AEMC

REVIEW

Australian Energy Market Commission

DRAFT REPORT

REVIEW OF THE REGULATORY FRAMEWORKS FOR STAND-ALONE POWER SYSTEMS - PRIORITY 2

27 JUNE 2019

INQUIRIES

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ABOUT THE AEMC

The AEMC reports to the Council of Australian Governments (COAG) through the COAG Energy Council. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the COAG Energy Council.

SUMMARY

1 In August 2018, the Australian Energy Market Commission (AEMC or Commission) was asked by the COAG Energy Council to undertake a review of the regulatory arrangements for stand-alone power systems under the national energy laws and rules.

2 This draft report sets out and explains the Commission's initial views on the regulatory frameworks that should apply to stand-alone power systems (SAPS) provided by parties other than distributors in the National Electricity Market (NEM). These "third parties" could include a wide range of potential providers, including community groups, local councils, developers or NEM market participants.

3 Under the terms of reference for the review, the Commission was asked by the COAG Energy Council to look at the use of SAPS by NEM distributors as a first priority for the review. A final report for priority 1 was published on 30 May 2019.

4 In the priority 1 final report, the Commission recommended the implementation of new regulatory arrangements that would allow NEM distributors to use stand-alone power systems where it would be economically efficient to do so. The arrangements would closely follow existing national energy frameworks to enable customers receiving stand-alone systems to retain all of their current consumer protections, including access to retail competition and existing reliability standards, such that they would not be disadvantaged where a distributor determined that it would be more cost-effective to supply them on a stand-alone basis.

5 The approach set out in this priority 2 draft report for third-party SAPS aims to provide a more flexible framework capable of accommodating the broader range of providers and circumstances that could be associated with third-party systems. In contrast to priority 1, customers will generally be making a choice to transition to third-party provision or to move to premises supplied by a third-party system. Additionally, service providers themselves are likely to be much smaller and less well resourced than distribution businesses in the NEM would be, and may operate under a variety of ownership structures and operating models.

6 To meet these requirements, the Commission is developing a tiered framework that would provide appropriate protections for consumers, but with these applied in a proportionate manner. A number of categories of stand-alone system would be identified, with regulatory obligations tailored to fit each category. The largest systems would be regulated under national frameworks, but smaller systems would be subject to jurisdictional arrangements.

7 The Commission is seeking feedback from stakeholders in response to this report, both on the overall approach the Commission is proposing and the more detailed arrangements that would underpin it, on which the Commission will develop more detailed recommendations in its final report. In particular, stakeholder input would be welcome in regards to the obligations that would apply to each category and the thresholds that would be used to determine which category would apply to a given system.

Background

8 A stand-alone power system (SAPS) is an electricity supply arrangement that is not physically connected to the national grid. The Commission uses the term to encompass both microgrids, which supply electricity to multiple customers, and individual power systems (IPS), which relate only to single customers.

9 Currently, the national energy laws and rules only apply to the interconnected electricity grid on the east coast of Australia that forms the NEM.[1] Where there are stand-alone systems not connected to this grid, generally in remote areas, these are subject to regulation by states and territories at the jurisdictional level.[2]

10 State and territory regimes for SAPS differ quite widely, and regulation is not necessarily comprehensive. Most jurisdictions have some form of licensing or exemption system that allows certain conditions to be applied to licensees, but some jurisdictions do not. Customers of SAPS often have some pricing protections but reliability standards may be less prescriptive, for example.

11 Changes in technology and technology costs are leading stand-alone power systems to become an increasingly viable option for providing electricity services to customers. Consequently, there is a risk that the current regulatory frameworks, by not adequately supporting the use of stand-alone power systems and the transition of grid connected customers to stand-alone systems, might be inhibiting the use of the most efficient technological solutions to supply some customers.

12 In 2017, the Commission considered a rule change request made by Western Power that sought to better allow for the use of alternative technologies and methods of providing distribution services, such as transitioning customers to off-grid supply, primarily by Distribution Network Service Providers (DNSPs) registered in the NEM. The Commission concluded that there may be situations where it would be efficient to allow DNSPs to offer off-grid supply, but that a broader package of framework changes would be required to properly implement the required reforms. Consequently, the Commission determined not to make a rule at that time, but recommended that the COAG Energy Council ask it to provide advice on the law and rule changes that would be required.

13 Similar conclusions were reached by the *Independent Review into the Future Security of the National Electricity Market* ('the Finkel Review') and the Australian Competition and Consumer Commission (ACCC) in its retail electricity pricing inquiry, with both recommending that a review of the regulation of SAPS be undertaken so that these systems could be used where efficient to do so.

14 In light of these recommendations, and building on work previously undertaken by its Energy Market Transformation Project Team (EMTPT), on 23 August 2018, the COAG Energy Council directed the Commission to conduct a review of changes required to the national electricity framework for stand-alone power systems.

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1 Certain elements of the national laws and rules also apply to the three largest electricity systems in the Northern Territory.

2 Note that Queensland applies some national regulation to stand-alone power systems.

Approach

15 As noted, under the terms of reference, the review was split into two priority areas:

- priority 1, focussing on the development of a national framework for customers that move from grid-connected supply to stand-alone systems provided by DNSPs
- priority 2, focussing on the development of a national framework to support the supply of electricity from stand-alone power systems provided by parties other than DNSPs.

16 Additionally, under priority 1, the Commission was asked to develop a mechanism to facilitate the transition of customers currently supplied by a DNSP to a stand-alone power system provided by a party other than a DNSP, such as a developer or community group. The terms of reference contemplated that such systems could then be regulated on an ongoing basis under existing jurisdictional frameworks or under the regulatory arrangements to be developed by the Commission in accordance with priority 2.

17 A final report for priority 1 was published on 30 May 2019. In addition to the key recommendations to facilitate use of SAPS by DNSPs, this also contained recommendations for amendments to the national frameworks to enable the transition of existing DNSP customer to SAPS supply provided by parties other than the local distribution business.

18 The Commission commenced consultation on priority 2 of the review through the publication of a consultation paper on 1 March 2019. Submissions were received from 20 stakeholders in response.

19 The consultation paper sought stakeholder feedback on the merits of regulating third-party SAPS, the scope of such regulation, whether it should apply to both individual power systems and microgrids, and whether regulation at a national or jurisdictional level would be more appropriate.

20 In particular, the paper discussed potential issues, comparator arrangements and policy considerations across a range of seven dimensions for regulation identified in it:

- Registration and licensing, covering eligibility criteria to provide assurance that service providers are 'fit and proper', and to provide a means for the application of further regulatory obligations, as well as covering supply continuity.
- Access and connection, comprising obligations to supply, connect and/or provide access.
- Economic regulation, which refers to the regulation of prices charged or revenues earned by the service provider for supply, connection and/or access.
- Consumer protections which provide rights for consumers, including protections for vulnerable consumers, and aim to prevent unfair practices or unscrupulous behaviour.
- Reliability of supply obligations to support adequate and efficient levels of reliability.
- Network operations, including system security and technical standards, in addition to metering and settlement.
- Safety standards governing the safe supply of electricity to consumers, and the safety of electrical works and the general public.

21 To a greater extent than for priority 1, the issues being considered under priority 2 also relate

to the Commission's work on embedded networks. The Commission self-initiated the *Updating the regulatory frameworks for embedded networks* review on 30 August 2018, and published a final report on 20 June 2019.[3] The report describes and explains an accompanying package of drafting changes to the national energy laws and rules to implement the recommendations from the Commission's earlier *Review of the regulatory arrangements for embedded networks*.

22 The Commission recognises the risk that may be introduced if inconsistent regulatory approaches are adopted for DNSP SAPS, third-party SAPS and embedded networks. As such, the Commission has closely coordinated and considered the linked policy and legal issues between the SAPS priority 1, SAPS priority 2 and embedded networks workstreams.

This report

23 This report presents and explains the Commission's developing views on the regulatory framework that should apply to third-party SAPS.

24 In developing this framework, the Commission has sought to apply consistent principles between priority 2, priority 1 (DNSP-led SAPS), and the Commission's recommended framework for embedded networks, as well as standard supply, recognising the importance of areas such as licensing, consumer protections and access to retail competition. However, how those principles are applied for third-party SAPS in practice is likely to vary, depending on:

- the size of the system (for example, only large systems are likely to be able to support retail competition and justify the costs of economic regulation) and
- whether it is regulated under national or jurisdictional rules (noting that regulation of third-party SAPS is currently the responsibility of jurisdictions).

25 In addition, a key difference between DNSP-led SAPS and third-party SAPS is the area of consent and customer choice. Customers transitioning to a DNSP-led SAPS would be doing so because it has been identified by the DNSP that it would be more economically efficient way of supplying the customer, and customer consent to the transition would not be required. In contrast, customers transitioning to a third-party SAPS, establishing a third-party SAPS, or moving into a premises supplied by a third-party SAPS are more likely to be doing so by choice.

26 Similarly, customers of third-party SAPS are more likely to have alternative choices than standard supply customers. Third-party SAPS customers would not be able to access cross-subsidies present in standard supply network tariffs that offer benefits to high cost to serve customers and, as such, supply from an IPS would likely be a comparable financial cost to supply via a third-party microgrid. In addition, customers would have the choice to request a connection offer from the local DNSP. All of these factors mean that consent and choice should drive principles for the appropriate regulatory frameworks for third-party SAPS.

27 The scope and breadth of potential SAPS is large, with many variations likely in the size of the systems, as well as ownership structures and operating models. Consequently, it is likely

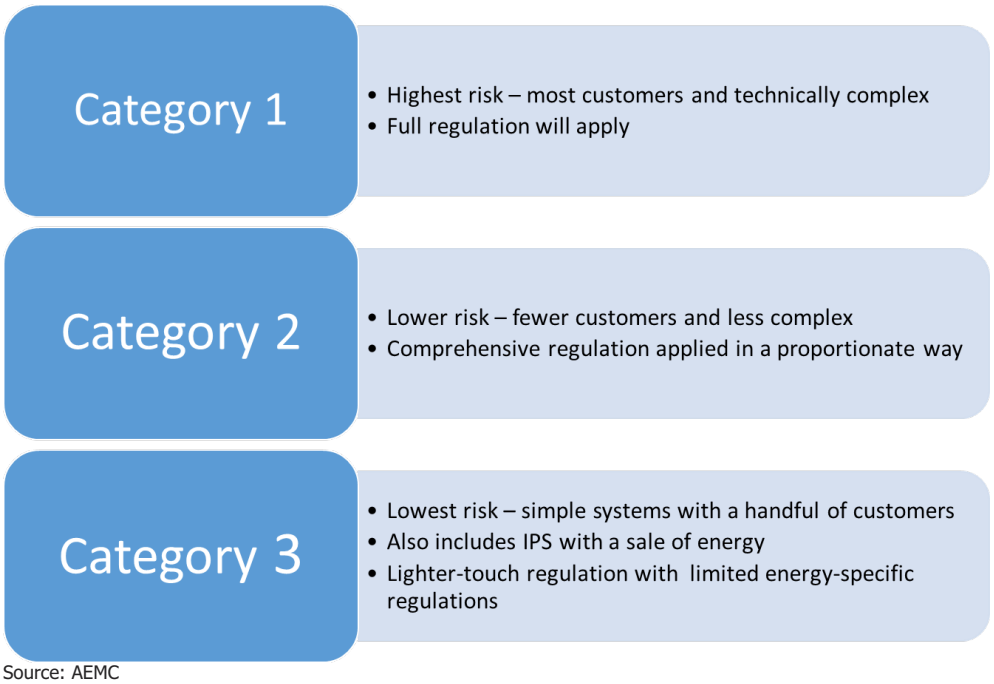
3 AEMC, *Updating the regulatory frameworks for embedded networks*, Final report, 20 June 2019.

that a one-size-fits-all approach will not be appropriate for the regulation of third-party SAPS. Instead, regulatory arrangements should allow the Commission's overarching principles to be applied in a proportionate and flexible manner.

28 While the Commission is cognisant of minimising opportunities for regulatory arbitrage between types of supply, it considers that the most appropriate approach to regulating third-party SAPS will be through a tiered framework applying regulation in a proportionate way. Many submissions to the consultation paper advocated such an approach, with a number highlighting a straw man concept outlined by the Independent Pricing and Regulatory Tribunal (IPART) in response to an earlier NSW government consultation.

29 To develop a tiered framework, the Commission has considered the appropriate categories for third-party SAPS, how boundaries would be drawn between categories and what type and level of regulation would be required for each category.

Figure 1: Proposed tiered framework for third-party SAPS



Source: AEMC

30 The Commission's initial view is that there might be three categories of system specified in the framework:

- Category 1 would comprise very large microgrids, in particular those large enough to warrant regulatory determinations by the AER. The relatively large number of customers and the existence of network tariffs arising from the regulatory determinations would mean that such systems should also be able to support effective retail competition. Consequently, this category of microgrids would be regulated in an equivalent manner to standard supply customers, and DNSP-led SAPS. As such, the existing national laws and

rules should be extended to apply to these systems so they are regulated in the same way as standard supply, as should relevant existing jurisdictional frameworks.

- Category 2 microgrids will range from those supplying smaller towns to those connecting more than a handful of customers. Effective retail competition is unrealistic in this category as any network tariffs would be specific to each microgrid and retailers generally require many thousands of customers for it to be cost effective to develop specific retail tariffs and therefore support retail competition. In any event, the costs associated with the AER revenue determination process to set network tariffs would be disproportionately burdensome. Consequently, microgrids under category 2 will generally be vertically integrated. The flexibility and proportionality in a regulatory framework necessary to accommodate the potential breadth of circumstances is likely to be most effectively supported through regulation being undertaken at a jurisdictional level. However, the development of frameworks along nationally consistent principles would be desirable to minimise additional compliance costs for operators seeking to operate on a national basis.
- Category 3 would encompass very small microgrids with a handful of customers, microgrids which only supply large customers and IPSs where there is a sale of energy. These microgrids and IPSs are likely to have a much lower regulatory risk and failure of the energy provider would impact a much smaller number of customers. In addition, customers are likely to have a higher degree of control over system specifications and requirements, and greater bargaining power. A proportionate framework would therefore have some minimum consumer protections, such as billing requirements, as well as energy-specific safety requirements, basic metering requirements and some technical standards. Applying these requirements through jurisdictional license conditions or jurisdictional exemption conditions would allow for flexibility and likely strike an appropriate balance between risks and costs.

31 Energy-specific regulation generally only applies where there is a network connecting more than one customer, or where there is a sale of energy. For IPSs where there is no sale of energy, that is where the customer has brought the IPS outright from an equipment provider or installer, and owns and operates the IPS themselves, the Commission's initial view is that the impost of additional energy-specific regulations beyond those relating to safety would not be proportionate and would not be consistent with the existing national and jurisdictional approach to energy regulation. Where there is no sale or supply of energy the IPS will be covered by Australian Consumer Law, and any applicable jurisdictional safety regulations that apply to electrical installations.

32 A key question that the Commission will be considering further over the remainder of the review is exactly how to determine which category a given third-party SAPS will fall into. However, the Commission has developed some initial views, as follows:

- Category 1 systems could be determined by a form of coverage test to determine whether retail competition would be feasible or whether it would be appropriate for other generators and retailers to be able to access the SAPS. Although customer numbers would likely be important, they are unlikely to be the sole determinant — significant industrial load might be more important than a much larger number of small customers, for instance.

- Category 2 would encompass systems that are bigger than category 3 but for which the category 1 coverage test is not passed. The threshold between categories 2 and 3 might be based on the number of small customers. It is also likely that other factors, such as the size and complexity of the system, and the public safety risks posed by the microgrid, would be relevant. While the test to determine regulatory coverage under category 1 should be specified on a national basis, the threshold between categories 2 and 3 would be specified on a jurisdictional basis, and it might be appropriate for this vary to reflect local circumstances.
- Category 3 would include systems with a sale of energy and/or more than one customer but fewer customers than the category 2 trigger. This category would also include microgrids with only large customers. Any other triggers for category 2 status, such as technical characteristics, would also not be met.

33 The Commission has also developed initial positions on the regulatory obligations that should apply to each category, for each of the seven regulatory dimensions that the Commission has been considering in the review. These are set out in the table below, and include the most appropriate form of registration or licensing that would be used to give effect to the further obligations.

