



# **Clean Energy Council submission to the Australian Energy Market Commission's Consultation Paper: Review of the Regulatory Frameworks for Stand-Alone Power Systems – Priority 2**

The Clean Energy Council (CEC) welcomes the Consultation Paper of the Australian Energy Market Commission (AEMC) Review of the Regulatory Frameworks for Stand-Alone Power Systems (SAPS) – Priority 2.

The CEC is the peak body for the clean energy industry in Australia. We represent and work with hundreds of leading businesses operating in solar, wind, hydro, bioenergy, marine and geothermal energy, energy storage and energy efficiency along with more than 6,000 solar installers. We are committed to accelerating the transformation of Australia's energy system to one that is smarter and cleaner. We have a co-regulatory role, managing voluntary industry codes in conjunction with the Clean Energy Regulator (CER) and various state and territory government agencies.

The CEC supports the objective to progress the reforms required for SAPS to be used as an alternative to traditional grid supply, safely, reliably and with appropriate customer protections. We support the general approach regarding jurisdictional and national frameworks for SAPS, namely that jurisdictions decide whether and when to transition individual power systems (IPSs) and microgrids that have been established and are currently operating under jurisdictional legislative frameworks to the national framework for SAPS that the Commission has been asked to develop.

The regulatory framework for SAPS is fragmented across jurisdictions and there are many gaps in the framework. No organisation is better placed than the AEMC to undertake a review of the overall regulatory framework for SAPS, across the various jurisdictions, scales and ownership models.

We support the focus of the paper on systems supplying small customers (as opposed to large industrial customers). The review should focus its efforts on improving the regulatory framework for small customers. The need for changes to the regulation of the use of SAPS by large customers is far less urgent. By and large, the large customers are far better able to understand risk and negotiate terms.

We support the Commission's recognition of the importance of proportionality in developing the regulatory arrangements. There are several key criteria for determining how SAPS should be regulated, such as:

- Is it owner-operated for self-consumption? e.g. an IPS or a small community-based microgrid
- Is it large enough to sustain competition in retailing of electricity? e.g. a city-scale grid at least as large as the Mount Isa-Cloncurry grid
- Is the design resilient enough to avoid the need for certain regulations? e.g. a grid that reverts to islanded IPSs in the event of grid failure

We support the draft recommendations in relation to the decision-making framework for customer transition to a third-party SAPs:

- No requirement for an efficiency pre-condition,
- A requirement for Explicit Informed Consent of all relevant customers, and
- Guidelines for Explicit Informed Consent requirements.

The current framework for enforcement of safety, product quality and consumer protection standards relies for its effectiveness on the connection with the eligibility criteria for distributed energy resources (DER) incentive schemes, such as the Small-scale Renewable Energy Scheme (SRES) or state government programs (eg. Victoria, South Australia and Queensland's schemes). As these rebate schemes unwind there will be a need to replace incentive-based enforcement with either a different form of incentive or a regulatory requirement. Jurisdictional safety regulations are enforced for design and installation, but the treatment of ongoing safety and maintenance is varied. Developing mandatory standards for SAPS under Australian Consumer Law (ACL) would protect SAPS customers following installation and would avoid the need for coordination of regulatory reforms across states and territories.

We support the proposal to develop a national regulatory framework for SAPS and allowing jurisdictions to opt into some or all elements of the national framework as and when they are ready to do so.

Most third-party microgrids will be too small to warrant a third-party access regime. It would be disproportionate unless it was being applied to an extremely large, city-scale grid.

We would be very happy to discuss these issues in further detail with the AEMC. We would also be happy to provide additional information on CEC's accreditation schemes for solar installers, solar equipment and solar retailers. We look forward to contributing further to this important area for policy development.

## Responses to questions raised in the Consultation Paper

### 1. SHOULD WE REGULATE THIRD-PARTY STAND-ALONE POWER SYSTEMS?

#### **(a) Is there a need for regulation of a third-party SAPS? Why or why not?**

As noted in the Consultation Paper, SAPS are currently not generally captured under the national regulatory framework and are subject to jurisdictional legislative frameworks “that vary in their effectiveness”.

The most appropriate regulatory arrangements will apply depending on whether the SAPS in question is an individual power system (IPS), a third party connecting an off-grid SAPS for a customer and a third party community or commercial organisation responsible for providing multiple customers access to energy through a SAPS.

Current frameworks for safety and quality largely rely for their effectiveness on their links to incentive schemes such as the Small-scale Renewable Energy Scheme (SRES) and state government rebate schemes. These incentive schemes are legislated to wind down progressively, ending in 2030. By about 2025 the value of the SRES incentive might be diminished to the point that alternative compliance mechanisms are required. The grid connection processes of distribution network service providers (DNSPs) could take up some of the compliance role for grid-connected systems. This will not be the case for off-grid systems, whether IPSs or microgrids.

#### **(b) If there is a need for regulation, is this sufficiently provided for via the existing broad-based regulatory framework (for example, Australian Consumer Law)? Why or why not?**

A broad-based regulatory framework such as Australian Consumer Law (ACL) can be effective for certain ownership models, such as IPSs, where there is a single owner of a system subject to warranties and other consumer protections. In this circumstance the customer is making their own decision to self-supply their own energy. It will be important to ensure compliance arrangements are not onerous for such customers as the cost is likely to outweigh any benefit.

