed product information to allow for straightforward repairs and identification of the correct replacement parts;<br>▪ Independent dispute resolution and recording and reporting of disputes to the AER; and<br>▪ A prudential fund or insurance against the failure of the system.<br><br>These issues are explored in Section 6.3 of PIAC's submission. |

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| | | As noted earlier, this is different to where the DNSP provides a SAPS as a regulated service, as in such cases the responsibility for ensuring appropriate standards of supply would sit with the DNSP themselves rather than the consumer. |
| (b) | In relation to detailed product information for the SAPS, what are the minimum provisions that should apply (if any)? | See above. |
| **Question 16 – Options for providing electricity-specific consumer protections** | | |
| | To provide equivalent protections for consumers receiving electricity supply via SAPS is the most efficient approach to amend the jurisdictional Acts adopting the NERL, as well as amending the NERL and NERR? Is there an alternative approach which may be more effective? | As a general principle, PIAC considers that national consistency should be the priority. |
| **Question 17 – Reliability, security and quality** | | |
| (a) | What reliability, security and quality standards are appropriate for DNSP-led SAPS? Should the same reliability and service quality levels apply as for grid-connected customers? | PIAC expects SAPS will often provide much better quality of service than the long, stringy power lines that they are likely to replace. Therefore, we consider it appropriate for the same reliability, security and quality standards to be applied to DNSP-led SAPS as are applied for grid-connected customers. |
| (b) | Are there any existing network reliability, security and quality standards that would be difficult to comply with for SAPS? For example SAIDI and SAIFI requirements may have equivalent principles, but the practice for determining them may be different in SAPS. | SAPS need monitoring built-in and at point of supply to customer to ensure information is being collected to assess performance. These are standard for smart meters (for monitoring at the customer's connection point) and inverters (for monitoring generation). Therefore, we do not consider this would impose a material new burden on any SAPS supplier or purchaser. |
| (c) | Should GSLs be determined for DNSP-led SAPS? If so, should the same standards apply as for grid-connected customers (why/why not)? | Yes, it should be the same as for grid-connected customers. As discussed in our response to 17a), many SAPS customers will experience better quality of service than the long, stringy power lines that they are likely to replace. |

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| **Question 18 – Other jurisdictional consumer protection considerations** | | |
| (a) | Are the other jurisdictional issues presented in section 5.6 less likely to be a concern for DNSP-led SAPS (why/why not)? | PIAC contends that customers transitioned to SAPS should see as little change in their electricity supply experience as possible. Therefore, the jurisdictional protections should continue to apply.<br><br>Further, under most of the DNSP-led SAPS models outlined in Section 5 of PIAC's submission (models 2, 3 and 4), we agree with the AEMC's initial view that these protections will automatically apply. |
| (b) | Should any of these issues be examined in greater detail in relation to DNSP-led SAPS? | No comment. |
| **Question 19 – Third party stand-alone power systems – decision making framework** | | |
| (a) | Which party should make the decision to transition customers to a SAPS and which party/ies should approve the decision | We do not make comment on the third-party provision of SAPS here but will seek to address in future stages of review.<br><br>PIAC has given a lot of thought to the issues relating to the third-party provision of SAPS and has raised these points in previous submissions. We look forward to meeting with Commission as they work through these issues for next stage of this review. |
| (b) | What should be the grounds for deciding to transition customers to a third party SAPS? | See 19a). |
| (c) | Which mechanisms should be employed to seek approval and/or consent? | See 19a). |
| (d) | If the consent of transitioned customers is sought, what is the proportion of customers that should provide their consent? Should consent factors be defined, and what should they be? | See 19a). |

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| (e) | Should transitioned customers, either individually or collectively (in the case of a microgrid), retain the right to reconnect to the grid? | See 19a). |
| **Question 20 – Third party stand-alone power systems –asset transfer and stranded assets** | | |
| (a) | Is there a role for the AER, jurisdictional regulator or other body in setting or approving asset values and pricing methodologies as a result of the transfer? | See 19a). |
| (b) | How should asset transfers be treated in the DNSP RAB? | See 19a). |
| (c) | How should stranded assets be treated in the DNSP RAB? | See 19a). |
| (d) | Should corresponding fees be charged to the transitioned customers and customers left behind on the grid? | See 19a). |
| (e) | Is a dispute resolution framework design required for asset transfer and stranded assets? What are the key elements of the design? | See 19a). |
| **Other comments on the review or consultation paper** | | |
| | Do you have any other comments on the rule change request or the consultation paper? | See: PIAC submission. |

public interest
ADVOCACY CENTRE

# PIAC submission to AEMC Alternatives to grid-supplied network services rule change consultation paper

**28 July 2017**

Level 5, 175 Liverpool Street, Sydney NSW 2000
Phone: 61 2 8898 6500 • Fax: 61 2 8898 6555 • www.piac.asn.au

# 1. Introduction

## 1.1 The Public Interest Advocacy Centre

The Public Interest Advocacy Centre (PIAC) is an independent, non-profit law and policy organisation that works for a fair, just and democratic society, empowering citizens, consumers and communities by taking strategic action on public interest issues.

PIAC identifies public interest issues and, where possible and appropriate, works co-operatively with other organisations to advocate for individuals and groups affected.

Established in July 1982 as an initiative of the (then) Law Foundation of New South Wales, with support from the NSW Legal Aid Commission, PIAC was the first, and remains the only broadly based public interest legal centre in Australia.

## 1.2 Energy and Water Consumers' Advocacy Program

The Energy + 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 policy input to the program from a community-based reference group whose members include:

- Council of Social Service of NSW (NCOSS);
- Combined Pensioners and Superannuants Association of NSW;
- Ethnic Communities Council NSW;
- Salvation Army;
- Physical Disability Council NSW;
- Anglicare;
- Good Shepherd Microfinance;
- Financial Rights Legal Centre;
- Affiliated Residential Park Residents Association; and
- Tenants Union.

# 2. PIAC's position on the rule change proposal

PIAC is supportive of distribution network service providers (DNSPs) pursuing the least-cost option to provide regulated network services. In the same way that DNSPs should consider non-network in addressing a need, PIAC considers that DNSPs should also consider off-grid, or Stand-alone Power Supply (SAPS), solutions where they provide a cost-effective alternative to traditional network solutions.