34 It should be noted that, under the tiered approach, the precise requirements for category 2 and 3 systems would be developed and applied by jurisdictional governments and regulators. As such, while the Commission is intending to further refine its recommendations for the priority 2 final report, these are unlikely to be specified in prescriptive detail. Where changes are required to national frameworks to give effect to the recommendations for category 1 SAPS, the Commission will give further consideration to these and intends to provide drafting instructions for law changes in the final report. The proposed regulatory obligations under the tiered framework are summarised on the next page.

Next steps

35 Written submissions from stakeholders commenting on the matters raised in this draft report for priority 2 are requested by **8 August 2019**. In particular, stakeholder input would be welcome in regards to the obligations that would apply to each category and the thresholds that would be used to determine which category would apply to a given system.

36 Following receipt of submissions, the Commission intends to consider the extent to which further consultation is required, particularly with jurisdictional regulators. The Commission may make use of stakeholder workshops and/or roundtable meetings to progress any matters requiring further consideration.

37 Under the terms of reference for the review, the Commission is required to publish the priority 2 final report provided to the COAG Energy Council by 31 October 2019.

Table 1: **Proposed regulatory obligations under the tiered framework**

DIMENSION	CATEGORY 1	CATEGORY 2	CATEGORY 3
Registration and licensing	Registration and licensing arrangements should be as for standard supply. Existing NEM Retailer of Last Resort (RoLR) arrangements will apply. There may need to be jurisdictional Operator of Last Resort (OoLR) schemes for network and generation activities.	Licensing should be undertaken on a jurisdictional basis with combined licenses for network, generation and retail activities. Licence conditions would be determined on a risk basis. No form of registration with AEMO would be required. Jurisdictional OoLR arrangements should be introduced, with OoLRs nominated and resourced on a pre-emptive basis.	Licensing/ exemptions should be undertaken on a jurisdictional basis using either a risk-based licensing regime with proportionate licence conditions or an exemptions framework with exemption conditions. No OoLR arrangements would apply.
Access and connections	A form of "coverage test" will be used to determine those third-party microgrids that warrant the application of an access regime. This access regime would be the same as that which applies in the NEM. Retailers would have access to customers in the same way they have access to grid-connected customers.	An obligation to offer to supply and connect would be placed on third-party microgrid providers, implemented through jurisdictional licensing. The obligations to connect would cover end users, including micro embedded generators, but would not apply to the connection of generators greater than 5MW.	No obligations would be placed on third-party SAPS providers to offer to connect and supply customers.
Economic regulation	Economically regulated by the AER in the same manner as existing DNSPs including revenue determinations and incentive schemes. Retail price regulation in jurisdictions	Some form of light-handed economic regulation by jurisdictions such as price monitoring or negotiate/arbitrate regime.	Not economically regulated.

DIMENSION	CATEGORY 1	CATEGORY 2	CATEGORY 3
	with current retail price regulation.		
Consumer protections	Retailers will be authorised by the AER, with the full suite of consumer protections under the National Energy Customer Framework (NECF) and any applicable jurisdictional consumer protections applying. Consumers should be able to access jurisdictional energy ombudsman and concessions and rebate as well as emergency payment assistance schemes.	Consumer protections will be provided through jurisdictional license conditions containing many of the same protections in the NECF applied in a more proportionate way, as well as access to jurisdictional energy ombudsman and concession, rebate and emergency payment assistance schemes. SAPS-specific information provision obligations for customers starting to receive supply is likely required.	Minimum consumer protections such as billing information, minimum payment requirements and disconnection and reconnection obligations in exemption/license conditions.
Reliability of supply	Same reliability measures as DNSPs including jurisdictional reliability standards , Guaranteed Service Level (GSL) schemes and national targets under incentive schemes. Some variations may be required as feeder categories may not be appropriate. Reliability performance reporting to jurisdictional regulator on jurisdictional reliability standards and GSL payments, and to the AER on incentive scheme performance.	Reliability targets in jurisdictional licence conditions (which may not be as prescribed as for DNSPs). Reporting on performance against reliability targets and any rectification requirements for poor reliability also included in jurisdictional licence conditions.	Potential for customers to negotiate reliability with third-party SAPS provider, but no regulated reliability obligations.
Network operations and system security	The same jurisdictional system security and technical standards that	Jurisdictional system security and technical standards should include	Jurisdictional system security and technical standards for microgrids

DIMENSION	CATEGORY 1	CATEGORY 2	CATEGORY 3
	apply to DNSPs. AEMO becomes the independent system operator where registered generation is connected to the system. For metering and settlement, existing NEM arrangements would apply, including AEMO settlement and metrology procedures and NEM compliant metering.	adoption of relevant Australian Standards for quality of supply, service and installation rules and asset management plans. Jurisdictional licence conditions should require SAPS operators to use pattern approved meters and develop a metering plan for approval by the jurisdictional regulator.	should include adoption of relevant Australian Standards for quality of supply, service and installation rules and an asset management plan. For IPS, jurisdictions should require compliance with relevant Australian Standards. For metering and settlement, jurisdictional licence conditions should require SAPS operators to use pattern approved meters.
Safety	The same jurisdictional safety arrangements as for DNSPs.	Operators of microgrids should be required to develop and maintain a Safety Management System under AS 5577. Jurisdictional regulators should consider whether there are particular jurisdictional circumstances that justify making certain Standards and Codes mandatory for third-party SAPS. Mandatory jurisdictional reporting schemes for safety incident reporting should apply to third-party SAPS.	For microgrids, jurisdictional requirements based on category 2, rationalised to account for system risk. For IPS, AS 3000 and AS 4509, as well as any other standards the jurisdictions consider appropriate, should be enforced.

Source: AEMC

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1 INTRODUCTION

The COAG Energy Council has requested that the Australian Energy Market Commission (AEMC or Commission) undertake a review of the regulatory arrangements for stand-alone power systems (SAPS). The review focuses on the regulation of new SAPS, and is required to consider three sets of circumstances:

- the transition of currently grid-connected customers to a SAPS provided by their existing distributor
- the transition of currently grid-connected customers to a SAPS provided by a party other than their existing distributor ('third-party SAPS')
- the ongoing regulation of third-party SAPS.

The first two of these requirements were met by the Commission's recent final report on priority 1 for the review.[4]

This draft report sets out the Commission's views to date and analysis undertaken for the third of these three requirements, the development of regulatory frameworks for third-party SAPS. It includes the Commission's draft findings on key issues for further stakeholder comment. This work forms priority 2 for the review.

This chapter provides an introduction to the review and outlines:

- the background to the Review of the regulatory frameworks for stand-alone power systems, in particular for priority 2 on third-party stand-alone power systems
- a summary of the review, including terms of reference, progress so far and structure of this report
- an overview of other related ongoing work
- the Commission's plan for stakeholder consultation and timeframes.

1.1 Background

The falling costs of renewable generation and batteries are leading to significant decreases in the costs of providing off-grid electricity supply. In some areas such as those that are bushfire risk prone or heavily vegetated, off-grid supply may now be less costly than standard supply. There are potential additional benefits such as improved reliability for remote customers and reduced carbon footprint. There are currently relatively few customers receiving supply from a SAPS due to a combination of factors that include limitations in the regulatory frameworks and nascence of the SAPS industry.

1.1.1 Definitions and concepts

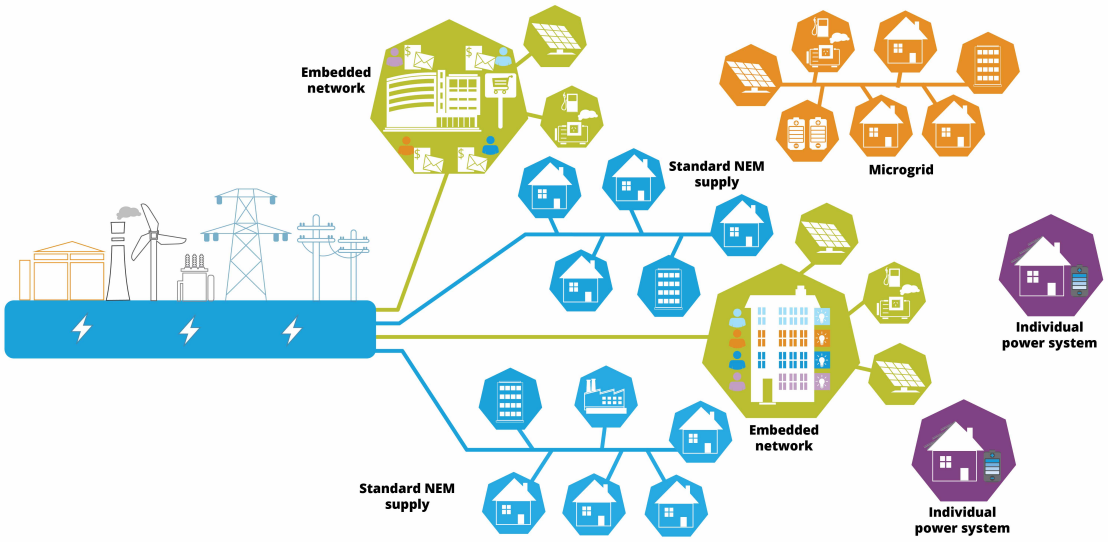
For the purposes of the review, we consider there to be four possible models of electricity supply for customers:

- supply via the interconnected grid, which we refer to as "standard supply"

4 AEMC, *Review of the regulatory frameworks for stand-alone power systems — priority 1,* Final report, 30 May 2019.

- supply via an embedded network, which in turn is connected to the interconnected grid
- supply via a microgrid isolated from the interconnected grid
- supply via an individual power system (IPS), which only provides electricity to the customer in question.

Figure 1.1: Four models of electricity supply



This review focuses on power systems that are not connected to the interconnected grid. An electricity supply arrangement that is not physically connected (directly or indirectly) to the national grid can be referred to as a stand-alone power system (SAPS). Microgrids and individual power systems are both a form of stand-alone power system.

Microgrid

A microgrid is a SAPS that generates and supplies electricity to multiple customers. This could include anything from a large town to two farms connected to each other. Power may be supplied by a mix of local generation and storage, possibly combined with behind-the-meter generation and storage. Remote communities, island resorts and remote mining towns are often supplied by microgrids.

Individual power system

An individual power system, or IPS, is a SAPS that generates and supplies electricity to a single customer. Typically, power is generated by a combination of renewable generation, energy storage and/or conventional diesel or gas generators.

Embedded network

Microgrids and individual power systems are distinct from embedded networks. While embedded networks supply electricity to customers in a way that is an alternative to standard supply, they remain connected to the national grid (they may or may not have generation within the embedded network). The regulatory framework for embedded networks was considered in a concurrent review by the Commission, which is discussed in Section 1.3.

1.1.2 Overview of related reforms

Currently, SAPS are not generally captured under the national regulatory framework and are subject to jurisdictional legislative frameworks that vary in their completeness.

There are a range of reasons that justify the need for effective regulation of SAPS:

- Energy is an essential service for which there is a need and expectation for certain minimum protections, but in some jurisdictions SAPS customers currently have no energy-specific consumer protections and minimal safety or reliability standards.
- Once they are established, SAPS may exhibit natural monopoly characteristics such that regulation is required to simulate competitive market outcomes.
- Regulatory barriers may inhibit new entrant products and services that have potential to benefit consumers and increase energy productivity.

The need to update the regulatory framework to better facilitate the use of SAPS has been recognised both by governments and regulatory bodies in recent years. Details of past related work programs that have led to this review are provided below.

Energy Market Transformation Project Team related work

In August 2016, the COAG Energy Council's Energy Market Transformation Project Team (EMTPT) published a consultation paper on regulatory issues relating to off-grid systems.[5] Following consideration of submissions to the consultation, the COAG Energy Council agreed that EMTPT should engage with regulators and other relevant jurisdictional bodies to develop a best practice model for jurisdictional regulation of stand-alone power systems, and to develop changes to the national framework to address regulatory gaps for transferring from grid supply to SAPS. In 2017/2018 the EMTPT undertook further work on the regulatory issues relating to off-grid systems. This included commissioning HoustonKemp to facilitate a workshop involving the EMTPT, the Commission and the Australian Energy Regulator (AER), and develop a workshop report.[6]

Western Power rule change

In 2017, the Commission considered a rule change request made by Western Power that sought to allow distribution network service providers (DNSPs) to deploy alternative technologies and methods of providing distribution services, such as transitioning customers to off-grid supply. The Commission concluded that there may be situations where it would be

5 COAG Energy Council, Stand-alone power systems in the electricity market, Consultation on regulatory implications, 19 August 2016.

6 The Houston Kemp report, Decision-making mechanisms for transition to Stand-alone Power Systems, is Appendix 2 to the terms of reference for this review.

efficient to allow DNSPs to offer off-grid supply, but that a broader package of framework changes would be required to properly implement the required reforms.[7]

The Commission determined not to make a rule at that time, but recommended that the COAG Energy Council ask it to provide advice on the law and rule changes that would be required.

Finkel review

The Independent Review into the Future Security of the National Electricity Market (the Finkel review) detailed 50 recommendations for the national electricity market. At its July 2017 meeting, the COAG Energy Council agreed to implement 49 of the 50 recommendations. One of the recommendations was that:

> By mid-2018, the COAG Energy Council should direct the Australian Energy Market Commission to undertake a review of the regulation of individual power systems and microgrids so that these systems can be used where it is efficient to do so while retaining appropriate consumer protections

Consistent with this recommendation, the COAG Energy Council has tasked the Commission with undertaking such a review. The terms of reference for this review distinguish between SAPS that are owned and operated by a DNSP and SAPS that are owned and operated by third party providers. The key focus of this draft report is a framework for third-party SAPS.

ACCC retail pricing inquiry

On 11 July 2018, the Australian Competition and Consumer Commission (ACCC) released its final Retail Price Inquiry report Restoring electricity affordability and Australia's competitive advantage.[8] The report contained a recommendation (recommendation 23) on SAPS. The recommendation was that the package of law amendments recommended by the AEMC in the Western Power rule change determination be worked on immediately to allow DNSPs to supply power to existing customers or new connections via SAPS, where efficient.

The ACCC also stated in its recommendation that the arrangements for SAPS should be adopted on a consistent basis across the NEM, and operated under a contestable framework. These recommendations are more closely related to DNSP-led SAPS, but may also have implications on stand-alone power systems that are provided by other parties.

1.2 Summary of the review

This section sets out the terms of reference, in addition to the progress to date and approach of the Review of the regulatory frameworks for stand-alone power systems.

7 AEMC, Alternatives to grid-supplied network services, Final rule determination, 19 December 2017.

8 ACCC, Restoring electricity affordability and Austalia's competitive advantage, Retail Electricity Pricing Inquiry - Final Report, June2018, p. 221.

1.2.1 Terms of reference

On 23 August 2018, the Commission received the terms of reference from the COAG Energy Council for a review of the regulatory frameworks for SAPS. The review is in response to the Commission's recommendations in the final rule determination on the Western Power rule change and the recommendation in the Finkel review.