It is unlikely that the ACL on its own will be adequate in the case of microgrids and especially if the consumers of electricity are not the owners of the system because:

- It is likely that such arrangements will require an ongoing access arrangement between energy users and the provider of the third-party SAPS,
- There is a potential for energy users to change over time, and
- There is limited choice for energy users or new users to change arrangements once the third-party SAPS has been established.

There could also be a very useful role for ACL in protecting SAPS customers after systems have been installed by regulating SAPS as a product-related service. Jurisdictional electrical safety regulations address design, product and installation issues, but generally do not address ongoing operation, maintenance and safety.

A product-related service means a service for or relating to:

- (a) the installation of consumer goods of a particular kind; or
- (b) the maintenance, repair or cleaning of consumer goods of a particular kind.

A safety standard for product related services of a particular kind may consist of such requirements about the following matters as are reasonably necessary to prevent or reduce risk of injury to any person:

- (a) the manner in which services of that kind are supplied (including, but not limited to, the method of supply)
- (b) the skills or qualifications of persons who supply such service

- (c) the materials used in supplying such services
- (d) the testing of such services;
- (e) the form and content of warnings, instructions or other information about such services.

The Minister may make a safety standard for a product related service. There would be value in exploring whether this would be an effective way of extending customer protections nationally, without the need for complex processes to reform or harmonise established jurisdictional frameworks. Mandatory standards currently in force cover physical things such as bunk beds, trolley jacks and labelling requirements on cosmetics and clothing. Products deemed unsafe can be subject to an interim or permanent ban or recall notice. Further consideration would need to be given to the appropriate means for enforcement of a breach in a mandatory standard for SAPS and whether the enforcement mechanisms under ACL are fit for the purpose of protecting SAPS customers.

***(c) If the existing broad-based regulatory framework is insufficient for the purposes of regulating a third-party SAPS, which additional regulations are needed? Should these additional regulations be national or jurisdictional?***

Regulatory reform is needed in the areas of safety and consumer protection, particularly following the installation of systems. Making safety and maintenance a mandatory standard for SAPS under ACL would be a pragmatic way of strengthening customer protection, simplifying the regulations, and commencing the establishment of a national framework.

Certain areas will not be suited to regulation using mandatory standards for SAPS under the ACL and for these reforms the most effective approach is likely to be the development of a national framework to which jurisdictions can opt in.

***(d) Do the seven dimensions identified by the Commission capture all the potential areas for regulation of a third-party SAPS? If not, which areas are not covered?***

The seven dimensions selected are appropriate. Some of the dimensions would be more or less applicable, depending on the scale and ownership model of the SAPS. Some issues will apply across scale and ownership model and some also overlap with grid-connected DER. For example, there is significant overlap between regulation of quality and safety of grid-connected DER versus off-grid IPSs.

***(e) Should the regulatory framework for a third-party SAPS distinguish between an IPS and a microgrid? Why or why not?***

Yes. The IPS doesn't need a regulatory framework for the distribution aspect of the system, since distribution is internal to the system in an IPS. However, there might need to be separate consideration where a third party wishes to provide microgrid services to an individual customer.

***(f) Should the regulatory framework for a third-party SAPS distinguish between microgrids based on size or some other criteria? If so, what might these criteria be?***

Different approaches should be taken to microgrids, large individual power systems (supplying large business and commercial customers), and small IPSs, as each segment will have significantly different levels of expertise, market sophistication, buying power, risk appetite etc. In addition to segmentation between microgrids and IPSs, there may need to be different categories of microgrid arrangements to cover the different possible types of microgrid connection and topology.

Capacity thresholds may be a simple first-step to distinguish between segments – as commonly employed in retail price regulation.

The larger-scale segments might be best served by a form of light-handed regulation that ensures transparent information flows, price provisions, dispute resolutions, and any negotiation framework

required. Full regulation may be unnecessary in circumstances where customers will still have a DNSP-led option to pursue as an alternative service.

The CEC has a co-regulatory role working with the CER, state governments and regulators to ensure quality control and customer protections via links to rebate programs and their eligibility criteria and tender requirements. However, there are gaps and limitations to this approach.

The CEC's role in accreditation for the SRES extends to the design and installation of systems but does not address the safety issues relating to operation and maintenance (O&M). We welcome the Commission's interest in ensuring safety in O&M. ACL would likely be a more practical approach than jurisdictional safety regulations.

The CEC agrees that jurisdictional concessions, rebates and emergency assistance provisions should be available to SAPS customers and that customer protections, safety and reliability standards should be maintained.

***(g) Should the regulatory framework for third-party SAPS address large customers as well as small customers? Why or why not?***

It is probably not necessary to develop a separate regulatory framework for SAPS for large customers at this stage. Large customers have the resources to undertake due diligence. It is a higher priority to ensure safety, quality and reliability for smaller customers, who are less able to research and negotiate effectively.

***QUESTION 2: PROPOSED ASSESSMENT CRITERIA FOR A THIRD-PARTY SAPS***

***(a) Are there assessment criteria included that should not be? If so, what are these?***

The assessment criteria appear to be appropriate. It will be important to ensure that the regulatory burden is proportionate to the scale of a SAPS and appropriate for the ownership model. We strongly agree with the need for clarity in the regulatory framework.