As such PIAC supports the intent of the rule change proposal. However, PIAC raises a number of issues for the AEMC to consider in making its determination which cover aspects of potential configurations for providing off-grid supply and the necessary consumer protections for customers who are transitioned to off-grid supply.

PIAC understands that the rule change proposal is to clarify that DNSPs can provide off-grid solutions to its customers who are currently grid-connected and receiving regulated network services only where it is a more efficient alternative to a continued grid-connection.

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. While PIAC considers that the current Rules do not explicitly prevent DNSPs from pursuing off-grid systems in these cases, we 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.

Therefore, the key factor behind the DNSP proposing a Stand-Alone Power System (SAPS) solution would be to reduce costs in either network augmentation or replacement expenditure. The DNSP is best placed to see the true costs of providing network services to a customer (or group of customers) and, in the absence of locational network pricing, or another incentive for the consumer (for example as part of an agreement for any customer/s to forego their entitlement to receive energy from the grid) the customers themselves will have insufficient price signal to install a SAPS.

In considering this rule change, it is important to note there are two general cases where a customer might be supplied by a SAPS. One is where the customer has not sought a change to their method of electricity supply and any change is done "behind the scenes" by the DNSP as the most cost-effective way of providing regulated network services. In this case, the arrangements should seek to retain as many aspects as possible of a grid-connected customer's relationships, interactions and protections, irrespective of the source of supply.

The second case is where a consumer nominates to receive their power supply from a SAPS that they themselves own or lease of their own volition, potentially as part of an agreement for that consumer to forego their entitlement to receive energy from the grid in return for a payment. PIAC supports consumers having this option where appropriate. These consumers will require additional protections to those currently afforded to off-grid customers, similar to protections that exist currently under retail and distribution frameworks but reflect the greater risk to the customer should the SAPS fail to operate as expected. These protections are as discussed in more detail in 5.2 Specific protections for consumers going off-grid.

## 2.1 Extent of the rule change proposal

PIAC supports the intent to the rule change to clarify that a DNSP can provide off-grid solutions where they provide a cost-effective alternative to traditional network solutions. PIAC also supports the limitations proposed by Western Power on the situations where the DNSP can provide an off-grid solution as a regulated service.

PIAC understands that the proposal will only extend to customers who are currently grid-connected and the DNSP identifies that an off-grid solution is a more cost-efficient alternative to continuing their grid supply. PIAC also understands that the proposal will not extend to customers who are currently off-grid, in a microgrid or are seeking to go off-grid of their own volition. Further, it will not prevent such customers choosing for themselves to disconnect from the grid and purchase an off-grid solution through the competitive market.

## 2.2 Appropriate trigger for evaluation of network options

It is likely that projects to transition customers to SAPS supply will be driven by a replacement or other investment needs of the DNSP's network.

The recent 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 $5 Million RIT-D threshold.

PIAC expects, however, that due to the nature of smaller distribution upgrades that effect supply to a limited number of consumers at the fringe of the grid[1], many of the potential projects where consumers might be more effectively supplied by SAPS will be less than the cost threshold for conducting a RIT-D, currently $5 million.

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.

In the interest of identifying the most cost-effective measures to supply existing consumers, in PIAC's view, a less detailed investment test than a RIT-D (i.e.: a "RIT-D lite") should be applied for any projects of less than $5 million that only supply a small number of customers. Noting the SAPS cost of $50,000, an appropriate threshold for this might be $100,000 per customer served.

[1] Such as reconductoring, pole replacement, upgrading distribution transformers, installing switchgear and so on.

## 2.3 Definition of a grid-connected customer

PIAC understands that the AEMC has interpreted the National Energy Retail Law to mean that a distributor moving a customer from grid supply to off-grid supply would constitute disconnection and hence would be subject to various limitations under the Law.

However, PIAC questions this interpretation and points out that it is problematic in this context.

PIAC agrees that disconnection is defined as the electrical separation of a premises from the distribution system. However, if the distributor is providing the SAPS as a regulated service in lieu of a traditional grid connection, as proposed in this rule change, then PIAC contends that the network assets should be considered as being part of the distribution system.

This will make clear that the customer is still subject to the protections under the National Energy Retail Law as they were while still grid-supplied, and that the network business can recover the efficient costs of providing this service. This also makes clear under the Retail Law that the distributor and/or retailer must obtain the explicit informed consent of the customer.

This does not, however, limit the need for any additional protections specifically for customers who choose to provide their own SAPS, as discussed in 5.2 Specific protections for consumers going off-grid.

## 2.4 Understanding of regulated network services

PIAC acknowledges concern regarding regulated distribution businesses potentially providing 'behind the meter services' and the overlap between this rule change and other reforms, in particular, the contestability of energy services rule change. PIAC agrees that there are risks to competition and ultimately to consumer outcomes from regulated distribution businesses unfairly being able to edge out otherwise efficient competitors.

However, this should not prevent the AEMC from considering this rule change proposal. So long as appropriate ring-fencing and other protections are in place, DNSPs should be able to pursue the least cost solution to provide network services. Limitations such as the limbs in Western Power's proposed rule can effectively restrict the situations where the DNSP can provide an SPS as a regulated service to only those where it is clearly the least cost solution to meeting its obligation to provide distribution services, as opposed to providing contestable behind the meter or off-grid systems, ensuring that the benefit of the least-cost solution being chosen is socialised among all consumers.

# 3. Stand-alone power systems

## 3.1 A typical stand-alone power system

Currently, customers who choose a SAPS mostly do so because they are too far from existing grid infrastructure to make a cost-effective grid connection. Increasingly, as the cost of SAPS continue to drop and energy from the grid becomes more expensive, consumers choose SAPS for other reasons. While there may be financing options available, the customer typically procures the physical assets either from one of a number of suppliers each offering markedly different

products. This is in contrast to a grid-connected supply where the customer is procuring a more or less identical service from a retailer via the single interface of “the grid”.

As shown in Figure 1, 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.

It is important to note that while there are multiple assets which make up an SPS, and these may be physically housed on, or integrated with, the site, there is still typically effectively still a single electrical connection from the SPS to the customer’s premises.