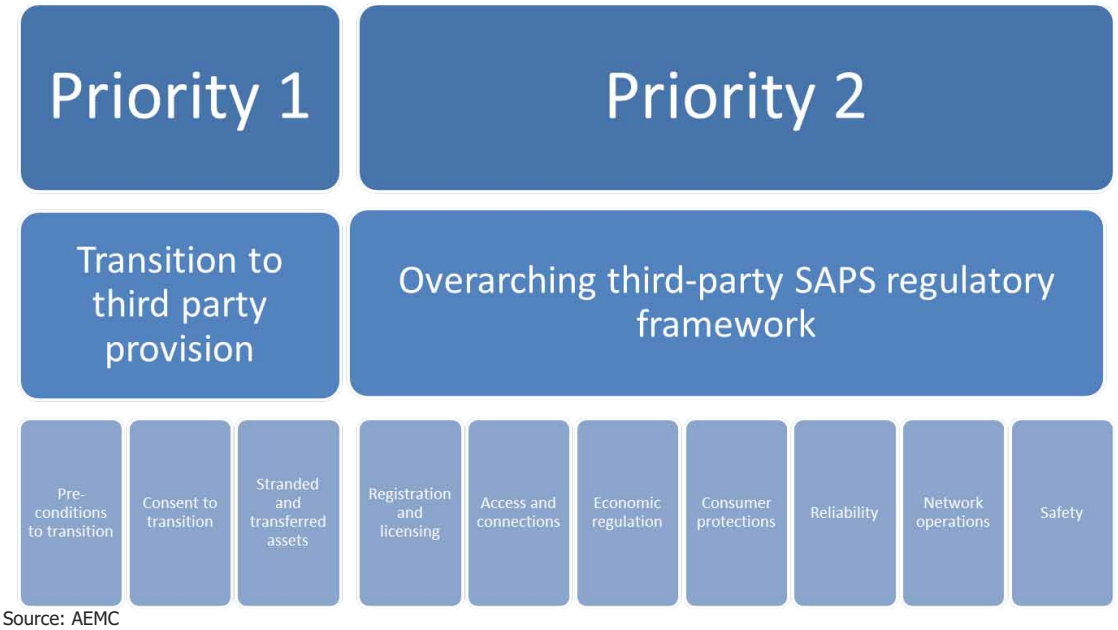
The review focuses on the regulation of new SAPS, and considers the national electricity regulatory framework set out in the National Electricity Law (NEL) and National Electricity Rules (NER), the National Energy Retail Law (NERL) and National Energy Retail Rules (NERR), and associated regulations and other subordinate instruments including guidelines issued by the Australian Energy Market Operator (AEMO) and AER. Legacy SAPS operating under jurisdictional legislation are not a focus of the review.

The terms of reference split the review into two priority areas, Priority 1 and Priority 2:

- Priority 1 focused on the development of a national framework for customers that move from grid-connected supply to a SAPS facilitated by a DNSP, and adjustments to the national framework to enable the transition of grid-connected customers to a SAPS facilitated by a party other than a DNSP.
- Priority 2 focuses on the development of a national framework to support a SAPS model of supply facilitated by a third party.

The following figure outlines the Commission's approach to issues related to third-party SAPS under priorities 1 and 2 of the review as set out in the terms of reference.

Figure 1.2: Approach to third-party SAPS



Source: AEMC

1.2.2 Priority 1 and transition to third-party stand-alone power systems

The Commission published the final report for priority 1 on 30 May 2019. In the report, the Commission recommended the implementation of new regulatory arrangements that would allow DNSPs to use stand-alone power systems where it would be economically efficient to do so. The arrangements would closely follow existing national energy frameworks to enable customers receiving stand-alone systems to retain all of their current consumer protections, including access to retail competition and existing reliability standards, such that they would not be disadvantaged where a distributor determined that it would be more cost-effective to supply them on a stand-alone basis.

The Commission's specific recommendations in relation to DNSP-led SAPS covered planning for transition to a DNSP-led SAPS and the customer engagement required, the decision-making mechanism to trigger transition to a DNSP-led SAPS, the DNSP-led SAPS model of supply, treatment of SAPS assets, consumer protections and processes for new connections and reconnection.

Additionally, under priority 1, the Commission was asked to develop a decision-making framework and mechanism to facilitate the transition of customers currently supplied by a DNSP to a stand-alone power system provided by a third party. The terms of reference contemplated that such systems could then be regulated on an ongoing basis under existing jurisdictional frameworks or under the regulatory arrangements to be developed by the Commission in accordance with priority 2.

The Commission's recommendations in relation to the decision-making framework for customer transition to a third-party SAPS were as follows:

- an efficiency pre-condition for transitioning DNSP customers to a third-party SAPS is not required as the costs of transitioning will be borne by the transitioned customers that consent to the decision to transition
- the third party should obtain the consent of all relevant customers in written form to transition them from the DNSP grid to a third-party SAPS
- consent to transition customers to third-party off-grid supply should be based on a set of Explicit Informed Consent requirements that include detailed information about the third party, SAPS solution, and additional conditions related to service delivery and outcomes under a third-party SAPS supply model
- the third party should compensate the DNSP for costs related to stranded assets as a result of the transition, under AER guidance.

1.2.3 Priority 2 and structure of the draft report

Under priority 2 of the review the Commission was asked to recommend a national framework for third-party stand-alone power systems that jurisdictions may opt into for new or current systems or both. The framework should cover the ongoing regulation of any systems transferred from local DNSPs to third parties, as well as newly established systems.

A consultation paper was published on 1 March 2019, in which the Commission sought to obtain stakeholder views on the:

- Scope of the regulatory framework — policy drivers in key areas, whether and the extent to which regulation is required, whether it should apply to microgrids or individual power systems or to both, whether it should target new customers or existing customers or both, in addition to options for regulatory arrangements.
- National and jurisdictional elements of the framework — how much of the regulation should be in a national framework, and how much should be left to jurisdictional frameworks.

This draft report sets out the Commission's analysis and proposed approach for an overarching regulatory framework for third-party SAPS, followed by more detailed analysis and the Commission's developing views on key areas for the regulation of a third-party SAPS service.

Following details of related work and stakeholder consultation in the remainder of this section, the rest of the report is structured as follows:

- Chapter 2 summarises national and jurisdictional arrangements that currently apply to third-party stand-alone power systems, and provides the Commission's assessment framework
- Chapter 3 discusses the Commission's overarching objectives in developing recommendations for the regulation of third-party SAPS, and explains the proposed approach to developing regulatory frameworks for third-party SAPS
- Chapters 4 to 10 set out more detailed analysis and views on the key areas of licensing and entry requirements, access and connections, economic regulation, consumer protections, reliability of supply, network operations and safety under the proposed regulatory framework.

1.3 Related work

This section summarises ongoing work that is related to the *Review of the regulatory frameworks for stand-alone power systems.*

1.3.1 Embedded networks review

The Commission self-initiated the *Updating the regulatory frameworks for embedded networks* review on 30 August 2018, publishing a draft report on 31 January 2019, and a final report on 20 June 2019.[9] The Commission has developed a package of changes to the NER and NERR, along with recommended amendments to the NEL and NERL to implement the new regulatory approach for embedded networks.

The purpose of the *Updating the regulatory frameworks for embedded networks* review was to advise on the detailed amendments to the regulatory framework required to implement the recommendations from the Commission's 2017 *Review of the regulatory arrangements for embedded networks*. The recommendations proposed a new regulatory approach to improve access to competition for embedded network customers, elevate embedded

9 AEMC, *Updating the regulatory frameworks for embedded networks*, Final report, 20 June 2019.

networks into the national framework, and better regulate new and legacy embedded networks.

The Commission closely coordinated and continues to consider linked policy and legal issues between the SAPS and the Embedded networks workstreams. The COAG Energy Council recommended the two workstreams are coordinated to ensure strategic overview, efficiency and consistency, as the regulatory issues covered are similar.

1.3.2 Western Australian Parliamentary Inquiry into Microgrids and Associated Technologies

In February 2018, the Western Australian Government commenced a Parliamentary Inquiry into Microgrids and Associated Technologies in WA. This Inquiry has considered both stand-alone power systems and embedded networks.

The Commission made a submission to the inquiry highlighting the common issues with this review on 31 October 2018, and participated in a hearing on 23 November 2018. An interim report was released by the Economics and Industry Standing Committee on 11 April 2019.

1.3.3 New Energy Tech Consumer Code

In 2017, a New Energy Tech Consumer Code (then the Behind the Meter Code) Working Group was established to develop a draft code of practice for the industry in relation to behind the meter products (such as solar, battery energy storage systems, electric vehicle charging products, energy management systems and software, and other emerging products and services for homes and businesses). The Working Group consists of Australian Energy Council, Clean Energy Council, Consumer Action Law Centre, Energy Consumers Australia, Energy Networks Australia, Public Interest Advocacy Centre, Renew and Smart Energy Council. The Working Group submitted a draft code to the Australian Competition and Consumer Commission for authorisation on 30 April 2019. If approved, this Code may provide some general consumer protections relating to the purchasing of SAPS from signatories to the Code.[10]

1.4 Stakeholder consultation and timeframes

Under this review, the COAG Energy Council has requested the Commission consult with the EMTPT, the AER, the Economic Regulatory Authority of Western Australia, Energy Consumers Australia (ECA) and AEMO.

The Commission has consulted with stakeholders since initiating priority 1 of the review, including with jurisdictional governments, regulators, consumer groups, technology providers and agricultural bodies. The Commission intends to continue to utilise stakeholder meetings and roundtables to facilitate consultation at appropriate times as the review progresses.

The Commission plans to publish a final report for priority 2 in October 2019. The Commission published the final report for priority 1 on 30 May 2019.

The following table summarises the project timelines.

10 Draft New Energy Tech Consumer Code, 29 April 2019.

Table 1.1: **Key deliverables and timeframes**

DELIVERABLE	DATE
Priority 1	
Issues paper	11 September 2018
Draft report	18 December 2018
Final report	30 May 2019
Priority 2	
Consultation paper	1 March 2019
Draft report	27 June 2019
Final report	31 October 2019

2 CONTEXT AND APPROACH

2.1 Context for a framework for third-party stand-alone power systems

As discussed in the final report for priority 1 of the review, the Commission defines third-party stand-alone power systems as power systems that are not connected to the national grid and that a third party owns and operates.[11]

The Commission considers a third party to be any party that is not the customer's local distribution network service provider (DNSP), which may include:

- community group (customers of a microgrid)
- local council
- developer
- embedded network operator
- an electricity market participant that is not the local DNSP - for example a retailer or a ring-fenced affiliate of the local DNSP or another DNSP.

Third-party stand-alone power systems would include both third-party individual power systems and microgrids that supply:

- customers that transition from a DNSP interconnected grid
- customers that transition from a DNSP owned and operated SAPS
- new customers.

The sections below provide an overview of the regulatory treatment of these systems in current national and jurisdictional frameworks, and the Commission's assessment framework for priority 2 of the review.

2.1.1 Regulatory treatment of stand-alone power systems in national energy frameworks

This section provides an overview of the current application of national energy frameworks to third-party SAPS. Unless otherwise specified, references in this section to microgrids and individual power systems refer to both DNSP-led SAPS, and third-party systems.

In general, the NEL and the NER do not currently impose obligations on owners/operators of stand-alone power systems, unless those entities are already registered market participants, as most provisions of the NEL and NER apply only to interconnected systems.

The NEL defines the interconnected national electricity system as:[12]

> The interconnected transmission and distribution system in this jurisdiction and in the other participating jurisdictions used to convey and control the conveyance of electricity to which are connected –
>
> (a) generating systems and other facilities; and

11 Review into the regulatory frameworks for stand-alone power systems — Priority 1, final report, 30 May 2019.

12 Section 2 of the NEL.

> (b) loads settled through the wholesale exchange operated and administered by AEMO under this Law and the Rules.

"Connected" is defined in the NER as having a "physical link to or through a transmission network ... or distribution network." As such, most provisions of the NEL and NER apply only to generators and transmission or distribution providers that are physically linked to other transmission or distribution systems and to loads settled on the wholesale exchange operated by AEMO.

The National Energy Customer Framework (NECF) comprises the NERL and NERR together with Chapters 5A and 6B of the NER. The NECF would not apply to stand-alone power systems in New South Wales (NSW), South Australia or Tasmania as the NERL application acts in these states only apply to customers supplied via the "interconnected national electricity system" that is defined to exclude stand-alone power systems. However, the NERL and NERR do apply to Queensland stand-alone power systems unless the seller has an exemption. In Victoria, the Commission understands that provisions largely equivalent to the NECF would apply to stand-alone power systems.

Individual jurisdictions can choose to nominate distributors that would not otherwise be covered by the national framework in respect of a specific distribution system (for example a distributor in a microgrid).[13] The nominated distributor would then be subject to specified provisions of the NER relating to connection services, retail support obligations and credit support obligations[14] as well as all or part of the NERL and NERR. These provisions could be used by jurisdictions if they wish to ensure that distributors operating microgrids are subject to the full NECF provisions including those contained in Chapters 5A and 6B of the NER. To do so, a jurisdiction would need to amend the regulations under the Acts which apply the NEL and NERL in that jurisdiction (the application Acts). Specific distributors need to be nominated. To date, only Queensland has chosen to nominate a distributor in this way. Ergon Energy Corporation is nominated in relation to the distribution systems it operates that do not form part of the national grid (except for the Mount Isa – Cloncurry supply network).[15]

The Commission has recommended changes to the NEL and NERL, as well as to the application Acts for the NERL in NSW, South Australia and Tasmania, to extend the application of the NEL, NERL, NER and NERR to DNSP-led SAPS. However, these proposed changes will not extend the application of these instruments to third-party SAPS.

2.1.2 Other national frameworks covering third-party stand-alone power systems

The Australian Consumer Law (ACL) prohibits misleading, deceptive and unconscionable conduct and offers protections for consumers including in the areas of:

- consumer rights when buying goods and services

13 Section 6A of the NEL and section 12 of the NERL.

14 Chapters 5A and 6B of the NER.

15 Electricity - National Scheme (Queensland) Regulation 2014, s.4. The Mount Isa - Cloncurry supply network is a large microgrid that is regulated as if it were connected to the NEM. The microgrid is operated by Ergon and supplies approximately 10,000 customers. It is subject to chapter 6 (Economic regulation of distribution services) and chapter 11 (Savings and transitional rules) of the NER.

- product safety
- unsolicited consumer agreements, direct marketing, unfair contract terms law, and consumer redress options, among others.

Therefore, the sale of electricity by a third-party SAPS provider, the safety of the SAPS solution and equipment and any agreements between consumers and any third party in this context would be broadly governed by the ACL, irrespective of whether the NECF and parts of the NER also apply.

Further detail on relevant ACL provisions is set out in the following chapters.

2.1.3 Jurisdictional frameworks for stand-alone power systems

State and territory regimes for SAPS differ quite widely, and regulation (particularly in relation to consumer protections) is not necessarily comprehensive. Most jurisdictions have licensing and exemption systems that allow certain conditions to be applied to licensees. SAPS operators with exemptions from the requirement to obtain a licence would, in general, be subject to fewer conditions than licensees, which may be appropriate in some cases. Customers of SAPS often have some pricing protections but in some jurisdictions there is little in the way of reliability standards, and safety and technical standards that apply to SAPS vary in their comprehensiveness.

Some examples of jurisdictional regulation of SAPS are discussed in the following section.

2.2 Scale and arrangements for current third-party stand-alone power systems

This section provides an overview of some third-party stand-alone power systems under jurisdictional frameworks. The overview is not comprehensive or necessarily representative, but is provided to illustrate some current examples of third-party stand-alone power systems across Australia.

The jurisdictions would decide whether to apply any recommendations from this review for new third-party stand-alone power systems to existing microgrids.[16]

In the context of this review, Renew (previously Alternative Technology Association) assisted the AEMC in surveying its members on their experiences with off-grid power. The survey respondents primarily reside in rural Victoria. Box 1 summarises the main survey outcomes.

BOX 1: SURVEY OF OFF GRID CUSTOMERS

Renew (previously Alternative Technology Association) assisted the AEMC in surveying its members in relation to their experiences in off-grid electricity. The AEMC has treated the results of this survey as illustrative rather than comprehensive or conclusive, due to the sample and methodology limitations.

16 Terms of Reference, *Review of the regulatory frameworks for stand-alone power systems*, p. 6.

Out of 130 survey participants, 57 have disconnected from the national grid, generally for cheaper and more sustainable energy. Survey respondents cited the following objectives in disconnecting from the grid:

- cost savings
- self-sufficiency
- environmental reasons and emission reduction
- reliability of power supply.

These participants established their own individual power systems, and report them being easy to look after and offering good reliability.

The participants, however, raised the following issues and propositions:

- Off-grid systems should be tailored to the users and must be designed to manage winter shortages and summer excesses
- Information on system efficiencies and cost comparators are not readily available
- Upfront costs are large and mostly cannot be offset or covered by rebates
- Technical information is fragmented and incomplete, and there is no centralised register of suppliers and maintenance service providers
- Enabling power sharing between neighbours would be useful to manage system shortages and excesses.

Source: AEMC and Renew.