***(b) What should be the broad objectives under the Commission's assessment of a third-party SAPS regulatory framework?***

The Commission's assessment should enable the use of SAPS by third parties, while protecting their rights as consumers to safe, reliable electricity supply. The framework should be proportionate to the scale of the SAPS in question. The framework should enable and encourage competition where the scale of system is sufficiently large to support that approach. The framework for small microgrids should not be made overly complicated in the name of maximising competition.

The CEC supports the use of competition associated with the choice of SAPS provider, with a regulatory framework that:

- is sufficiently flexible to encourage emerging technologies and suppliers,
- empowers consumers to choose between competing SAPS providers and competing business models, and
- promotes, rather than hinders, innovation and competition in the provision of electricity services.

Competition in the provision of generating and retail functions might not be practical in microgrids, except for the city-scale microgrids such as the Mt Isa-Cloncurry microgrid (which is outside of the scope of this review). Forcing a complicated market model onto small microgrids in the name of maximising competition in retail could overcomplicate matters and make the small; microgrid business model too difficult and too expensive.

### **QUESTION 3: NATIONAL AND JURISDICTIONAL REGULATORY FRAMEWORKS FOR A THIRD-PARTY SAPS**

***(a) What, in your view, are the advantages for jurisdictions to allow some parts of the interconnected grid to transition to a community SAPS regulated under a jurisdictional framework?***

If communities want to transition to a community SAPS they should not be prevented from doing so. Frameworks should be clear on how this transition can take place and what pre-conditions need to be met.

Some regulation will continue to be needed and the scale of the regulator should be proportionate to the scale of the system being regulated. For example, the Australian Energy Regulator (AER) or state government agencies may be the most appropriate regulator for very large, NEM-like grids where issues of access and consumer protections are likely to be ongoing. However, there are many microgrids already in existence that operate without the need of independent regulation. It is probably unreasonable and inefficient to expect the AER to actively regulate hundreds, or possibly thousands, of future microgrids.

***(b) What, in your view, are the advantages for jurisdictions to regulate some or all SAPS under a national framework?***

With microgrids likely to increase in prominence, a national framework provides more certainty and consistency in arrangements, particularly where there is no demonstrable difference between states in terms of access and consumer protection. The complexity of multiple sets of rules adds to administrative overheads and costs to consumers. However, the regulatory framework should be appropriate to the scale of the system being regulated. A licensing system for SAPS operators might be better managed at the jurisdictional level, where regulators can be closer to the people, companies or systems being regulated.

We urge the Commission to consider the possibility of a national framework for electrical safety of SAPS, even though the Australian Energy Market Agreement (AEMA) recognises that reliability and safety are jurisdictional instruments. A national electrical safety framework that jurisdictions could opt into (either in part or in whole) would be a practical step toward harmonising rules without intruding on the independence of jurisdictional safety regulators. A practical way to begin would be to develop mandatory standards for the safe and reliable operation and maintenance of SAPS under ACL.

***(c) Which do you think are the advantages of maintaining multiple SAPS frameworks within and across jurisdictions?***

Some state regulatory systems for SAPS are working well and some are not. We don't advocate tearing down a system that is functioning adequately. We should build on what is already in place to develop a fit-for-purpose regulatory framework. An opt-in national regulatory framework is conceptually appealing as an approach towards a national framework that builds on and complements the successful jurisdictional system already in place.

***(d) Which do you think are the disadvantages of maintaining multiple SAPS frameworks within and across jurisdictions?***

The potential disadvantages could include confusion, misunderstanding, and inefficiency.

There is no single publication summarising the rules and regulations that govern all SAPS across Australia. It would be very useful if there were an energy regulator or policy maker that regularly published an update with a 'state of SAPS rules' report that allows everyone to keep track of the myriad regulatory frameworks.

***(e) Which elements of third-party SAPS regulation should fall under a national framework and which ones should fall under jurisdictional frameworks? Why?***

If we were starting with a proverbial 'blank sheet of paper' we would recommend a national approach to electrical safety. Electricity doesn't change when it crosses a state border! Recognising that there is a long history of safety regulation at the state level, it would be more pragmatic to work toward a national framework that can be opted in to when jurisdictions choose to do so.

Very large, NEM-like grids that are big enough to support retail competition should be regulated by AER. Large municipal grids might also fall in the category of being large enough to warrant AER oversight. (Noting that the existing city-scale grids such as the Mt Isa-Cloncurry grid is outside of the scope of this review.)

New suburbs that are off-grid should also be considered for AER coverage.

The operation and maintenance (O&M) of SAPS and IPSs would be better regulated under ACL, rather than trying to encourage jurisdictions to take on a new responsibility in a coordinated manner. Safety of design, products and installation are already under jurisdictional safety frameworks and are less of a regulatory gap than O&M and ongoing safety and performance.

**QUESTION 4: REGISTRATION AND LICENSING**

***(a) Would it be appropriate to apply either a licensing regime or a registration regime (or both) for third-party SAPS?***

We agree with the observation in the Consultation Paper that "it is not immediately clear that registration at a national level would be required".