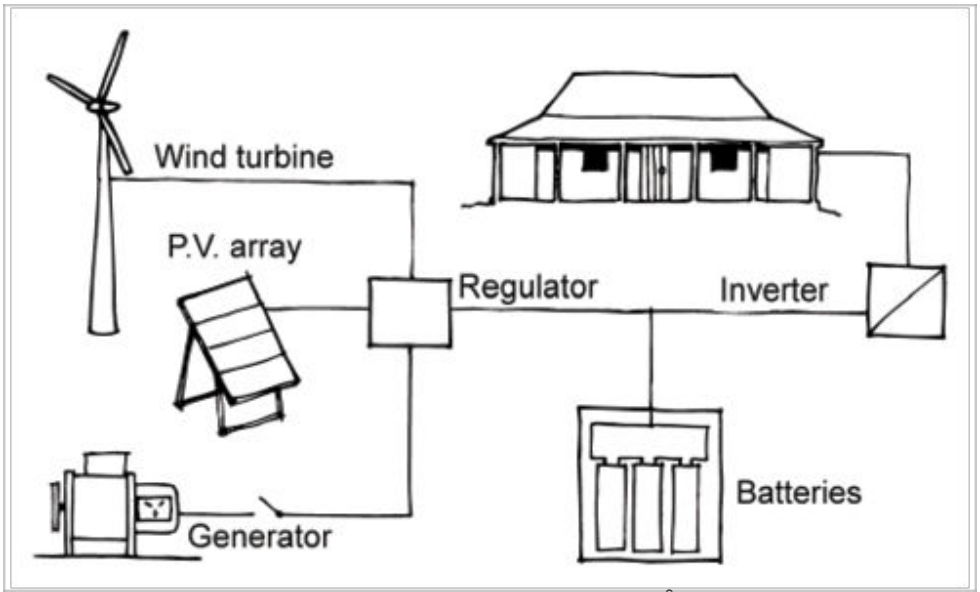



*Figure 1 Typical configuration of a Stand-alone Power System*[2]

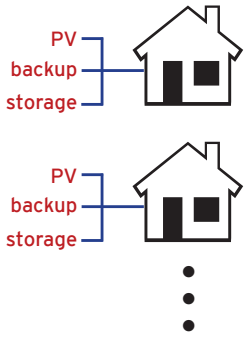
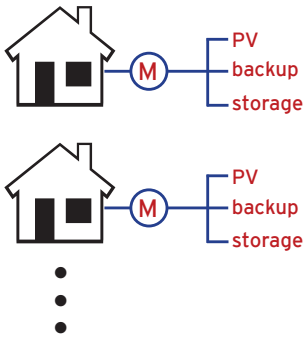
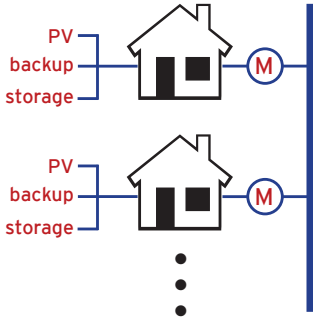
When off-grid customers are procuring the assets and not a service, they are not charged based on their usage (notwithstanding ongoing costs for maintenance, repairs and replacements and fuel costs for any use of a backup generator) but instead effectively charged for the capacity of their system. Therefore, they will often not have a revenue meter in the same way that a grid-connected customer will and be charged based on their usage (in kWh and/or kW).

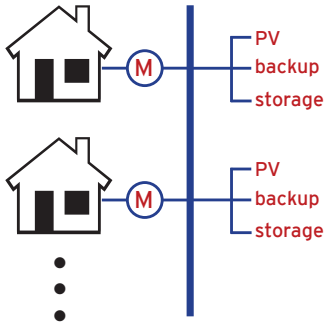
However, PIAC contends it is possible for SAPS to retain aspects of a grid-supplied system, most notably a metered connection with access to retail competition and consumer protections. These are outlined in the following section. In PIAC’s view, this should be able to be done, in the context of this rule change proposal, where the customer is not necessarily choosing to transition to off-grid themselves, but is being transitioned by the DNSP as a more cost-effective alternative to providing network services.

2 http://www.yourhome.gov.au/energy/batteries-and-inverters

## 3.2 Possible configurations for stand-alone power systems

There are a range of different configurations that may prove the most cost-effective solution to providing off-grid supply to customers. These are summarised in Figure 2. Where SAPS are being considered, the most efficient solution will often be a SAPS with no connection to the local grid. In some cases, particularly local microgrids, it may be a hybrid of these configurations. Which of these is more efficient and acceptable depends on a range of factors, including the number and size of customers to be supplied, their distribution relative to each other and exiting infrastructure, the relative costs of small-scale vs large-scale SAPS equipment, and consumer preferences.

| | |
|---|---|
|  | **1) Unmetered individual SAPS**<br>• All SAPS equipment is integrated into the premises<br>• Billing to customer for payback of capital cost and not necessarily related to electricity usage<br>• Similar to many current off-grid systems<br>• No role for any energy retailer or DNSP |
|  | **2) In front of the meter individual SPS**<br>• Similar to (1) except SPS equipment is separated by a revenue meter – similar to meter used in grid supply<br>• Customer is charged for energy usage, as per normal grid connection<br>• Role for retailer and/or DNSP |
|  | **3) Microgrid with behind the meter generation**<br>• Similar to (1) except customers are connected in a microgrid to allow sharing between premises<br>• Revenue meter for use of the microgrid<br>• Some customers may have larger or smaller capacity of generation and storage onsite. Some customers may be net importers and others net exporters<br>• 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
- SPS equipment can be a mix of distributed and centralised
- Customer charged using revenue meter similar to grid supply
- Role for retailers and DNSP

*Figure 2 Potential configurations for Stand-alone Power Systems (SPS)*

Importantly, there are configurations possible which, from the customer's perspective, retain many aspects of their grid-supply arrangements including a role for a retailer as in grid-connected supply and the use of a revenue meter as a line of demarcation between the customer's premises and the DNSP's network assets and infrastructure. 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. As noted previously, PIAC recommends that the AEMC consider options that seek to retain as many aspects as possible of a grid-connected customer's relationships, interactions and protections to these off-grid customers.