2.2.1 New South Wales

In New South Wales, the Commission is aware of one microgrid that is regulated under site-specific legislation: Lord Howe Island.[17]

Lord Howe Island is a small remote island in the Tasman Sea around 600km east of Port Macquarie. The permanent population at the time of the 2016 census was 382 with up to an additional 400 tourists at any one time.[18]

The island's electricity generation and transmission system is operated by the Lord Howe Island Board (LHIB), servicing 275 customers. The generation system consists of three 300kW diesel generators and one backup 425kW generator.[19] There are two inclining block tariff structures, for domestic and commercial customers, with the rates set annually by the LHIB.

The LHIB is required to have Electricity Network Safety Management System under the *Electricity Supply (Safety & Network Management) Regulation 2014 (NSW)*. In addition, all electrical installations on the island must comply with *Lord Howe Island Electrical Service*

17 Lord Howe Island Service Rules, 2011.
18 2016 Census QuickStats Code SSC12387.
19 Lord Howe Island Board, https://www.lhib.nsw.gov.au/infrastructure/electricity

Rules, which regulate electrical installations and connections, and *AS/NZS 3000:2007 Electrical Wiring Rules*.

2.2.2 Northern Territory

In the Northern Territory, Indigenous Essential Services Pty Ltd, a subsidiary of Power and Water Corporation (PWC), performs the installation, operation and management of remote electricity supply to parties outside of the Darwin-Katherine network, Alice Springs and Tennant Creek networks. This organisation operates numerous remote community microgrids (diesel and solar hybrid based generation and distribution) under PWC's network, retail, generation and system control licenses issued by the Utilities Commission of the Northern Territory.

Other parties operating microgrids can also apply to the Utilities Commission of the Northern Territory for an isolated system license, or an exemption. Currently, one microgrid operator holds an isolated system license and another one has been granted an exemption. Both operators serve mining operations and associated towns.

2.2.3 Queensland

Among the NEM jurisdictions, Queensland is unique in that it applies the NECF and certain parts of the NER to SAPS, as discussed in section 2.1.1 above. In addition, under Queensland law entities providing distribution services are required to obtain either a distribution authority, which may have conditions attached to it, or a special approval to provide such services without a distribution authority. Customers of SAPS operated under special approvals (for example, by resources companies and island resort operators) are less protected than customers of SAPS with distribution authorities.

Ergon Energy owns and operates 33 isolated and remote power stations that are not part of the interconnected grid in Western Queensland, the Gulf of Carpentaria, Cape York, Torres Strait Islands, and Palm and Mornington Islands. Ergon Energy also operates the Mount Isa-Cloncurry microgrid that supplies approximately 10,000 customers. These systems do not constitute third-party SAPS for the purposes of this review.

As an example of the regulation of a third-party SAPS, the AER has approved a selling exemption for RTA Weipa to operate a microgrid in a far-north settlement.[20] Box 2 describes this project.

BOX 2: WEIPA MICROGRID

RTA Weipa Pty Ltd (RTAW) holds a mining license, and to fulfil one of its license conditions, owns power stations and a distribution network that constitute the sole power supply source for residents and businesses in the far north off-grid Queensland settlement of Weipa. Weipa

20 AER submission to EMTPT consultation on regulatory implications of stand-alone energy systems in the electricity market, 4 October 2016; and RTA Weipa Pty Ltd - notice of instrument-individual exemption, 2 June 2016, available on the AER website.

is a mining town on the Gulf of Carpentaria with a population of 3,905 as at 2016.

Since Queensland applies the NERL to third-party microgrids, RTAW sought from the AER and has obtained a selling exemption. The following are the main features of RTAW's selling exemption:

- Obligation to supply does not apply to new large customers, or current large customers that significantly alter their annual load, due to RTAW's concerns over generation capacity.
- RTAW is permitted to charge small customers prices that are higher than the standing offer due to the lack of a comparable local area retailer.
- RTAW is not required to base a bill on a meter read, as RTAW faces difficulties in accessing customer premises.

Source: AER submission to EMTPT consultation on regulatory implications of stand-alone energy systems in the electricity market, 4 October 2016; AER, RTA Weipa Pty Ltd - notice of instrument - individual exemption, 2 June 2016; ABS 2016 Census.

2.2.4 South Australia

With the most centralised population in the NEM, South Australia provides an informative case study of the potential for third-party SAPS as the Australian population becomes more centralised in the future.[21]

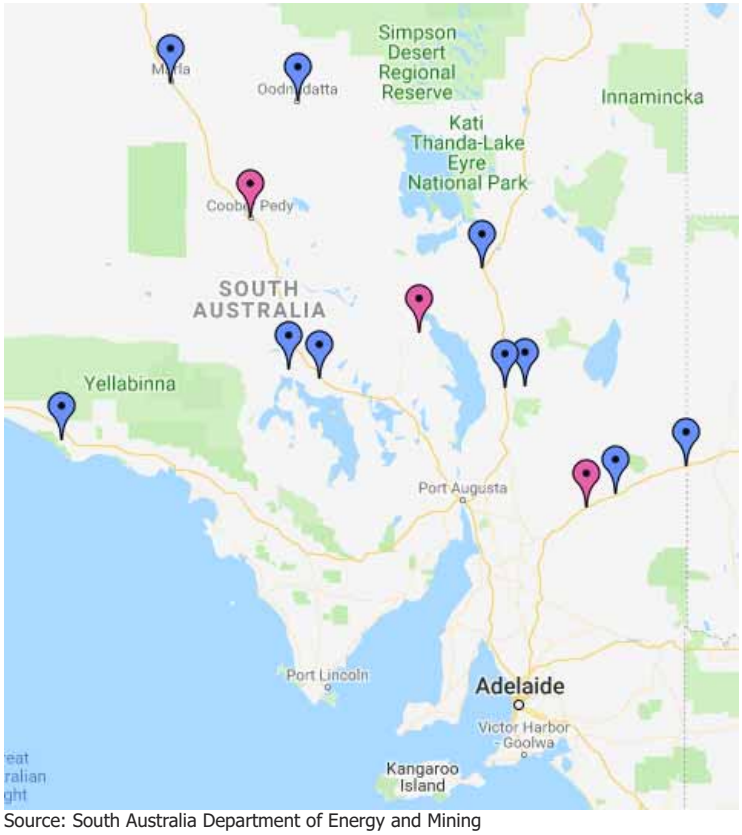
In South Australia, the Essential Services Commission (ESCOSA) regulates off-grid electricity networks under the Remote Area Energy Supply (RAES) scheme that is run by the South Australian government and includes the RAES State/Independent scheme and the RAES Aboriginal Communities scheme. The RAES scheme is regulated under comprehensive jurisdictional license conditions enforced by ESCOSA, in addition to contract conditions with the providers running the RAES on behalf of the South Australian Government. License conditions include consumer protection obligations, safety, technical and reliability standards, compliance and reporting obligations. Other SAPS in South Australia which are not part of the RAES schemes are regulated under license conditions.

The RAES State/Independent scheme covers around 2,400 customers in 13 towns and supplies more than 15 GWh of electricity annually.[22] The South Australian government supplies the electricity infrastructure for 10 of the towns. The remaining three towns, Andamooka, Coober Pedy and Yunta, are supplied by independent electricity providers, displayed as the pink icons in Figure 2.1.

21 Over 77% of South Australia's population (around 1.7 million people) live in metropolitan Adelaide. Australian Bureau of Statistics, Australian Demographic Statistics, March 2018.

22 Department of Energy and Mining, http://www.energymining.sa.gov.au/energy_and_technical_regulation/energy_resources_and_supply/south_australias_energy_supply_and_market/remote_area_energy_supply. Accessed 17/1/2019.

Figure 2.1: RAES State/Independent scheme locations



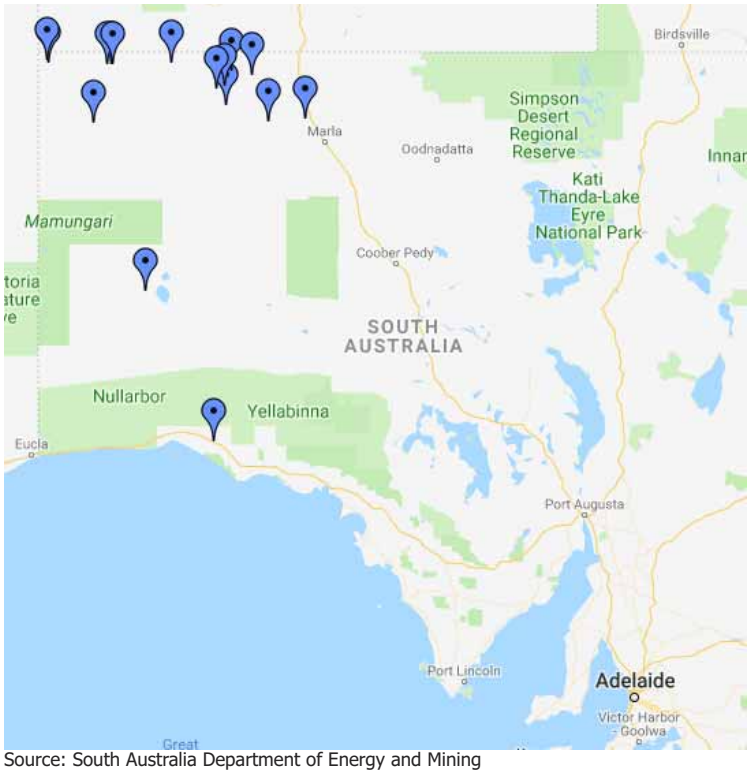
Source: South Australia Department of Energy and Mining

Note: The blue icons denote RAES schemes owned by the SA Government. Pink icons are settlements supplied by independent third parties.

Under the RAES Aboriginal Communities scheme, a further 1,000 off-grid customers are supplied with 14 GWh of electricity annually. The scheme is currently operated by Cowell Electric Supply and covers the areas shown in Figure 2.2.[23]

23 ESCOSA Off-grid networks performance report 2016-17.

Figure 2.2: RAES scheme locations



Source: South Australia Department of Energy and Mining
Note: The blue icons denote RAES Aboriginal Communities scheme locations operated by Cowell Electricity Supply

The experience of the RAES scheme in South Australia provides an example of remote and sparsely populated communities that may be serviced by third-party SAPS.

2.2.5 Victoria

In Victoria, the Retail Code applies protections similar to many of those in the NECF to customers of retailers.[24] A licence is required for the supply or sale of electricity, among other activities, and exemptions from the licence requirement would not be available to SAPS retailers.[25] There do not appear to be any restrictions limiting the protections in the Retail Code to NEM-connected customers, so SAPS customers should also receive the benefit of these protections if they are supplied by an authorised retailer.

The Distribution Code contains additional customer protection provisions that would apply to microgrid customers, including:[26]

- restrictions on disconnection and requirements regarding reconnection

24 For example, there are provisions on customer retail contracts, customer hardship, disconnection of premises, and life support equipment: Energy Retail Code Parts 2, 3, 6 and 7.

25 Electricity Industry Act 2000 (Vic), s. 16. General Exemption Order 2017, Victoria Government Gazette N. S 390, 15 November 2017, ss. 4-5.

26 Electricity Distribution Code cl 9-13. It is unclear whether these provisions would also apply to IPS customers.

- provision of information to customers, including on reliability standards and customers' rights
- requirements regarding complaint handling and dispute resolution.

2.2.6 Tasmania

In Tasmania, the regulation of electricity generation, distribution and sale to customers in the Bass Strait Islands (principally under the Electricity Supply Industry Act and the Tasmanian Electricity Code) provides an example of a relatively complete regulatory regime for an existing microgrid. These provisions are specific to the Bass Strait Islands.

Hydro Tasmania operates the microgrids on King and Flinders Islands (the Bass Strait Islands) supplying around 2,500 people. In addition to regulation under the Electricity Code, all tariffs, charges and conditions relating to retailing on these islands are subject to approval by the Tasmanian Economic Regulator.

The King Island system is the larger of the two systems supplying around 12 GWh annually with a system comprised of around 3 MW of combined wind and solar generation, a 3 MW/1.5 MWh battery and a diesel generator.[27]

The Flinders Island microgrid is smaller, meeting an annual consumption of 6.7 GWh through diesel generation, a 900 kW wind turbine, a 200 kW solar array and a 750 kW/300 kWh battery.

Customers of any new SAPS in Tasmania would receive the benefit of the electrical safety requirements which have broad application, and would also be protected by the general provisions of the Supply Act and the Code that apply to licensed electricity entities if the SAPS services are provided by licensed electricity entities. The NECF does not apply to Tasmanian SAPS. Customers of new SAPS would not be covered by the customer billing provisions and reliability standards that are set for the Bass Strait Islands power system.

Box 3 discusses research in Tasmania around customers that may have chosen to move off-grid due to battery storage performance, feasibility of household scale electricity generation, relatively higher costs of mains generation or environmental and social considerations.

BOX 3: INDIVIDUAL POWER SYSTEMS IN TASMANIA

The University of Tasmania has undertaken research into the experiences of off-grid customers in Tasmania.

The key findings were as follows:

- Data on how many households are already off-grid in Tasmania is not currently being collected. Estimates of off-grid households range from 200 to 10,000, which indicates uncertainty.

27 Hydro Tasmania KIREIP, https://www.hydro.com.au/clean-energy/hybrid-energy-solutions/success-stories/king-island

- There has been a shift over time in the motivations for households to leave the electricity grid. For households that have recently moved off-grid, financial considerations have been an important factor in their decision. In contrast, households who have been off-grid for longer were more likely to mention environmental concerns or personal values.
- The decision to go off-grid has mostly been taken on an individual household basis, facilitated by key organisations such as specialist battery and renewable energy installers.
- Living off-grid has given rise to heightened awareness of energy use. Households typically demonstrated a high degree of flexibility in their routine, for example only doing certain tasks such as vacuuming and ironing when the sun was shining and their PV panels were generating electricity.

Source: Associate Professor Heather Lovell, School of Social Sciences, University of Tasmania, Hobart; Australian Research Council Future Fellow (2015-2018); November 2015.

2.3 Assessment framework

In developing recommendations on whether and how to regulate third-party SAPS, the Commission is applying-the national electricity objective (NEO) and the national energy retail objective (NERO). The Commission is assessing whether its recommendations promote efficient investment in, and operation of energy/electricity services for the long term interests of consumers of energy/electricity with respect to price, quality, safety and reliability.

2.3.1 National energy objectives

The review involves considering potential changes under the NEL and NER for electricity and the NERL and the NERR for energy retail services. As such, two of the national energy objectives — the NERO and the NEO — are relevant to this review.

The NERO is:[28]

> to promote efficient investment in, and efficient operation and use of, energy services for the long term interests of consumers of energy with respect to price, quality, safety, reliability and security of supply of energy.

In addition, under the NERL the Commission must, where relevant:[29]

> satisfy itself that the Rule is compatible with the development and application of consumer protections for small customers, including (but not limited to) protections relating to hardship customers.

This is referred to as the consumer protection test.

The NEO is:[30]

28 NERL, s. 13.
29 NERL, s. 236(2)(b).
30 NEL, s. 7.

> to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system.

Consistent with the terms of reference for the review, the Commission considered that the relevant aspects of the NERO and NEO were the promotion of efficient investment in, and operation of, energy/electricity services for the long term interests of consumers of energy/electricity with respect to price, quality, safety and reliability.

For example, any regulatory arrangements for stand-alone power systems may affect the prices consumers pay (including consumers that remain connected to the grid) and the reliability of the service SAPS customers receive.

The consumer protection test was also important given the strong focus of the review on the protections that consumers should receive when supplied by stand-alone power systems.

For a detailed discussion on the Commission's approach to applying these overarching objectives to rule making processes and reviews, such as this one, refer to Applying the energy objectives: A guide for stakeholders.[31]

2.3.2 Assessment criteria

The proposed assessment criteria being used to determine the scope and breadth of a fit-for-purpose regulatory framework for a third-party SAPS are the same as those used by the Commission in its review of DNSP-led SAPS; namely[32]:

- Do the regulatory arrangements facilitate competition and consumer choice in energy services and products?
- Are the regulatory arrangements proportional to the risks they seek to mitigate, such that the framework balances the costs of regulatory arrangements with their expected benefits?
- Do the regulatory arrangements promote efficient investment and allocation of risks and costs?
- Do appropriate consumer protections and compliance mechanisms apply within stand-alone power systems?
- Are the regulatory arrangements clear and fit-for-purpose? The considerations here include the regulatory framework being flexible and resilient to future market developments including technological developments, and evolution of SAPS business models.
- Are the regulatory arrangements consistent and transparent? A level regulatory playing field, to the extent that this is likely to yield efficient outcomes for consumers, would eliminate incentives for arbitraging across different regulatory frameworks?