There should be minimum standards for operators of microgrids and this could be enforced through a licensing regime or ACL. We agree that the potential for failure of a third-party SAPS provider is a key risk that regulatory arrangements should seek to address or mitigate.

Licensing will be especially important in areas where a single entity is permitted to provide generation, distribution and retail services to customers. Licensing conditions will be required to provide the protections that might otherwise have been addressed through competition.

There might be elements of the CEC Approved Solar Retailer Code or the proposed BTM Code that would be suitable for adoption in licensing conditions for SAPS providers. The CEC would welcome the opportunity to share additional information about the requirements of the BTM Code and the Approved Solar Retailer Code with the Commission.

We support the approach of using insurance against key risks as a first step in risk mitigation to offset the costs of insolvency by a SAPS operator.

***(b) Does the justification for a licensing or registration regime for third-party SAPS differ for microgrids and IPSs?***

There is no need to license IPSs.

The Australian Energy Market Operator (AEMO) is developing a Register of grid-connected DER systems to assist its operation of the grid. However, a register of off-grid systems would not assist with grid management.

***(c) Does the justification for a licensing or registration regime for third-party SAPS differ based on microgrid size? Why or why not?***

Yes. There are likely to be additional regulatory requirements for very large, NEM-like grids that might not apply to smaller microgrids, e.g. third-party access.

***(d) Should any licensing or registration regime for third-party SAPS be applied solely at a jurisdictional level, or a national level where this is consistent with NEM arrangements?***

The CEC would ideally like to see a uniform electrical safety system for SAPS applying across all jurisdictions. It is difficult to understand why electrical safety rules should vary across borders. The lack of uniformity adds to confusion. However, we understand that where a functioning regulatory system already exists at the jurisdictional level, it would be foolish to prematurely scrap it. The opt-in approach for jurisdictional and national frameworks could be used in the case of licensing for SAPS operators. This would allow jurisdictions to become part of the national framework as and when they are ready. There is a gap in regulation of SAPS O&M safety, which could be addressed through ACL.

***(e) Is there a requirement for specific arrangements to be developed to maintain the continuity of supply in the event of the failure of a third-party SAPS service provider? How might an operator of last resort be selected and funded?***

Yes, depending on what other options would be available in the event of the failure of a third-party SAPS provider. Different levels of assurance might be required for:

- Availability of fall-back options: For example, situations where customers could revert to IPS supply might be treated differently to situations where this would not be practical
- Ownership models: Community-owned or municipal SAPS might need to be regulated differently to a privately-owned suburb-scale SAPS

***(f) Are there any other issues related to eligibility criteria and arrangements for maintaining the continuity of supply that the Commission should consider?***

Yes. A microgrid capable of operating as a series of islanded IPSs could be treated differently by regulations due to its capability to continue supplying electricity in the event of grid failure.

***(g) Should any regulation address both large industrial customers and small customers?***

There doesn't appear to be a need for regulation of large industrial customers at this stage. Start with small scale. There doesn't appear to be a problem that needs to be addressed by additional regulation.

***QUESTION 5: THIRD PARTY ACCESS TO THIRD-PARTY MICROGRIDS***

***(a) Should third-party microgrids be subject to a third-party access regime?***

In general, no. Most third-party microgrids will be too small to warrant this degree of regulation. It would be disproportionate unless it was being applied to an extremely large, city-scale grid. However, any framework needs to consider transparency and consumer protection in the case of third party microgrids under a light-handed arrangement.

We agree with the observation in the Consultation paper that "it is not clear that competitive generation and/or retail markets would be likely in all but the largest of microgrids (for instance, of a comparable size to the Mt Isa grid in Queensland or the Darwin-Katherine or Alice Springs systems in Northern Territory".

***(b) Should only third-party microgrids above a certain size be subject to a third-party access regime?***

Yes. As noted above, these arrangements do not seem necessary for IPSs. Similarly, it wouldn't make sense to apply this requirement to very small microgrids where there is a strong contractual arrangement between a third party and a small number of users. Imposing an onerous framework on



small scale microgrids may create an incentive for customers to use IPSs when a microgrid might have been more cost effective.

***(c) Should third-party microgrid service providers be obliged to offer to supply or connect customers? Should these obligations address small customers only or both small customers and large industrial customers?***

Where the microgrid is small and subject to contractual arrangements with a small number of customers reflecting the capacity of the microgrid, the third party should not have an obligation to offer to supply or connect customers.

It might be appropriate to oblige very large, NEM-like grids or new suburban developments that are off-grid to offer to supply or connect small customers.

An important consideration is the other options available to the customer. As noted in the Consultation Paper, alternatives might also be available in the form of an IPS or a DNSP-led SAPS. Where an IPS is the preferred option to extending a SAPS, the IPS solution should be used.

***(d) To the extent that it would be appropriate to place obligations on operators of third-party microgrids to offer third-party access and/or to offer to supply new customers, should these obligations be applied through national or jurisdictional legislation?***

Obligation to supply and connect should only apply for grids that are large enough to warrant regulation by the AER. Only for grids above the threshold for 'very large' or new off-grid suburban developments.

***(e) Do the concepts of third-party access or supply and connection obligations have any relevance for individual power systems?***

No, this is irrelevant. The only exception is where the third party purports to provide an ongoing service to the customer, rather than the customer owning the generation outright. However, even in these circumstances and circumstances with very small microgrids, these issues are best addressed through contractual arrangements rather than individual oversight.