In the event that a microgrid is deployed, a mix of centralised and decentralised generation is possible. For example, it may be more cost effective to deploy distributed PV and storage devices throughout the microgrid, potentially at or near each customer's premises, solar systems installed on rooftops and/or in public space, and a single large backup generator to supply the entire microgrid with power in the event of sustained generation shortfall or equipment failure.

## 3.3 Treatment and recovery of generation costs

Regardless of the configuration, the issue of the DNSP's cost recovery for generation will need to be considered.

PIAC supports the DNSP owning and operating the generation assets in a SAPS where it is the most cost-effective solution to providing network services, provided any operating expenditure, such as for fuel for the backup generator or maintenance, is subject to appropriate regulatory oversight. Importantly, opex may change year to year depending on many factors including how often the backup generator is used due to weather, customer usage patterns and breakdowns.

Where energy is still delivered to the customer as a metered service (configurations 2 and 4 above) PIAC considers there are a number of potential options for this that allow the customer to still access retail competition:

- allow cost recovery through the retailer at a price linked to and/or capped by the regional spot price for energy. This option may support retail competition by providing consistency between on and off grid arrangements.
- allow cost-recovery through a retailer using a regulated price for the efficient operation of off-grid systems. This provides an incentive for DNSPs to provide the service at or below the regulated prices, but would impose additional obligations on the AER or jurisdictional regulators to set and monitor these benchmark efficient operating costs. This may require a range of prices to be set depending on the configuration and scale of the off-grid systems.

This option may encourage retail competition by allowing a higher gross retail margin than for a grid connected customer.

- in the case where this operating expenditure is relatively small, it may be appropriate for the DNSP to not recover these costs directly from the customer or retailer. In this case, the DNSP's operating costs may be included in the DNSP's total operating expenditure allowance in its revenue proposal and hence recovered from all customers. This would further reduce costs for the off-grid customer's retailer and more strongly encourage retail competition for such off-grid customers. This would likely need to be reviewed in the case where DNSP-supplied off-grid systems become more common such that the revenue associated became a material part of the overall network revenue.

# 4. Retention of retail arrangements for off-grid customers

As noted in the above section, there are opportunities for off-grid supply to be arranged in a way that retains the current customer interfaces with their authorised retailer and distributor and the customer may remain covered by the Retail Law and Retail Rules. In these arrangements, the customer has the benefit of continuity of experience where they continue to pay their bills to a retailer, access competitive retail offers and the same consumer protections.

## 4.1 Access to retail competition

While PIAC has concerns about the effectiveness of retail competition for consumers in the current retail market, retail competition has the potential to provide considerable benefit. Competitive tension between retailers ought to drive lower costs for consumers and encourage innovation in their offers. Further, allowing customers choice in their retailer and retail offer may allow them to select a retail offer which best suits their particular needs. For these reasons, retaining access to retail competition is important.

## 4.2 Existing consumer protections

Retaining retail arrangements will allow off-grid consumers to continue to be covered by the same consumer protections they have while grid-connected. These include:

- access to a retailer's hardship programs and repayment plans where customers cannot pay their energy bills. These plans help prevent low-income and vulnerable customers from falling unnecessarily deep into debt and other financial stress in order to receive essential energy services and an important safety net to prevent the need for disconnection of supply
- access to rebates and vouchers such as the Energy Accounts Payment Assistance (EAPA) Scheme in NSW
- strict limitations on retailers and distributors around the conditions under which the customer may be disconnected
- stringent protections around disconnection for customers with life support equipment
- access to binding dispute resolution processes through the ombudsman's schemes. These dispute resolution processes allow consumers to have free and independent dispute resolution with their retailer or distributor which they may otherwise not have.

# 5. Consumer protections for off-grid customers

PIAC considers that the current consumer protection frameworks are in need of significant changes to reflect that access to energy is essential in a modern society while acknowledging that not all energy services are inherently essential.

With this in mind, PIAC recommends moving to a harm-cognizant, impact-based approach to consumer protections, where the level of protection for a given service is commensurate with the potential impact to the consumer from something going wrong, and is irrespective of the method and technology involved in delivering the service.

## 5.1 The risks for consumers in going off-grid

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 and foregone their connection to the network, the consequences of the SPS failing are considerably more severe. If there is no backup generator as part of the SPS, 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 SPS 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 which 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.

There is also potential for the customer's load to change in excess of the off-grid system's capacity to provide. This may be due to growth in demand and/or energy, changes in the time of usage or changes in the required level of security and/or reliability of supply such as the need for life support. Upgrading an off-grid system to meet this higher load requirement may require considerable capital investment, unlike the case if the same customer were to have retained their grid-connection. Therefore, it is important that customers who are transitioned to off-grid supply are made aware of such implications so they are able to make a fully-informed choice or are appropriately protected from these costs.

## 5.2 Specific protections for consumers going off-grid

Given these specific risks for customers who to own or lease a SAPS of their own volition, particularly where they are be used to the nature of supply from the grid, additional consumer protections are required above those received by consumers who remain grid-connected.

It is important to remember that, currently, SAPS are typically provided by small businesses (often sole traders) who, because they are not selling energy, have no obligations to comply with retail licencing or exemption arrangements or any other aspects of the National Electricity Rules. The only redress consumers have with SAPS providers is under Australian Consumer Law (ACL), which has no energy specific consumer protections. Work undertaken by PIAC suggests that the warranties for many residential batteries, which form a crucial part of any SAPS, may not fully comply with the ACL.

PIAC considers that SAPS systems, where they are purchased outright or leased by the consumer to replace an existing grid connection, should include:

- Performance guarantees regarding the frequency and duration of system outages
- Educating the customer about the differences between living with a grid connection and living with a SAPS
- Clearly demonstrating the Explicit Informed Consent of the customer, with particular emphasis on the customer's understanding of the differences between living with a grid connection and living with a SAPS
- Clear and fair contract terms with a cooling off period
- A transition period for customers where the premises is electrically isolated but not yet physically disconnected from the grid. This will allow the customer to trial the SAPS for a period and, if they opt out of using the SAPS and instead decide to retain the grid connection, the customer will not need to establish new grid connection infrastructure from scratch
- Full disclosure of detailed product information to allow for straightforward repairs and identification of the correct replacement parts
- Independent dispute resolution and recording and reporting of disputes to the AER
- A prudential fund or insurance against the failure of the system.