31 AEMC, *Applying the energy objectives: A guide for stakeholders*, 1 December 2016, Sydney.

32 AEMC, *Review of the regulatory frameworks for stand-alone power systems — priority 1*, Final report, 30 May 2018.

Facilitating competition and consumer choice

Competition is a key driver of productivity and efficiency in markets, driving lower prices and improved choices for consumers in the long run. This is because, over time, effective competition will incentivise businesses to innovate, minimise costs, provide competitive prices, provide a quality of service matching customer expectations and a choice of services consistent with consumer preferences. The terms of reference recognises the relevance of competitive service delivery as a means of driving better price and service outcomes for consumers.

Proportionality and regulatory burden

This review considers how the regulatory framework can appropriately address any market failures or risks arising from the evolution and growth of third-party stand-alone power systems. For example, the breadth and depth of the regulatory framework may be different for an IPS compared to a microgrid, or for different sized microgrids. For economic regulation, the potential for market power to be exercised in an IPS is likely to be lower than for a microgrid, moreover, the size of the microgrid may also be a determining factor in whether and how it is economically regulated.

Regulatory frameworks should balance the costs of regulatory arrangements with their expected benefits and be fit for purpose. Where arrangements are complex to administer, difficult to understand, or impose unnecessary risks, they are less likely to achieve their intended ends, or will do so at higher cost.

Efficient investment and allocation of risks and costs

The regulatory framework for stand-alone power systems should encourage innovation and promote efficient investment in network infrastructure and the supply of energy services. Efficient outcomes are most likely to arise where risks and costs are appropriately allocated.

As a general rule, risks should be borne by, or allocated to, parties who are in the best position to manage them and have the incentives to do so. This review, for example, considers how costs and risks are allocated between third-party SAPS service providers and SAPS customers.

Appropriate consumer protections and compliance mechanisms apply

This review considers the extent to which the regulatory arrangements for a third-party SAPS can and should provide for adequate consumer protections to be extended to third-party SAPS customers, and how this can best be achieved. The Commission will also consider the mechanisms for compliance and enforcement of consumer protections within a third-party SAPS.

Clarity and predictability

The regulatory framework for a third-party SAPS needs to be transparent and result in predictable outcomes for all participants and should provide a clear, understandable set of rules to encourage effective participation in the SAPS. SAPS customers (which may consist of residential and business customers) and SAPS service providers need to understand what

their protections and obligations are, and what others' obligations are, with respect to the transactions they undertake. This should promote confidence in the regulatory framework and encourage effective participation.

To the extent they are required to make decisions, consumers should have access to sufficient information to make informed and efficient decisions, especially as a decision to accept a third-party SAPS solution is likely to have long-term implications.

A clear and transparent regulatory framework creates confidence in the market which should also encourage investment and innovation in providing SAPS-based services.

Consistency

Through the general principle that a national framework for third-party SAPS should provide a level playing field, the Commission recognises the risk of different regulatory approaches across DNSP SAPS, embedded networks and non-DNSP SAPS. As such, the Commission is considering potential incentives for parties to arbitrage across different regulatory frameworks; for example, the potential switching from one SAPS supply model (e.g. DNSP-led SAPS) to another SAPS model due to an onerous regulatory burden in the former supply model.

The Commission is mindful that the national framework may create incentives for parties around disconnections from the interconnected grid, or migration from DNSP SAPS to third-party SAPS. For example, an embedded network may have the incentive to disconnect from the interconnected grid to be treated as a third-party SAPS rather than an embedded network under the regulatory framework. The Commission intends for its recommendations to create incentives around efficiency and consumer benefits rather than regulatory arbitrage.

3 REGULATORY FRAMEWORK FOR THIRD-PARTY SAPS

In the consultation paper, the Commission explored why, and under what circumstances, regulation of third party SAPS is necessary. The Commission additionally considered types of regulation, and the manner in which the appropriate scope for a regulatory framework for third-party SAPS can be determined.

The Commission sought stakeholder views on the appropriate regulatory framework for third-party SAPS, and on whether third-party SAPS should be regulated under a national or jurisdictional framework, or some combination of the two.

This chapter explores the development of a regulatory framework for third-party SAPS in more detail, providing:

- a discussion of the factors to consider when determining the appropriate regulatory framework for third-party SAPS
- key details of the stakeholder submissions to the consultation paper
- the Commission's analysis in determining a draft overall regulatory framework
- the Commission's draft framework for the regulation of third-party SAPS.

3.1 Background

As discussed in the consultation paper, in general, regulations may be required to provide assurance to consumers about the quality of the product, and in some cases, assurance about the efficiency of the price of that product. Regulation seeks to impose controls on the behaviour of buyers and sellers by either limiting the extent of market power exercised by a market participant, or limiting the potential for market failure and providing a degree of quality assurance.

Determining the appropriate scope and extent of regulation involves considering the reasons why actual outcomes depart from what may be considered efficient. In some markets the issue may be resolving informational asymmetries between buyers and sellers, for example, by imposing requirements around licensing and minimum performance standards. For other markets and contexts, market power may be the main issue, not market failure. This implies a greater focus on economic regulation than in a market with little or no market power concerns.

Furthermore, even where there are demonstrated instances of market failure, it does *not* necessarily follow that regulation is the best or only remedy. In the case of informational asymmetry-induced market failure, a range of collective reputational mechanisms could address the issues, for example, by sellers' discretionary provision of guarantees or warranties, or accreditation techniques for suppliers that are collectively enforced by suppliers.

Essential services, such as energy, water and telecommunications, are 'needed' (as opposed to 'wanted'). Generally, consumers cannot completely forgo consuming energy. This imposes

a further limit on the extent to which competition alone can achieve pro-consumer outcomes without some supporting regulatory protections.

While regulations can and often do benefit consumers, there are always costs associated with imposing regulations. For example, regulations can create barriers to entry which may inhibit new entrant products and services that have the potential to benefit consumers and increase productivity and living standards across the economy. The issue is whether the benefits to consumers and society from regulation exceeds the costs associated with that regulation.

3.1.1 Whether and how to regulate third-party SAPS

The appropriate regulation of third-party SAPS, including whether and how to regulate these systems, is at the heart of this review. Electricity, as an essential service, is generally considered to require additional regulatory protections than those found in broad-based regulations (such as the Australian Consumer Law). Energy-specific national and jurisdictional regulations are currently in place for standard supply, and the Commission has recommended energy-specific consumer regulations for DNSP SAPS, and embedded networks.[33]

A key question for priority 2 of this review is whether the regulations for third-party SAPS should be the same as those recommended in priority 1 for DNSP-led SAPS and for standard supply customers, or whether there should be differences to reflect the differences in the consent to be supplied via the different types of supply, as the customer is exercising choice to be supplied via a third-party SAPS. In addition, differences in potential ownership structures and operating models, and the customers' level of control over system specifications and requirements, may require consideration.

If it is determined that there is a need for energy-specific regulations in a third-party SAPS, but that these regulations need *not* be the same as for an DNSP-led SAPS and for standard supply, an appropriate regulatory framework to apply to third-party SAPS such that electricity provision within a third-party SAPS is consistent with the long term interests of consumers needs to be developed.

In its consideration of the appropriate regulation for third-party SAPS, the Commission is focusing on the following seven potential dimensions for regulation:

1. Registration and licensing, which covers eligibility criteria to provide assurance that service providers are 'fit and proper', and to provide a means for the application of further regulatory obligations, as well as covering supply continuity.
2. Access and connection, which includes obligations to supply, connect and/or provide access to the network.
3. Economic regulation, which refers to the regulation of prices charged or revenues earned by the seller for supply, connection and/or access.
4. Consumer protections which provide rights for consumers, including protections for vulnerable consumers, and aim to prevent unfair practices or unscrupulous behaviour.

33 Respectively, AEMC, *Review of the regulatory frameworks for stand-alone power systems - priority 1,* Final report, 30 May 2019; and AEMC, *Updating the regulatory frameworks for embedded networks*, Final report, 20 June 2019.

5. Reliability of supply obligations to support adequate and efficient levels of reliability.
6. Network operations, including system security and technical standards, in addition to metering and settlement.
7. Safety standards governing the safe supply of electricity to consumers, and the safety of electrical works and the general public.

It is worth noting that there is a high degree of overlap between these dimensions of regulation, for example, provision of service and access crosses over into economic regulation. This overlap means that the regulatory approach for each of these dimensions should not be determined completely in isolation from any other one.

The focus of the discussion on the seven dimensions is on systems supplying small customers,[34] and the provision of consumer protections to those customers. Large customers have substantially fewer customer protections under current arrangements for grid supply, based on a rationale that they should be able to negotiate satisfactory commercial outcomes. The Commission considers this rationale would hold for large customers being supplied via a third-party SAPS. Nevertheless, the Commission has considered which aspects of regulation that might be applied to third-party SAPS should also cover large customers.

Whether the regulatory framework for a third-party SAPS should distinguish between microgrids and IPS and whether it should distinguish microgrids based on size is being considered by the Commission in this review. For example, economic regulation may be more relevant for a microgrid with hundreds of customers than a microgrid with a handful of customers, or an IPS with one customer. Consideration may need to be given to the size at which a microgrid starts to exhibit the same market characteristics as the interconnected grid and justifies the costs that would result from the application of more onerous forms of regulation such as economic regulation.

3.1.2 National or jurisdictional regulatory framework

When developing a regulatory framework for third-party SAPS, the Commission is considering whether national or jurisdictional frameworks are more appropriate for third-party SAPS, or whether some provisions are more appropriate under a national framework and others under a jurisdictional framework. Harmonisation of regulatory arrangements, whether under a national framework, or consistent jurisdictional frameworks, or a combination of both national and harmonised jurisdictional frameworks would likely be beneficial.

National energy markets in Australia are governed by a combination of national and jurisdictional legislation and other regulatory frameworks. The Australian Energy Market Agreement (AEMA) is an agreement between the Australian government and the governments of all states and territories[35] which sets out the legislative, institutional and governance frameworks for energy regulation. The AEMA specifies the distribution and retail activities that are to be covered by national regulatory frameworks in NEM jurisdictions,[36] and

34 Under the NERL and jurisdictional regulation, a small customer is one consuming less than 100MWh per annum in Queensland, NSW and the ACT, less than 150MWh per annum in Tasmania and less than 160MWh per annum in South Australia.

35 COAG, Australian Energy Market Agreement (as amended December 2013).

36 The NEM interconnects five regional market jurisdictions: Queensland, New South Wales (including the Australian Capital

those that are regulated under state and territory arrangements. The AEMA will help guide the Commission's approach in this review.

Under the AEMA, national functions include the economic regulation of distribution networks, arrangements for distribution network expansion, the authorisation of retailers, and key consumer protection measures and contract terms and conditions under NECF.[37] The regulation of transmission networks and arrangements for the wholesale electricity market are also activities governed by national frameworks in NEM jurisdictions. State and territory functions include DNSP technical and safety requirements, small customer dispute resolution, service reliability standards and the determination of distribution and retail service areas.

Jurisdictional opt in arrangements

Potentially, there may be a number of different frameworks for microgrids in a jurisdiction, with legacy SAPS regulated under discrete jurisdictional frameworks, a national framework for a DNSP SAPS, and a nationally consistent framework for third-party SAPS.

There are a number of options for the design of a new framework for third-party SAPS. One option could be to allow a jurisdiction to opt into all or parts of a national third-party SAPS framework for new SAPS, and for some or all legacy SAPS. Another option could be a framework with regulations applied at a jurisdictional level in a more nationally consistent way. A third option could be a combination of national and jurisdictional frameworks, with some dimensions regulated at a national level and others at a jurisdictional level.

3.2 Stakeholder submissions

In submissions to the consultation paper, stakeholder views ranged from all third-party SAPS being subject to the full regulatory framework that governs standard grid-connected supply, to no energy-specific regulations being required for third-party SAPS.

A number of DNSPs cited a need for consistency with the frameworks for SAPS priority 1 and embedded networks.[38] AEMO, in its submission to the consultation paper, considered that the potential for regulatory arbitrage across different regulatory frameworks should be minimised where practical.[39] In contrast, some other stakeholders considered that third-party SAPS were a different proposition to grid-connected supply and DNSP-led SAPS, noting that customers would be choosing to enter into a third-party SAPS and that the customer will be able to (in theory) negotiate supply arrangements to meet their specific needs.[40] EWON considered that the framework should be flexible enough to accommodate future energy services which may be provided to residential customers.[41]

Territory), Victoria, South Australia and Tasmania. Western Australia and the Northern Territory are not connected to the NEM.

37 Some elements of the national frameworks have not been adopted in Victoria.

38 Submissions to the consultation paper: Ausgrid, p. 3; Endeavour Energy, p. 5; Essential Energy, p. 1; Energy Queensland, p. 4.

39 AEMO, submission to the consultation paper, p. 2.

40 Submissions to the consultation paper: AER, p. 3; National Farmers Federation p. 3; Agriculture Industries Taskforce, p. 4.

41 EWON, submission to the consultation paper, p. 1.

3.2.1 Regulation of third-party SAPS

Many of the DNSPs who submitted to the consultation paper advocated for strong regulation, similar to the regulation of standard supply, for either all third-party microgrids, or microgrids which have reached a certain threshold.[42] For example, TasNetworks advocated for strong regulation of third-party SAPS that is consistent with the NEM, with different treatment only on an exception basis.[43] Energy Queensland considered that established microgrids would exhibit natural monopoly characteristics, and therefore warrant regulatory oversight consistent with DNSP-led SAPS.[44]

However, most stakeholders viewed lighter regulation as appropriate for IPS, with some stakeholders extending this view to small microgrids.[45] Further, a small number of stakeholders supported minimal regulation for all third-party SAPS to allow customer choice to meet their specific needs.[46] The AER suggested in its submission that a lighter touch may be justified in some cases as the decision to enter a SAPS would reflect a customer exercising their choice.[47]

A tiered regulatory approach

Following from this, many stakeholders considered that a differing regulatory framework was required for IPS than for microgrids. Additionally, a number of stakeholders either suggested a tiered regulatory approach would be appropriate for third-party SAPS, or indicated in submissions that differing levels of regulation would be required to provide an appropriate and proportionate regulatory framework.[48] Both ENA and Ausgrid suggested a tiered framework using a risk-based assessment to determine the regulatory approach, noting a model proposed by IPART in its submission to a NSW Government review of consumer protections.[49]

Based on IPART's framework as a starting point, Ausgrid provided an example of a possible categorisation of microgrids:[50]

- Category 1: Very large third party microgrids (for example covering an entire town)
- Category 2: Microgrids covering a large group of households or businesses
- Category 3: A SAPS serving an individual, or a microgrid with a very small number of customers.

42 Submissions to the consultation paper: Energy Queensland, pp. 2-3; TasNetworks, p. 3; Ausgrid, p. 4; ENA, p. 3; Citipower, PowerCor and United Energy, p. 1; Endeavour Energy, p. 5.

43 TasNetworks, submission to the consultation paper, p. 3.

44 Energy Queensland, submission to the consultation paper, p. 4.

45 Submissions to the consultation paper, AER, p. 3; AEMO, p. 2; Essential Energy, p. 2; ENA, p. 1; Ausgrid, p. 4; Endeavour Energy, p. 5; AEC, pp. 2-3; EWON, p. 3; CEC, p 3.

46 Submissions to the consultation paper: National Farmers Federation, p. 3; Agriculture Energy Taskforce, p. 4.

47 AER, submission to the consultation paper, p. 3.

48 Submissions to the consultation paper: Essential Energy, pp. 2-3; Ausgrid, p. 4; ENA, p. 3; Tesla, p. 2; Citipower, Powercor and United Energy, p. 1; CEC, p. 3.