***(f) Are there any other issues relating to third-party access or supply and connection obligations that the Commission should consider?***

The Commission may need to consider how an individual customer could transition back to a DNSP-led arrangement or to an IPS.

## **QUESTION 6: ECONOMIC REGULATION**

***(a) Should third-party SAPS be economically regulated and what should the scope of regulation be?***

The Commission may need to distinguish between arrangements that are commercial and arms-length and smaller community arrangements where there is common ownership of the infrastructure. In the former case, where the ownership arrangements are ongoing and at arm's length, access arrangements and consumer protections are likely to require some degree of transparency. In these circumstances, a light-handed regulatory approach is required.

***(b) Should a different approach be taken for an IPS compared to a microgrid, or for different sized microgrids? If so, why? If not, why not?***

Yes. Scale, ownership and resilience matter.

Systems that are small and owner-operated require relatively few new regulations and would benefit from fewer, more harmonised regulations.

When shared systems are very large or owned and operated by a privately-owned monopoly company then some degree of regulation will be needed.

Very little regulation would be needed for small-scale, resilient and owner-operated systems (eg. a microgrid designed to allow for extended operation as islanded IPSs in the event of grid failure).

***(c) Which of 'full', 'light', or 'no' economic regulation is most appropriate for a third-party SAPS? Why?***

Full regulation is not warranted for small systems. The CEC advocates a light-handed regulatory approach for small microgrids where there is common ownership between the third party and users. This could include tendering, price monitoring and price disclosure, as well as eligibility criteria for government programs and rebates.

A greater degree of regulation may be required for very large, city-scale grids such as the Mt Isa-Cloncurry microgrid that supplies approximately 10,000 customers. However, we note that the systems owned and operated by Ergon Energy do not constitute a third-party SAPS for the purposes of the review.

No distribution regulation is needed for IPSs.

***(d) Are there other more appropriate approaches to economic regulation of a third-party SAPS not discussed above?***

Yes. There could be more light-handed approaches taken depending on the configuration and engineering. Where the system is configured to operate as islanded IPSs in the event of grid failure there could be innovations in peer-to-peer trading and use of blockchain if regulation is kept to a minimum. Regulations need to be flexible enough to allow for technology to solve for some of the issues that energy regulations traditionally have sought to address.

The framework should consider the costs and benefits of regulation outside of the contractual arrangements that would otherwise exist. There is likely to be a point at which additional regulatory arrangements and consumer protections are required, but it is unlikely to be beneficial for small microgrids.

***(e) Should economic regulation of third-party SAPS be undertaken at a national or jurisdictional level?***

We should build on the jurisdictional systems already in place. Rather than trying to replace them it might be more pragmatic to develop a national opt-in framework. Jurisdictions could choose to continue to fund regulatory functions themselves or pass responsibility to a national regulator.

Jurisdictions may wish to consider a level of commonality and choose to make this level of commonality more transparent and consistent under a national framework. Even establishing common terms and definitions would assist if applied nationally.

## **QUESTION 7: CONSUMER PROTECTIONS**

***(a) Is it appropriate to apply the full suite of energy-specific consumer protections (national and jurisdictional) to third-party SAPS? Are there any consumer protections which would not be appropriate and proportionate for third-party SAPS?***

We welcome the Commission's recognition of the Behind the Meter (BTM) Working Group and its potential role in relation to behind the meter products. The CEC is an active participant in the BTM Working Group. We have also administered the Approved Solar Retailer program since it was launched in 2013.

The Solar Retailer Code of Conduct is a voluntary code designed to promote best practice measures and activities for retailers of solar and battery storage systems. It aims to protect consumers and to improve industry integrity by addressing issues identified as negatively impacting the reputation of the solar industry.

The Solar Retailer Code of Conduct was devised by the CEC following calls from its members and the broader community for improved standards and integrity in the solar PV industry. It is the only solar industry code of conduct authorised by the Australian Competition and Consumer Commission (ACCC). The Code was launched in 2013 by Federal Environment Minister Greg Hunt. It is administered by the CEC and is overseen by an independent Code Review Panel. Further information is available at: <https://www.solaraccreditation.com.au/retailers.html>

The BTM Working Group has recently given consideration to the areas of consumer protection that are expected to lie outside the scope of a voluntary, industry self-regulatory code. At this stage the areas that are considered completely beyond the scope of the BTM Working Group are:

- Obligations on Energy Retailers and Distribution Network Service Providers that fall outside the Code,
- Protections for off-grid customers,
- End of life and recycling / waste management,
- Solar Power Purchase Agreements (PPAs),
- Safety,
- Sales to microgrids, SAPS or community-based collective purchases,
- Access to external dispute resolution, and
- Customers with life support and medical heating and cooling needs.

***(b) Are there any additional SAPS-specific consumer protection provisions which should apply to third-party SAPS? If so, what are they?***

Additional consideration might need to be given to the means of ensuring supply in the event that a critical SAPS service provider fails.

SAPS customers should have access to the dispute resolution procedures of the state and territory energy and water ombudsmen.