# 6. Consultation questions

Responses to the AEMC's consultation questions and other issues for the AEMC to consider are provided in Attachment A.

# 7. Further engagement

PIAC would welcome the opportunity to discuss the issues considered herein in more depth. For any queries please contact Energy Team Leader, Craig Memery at cmemery@piac.asn.au or on (02) 8898 6522.

# Attachment A: Responses to consultation questions

## Question 1 Nature of issues

*a) Do Western Power's concerns, as described in section 2.2, accurately identify the nature of any problems associated with distributor-led transitions from grid supply to off-grid supply in the jurisdictions that are part of the national electricity market?*

PIAC supports network businesses pursuing the least-cost options to provide regulated services. In the same way that DNSPs should consider non-network options in addressing a need, PIAC considers that DNSPs should also consider off-grid solutions where they provide a cost-effective alternative to traditional network solutions.

PIAC agrees that there is uncertainty around whether a SAPS would be considered a distribution service under current arrangements. While PIAC does not consider this uncertainty expressly prevents DNSPs from pursuing off-grid systems in all cases, we welcome clarity to allow network businesses to pursue SAPS and other alternatives to traditional network options wherever it is the most efficient solution.

*b) In relation to customers who currently have a grid connection, is there workable competition for off-grid supply systems, or are there barriers that significantly impede businesses that are not economically regulated (non-distribution businesses) from providing off-grid supply to these customers?*

Currently there are some consumers who have made decisions to go off-grid of their own accord for a range of reasons such as being too remote to make a grid connection a viable option or for personal preference.

PIAC understands that this rule change proposal is not targeting these customers. Instead, it is intended to capture customers who currently have a grid-connected supply but the DNSP has identified that an off-grid supply would be a more cost-effective option. For these consumers, there is currently no incentive for them to go off-grid even though it would be a lower cost option overall as these customers are not exposed to the full cost of supplying their grid connection (in the absence of locational network pricing).

As noted above, due to the nature of smaller distribution upgrades that effect supply a limited number of consumers at the fringe of the grid[3], many of the potential projects where consumers might be more effectively supplied by SAPS will be less than the cost threshold for conducting a RIT-D, currently $5 million.

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.

In the interest of identifying the most cost-effective measures to supply existing consumers, in PIAC's view, a less detailed investment test than a RIT-D (i.e.: a "RIT-D lite") should be applied

[3] Such as reconductoring, pole replacement, upgrading distribution transformers, installing switchgear and so on.

for any projects of less than $5 million that only supply a small number of customers. Noting the SAPS cost of $50,000, an appropriate threshold for this might be $100,000 per customer served.

c) *Does the issue identified by Western Power, and any barriers from (b), indicate that it may be appropriate to allow distributors to provide off-grid supply as a regulated service, in certain circumstances?*

It may be favourable for DNSPs to provide off-grid systems in cases where it is a more efficient solution to provide network services because they may be better able to provide continuity of service to the customer.

As noted earlier, SAPS are typically provided by small businesses (often sole traders) who, because they are not selling energy, have no obligations to comply with retail licencing or exemption arrangements or any other aspects of the National Electricity Rules. The only redress consumers have with SAPS providers is under Australian Consumer Law (ACL), which has no energy specific consumer protections.

PIAC notes the submission by ATA and CUAC in their 2015 New Products and Services in the Electricity Market Consultation Paper:

> Currently, the protections afforded to consumers who choose to go 'off the grid' are mostly limited to:
> - Electrical safety provisions, such as the wiring rules. These are mandatory for the standard household voltages (Low voltage, eg 240 VAC), however an electrical licence is not required to work on elements of a SAPS that operate at Extra Low Voltage (up to 48VAC and 110VDC). This means that battery systems and components can legally be installed and maintained by someone without a full electrical licence.
> - Clean Energy Council's SAPS installer accreditation. Importantly, a SAPS installer does not legally require this accreditation, and providers of cheaper poor quality SAPS can easily undercut more reputable providers that do have accreditation. In any case, this accreditation caters to traditional SAPS applications so does not specifically address the unique risks and needs of grid-connected consumers moving off-grid.
> - The ACL, which carries little in the way of energy-specific protections.[4]

Classification as a regulated service also provides a number of customer protections including regulatory oversight of expenditure, similar consumer experience to a grid-supplied customer and additional consumer protections specific to an off-grid system (see above Sections 2.2, 4 and 5.2, respectively).

Considering these protections, the provision of SAPS by a DNSP and as a regulated service under the National Electricity Rules may carry markedly less risk for consumers than provision by a small business as a contestable service outside of the Rules.

[4] ATA and CUAC, *Submission to COAG Energy Council Energy Market Reform Working Group on New Products and Services in the Electricity Market Consultation Paper*, 2015, pg. 10.

*d) Other than concerns as to whether off-grid supply would constitute a distribution service, what barriers (such as other regulatory barriers or licence requirements) prevent distributors from seeking customers' agreement to move off-grid where it would be cost effective?*

No response.

## Question 2 Costs and benefits of moving to off-grid supply

*a) Do you agree with Western Power's description of the costs and benefits of transitioning from grid supply to off-grid supply? What other costs and benefits should be considered?*

Transitioning a customer from grid supply to off-grid supply may provide benefits in network costs in terms of reduced assets costs for the network infrastructure used directly to supply the customer(s), reduced asset costs for assets elsewhere in the network which are used to supply multiple customers, reduced operating costs in maintenance of remote distribution assets, potentially improved reliability and security, reduced network losses. In addition, there may be benefits of reduced carbon emissions from a greater reliance on local renewable generation than if supplied through a centralised grid. PIAC expects these benefits to be passed on to consumers through lower overall network costs.

The exact quantum of these costs and benefits will vary based on numerous factors.