49 Submissions to the consultation paper: ENA, p. 3; Ausgrid, p. 4.

50 Ausgrid, submission to the consultation paper, p. 4.

ENA, in its submission, suggested that high voltage microgrids, and low voltage microgrids which cross roads and property boundaries outside of a strata title should be in category 2, with the remaining microgrids assessed on a risk-based criteria which could include:[51]

- potential customer impacts, such as the number of customers and customer types
- the suite of services being provided by the third-party e.g. peer-to-peer trading or vertical integration
- system complexity such as asset types within the supply system and load
- location and operating environment e.g. extreme weather conditions, bushfire risk, public safety risk
- skills required to safely manage and operate the SAPS.

Tesla also suggested a tiered approach to the regulation of third-party microgrids, suggesting capacity thresholds may be a first step in determining categories. Further, Tesla proposed that large microgrids should align with DNSP-led SAPS, medium-scale microgrids should have light handed regulation (transparent information flows, price provisions, dispute resolution, and negotiation framework) and small-scale IPS should be subject to self-regulation (ACL and possibly an accreditation scheme).[52]

Citipower, Powercor and United Energy were of the view that microgrids are similar to a DNSP and that SAPS operators would have a degree of market power within the SAPS, however, it suggested that regulatory treatment should differ depending on the size and risks of the SAPS.[53]

Endeavour Energy noted in its submission that it could be difficult to determine thresholds under a tiered approach in practice.[54] Essential Energy also considered that there were difficulties in defining a microgrid. In its view, the criteria may include number of customers, types and size of customers, generation assets, complexity of relationships, scale of network assets, and whether property boundaries were crossed.[55]

3.2.2 Regulation of customer owned IPS

The majority of stakeholders were of the view that it would be reasonable to apply a lighter regulatory framework for IPS, especially in cases where the customer owns and operates the IPS.[56]

AEMO considered that the NER should not apply to IPS where a customer is exercising a choice in preference from standard grid connection. AEMO also noted that customers would be able to reverse the choice to be supplied by an IPS in the future and connect to the interconnected grid.[57] Where there is no sale of energy or provision of energy services on an

51 ENA, submission to the consultation paper, pp. 3-4.
52 Tesla, submission to the consultation paper, p. 2.
53 Citipower, Powercor and United Energy, submission to the consultation paper, p. 1.
54 Endeavour Energy, submission to the consultation paper, p. 5.
55 Essential Energy, submission to the consultation paper, p. 3.
56 Submissions to the consultation paper: AEMO; p. 2; AEC, p. 2; Energy Queensland; p. 3; Tesla, p. 2; Essential Energy, p. 2; Endeavour Energy, p.5; ENA, p. 2, EWON, p.3; CEC, p. 3, Ausgrid, p. 4, ENA, p. 2.
57 AEMO, submission to the consultation paper, p. 2.

ongoing basis, a number of stakeholders considered that the ACL would provide adequate protections.[58] The ENA considered that additional regulations would be required where there is an ongoing agreement to maintain the SAPS or retail the electricity provided by the SAPS.[59]

3.2.3 National or jurisdictional regulatory framework

Many stakeholders recommended a nationally consistent framework that allowed jurisdictions to opt in.[60] The AER in its submission noted that third-party SAPS will likely be vertically integrated, and considered that, while there would be merit in a nationally consistent framework for regulation to reduce barriers to entry, the long term benefits must outweigh the costs.[61]

Endeavour Energy suggested that the regulatory framework for third-party SAPS would be most workable if arrangements are generally consistent with arrangements for grid-connected and DNSP-led SAPS customers, that is, the existing jurisdictional and national framework.[62] ENA agreed with consistent arrangements with the existing jurisdictional and national regulatory frameworks.[63]

Advantages of a jurisdictional framework, or regulating some aspects of third-party SAPS under jurisdictional frameworks, that were raised in submissions included that jurisdictions could tailor regulations and develop fit-for-purpose outcomes and that jurisdictional regulations would allow for the better management of local opportunities and challenges.[64]

Advantages of a national framework that were raised in submissions included consistency and efficiency, reduced complexity, administrative burdens and costs and that existing national frameworks could be used as a starting point.[65]

The Department of State Growth, Tasmania, considered that a jurisdictional opt-in for any national third-party SAPS framework would be important to allow jurisdictions to determine if and when to opt-in.[66]

3.3 Commission's analysis

Electricity is an essential service, and is generally considered to require additional regulatory protections beyond those in the ACL. Currently, third-party SAPS would be regulated under the ACL, some jurisdictional safety legislation, and in some jurisdictions, license conditions or by other specific third-party SAPS legislation.

As discussed in Chapter 2, the existing jurisdictional frameworks for third-party SAPS vary in their completeness. Regulation, particularly in relation to consumer protections, safety and

58 Submissions to the consultation paper: AEC, p. 2; Energy Queensland, p. 3; ENA, p. 2.
59 ENA, submission to the consultation paper, p. 2.
60 Submissions to the consultation paper: EWOSA, p. 1; EWON, p. 3; Ausgrid, p. 4; CEC, p. 6; TasNetworks; p. 4.
61 Submission to the consultation paper, p. 1.
62 Endeavour Energy, submission to the consultation paper, p. 7.
63 ENA, submission to the consultation paper, p. 12.
64 Submissions to the consultation paper: Endeavour Energy, p. 6; ENA, p. 11.
65 Submissions to the consultation paper: Endeavour Energy, p. 6; ENA, p. 11; CEC, p. 6.
66 Department of State Growth, Tasmania, submission to the consultation paper, p. 1.

reliability, is not comprehensive in some jurisdictions. In other jurisdictions a relatively comprehensive licensing framework is in place, with some or all third-party SAPS providers obliged to comply with detailed jurisdictional license conditions.

For standard supply, energy-specific national and jurisdictional regulations are currently in place, and the Commission has recommended energy-specific regulations for DNSP SAPS and embedded networks.[67] Although there would be benefits in applying some energy-specific regulations to third-party SAPS, the regulatory framework needs to be designed in a way in which the benefits to consumers and society from regulation exceed the costs associated with that regulation. Consumers generally have a higher degree of choice to enter into a supply arrangement where electricity is supplied by a third-party SAPS, than for supply by a DNSP-led SAPS, and in many cases for supply by an embedded network. Some or all of the costs of regulation are likely to be passed on to customers of third-party SAPS, so those costs must be proportionate, especially for small SAPS where the costs would not be spread over a large customer base in the same way as for standard supply or DNSP SAPS.

If energy-specific regulations are required for third-party SAPS, the regulations that apply need not be the same as for a DNSP-led SAPS and for standard supply, however, the principles behind the regulations should be consistent.

The subsections below provide analysis of the key considerations for the development of a regulatory framework for third-party SAPS in more detail.

3.3.1 Application of overarching principles

When developing a regulatory framework for third-party SAPS, the Commission intends to apply consistent principles between priority 1 (DNSP-led SAPS) and priority 2 and standard supply, recognising the importance of areas such as licensing, consumer protections and access to retail competition. However, how those principles are applied for third-party SAPS in practice is likely to vary, depending on:

- the size of the system (for example, only large systems are likely to be able to support retail competition and justify the costs of economic regulation) and
- whether it is regulated under national or jurisdictional rules (noting that regulation of third-party SAPS is currently the responsibility of jurisdictions).

In addition, a key difference between DNSP-led SAPS and third-party SAPS is the area of consent and customer choice. Customers transitioning to a DNSP-led SAPS would be doing so because the DNSP identified that a SAPS is more economically efficient, benefiting all the DNSP's customers, and so customer consent to the transition would not be required. In contrast, customers transitioning to a third-party SAPS, establishing a third-party SAPS, or moving into a premises supplied by a third-party SAPS will be doing so by choice. Therefore, consent and choice will likely be a driver of principles for the appropriate regulatory frameworks for SAPS.

67 Respectively, AEMC, *Review of the regulatory frameworks for stand-alone power systems — priority 1,* Final report, 30 May 2019; and AEMC, *Updating the regulatory frameworks for embedded networks*, Final report, 20 June 2019.

For each of the seven dimensions of regulation that the Commission is focusing on for priority 2 of the review, the overarching principles that the Commission is applying are:

1. registration and licensing — an appropriate form of registration, licensing or authorisation should be required for retail where there is a sale of electricity[68] and for distribution where there is a network connecting two or more small customers or a significant number of large customers.
2. access and connections — there should be an obligation to connect and supply customers within a defined boundary area where this is not too onerous or disproportionate, and if the SAPS is large enough to support competition there should be access to services required to facilitate competitive markets.
3. economic regulation — proportionate forms of economic regulation should apply to govern access and connection, and to provide protection to customers.
4. consumer protections — consumer protections should apply to customers in a proportionate manner where there is a sale of energy. The size and risks of the SAPS, as well as the customers' control and bargaining power may impact the level of consumer protections required.
5. reliability — reliability of supply should be at an appropriate level valued by the customer, or customers as a whole. For customers with limited control over the system design, reliability targets should be specified.
6. network operations — technical standards (for example, service installation rules and the wiring rules) should apply to all SAPS, in proportion to the risks and size of the system. There should also be some metering standards to provide accurate metering.
7. safety — safety standards should apply to all SAPS, in proportion to the risk to customers, operators, employees and the general public that the SAPS poses.

The Commission intends to apply consistent principles between SAPS priority 1, SAPS priority 2 and standard supply, as far as possible while accounting for the differing circumstances. However, it is likely that the application of each of these principles will vary from standard supply and DNSP-led SAPS in some aspects to account for differences in consent and choice, as differences in the types, sizes and circumstances of third-party SAPS, the cost of regulation for small SAPS, and likely vertical integration of many third-party SAPS.

BOX 4: CONSENT REQUIREMENTS FOR TRANSITIONING TO A SAPS

Consent requirements between DNSP-led SAPS and third-party SAPS differ.

The underlying driver for transition to a DNSP-led SAPS will be the DNSP determining that it would be more economically efficient to supply a current, grid-connected customer in its network via a DNSP-led SAPS than to maintain or replace the grid-connection. The customer

68 Sale of energy includes, for the purposes of this report, an ongoing arrangement between two parties, where one party is controlling the supply of electricity to the other party, regardless of whether there is a separate charge for the electricity consumed.

is not choosing by their own volition to be supplied by a SAPS. In the priority 1 final report, the Commission recommended that once the DNSP has determined that supplying the customer via a DNSP-led SAPS would lower total system costs, the customer's explicit informed consent would not be required as all protections afforded to standard supply are maintained. Instead, the DNSP will be required to comply with a number of new customer engagement obligations.

In contrast, a customer will be making a choice to either transition to a third-party SAPS, or to move into a premises supplied by a third-party SAPS. If the customer is currently connected to the national grid (or a DNSP SAPS) and wishes to transition to a third-party SAPS, the Commission recommended in priority 1 of the review that the customer's explicit informed consent to the transition must be obtained in writing. Other customers who will be supplied by a third-party SAPS make a choice to move into a premises supplied by a third-party SAPS, or enter into a contract to be supplied via a third-party SAPS.

Source: AEMC, *Review of the regulatory arrangements for stand-alone power systems- priority 1,* Final report, pp. 37, 109.

3.3.2 Consideration of a tiered regulatory framework

The scope and breadth of potential third-party SAPS is large, with many variations in the size of the SAPS, as well as the ownership structure and operating models. Considering the assessment criteria, including proportionality of the regulatory arrangements and the promotion of efficient investment and allocation of risks and costs, it is likely that a one-size-fits-all approach is not appropriate for the regulation of third-party SAPS.

While the Commission is cognisant of reducing opportunities for regulatory arbitrage between types of supply, it is likely that the most appropriate regulatory framework for third-party SAPS is a tiered framework. Therefore, the Commission has taken steps to mitigate against risks for forum shopping, whilst allowing for flexibility and resilience where practicable, and applying the overarching principles in a clear and transparent matter.

A tiered regulatory framework will account for differences in customers' bargaining power, customers' ability to influence the design and system requirements of the SAPS, the complexities of the relationships in different third-party SAPS and the risk of failure of the third-party SAPS provider. The Commission considers that a risk based approach should be used to determine the categories within a tiered framework, and the regulatory requirements within each category.

IPART's proposed categorisation of electricity supply systems

An example of a risk-based tiered regulatory framework suggested for the electricity industry in Australia is the approach that the Independent Pricing and Regulatory Tribunal (IPART) submitted to the NSW Government's November 2017 Discussion paper *Protecting energy*

consumers in a changing energy world. In its submission IPART proposed there should be three categories of electricity supply systems:[69]

- Category 1: distribution and transmission networks
- Category 2: more complex and higher risk embedded networks and microgrids
- Category 3: less complex and lower risk embedded networks and microgrids

IPART's submission was made primarily in the context of safety regulation for both interconnected and stand-alone systems, however, the framework appears to be suitable when extrapolated to a complete regulatory framework for third-party SAPS. IPART considered that existing DNSPs and TNSPs would be included in category 1. Category 2 was recommended to contain embedded networks and microgrids that presented a higher risk to the community, for exampled those with high voltage networks and any low voltage networks considered to be higher risk after the completion of a risk assessment. Category 3 would include low voltage networks which were found to be lower risk.[70]

As can be seen section 3.3.1, IPART's approach was recommended as a starting point for a tiered framework by a number of stakeholders in submissions, with Ausgrid providing an example of how the framework could be amended to apply to third-party SAPS.

The appropriate tiered framework for third-party SAPS

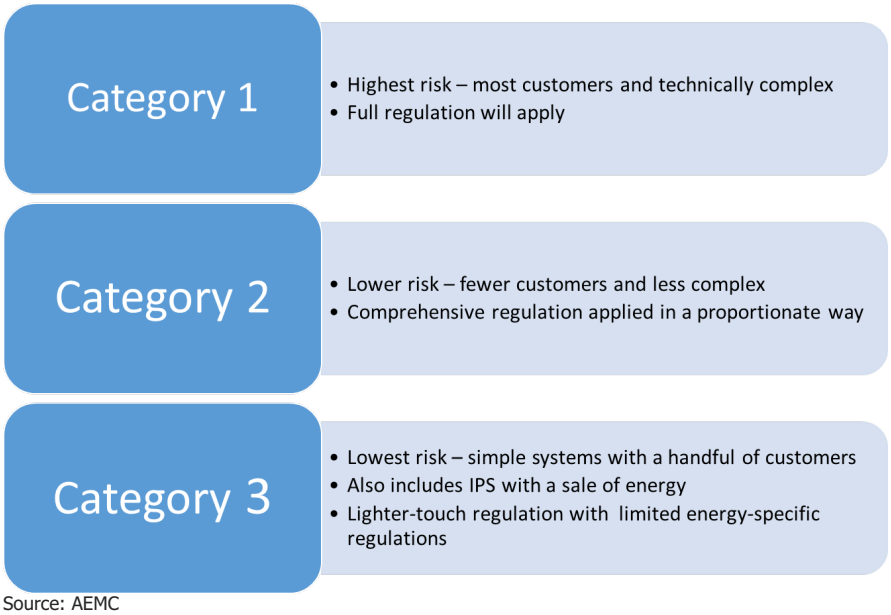
The Commission considers that IPART's proposed tiered framework represents an appropriate basis for the development of a tiered framework for third-party SAPS. To develop a tiered framework, the Commission has considered the appropriate categories for third-party SAPS, how boundaries would be drawn between categories and what type and level of regulation would be required for each category.[71]

69 IPART, submission to NSW Government Discussion paper protecting consumers in a changing energy world, 19 December 2017, p. 1.

70 IPART, submission to the NSW Government Discussion paper *Protecting consumers in a changing energy world*, 19 December 2019, pp. 1-2.

71 Boundaries between categories are discussed in section 3.4.3.

Figure 3.1: Proposed tiered framework for third-party SAPS



Source: AEMC

Category 1

Very large microgrids would fall under Category 1 of the tiered framework. Microgrids, particularly very large microgrids, would effectively become monopolies if they were providing energy services to a large number of customers, such as supplying a city or large town. Customers will have little bargaining power or control over the SAPS performance, quality or other system requirements. Additionally, the consequences of failure of the third-party provider will be high, with the supply of an essential service to a large number of customers at risk.

Microgrids in category 1 would be large enough to warrant regulatory determinations by the AER. The relatively large numbers of customers and the existence of AER-determined network tariffs means that such systems should also be able to facilitate effective retail competition. Consequently, given these considerations, it is appropriate to regulate this category of microgrids in an equivalent manner to standard supply customers, and DNSP-led SAPS. For efficiency and consistency, regulation of this category should be under the NEL, NERL, NER and NERR for current national energy regulations, and the existing jurisdictional frameworks for those areas that are regulated by jurisdictions under the AEMA.