***(c) Is there a justification for the consumer protection provisions applied to third-party SAPS differing between microgrids and IPSs? or between microgrids of different sizes?***

Yes. The owner of an IPS is free to determine the level of energy security and reliability that suits their budget. Shared assets that provide an essential service need to be regulated differently to individually (or communally) owned assets where the owner is also the operator and the consumer.

Small microgrids are very unlikely to be able to sustain retail competition. A very large, city-scale SPS might be able to sustain retail competition. The regulatory approach to a system capable of sustaining competition can be much more light-handed than the approach needed for small systems that are likely to involve monopoly functions.

***(d) Should consumer protections generally be applied to third-party SAPS on a national basis (excluding concessions and rebates and ombudsman schemes), or a jurisdictional basis?***

The proposal to provide additional SAPS-specific consumer protections under a national framework by incorporating them into the National Energy Retail Regulations (NERR) seems like a practical way forward.

#### **QUESTION 8: RELIABILITY**

***(a) Would it be appropriate to apply some form of regulatory reliability protections to third-party SAPS? If so, how might such protections be specified?***

All IPS purchasers should be provided with information to enable them to ascertain the reliability of the system once installed. The consumer should have recourse to dispute resolution, possibly through an energy ombudsman or using ACL, if the performance does not live up to the pre-sale promises about the system's reliability.

IPS owners and owners of microgrids should be able to decide on the level of reliability they want. It is unnecessary to apply reliability targets or standards to microgrids that are owned, operated and consumed by individuals or collectively by a community.

In business models where a party other than the customer or DNSP owns and operates the SAPS, reliability standards or customers having an ability to negotiate reliability will certainly be more important.

***(b) Should IPSs be subject to any reliability standards, targets or benchmarks? If so, what may be appropriate?***

Ongoing performance of IPSs or small microgrids might be better regulated using ACL rather than jurisdictional reliability regulations.

In the case of DNSP-led SAPS the CEC has previously advocated that reliability standards should be at least as high as those for a long rural feeder. In the case of an IPS, the purchaser of the system should be able to decide on the level of reliability they are willing to pay for. All IPS purchasers should be provided with information to enable them to ascertain the reliability of the system once installed. Customers will need to understand the cost-reliability trade-offs, how they will know if their system is not performing to expectations and their recourse to dispute resolution, ombudsman or legal processes.

***(c) Should reliability standards for third-party SAPS be governed under jurisdictional frameworks, consistent with the existing governance for network reliability? Is there a case for having any element of reliability protections specified or developed at a national level?***

Yes. The Commission could propose a national framework, to which jurisdictions would have the choice of opting in.

A reliability rating for SAPS should be consistent with classification schemes for other network types (eg. long rural feeder) to enable meaningful comparisons.

***(d) Are there any circumstances under which customers should be able to determine an acceptable level of reliability in consultation with the third-party SAPS provider? If so, what are those circumstances, and would any additional protections or information requirements be needed in relation to that negotiation?***

The purchaser of an IPS should be able to decide on the level of reliability they are willing to pay for. All IPS purchasers should be provided with information to enable them to ascertain the reliability of the system once installed. Customers will need to understand the cost-reliability trade-offs, how they will know if their system is not performing to expectations and their recourse to dispute resolution, ombudsman or legal processes.

***(e) Are there any other issues related to the reliability of third-party SAPS that the Commission should consider?***

There could be circumstances in which the design of the microgrid avoids the need for certain types of regulatory intervention. For example, if a microgrid is designed to allow extended operation as a series of islanded IPSs in the event of grid failure then little or no additional regulation would be required beyond that which apply to IPSs.

#### **QUESTION 9: NETWORK OPERATIONS**

***(a) What are the key system security and technical standards that should be applied to all third-party microgrids at a minimum? Are there any minimum system security and technical standards that should apply to IPSs?***

The CEC maintains lists of inverters on the Australian market and the standards to which they have demonstrated compliance. The applicable standards vary according to the type of inverter or power conversion equipment (PCE) and the circumstances in which it will be used. The flowcharts in Attachment 1 provide guidance on which standards apply in various circumstances. CEC would be pleased to provide additional advice on this matter, if that would assist the AEMC's considerations. Further information is also available at: <https://www.solaraccreditation.com.au/products/inverters.html>

***(b) Should there be a system operator role for large third-party SAPS? If so, what party would be most appropriate to perform this role, and what SAPS size threshold should trigger the need for this role?***

In a small microgrid many aspects of system operation can be automated and remotely monitored. The most important aspect of the system operation role is likely to be ongoing maintenance to ensure system reliability and safety. Changes in demand might also necessitate periodic upgrades to generation or storage capacity of the system.

***(c) What are the key metering and settlement obligations that should be applied to all third-party microgrids at a minimum? Are there any metering or settlement requirements that would be relevant for IPS?***

Metering and settlement requirements are not necessary for an owner-operated IPS.

Whenever a customer is paying on the basis of metering, it is important for the metering to be accurate to an appropriate standard.

***(d) Should the regulatory frameworks for system security and metering and settlement be national or jurisdictional, or a combination of both?***

If pricing is regulated at the jurisdictional level, it would also make sense to regulate metering and settlement at the jurisdictional level.