*b) What credible estimates are there of the current costs to procure, install and maintain (i) microgrids and (ii) individual power systems in fringe of grid areas of Australia? How are those costs broken down between electricity generation, network provision and retail costs/billing? How do these costs compare to the costs of providing electricity to such customers through the national grid?*

- There are multiple possible configurations for an off-grid system for the situations considered in this rule change proposal, such as distributed generation behind the meter, distributed generation in front of the meter or centralised generation in front of the meter.
- Each of these will have different costs but most of these will have common factors including: requiring a lumpy capital investment to install, relatively cheap marginal cost to run once installed and requiring (smaller) lumpy capital investment for refurbishment after about 10 and 20 years.
- Today, a SAPS system with a capital outlay of around $50,000 would supply a typical regional or remote residential household, with a level of reliability at least as high as what they receive from the grid, for a lower ongoing operating cost than the wholesale component of energy sent from the grid.

*c) Distributors, please provide information (to the extent you have any) on the number of your customers who are currently grid-connected but who you consider may be more cost-effectively served by (i) microgrids and (ii) individual power systems. Consider current and projected costs of those systems.*

As noted above a SAPS system with a capital outlay of around $50,000 would supply a typical regional or remote residential household, with a level of reliability at least as high as what they receive from the grid, for a much lower ongoing and operating cost. The same system would

have cost approximately $78,000 in 2011. A Consumer Advocacy Panel-funded study by SKM MMA in 2011 found that, due to the higher upfront cost but lower ongoing costs associated with SAPS compared to energy supplied from the grid, it was more cost effective to

> spend approximately $78,000 up-front on a high quality, automated SAPS than to upgrade the grid at a cost of $50,000. To put that in perspective, $50,000 broadly equates to the cost of undergrounding 100 metres of existing powerline to a single home.[5]

d) *What are the key factors that make customers candidates for off-grid supply? For example, upcoming line replacements, local reliability or congestion issues, safety standards, line undergrounding requirements, declining costs of off-grid supply, presence of existing distributed generation?*

PIAC expects that key factors, as the rule change has proposed, would be cases where the DNSP is obligated to undertake significant network (capital) expenditure.

This may be where a consumer or group of consumers in a remote area are supplied by a long, stringy line which is due for replacement. There are many potential drivers for replacement including the asset(s) reaching the end of their useful life, the need for expensive refurbishment or repair, or jurisdictional obligations on issues such as bush fire risk.

Requirements to improve reliability or quality of supply may also be an important driver, especially in remote areas which are often characterised by a weak network and long time to restore power due to the remoteness of the area.

However, PIAC considers there are other opportunities where off-grid supply may be a lower cost option but is not highlighted because there is currently no need for the DNSP to replace or augment the existing grid connection.

Another factor is the level of energy use of the consumer. The lower the energy consumption of the customer, the more cost-effective an off-grid system will be as an alternative to grid-connected supply. Indeed, some very low energy use customers may be more efficiently supplied through an SAPS than grid-supply even in the absence of the need for a network augmentation or replacement project.

e) *Distributors, if you were permitted to supply the customers identified in question (c) through off-grid supply, please provide an estimate of your annual savings (if any). Please state any critical assumptions such as pricing approaches to be applied to off-grid customers.*

In addition to cost estimates for savings for avoided network replacement and maintenance costs sourced from DNSPs, PIAC recommends the AEMC consider other sources. For instance the Victorian Powerline Bushfire Safety Taskforce suggests that the capital cost of replacing a Single Wire Earth Return (SWER) line with covered wire would be between $112,490 and $221,910 per

[5] ATA, *Stand Alone Power Systems as an Alternative to Grid Connection at the Fringe of the Grid – Summary for Policy Makers*, 2012, pg. 4.

km and replacement with an aerial bundled conductor would be between $221,720 and $320,100 per km (2011 dollars).[6]

*f) Other than the costs of the off-grid supply itself, what costs and benefits are likely to arise from moving certain customers off-grid, for the customer, the distributor, the customers remaining on the grid, retailers, local generators, or any other parties? How could any costs be mitigated?*

Moving remote customers to off-grid supply will likely lead to lower operating expenses for the DNSP in terms of reduced maintenance of long, remote lines. These savings will then pass on to consumers through lower network charges. In addition, off-grid systems typically have shorter asset lives than the 40- or 50-year asset lives of many network assets, hence SAPS may in some cases be a better approach to dealing with uncertainty such as the energy sector is currently experiencing in terms of changing usage patterns and new technologies enabling alternatives to traditional supply options.

## Question 3 Potential alternatives to the proposed rule

*a) If a rule change is considered necessary, are there alternatives to the proposed rule which relate to the issues raised in the request and:*
- *i) are consistent with the Law;*
- *ii) would allow all customers to benefit from lower costs by enabling electricity to be supplied in the most efficient way in each area; and*
- *iii) would result in customers who move to off-grid supply receiving electricity supply with appropriate reliability, quality, safety and other relevant consumer protections?*

PIAC recommends that the AEMC seek to retain as many aspects as possible of a grid-connected customer's relationships, interactions and protections for customers who are transitioned to off-grid supply as a more cost-effective alternative.

In addition, PIAC contends there is potential to clarify when the assets used in providing a SAPS as a more cost-effective alternative to continuing grid-connected supply are part of the distribution system. PIAC considers that this would provide additional certainty to consumers in terms of continuing the customer's relationships, interactions and protections. These are discussed further in Sections 3 and 4 above.

The issue of cost recovery for generation will also need to be considered. PIAC supports the DNSP owning and operating the generation assets in a SAPS where it is the most cost-effective solution to providing network services, provided any operating expenditure, such as for fuel for the backup generator or maintenance, is subject to appropriate regulatory oversight. Importantly, opex may change year to year depending on many factors including how often the backup generator is used due to weather, customer usage patterns and breakdowns.

PIAC considers there are a number of potential options including linking the generation charge to the wholesale spot market price, through a separate regulated price, and in the case where this operating expenditure is relatively small, it may be appropriate for the DNSP to not recover these

[6] Powerline Bushfire Safety Taskforce, *Powerline Bushfire Safety Taskforce Final Report*, 2011, pg. 66.

costs directly from the off-grid customer or retailer. These are discussed further in Section 3.3 above.

b) *Would the alternatives in (a) be able to be achieved through changes to the Rules alone, or would changes to other instruments, such as the Retail Rules or other laws, regulations or licences (jurisdictional or national) be required or desirable?*

Whatever rules are put in place to address this issue, the laws, regulations and licenses governing off-grid supply – in particular, those relating to consumer protections – will need to be reviewed and potentially revised.