This category therefore does not require the development of a new form of regulation, and would likely only require minor changes to the existing national energy laws and rules and/or application acts to extend them to this category of third-party SAPS.

Given that they would need to connect thousands of customers, it is not anticipated that many third-party SAPS will be classified as a category 1 third-party SAPS, however, it is important to have this category to allow for any future developments.

Category 2

Microgrids in category 2 will range from those that supply smaller towns to microgrids connecting more than a few customers. Regulating the smaller microgrids that would fall under category 2 in the same manner as standard supply customers and DNSP-led SAPS is likely to be disproportionate in a number of key areas. Effective retail competition is unrealistic in this category as network tariffs would be specific to each microgrid and retailers generally require many thousands to tens of thousands of customers for it to be cost effective to develop specific retail tariffs for a group of customers. In any event, the costs associated with the AER revenue determination process that would be necessary to set network tariffs would be disproportionately burdensome. Consequently, microgrids under category 2 will generally be vertically integrated.

While proportionate consumer protections would be important, it is unlikely to be appropriate to apply the NERL and NERR in their entirety to this category. For example, obligations relating to the tripartite relationship between the customer, retailer and distributor along with obligations relating to Retailer of Last Resort, settlement, marketing and transfers (amongst others) would not be applicable.

Due to the potential breadth of microgrids in category 2, the regulatory framework will need to be flexible and adaptable to provide regulatory arrangements that are fit for purpose and proportionate. The Commission considers this flexibility and proportionality is likely to be most effectively supported through regulation being undertaken at a jurisdictional level, including through jurisdictional license conditions. This will allow the regulatory framework to be tailored as required to best manage risks and balance regulatory costs. However, the Commission is of the view that national consistency under each of the seven dimensions, as much as practicable, would be desirable to provide a consistent and transparent framework, and minimise additional compliance costs for operators seeking to operate on a national basis.

Although category 2 would be likely to cover a broad range of circumstances, a typical example might be a SAPS supplying a remote town with hundreds of customers.

Category 3

Very small microgrids connecting a handful of customers, microgrids which only supply large customers, or IPS where there is a sale of energy would fall under category 3.[72] These microgrids and IPS are likely to have a much lower regulatory risk and failure of the energy provider would impact a much smaller number of customers. In addition, customers are likely to have a higher degree of control over system specifications and requirements, and greater bargaining power.

The Commission considers that for Category 3 customers, a proportionate framework would have some minimum consumer protections, such as billing requirements, as well as energy-specific safety requirements, basic metering requirements and some technical standards. It is likely that the most appropriate regulatory approach for category 3 is via jurisdictional license

72 Noting the broad interpretation the Commission is taking in this report to the 'sale of energy', as described in section 3.3.1 above.

conditions, or jurisdictional exemption conditions. This will allow for flexibility and is likely an appropriate balance between risks and costs. These possible options are explored further in chapter 4.

Examples of category 3 third-party SAPS might include a microgrid supplying a couple of farms, or an IPS where the customer is charged by the service provider for the energy produced by the system.

Customer-owned IPS

The Commission considers that for IPS where there is no sale of energy, that is where the customer has brought the IPS outright from an equipment provider or installer, and owns and operates the IPS themselves, it is likely that such an arrangement would be outside of the energy frameworks. The impost of additional energy-specific regulations beyond those relating to safety in these cases would not be proportionate. Where there is no sale or supply of energy the IPS will be covered by the ACL, and any applicable jurisdictional safety regulations.

3.3.3 Determining thresholds for categories within a tiered regulatory framework

A key question that the Commission will be considering further over the remainder of the review is exactly how to determine which category a given third-party SAPS will fall into.

Some of the considerations which could be used in determining the boundaries between each category include:

- The number and type of customers in each SAPS (for example, small or large customers)
- The types of assets connected to each SAPS and the system complexity
- System load
- Whether effective competition can be sustained through markets for some services
- The risks to customers, employees and the public posed by the system. This might itself depend on a number of factors, including the voltage levels of equipment and whether property boundaries are crossed.

The Commission's initial view as to how thresholds for each category might best be determined are as follows:

- Category 1 systems could be determined by a form of coverage test to determine whether retail competition would be feasible or whether it would be appropriate for other generators and retailers to be able to access the SAPS. Although customer numbers would likely be important, they are unlikely to be the sole determinant — significant industrial load might be more important than a much larger number of small customers, for instance. The appropriateness of, and considerations in designing, a coverage test are discussed in more detail in chapter 5.
- Category 2 would encompass systems that are bigger than category 3 but for which the category 1 coverage test is not passed. The threshold between categories 2 and 3 might be based on the number of small customers. It is also likely that other factors, such as the size and complexity of the system, and the public safety risks posed by the microgrid,

would be relevant. While the test to determine regulatory coverage under category 1 should be specified on a national basis, the threshold between categories 2 and 3 would be specified on a jurisdictional basis, and it might be appropriate for this vary to reflect local circumstances.

- Category 3 would include systems with a sale of energy and/or more than one customer but fewer customers than the category 2 trigger. This category would also include microgrids with only large customers. Any other triggers for category 2 status, such as technical characteristics, would also not be met.

The Commission welcomes stakeholder feedback on the factors to be considered and the thresholds for determining the categorisation of microgrids in the proposed tiered framework. In particular, the Commission would be interested in views as to how prescriptive its final recommendations need to be in terms of designing threshold criteria to determine the boundaries between categories 2 and 3.

3.3.4 National or jurisdictional regulatory framework

Harmonisation of regulatory arrangements will bring many benefits, and reduce the administrative burden of third-party SAPS service providers operating in multiple jurisdictions. This harmonisation could occur via a national framework, via consistent jurisdictional frameworks, or via a combination of both national and consistent jurisdictional frameworks.

The Commission considers that due to the diversity of circumstances of third-party SAPS discussed in this chapter, a 'one-size fits-all' approach will not be appropriate for the regulatory framework for third-party SAPS.

Currently, the energy markets in the NEM are governed by a combination of national and jurisdictional legislation and other regulatory frameworks under the AEMA. The Commission considers that the functions which are jurisdictional responsibility under the AEMA should remain jurisdictional functions under a third-party SAPS framework, consistent with the NEM.

When analysing the current national functions, the Commission considers that national regulation would be appropriate for very large third-party SAPS in category 1, but is less appropriate for categories 2 and 3. Jurisdictional regulatory frameworks developed using a consistent approach would be more appropriate for third-party SAPS in categories 2 and 3. The Commission recommends this approach to the regulation of third-party SAPS for a number of reasons including:

- For category 1 third-party SAPS, registration with AEMO will be required for market operation and settlement. Registration with AEMO for category 2 and 3 third-party SAPS is unnecessary as SAPS in this category will be vertically integrated, with no market operation and settlement functions required.
- Jurisdictional regulators will be better placed to know which obligations should apply to third-party SAPS in categories 2 and 3 and be able to account for any local circumstances.
- Third-party SAPS providers will be already be required to obtain a jurisdictional network license and any licensing of generators is also done on a jurisdictional basis. Therefore,

for vertically integrated third-party SAPS in categories 2 and 3, it would make sense for the retail license to also be provided by jurisdictions, with monitoring and compliance easier to enforce through the one regulator.

Although the Commission is recommending a jurisdictional framework for category 2 and category 3 third-party SAPS, the Commission considers that jurisdictional frameworks which are as consistent as possible would be likely to reduce compliance costs for third-party providers, and therefore customers. The Commission will continue to liaise with jurisdictions throughout the remainder of this review, and would be happy to assist jurisdictions in developing a consistent framework for the regulation of category 2 and category 3 third-party SAPS going forward.

Further, the Commission welcomes stakeholder feedback on the proposed regulatory split between national and jurisdictional regulation under each category of third-party SAPS.

3.4 Commission's draft position

The Commission draft position is that a tiered regulatory framework would be most appropriate for third-party SAPS. Given the breath of both third-party SAPS sizes and operating models, a tiered framework would provide a necessary level of flexibility and adaptability, and would allow risks and costs to be managed more effectively than under a "one-size fits all" national framework.

A tiered framework comprising of three categories is proposed, with different regulatory arrangements applying to each category. The Commission's proposed categorisation of third-party SAPS is:

- Category 1 would comprise very large microgrids, where there might be potential for competition in retail and/or generation. Category 1 would be regulated using the existing national energy laws and rules, which would be extended to these types of third-party SAPS. The owner/operator of the microgrid would be required to register with AEMO as a DNSP under the NER and be subject to the same NER/NERR rules as other DNSPs (and would likely also need to be licensed on a jurisdictional basis like other DNSPs). Existing provisions regarding retailer authorisation would apply.
- Category 2 would comprise smaller (likely vertically-integrated) microgrids, which would be subject to a relatively comprehensive jurisdictional licensing regime.
- Category 3 would comprise microgrids with very few customers (or only large customers), and IPS where there is a sale of energy, which would be regulated through jurisdictional registered exemptions or jurisdictional licenses with more limited conditions.

As is currently the case, an IPS where there is no sale of energy, that is where the customer buys the SAPS outright, would generally be outside of the energy regulatory frameworks, but would be subject to safety requirements as well as Australian Consumer Law. These types of IPS are therefore not covered by the recommendations in the following chapters.

The following chapter discusses the licensing frameworks that would be applied to third-party SAPS, with the subsequent chapters exploring the obligations which would be imposed through those licensing arrangements.

The Commission would welcome stakeholder feedback on this proposed overarching framework for third-party SAPS.

4 REGISTRATION AND LICENSING

Compared to businesses in the rest of the economy, electricity service providers are generally subject to relatively stringent checks on their capability to facilitate the supply of electricity on an ongoing basis and to meet specific regulatory obligations placed on them.

This chapter sets out the Commission's views on the extent to which it might be necessary to place entry requirements on third-party SAPS service providers to verify that they are appropriately prepared and resourced. These entry requirements could form part of a registration or licensing scheme that would then allow for ongoing regulatory obligations to be applied. The chapter also considers issues associated with providing supply continuity in the event that such entry checks prove ineffective for a particular service provider, such that the provider is unable to continue to discharge its responsibilities, for instance due to insolvency.

4.1 Background

4.1.1 Current arrangements in the NEM

Electricity is an essential service, and even a short interruption to supply can be very costly or disruptive to consumers. It is therefore important to customers that supply is maintained, and is provided with appropriate consumer protections. This policy driver is recognised in national and jurisdictional legislation and regulation in a number of ways.

Registration and licensing

Some elements of the electricity supply chain involve monopoly provision of a service (e.g. networks) and in such circumstances, where consumers cannot change providers, it is important that the service provider is able to meet all its responsibilities. Even in areas where customers are able to switch supplier, it is still important that market participants have regulatory obligations to permit this transfer process to happen in a way that prevents or minimises supply interruptions.

The nature of electricity as a product also leads to numerous other regulatory requirements (discussed in later chapters) being imposed, consistent with its status as an essential service and in order to mitigate risks to others (e.g. safety requirements, technical standards to maintain system security).

An important feature of the regulatory regime that aims to manage these risks to both individual consumers and the community more generally is a system of checks to ensure that service providers intending to become involved in the supply of electricity have the skills, resources and processes in place to meet the obligations that they will become subject to. The volatile nature of the wholesale energy market also means that market participants need to have access to sufficient financial resources.

Under current national and jurisdictional electricity frameworks:

- A person engaging in the sale of energy to a person for premises must hold a retail authorisation from the AER (in NECF jurisdictions), unless exempt from this requirement[73]
- A person engaging in the activity of owning, controlling or operating a transmission or distribution system must be registered by AEMO (unless exempted by the AER) and licensed by jurisdictional governments or regulators[74]
- A person engaging in the activity of owning, controlling or operating a generating system must also be registered by AEMO (unless exempted by AEMO) and, in some jurisdictions, be licensed by jurisdictional governments or regulators.[75]

BOX 5: ENTRY CRITERIA FOR RETAIL AUTHORISATION

The scope of a regulator's considerations in deciding whether or not to grant an authorisation or licence can be illustrated by the entry criteria applied by the AER for retail authorisation, as specified in s.90 of the NERL, which comprise:

- the organisational and technical capacity criterion - the applicant must have the necessary organisational and technical capacity to meet the obligations of a retailer
- the financial resources criterion - the applicant must have resources or access to resources so that it will have the financial viability and financial capacity to meet the obligations of a retailer
- the suitability criterion - the applicant must be a suitable person to hold a retailer authorisation.

In order to be granted a retail authorisation, the applicant must provide the AER with such information required to demonstrate to the AER that the applicant satisfies these criteria, in accordance with the AER's Retailer Authorisation Guidelines. In relation to the suitability criterion, the AER may take into consideration such matters as it thinks relevant, including:

- previous commercial dealings of the applicant and its associates
- the standard of honesty and integrity shown in previous commercial dealings of the applicant and its associates.

Source: NERL s. 90.

Under priority 1 of the review,[76] the Commission's approach was that these existing NEM regulatory arrangements should apply for DNSP-led SAPS and only be modified to the extent necessary to allow for supply to be provided by SAPS. This was to meet an objective that individual customers should not be disadvantaged where a distributor determined that it would be more efficient to supply them on a stand-alone basis, which would include retaining access to all existing consumer protections.

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73 NERL section 88. A retailer purchasing electricity in the wholesale market for resale to its customers must also be registered with AEMO as a market customer, under chapter 2 of the NER.

74 NER clause 2.5.1. Network licences are referred to as authorities in Queensland, under the *Electricity Act* 1994.

75 NER clause 2.2.1. For example, generators require licenses or authorities in South Australia, Victoria and Queensland, but not in New South Wales.

76 AEMC, *Review of the regulatory frameworks for stand-alone power systems – priority 1*, Final report, 30 May 2019.

Consumers will generally have a higher degree of choice to enter into a supply arrangement where electricity is supplied by a third-party SAPS than for standard supply or a DNSP-provided SAPS. However, as electricity is an essential service and customers would still not easily be able to move to an alternative network provider, the rationale for some form of licensing or registration framework with appropriate entry criteria would still apply. Also, many electrical risks such as safety are independent of the size of a network and regulation is likely to be required to mitigate them.

Supply continuity

As discussed above, it is generally very important, if not critical, to consumers that an uninterrupted supply of electricity is maintained. Consequently, if the system of checks put in place prior to the registration and/or licensing of a service provider proves ineffective or circumstances change, and the provider fails, pre-existing arrangements must already be in place to provide for supply continuity.

For retail activities in the NEM, the main such mechanism is the Retailer of Last Resort (RoLR) provisions contained in Part 6 of the NERL. The RoLR process can be triggered by a number of events, including the revocation of the retailer's authorisation, the cessation of the retailer's right to acquire electricity through the NEM wholesale exchange, or the appointment of an insolvency official.[77] Following the RoLR event, a designated retailer is assigned to take over the retail relationship.

In the event that a DNSP loses its licence or becomes insolvent, jurisdictional legislation and licences contain some provisions for continuity of supply. For example, in NSW the *Electricity Supply Act* 1995 (NSW) provides the regulator with the power to appoint a step-in operator to carry out network operations of a distributor which has failed, under the terms and conditions determined by the regulator. That Act imposes obligations on the network operator and step-in operator as well as conferring rights on the step-in operator.[78] The Commission has not undertaken detailed analysis of all jurisdictional regulatory instruments, however, a complete framework for continuity of network supply does not appear to be provided in all jurisdictions, and some provisions may be incomplete. However, it is not generally expected that regulated DNSPs would fail.

Given the competitive nature of the generation market in the NEM, there is less of a need for additional regulation governing the failure of a generator. In general, the same mechanisms, for instance the sale of assets as part of an insolvency process, would be used as outside the electricity market. The Commission will consider whether a similar approach should apply in relation to generating plant in SAPS, which may have some different characteristics (for example, they are likely to be more easily moved than traditional large generating plant).

Given the likely nature of third-party SAPS service providers as being smaller and less established than service providers in the NEM, particularly network service providers, the

77 NERL s. 122, definition of "RoLR event".

78 Part 6A, *Electricity Supply Act* 1995 (NSW).

Commission views the potential for the failure of a third-party SAPS service provider as being a key risk that any regulatory arrangements should seek to address or mitigate.