The AS 4777.2 standard governs inverter capabilities and is, in effect, implemented in a co-regulatory arrangement between the CEC, the CER and DNSPs. However, AS 4777.2 only covers grid-connected inverters, and does not apply to IPSs. Moreover, if there was no incentive under the SRES there would be no means of enforcing the use of CEC approved products, since no DNSP connection agreement is required. We therefore strongly recommend that in future the requirement to use safe products that meet relevant off-grid product standards should be captured in safety regulations.

**QUESTION 10: SAFETY**

***(a) Is it appropriate to apply the current jurisdictional safety obligations that are imposed on DNSPs on third-party SAPS? Are there any provisions which would not be proportionate for third-party SAPS?***

Third-party microgrids should be as safe as DNSP-led SAPS. However, that does not mean that all electrical safety requirements for DNSPs should automatically be applied to third party microgrids or IPSs. Some aspects of DNSP safety will be irrelevant for small systems (safety of large transformers and substations, for example).

As noted in the Consultation Paper, safety frameworks for electrical installations tend to focus on safety of the design (which includes specification of safe products) and their installation. The ongoing management of the safety is not a primary focus in many jurisdictions. DNSPs can enforce ongoing safety and maintenance requirements for grid-connected SAPS, but there is little or no protection for owners of off-grid IPSs.

A strategy that relies on reforms to state and territory safety regulations would risk leaving gaps in the safety and consumer protection framework. There may be merit in developing mandatory standards for SAPS under ACL so that all SAPS customers will have a minimum standard of safety following the installation of a system and which doesn't vary according to the configuration of their SAPS system or which state they live in.

***(b) What are the key safety obligations that should be applied to all third-party microgrids at a minimum? What are the minimum safety obligations for IPS?***

System design is crucial from a safety point of view. Improperly designed systems with storage can present serious safety risks.

The AS 3000 wiring rules apply to third party microgrids and IPSs. The AS 4509 standard also applies. The CEC accredits off-grid installers and the AS 4509 standard is a key component of the training required to obtain and maintain off-grid installer accreditation. To CEC's knowledge all off-grid systems are installed by accredited installers according to AS 4509. However, there is very little in the way of monitoring and inspection to confirm that microgrids and IPSs meet AS 4509. The CER undertakes some monitoring in connection with the implementation of the SRES. There might also be some inspection by state electrical safety regulators (in Victoria and Queensland, for example) however the electrical safety inspection regimes vary significantly between jurisdictions and are often reactive in nature. In addition, AS 4509 is more than a decade old and would benefit from an update.

***(c) What compliance, monitoring and enforcement powers relating to safety are appropriate for third-party SAPS?***

Compliance, monitoring and enforcement for the design and installation of third-party SAPS can be considered separately to compliance, monitoring and enforcement following installation. Jurisdictions already have an electrical safety framework for the installation of IPSs and SAPS. While there is certainly scope for improvement and harmonisation of jurisdictional safety requirements for design and installation, there would appear to be a bigger gap in the regulation of safety following installation. DNSPs have a role when it comes to grid-connected SAPS, but there is very little in the way of consumer protection for owners of IPSs, apart from ACL or self-regulatory initiatives such as the CEC Approved Solar Retailer program.

***(d) Are there any other issues related to safety that the Commission should consider?***

There is a gap in the regulation of the ongoing maintenance and safety of SAPS, especially those without any connection to distribution networks. Developing a national framework for design and installation of SAPS would be complicated because jurisdictions already regulate electrical safety. It might be more pragmatic to commence with changes to ACL for the ongoing safety and maintenance of SAPS.

Product standards for batteries are not regulated or enforced for off-grid systems.