## Question 4 Assessment framework

*Do you agree with the approach set out in section 3.3 to assessing whether the rule change request will, or is likely to, contribute to the achievement of the national electricity objective? If not, how should it be assessed?*

In considering this rule change, it is important to note where that the impetus for taking the customer off-grid is from the DNSP and where it is from the customer themselves.

In the first case, the customer has not sought a change to their method of electricity supply and any change is done "behind the scenes" by the DNSP as the most cost-effective way of providing regulated network services. Therefore, the AEMC should seek to retain as many aspects as possible of a grid-connected customer's relationships, interactions and protections to these off-grid customers.

In the second case a customer nominates to receive their power supply from a SAPS that they themselves own or lease of their own volition, potentially as part of an agreement for that consumer to forgo their entitlement to receive energy from the grid in return for a payment. For those customers, additional protections specifically for off-grid customers are required as discussed above in 5.2 Specific protections for consumers going off-grid.

In either of these cases, the NEO can be supported by more cost efficient SAPS supply options that do not compromise reliability of supply, or require any consumer to pay more than they otherwise would, when compared to the grid.

## Question 5 Competition issues relating to moving from grid supply to off-grid supply

a) *To what extent do you consider that distributors' ability to average the costs of grid-connected distribution services across their customer base inhibits the development of competition in off-grid supply as an alternative to grid connection?*

PIAC understands that the proposal will only extend to customers who are currently grid-connected and the DNSP identifies that an off-grid solution is a more cost-efficient alternative to continuing their grid supply. As the AEMC has noted, these customers do not currently have an incentive to pursue an off-grid supply.

PIAC also understands that the proposal will not extend to customers who are currently off-grid, in a microgrid or are seeking to go off-grid of their own volition. Further, it will not prevent such customers choosing for themselves to disconnect from the grid and purchase an off-grid solution through the competitive market.

Therefore, in the cases targeted by this proposal, PIAC does not consider that it will inhibit competition in off-grid supply.

Therefore, PIAC does not consider that this proposal will inhibit competition in off-grid supply in other cases.

PIAC reiterates that a customer's retention of any extant retailer choice is essential where the customer is taken off-grid by the DNSP as a more efficient way of providing its regulated services.

In the other case where a customer forgoes their entitlement to receive energy from the grid either of their own volition or in exchange for a payment from the DNSP, the customer should retain the ability to choose the provider of the SAPS.

b) *If the proposed rule (or a more preferable rule) is made, and the AER classifies off-grid supply as a standard control service, would distributors' ability to offer below-cost off-grid supply hamper the development of competition in the off-grid supply market, as costs of off-grid supply fall in the future?*

No. See answer to Question 5 a), above.

c) *In addition to the issues discussed in chapter 4, what other factors affect competition for providing off-grid supply in place of grid supply?*

No response.

d) *Would the AER's process for classifying distribution services, including considering the potential for the development of competition, provide an adequate way in which to address these competition issues in practice?*

No response.

## Question 6 Competition issues arising after moving to off-grid supply

a) *Should a monopoly provider of a service in one area of the supply chain for off-grid services be able to provide an integrated service whereby it provides all the services forming part of off-grid supply, in circumstances where competition is limited?*

PIAC does not oppose an appropriately ring-fenced and regulated entity providing a vertically integrated off-grid service in the cases where the off-grid supply is the cost-effective alternative to continued grid-connected supply.

There is potential benefit in having an appropriately ring-fenced DNSP, at the very least, having long-term responsibility to maintain and replace the physical assets of an off-grid system. The DNSP can, for instance, provide greater assurance that they will honour warranties and manage the long-term costs of the assets.

PIAC also highlights that there are alternative configurations of off-grid supply than a completely vertically-integrated model as suggested by the rule change proposal. Some configurations that are outlined above in Section 3.2 retain many aspects of their grid-supply arrangements including a role for a retailer as in grid-connected supply and the use of a revenue meter as a line of demarcation between the customer's premises and the DNSP's network assets and infrastructure.

b) *If a customer moves to off-grid supply where one entity is the monopoly off-grid retailer, generator and distributor, what disadvantages are they likely to face due to the lack of ability to change retailers?*

While PIAC has many concerns about the effectiveness of retail competition for consumers in the current retail market, retail competition has the potential to provide benefit. Competitive tension between retailers ought to drive lower costs for consumers and encourage innovation in their offers.

As noted in Section 3.2, there are opportunities for off-grid supply to be arranged in a way that retains the current customer interfaces with their retailer and distributor. In these arrangements, the customer has the benefit of continuity of experience where they continue to pay their bills to a retailer, potential to access competitive retail offers and have access to the same consumer protections. These consumer protections include access to retailer hardship programs, access to rebates and vouchers, strict limitations on disconnection of supply, stringent protections for customers with life support equipment and access to binding dispute resolution processes – see Section 4.

This would also retain the obligation for Explicit Informed Consent (EIC) which ensures customers are provided with detailed, accurate, standardised and easy to understand information including the anticipated risks and benefits which may arise. PIAC holds broader concerns around shortcomings of the current information obligations, for instance that it does not address the need to disclose information in plain English and to ensure it is provided by someone competent to do so, but considers that obligations around EIC are essential to ensure that customers are given sufficient information and understand their rights, obligations and terms of energy service contracts they enter into.

PIAC also considers that EIC should apply to all contracts, whether short or long term, but understand that the implications will be different depending on the nature of the service.

As discussed by ATA and CUAC

> consumers should be able to readily change energy retailers to access better priced energy from the grid, or break a contract when their circumstances change, with little or no penalty. However, some innovative products and services for consumers inherently require a longer

term contractual commitment, as material up-front investment is made in providing and installing equipment.