### INVERTER CATEGORIES

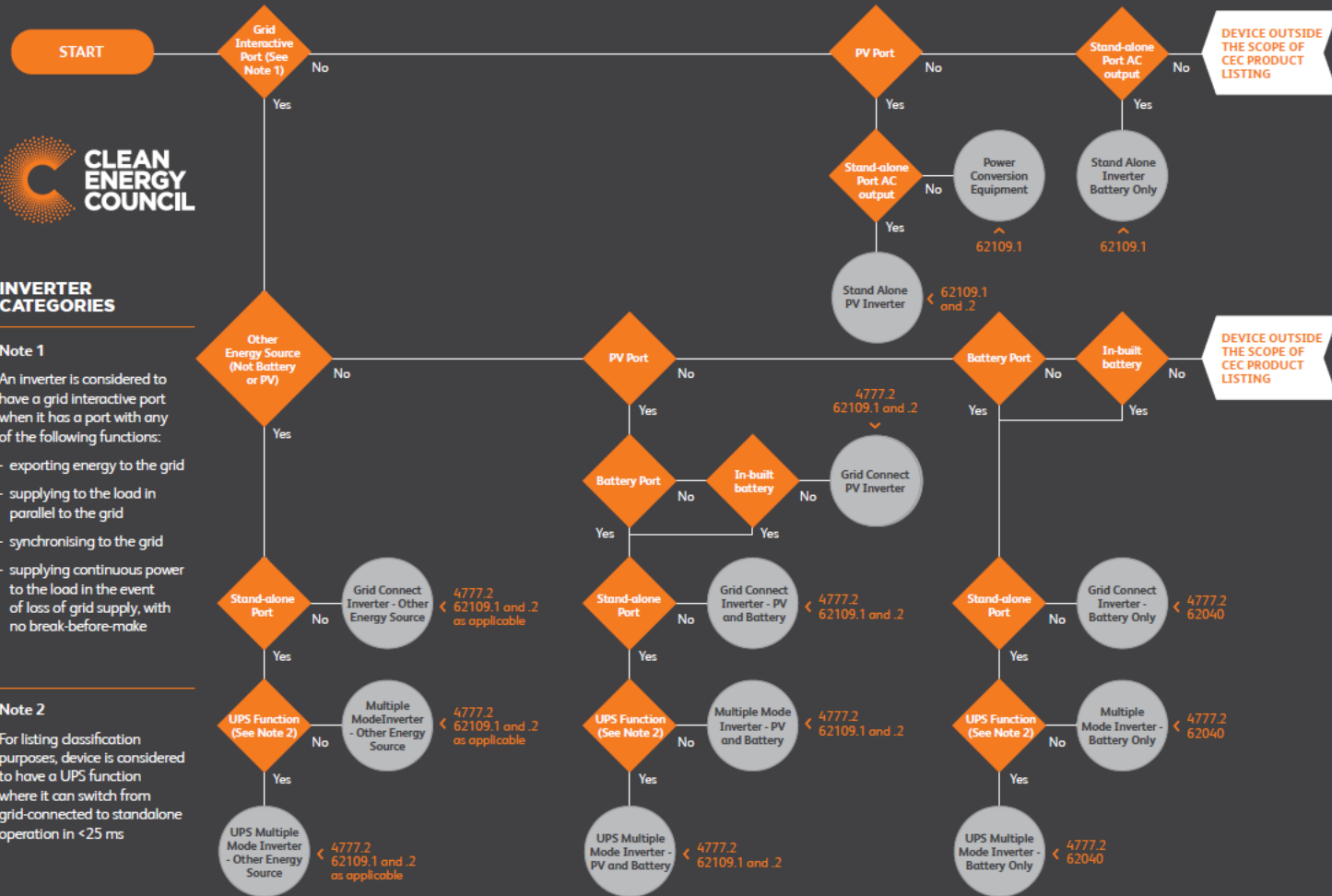
#### Note 1

An inverter is considered to have a grid interactive port when it has a port with any of the following functions:

- exporting energy to the grid
- supplying to the load in parallel to the grid
- synchronising to the grid
- supplying continuous power to the load in the event of loss of grid supply, with no break-before-make

#### Note 2

For listing classification purposes, device is considered to have a UPS function where it can switch from grid-connected to standalone operation in <25 ms





## INVERTER CATEGORIES - REQUIRED STANDARDS

### Grid Connected Inverter

– An inverter with a grid-interactive connection port (see Note 1). For listing classification purposes, this includes inverters which have battery storage, but do not provide multiple-mode functions (see the “Multiple Mode Inverter” category). Micro inverters are also included in this category.

### Multiple Mode Inverter

– An inverter that operates in more than one mode; for example, having grid-interactive functionality when mains voltage is present, and stand-alone functionality when mains supply is de-energised or disconnected.

### UPS Multiple Mode Inverter

– For listing classification purposes, a multiple-mode inverter is considered to have a UPS function where it can switch from grid-connected to stand-alone operation in 25 ms or less.

### Stand Alone Inverter

– An inverter intended to supply AC power to a load that is not connected to the mains. A standalone inverter can provide energy via batteries and/or a renewable source such as PV. Stand-alone inverters may not have a grid-interactive connection to the mains supply.

See also Note 2.

### Power Conversion Equipment (PCE)

– This listing category is for devices which are not inverters, but are connected between a PV array source and an application circuit. Examples include DC-to-DC converters, and charge controllers.

See also Note 3.

SUB-CATEGORY >	Grid Connected Inverter				Multiple Mode Inverter			UPS Multiple Mode Inverter			Stand Alone Inverter		Power Conversion Equipment (PCE)
	PV ONLY	PV AND BATTERY	BATTERY ONLY	OTHER ENERGY SOURCE	PV AND BATTERY	BATTERY ONLY	OTHER ENERGY SOURCE	PV AND BATTERY	BATTERY ONLY	OTHER ENERGY SOURCE	BATTERY ONLY	PV ONLY	
IEC 62109-1	✓	✓		✓	✓		✓	✓		✓	✓		✓
IEC 62109-2	✓	✓		✓	✓		✓			✓		✓	
AS/NZS 4777.2:2015	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
AS 62040.1.1			✓			✓				✓	✓		

STANDARDS REQUIRED

#### Note 1

An inverter is considered to have a grid interactive port when it has a port with any of the following functions:

- exporting energy to the grid
- supplying to the load in parallel to the grid
- synchronising to the grid
- supplying continuous power to the load in the event of loss of grid supply, with no break-before-make.

#### Note 2

Stand-alone inverters with connection ports for ELV batteries must have isolation between the ELV DC input and the AC output – refer to AS/NZS 4509.1:2009, Clause 9.3.3.

#### Note 3

DC Conditioning units are not considered to be PCE (refer to AS/NZS 5033:2014, Clause 2.1.5). Hence DC conditioning units are outside the scope of the CEC approved product list (i.e. are not required to be listed).