In these cases, a consumer should not be restricted from accessing innovative products and services by protections that are intended to preserve access to competition in the retail market, however, a service provider must be able to demonstrate EIC such that the consumer is made aware that:

- They may be foregoing access to competition for some or all of their energy needs for some period of time ...
- They may be subject to some sort of additional charge to recoup some of a provider's cost outlay if their circumstances change - for example, if they move house and equipment has to be removed or relocated.[7]

Therefore, the AEMC should seek to retain as many aspects as possible of a grid-connected customer's relationships, interactions and protections to customers whose supply is changing from grid-connected to SAPS.

c) *Do the extent of any disadvantages under (b) depend on which entity provides the monopoly services (e.g. a licensed, regulated distributor, compared to an entity that is exempt from registration and licensing provisions under the Rules and state laws)?*

No response.

d) *How can any disadvantages under (b) be mitigated?*

As noted above, there are opportunities to retain access to retail competition for customers who are transitioned to off-grid supply. This would alleviate some of the disadvantages noted in (b).

Please see also the commentary on Explicit Informed Consent in (b).

However, if there is no ability to change retailer or retail offer, then an appropriate regulatory oversight is needed to ensure the customer is paying an efficient price. This may take the form of price regulation for the entire off-grid supply to the customer. Or it may take the form of a regulated price for the generation and retail components of the off-grid supply, while the network component is regulated as under a normal grid-connection.

e) *Is it desirable (in light of the long-term interests of consumers) that customers being moved to off-grid supply would be offered, or would be able to access, competitive offers for each component of off-grid supply (for example, provision of generating plant, maintenance of the plant, billing)? If so, what circumstances or policies would encourage this?*

Full contestability and choice in each disaggregated component of off-grid supply as described in the question would increase complexity for the customer for no apparent benefit, and at high risk given the integrated operation of SAPS.

[7] ATA and CUAC submission to COAG Energy Council Energy Market Reform Working Group on New Products and Services in the Electricity Market Consultation Paper, 2015, pg. 3-4.

This may be a poor outcome for customers because it would likely require multiple contractual relationships, potentially unclear responsibility if things go wrong, which may mean customers are left without a clear means of recourse and a significant departure from arrangements from a traditional grid-connection.

Nonetheless, as discussed earlier herein, when energy is supplied from a metered SAPS, retail competition can be preserved.

## Question 7 Appropriate regulation of reliability of off-grid supply

*In light of the varying reliability requirements that may apply to off-grid supply under the current arrangements, are specific consumer protections regarding the reliability of off-grid supply required before the Rules should allow distributor-led transition to off-grid supply?*

Yes - the risks for off-grid consumers are different to those who retain a grid connection and additional consumer protections are required above those received by consumers who remain grid-connected.

PIAC considers that SAPS systems purchased outright by the consumer, including if incentivised by a DNSP to forego a grid connection, as an alternative way of providing network services should include:

- Performance guarantees regarding the frequency and duration of system outages
- Educating the customer about any differences between living with a grid connection and living with a SAPS (bearing in mind that for many customers a quality SAPS will improve reliability over a regional grid connection)
- Clearly demonstrating the Explicit Informed Consent of the customer, with particular emphasis on the customer's understanding of the differences between living with a grid connection and living with a SAPS
- Clear and fair contract terms with an appropriate cooling off period
- A transition period for customers where the premises is electrically isolated but not yet physically disconnected from the grid. This will allow the customer to trial the SPS for a period and, if they opt out of using the SPS and instead decide to retain the grid connection, the customer will not need to establish new grid connection infrastructure from scratch
- Full disclosure of detailed product information to allow for straightforward repairs and identification of the correct replacement parts
- Recording and reporting of disputes to the AER
- A prudential fund or insurance against the failure of the system.

If the move to off-grid supply is done as the most efficient way to provide network services, then it would be expected that the customer would not experience any reduction in service reliability and quality than under its previous grid-connection. But it should be noted that such off-grid options are most likely to occur, at least initially, in remote areas and an off-grid solution may provide a marked increase in service reliability and quality for these customers.

Further consideration may be required for how network service to off-grid customers is captured in DNSP reliability and service metrics such as the AER's benchmarking and the Service Target Performance Incentive Scheme (STPIS).

## Question 8 Impacts on consumers of moving to off-grid supply – general questions

a) *Chapter 5 discusses various regulatory issues and considers the potential impacts of moving to off-grid supply under the current regulations. If you have further information on, or a different analysis of, any of these issues, please provide details.*

No response.

b) *What are the impacts on off-grid customers of ceasing to be covered by the protections in the Retail Law and Retail Rules, bearing in mind the protections provided by the Australian Consumer Law and by state laws?*

The Australian Consumer Law and state laws do not necessarily provide the types of electricity-specific protections necessary for customers as these are instead intended to be provided under the Retail Law and Retail Rules. These protections include:

- access to a retailer's hardship programs and repayment plans
- access to rebates and vouchers such as the Energy Accounts Payment Assistance (EAPA) Scheme in NSW
- strict limitations on retailers and distributors around the conditions under which the customer may be disconnected
- more stringent protections around disconnection for customers with life support equipment
- access to binding dispute resolution processes through the ombudsman's schemes.

PIAC considers there are there are opportunities for off-grid supply to be arranged in a way that retains the current customer interfaces with their authorised retailer and distributor and the customer may remain covered by the Retail Law and Retail Rules (see Section 3.2). PIAC considers this would be a more preferable outcome than a customer ceasing to be covered by the protections in the Retail Law and Retail Rules.

c) *To what extent are customers who move to off-grid supply likely to face additional risks relating to electricity supply not faced by grid supplied customers? If additional risks arise, what is the nature of these risks and how material are they?*

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.

By contrast, where a customer has a SAPS and forgone the connection to the network, the consequences of the SPS failing are considerably more severe. If there is no backup generator as part of the SAPS, it may mean completely losing access to essential electricity services for up to a week. 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.

There is also potential for the customer's load to change in excess of the off-grid system's capacity to provide without increased generator run time. This may be due to growth in demand

and/or energy, changes in the time of usage or changes in the required level of security and/or reliability of supply such as the need for life support.

If generation charges for the metered SAPS system is unregulated, there is the risk that the off-grid customers may end up paying more than they were whilst still grid-connected. In this case, taking the customer(s) off-grid may be the most efficient option from the perspective of network service costs, however losing access to competitive centralised generation through the grid may drive up generation cost and cancel out the potential benefit to the customer if the business operating the generation source for the off-grid system is inefficient or sees this as an opportunity for windfall profits.