4.1.2 SAPS comparator arrangements

In its work on priority 2, the Commission is focussing on the consistent application of the overarching principles it has identified in priority 1 of the review and the embedded network review. A useful comparator is also provided by conditions imposed on licensees or operators of microgrids under existing jurisdictional regulation, for instance the licenses issued by ESCOSA in South Australia.

SAPS priority 1 review

As noted, the approach adopted by the Commission for priority 1 of the review was to depart from existing NEM regulation only where necessary.[79] As such, existing arrangements for the authorisation, registration and licensing of retailers, network service providers and generation would be maintained in respect of DNSP-led SAPS.

Similarly, the Commission's recommendations would allow for the continued operation of the existing NEM RoLR arrangements for customers supplied by DNSP-provided SAPS.

Embedded networks review

In its review of embedded networks, the Commission is recommending the creation of two new types of market participant: the Embedded Network Service Provider (ENSP) and the off-market retailer.[80] These participants would be assessed for registration by AEMO and authorisation by the AER, respectively.

The introduction of these new clearly identifiable and responsible entities would be a significant improvement over current arrangements, where it can be difficult for customers, the AER and ombudsmen to determine the party that is actually responsible for the supply and sale of electricity and any breach in obligations.

As part of the recommended new framework, a new RoLR scheme would be introduced for customers of off-market retailers. Under these arrangements, in the event of a failure of an off-market retailer, the retailer at the parent connection point (i.e. the off-market retailer's supplier) would, in most cases, assume the customers of the failed off-market retailer.[81] In the event of the failure of an ENSP, the owner of the embedded network would be responsible for either registering itself, or appointing another party as a replacement ENSP.[82]

Current jurisdictional frameworks for third-party SAPS

Of the current jurisdictional energy frameworks in participating NEM jurisdictions, those of South Australia are arguably one of the most comprehensive in relation to licensing of third-party SAPS providers. Electricity industry participants, including SAPS operators, cannot

79 AEMC, *Review of the regulatory frameworks for stand-alone power systems–priority 1*, Final report, 30 May 2019.
80 AEMC, *Updating the regulatory frameworks for embedded networks*, Final report, 20 June 2019.
81 AEMC, *Updating the regulatory frameworks for embedded networks*, Final report, 20 June 2019, pp. 99-101.
82 AEMC, *Updating the regulatory frameworks for embedded networks,* Final report, 20 June 2019, p. 101.

operate as a generator, retailer, or transmission or distribution operator (broadly defined, with no requirement that the system be connected to the national grid) unless they are licensed under the Electricity Act, or qualify for an exemption.[83]

For off-grid distributors and generators, licensing requirements are the same as those for entities providing those services in grid-connected systems. For retailers, the requirements differ: retailers selling electricity to grid-connected customers require an authorisation or exemption from the AER, whereas retailers selling electricity to off-grid customers require a retail licence from ESCOSA (unless exempt).[84]

Licensees are subject to licence conditions which cover a range of matters, including audit, financial capacity, access, quality standards, insurance and safety obligations.[85] There are examples of existing licences that allow a single entity to provide generation, distribution and retail services for customers in a specified area, subject to a range of licence conditions.[86]

Other jurisdictions have similar arrangements, for instance in the Northern Territory, the Utilities Commission can grant isolated system licenses which can be used for third-party SAPS. However, some jurisdictions, for example NSW, do not have any licensing frameworks in place for third-party SAPS.

Insolvency and supply continuity

One noteworthy feature of the South Australian regime is that, to mitigate a potential financial risk, ESCOSA imposes a licence condition on licensees operating remote area energy systems in South Australia requiring the licensee to obtain and maintain insurance against liability for causing bush fires.[87]

Further, in the event that action is required to maintain supply continuity, ESCOSA can intervene and take over operations of a licensed electricity entity (including a licensed SAPS operator) if the terms of its licence have been breached or the licence has expired.[88] ESCOSA may appoint a suitable entity to continue operations of an electricity entity it has taken over.[89]

4.1.3 Application of regulation for third-party SAPS

The consultation paper identified three broad questions relating to the registration and licensing of third-party SAPS:

1. Should third-party SAPS be subject to regulation to promote the long-term interest of consumers?
2. If there is an identified need for regulation, is there a need for energy-specific regulation or would the existing broad-based regulatory framework be sufficient?

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83 *Electricity Act* 1996 (SA) s15(1) – (3).
84 ESCOSA website, www.escosa.sa.gov.au/industry/electricity/licensing, viewed 18 January 2019.
85 Electricity (General) Regulations Part 3 Division 1, Licensing of electricity entities.
86 For example, the Electricity Retail and Distribution Licence for the District Council of Coober Pedy, issued 21 June 2007.
87 ESCOSA, Cowell Electric Supply Pty Ltd Electricity Retail, Distribution and Generation Licence, issued 21 June 2007, section 16.
88 *Electricity Act* 1996 (SA), section 38.
89 *Electricity Act* 1996 (SA), section 39.

3. If energy-specific regulations are needed, should they be the same as those proposed for a DNSP-led SAPS and for standard supply customers? If not, what may be an appropriate framework to promote the long-term interest of consumers to apply to a third-party SAPS?

In the previous chapter, the Commission set out its position on the first question, that is, it considers that some regulation of third-party SAPS is appropriate. This chapter addresses the second and third points.

Specific recommendations on what types of regulations are needed and should be given effect through a licensing framework are covered in chapters 5 to 10.

National or jurisdictional frameworks?

A further consideration is whether a national regime, a jurisdictional regime, or a combination of both should apply.

As set out in the consultation paper, the Commission needs to balance:

- The benefits of a harmonised framework in creating certainty for potential participants and customers, and enabling a national approach and market for third-party SAPS.
- Proportionality and the ability to cater to individual circumstances which might include whether the customer is an individual or a strata scheme, the location of the SAPS or the nameplate output of the power system.
- Interrelations between national provisions and jurisdictional policy and regimes that are directly or indirectly related to energy, such as tenancy legislation and subsidy schemes.

The Commission recognises the regulatory risk that may be introduced through the potential application of multiple frameworks at multiple levels across different SAPS. In addition, the Commission's approach needs to recognise the allocation of responsibilities under the AEMA. As such, aspects such as reliability and safety that are currently under jurisdictional instruments would not likely be part of a national framework for third-party SAPS, although the review could recommend arrangements that increase consistency across jurisdictions.

4.2 Stakeholder submissions

In submissions to the consultation paper, most stakeholders agreed that some form of registration and/or licensing is needed for third-party SAPS. However, stakeholders had a range of views on how much licensing is needed, from some stakeholders arguing for full registration and licensing, similar to that currently required for DNSPs, through to a central register with no licenses required.

4.2.1 Proportionality of a licensing regime

As examples of the range of views, TasNetworks submitted that third-party SAPS should be regulated and that the NEM consistency model is the appropriate framework to apply,[90] whereas the National Farmers' Federation suggested that no licensing and continuity of

90 TasNetworks, submission to the consultation paper, p. 1.

supply provisions are needed for SAPS (but there should be explicit consent between all parties involved).[91] The AER considered that there would be merit in adopting a licensing, registration or authorisation/exemption regime for third-party SAPS based on the current framework under NERL.[92]

Most submissions stated that size should be a factor in deciding what form of licensing is needed. For example, Ausgrid submitted that there should be a more stringent licensing regime for larger third-party SAPS.[93] The Australian Energy Council suggested that regulations can create barriers to entry and that, for IPS, the ACL would provide enough protection for consumers.[94] Similarly, the National Farmers' Federation did not see a need for regulation in addition to the ACL for IPS, and Endeavour Energy considered that a licensing regime could be burdensome for IPS and should therefore be proportionate.[95]

4.2.2 National consistency and the ability of jurisdictions to opt-in

A number of stakeholders considered that a nationally consistent framework would be preferable but that this would have to be assessed against its long-term costs and benefits. Others suggested that, where there is a national approach, jurisdictions should be able to opt-in to this.[96]

The AER submitted that the current framework for retail authorisation under the NERL could be tailored to SAPS where jurisdictions choose to apply it.[97] Ausgrid considered that consistency between SAPS priority 1 and priority 2 as well as embedded networks is important.[98]

4.2.3 Supply continuity and an Operator of Last Resort Scheme

A number of stakeholders, in particular DNSPs, provided input on how customers of third-party SAPS can be protected in case of failure. Submissions focused on principles around the choice, appointment and funding of an operator of last resort.

Ausgrid suggested that DNSPs would be well-placed to be an Operator of Last Resort (OoLR).[99] In addition to Ausgrid, a number of other stakeholders, including Endeavour Energy, Essential Energy and Energy Queensland, provided suggestions on how the relationship between the third-party SAPS operator and the OoLR should be structured to reduce incentives for the SAPS to transfer risk to the OoLR.[100] This included appropriate insurances and bank guarantees maintained by the SAPS operator.

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91 National Farmers' Federation, submission to the consultation paper, p. 3.
92 AER, submission to the consultation paper, pp. 4-5.
93 Ausgrid, submission to the consultation paper, pp. 4-5.
94 Australian Energy Council, submission to the consultation paper, p. 1
95 Submissions to the consultation paper: National Farmers' Federation, p. 3; Endeavour Energy, p. 7.
96 Department of State Growth, Tasmanian Government, submission to the consultation paper, p. 1.
97 AER, submission to the consultation paper, pp. 4-5.
98 Ausgrid, submission to the consultation paper, pp. 4-5.
99 Ausgrid, submission to the consultation paper, pp. 5-6.
100 Submissioms to the consultation paper: Endeavour Energy, pp. 2-3; Essential Energy, pp. 3-4; Energy Queensland, pp. 3-4.

Risk allocation between the third-party SAPS, the OoLR and customers was a central theme across submissions. For example, a number of DNSPs contended that DNSPs and/or grid connected customers should not bear the risk of a third-party SAPS failure if the DNSP was to become the OoLR.[101]

Endeavour Energy and Western Power both considered that mechanisms should be put in place for OoLR costs to be recovered from third-party SAPS operators and their customers.[102] ENA suggested that there could be an ongoing fee paid to the OoLR to cover its risks or, alternatively, that the third-party SAPS operator could be required to hold insurance.[103]

Endeavour Energy suggested that, if an OoLR event occurs, the assets should be gifted to the OoLR, and ENA considered that OoLR SAPS assets should become regulated assets, exempted from ring-fencing.[104] Assets not consistent with the DNSP's approach should be replaced - to avoid this outcome, minimum design standards consistent with those of the DNSP could be employed.

4.3 Commission's analysis

In light of submissions, the Commission has given further consideration as to:

- whether a registration and/or licensing framework is required for third-party SAPS and, if so, how this would operate - in particular, whether it should be implemented on a national or jurisdictional basis
- whether any specific requirements should be placed on third-party SAPS service providers to reduce the risk of insolvency, and whether there should be any scheme for an operator of last resort to take over the ongoing operation of a SAPS in the event of the failure of the provider/operator.

These issues are discussed in relation to each category of third-party SAPS in section 4.3.1 and section 4.3.2 below. Other specific regulatory obligations that might be placed on SAPS service providers in licences are discussed in chapters 5 to 10.

4.3.1 Should third-party SAPS be subject to a licensing regime?

Essential services, such as electricity, generally enjoy a higher level of regulatory protections than those found in broader-based regulations such as the ACL. While the ACL may provide sufficient protection for consumers choosing to buy an IPS for their personal residential use, additional protections may be required when there is more than one connection point, or where the user of the power system is not the owner/operator.

In submissions, a broad consensus of stakeholders agreed with the Commission's initial view that there is a need to apply a licensing regime to third-party SAPS, but that this should be proportionate to the risks involved in microgrid or IPS services. Many submissions also considered that such a framework should be broadly consistent with the Commission's

101 Submissions to the consultation paper: Ausgrid, pp. 5-6; Endeavour Energy, p. 3; Energy Queensland, p. 4.
102 Submissions to the consultation paper: Endeavour Energy, p. 3; Western Power, p. 1.
103 ENA, submission to the consultation paper, p. 7.
104 Submissions to the consultation paper: Endeavour Energy, p. 3; ENA, p. 8.

recommendations for priority 1 and in the embedded networks review. This section considers whether a licensing regime —and, if so, what type of regime — should apply to the different categories of the tiered approach outlined in chapter 3.

Category 1

By definition, category 1 third-party SAPS would be very large systems where retail competition is feasible. Essentially the same rationale for the current regulatory arrangements for standard supply would apply to category 1. This also means that the same division between national and jurisdictional functions would be maintained.

Registration

The reasons why distribution networks in the NEM are required to register with AEMO relate to AEMO's roles in:

- system operation, including the management of system security
- market operation and settlement, which facilitates the competitive markets in retail and generation.

Whether or not AEMO would have a role in system operation might depend on the size and complexity of each system, for instance whether there were any registered generating units subject to central dispatch. Consistent with the Commission's recommendation for DNSP-led SAPS, the extension of AEMO's functions relating to system security might be considered on a case-by-case basis.[105] However, market operation would be relevant for category 1 SAPS, and hence registration with AEMO would be required in any event.

Licensing and authorisation

Category 1 third-party SAPS would require a license to operate with conditions in line with operating licenses for DNSPs and generators (to the extent jurisdictions require generators to be licensed). Jurisdictional regulators or governments would retain discretion in varying license conditions, including reliability standards, as long as these achieve the objectives of comparable DNSP licenses.

The performance of retail functions in category 1 SAPS would require a retail authorisation from the AER. This would facilitate a level playing field between incumbent service providers and new entrants. It would also have the advantage of providing a nationally consistent framework. The appropriate jurisdictional authority would have to appoint a local retailer for the SAPS network.

In summary, for category 1:

- The SAPS network service provider and any connected generating units of a sufficient size would need to register with AEMO. Retailers would need to be registered with AEMO as market customers.
- The SAPS network service provider would require a license to operate with conditions in line with operating licenses for other DNSPs, including reliability standards. Any

105 AEMC, *Review of the regulatory frameworks for stand-alone power systems–priority 1*, Final report, 30 May 2019, p. 156.

generators connecting to the SAPS network may require licenses, depending upon the jurisdiction.

- Retailers selling to customers of a category 1 SAPS network would be required to hold a retail authorisation from the AER.

Category 2

Category 2 third-party SAPS would generally be smaller systems than category 1 and would be operated on a vertically-integrated basis, with no competitive provision of retailing and generation. In general, in submissions to the consultation paper, stakeholders considered that the licensing regime for category 2 SAPS should be risk-based, and that there would be advantages in national consistency.

Registration

There would be no need for category 2 SAPS to be registered with AEMO, as AEMO would not have a role in either system operation or market operation. System operation would in all cases be the responsibility of the SAPS service providers, and there would be no competitive markets to be supported.

However, it would still be important for there to be a central register or registers of third-party SAPS to provide long-term clarity of who is providing energy services and where. For category 2 SAPS, it is likely that this requirement could be met by jurisdictional regulators publishing registers of licensees, as many jurisdictional regulators do at present.

Licensing and authorisation

Although category 2 SAPS would represent smaller-scale systems and enterprises than category 1, the Commission is still of the view that some form of licensing regime would be required to check whether service providers have the requisite organisational, technical and financial capacity. As discussed in subsequent chapters, the Commission has identified a wide range of regulatory obligations and consumer protections it considers that category 2 SAPS service providers should be subject to. In some cases, these could be applied in a proportionate way; for others — such as safety management and the mitigation of bushfire risk — the risks may not vary with the size of an electrical network.

There could be some advantages of implementing licensing frameworks for category 2 SAPS on a nationally consistent basis, in that it would be easier to administer, would provide economies of scale for businesses operating in more than one state or territory, and would provide consistent consumer protections.

However, as previously noted, network licensing is currently undertaken by jurisdictions. For example, in NSW, IPART is the jurisdictional regulator responsible for licensing and for monitoring compliance with licence conditions placed on electricity networks in NSW, including safety and reliability obligations. A national "one-size fits all" framework would not take into account jurisdictional differences. Jurisdictional regulators will generally be well-placed to administer a licensing regime, and able to take local circumstances and issues into account as a part of a risk-based assessment of license conditions and compliance monitoring.

Nevertheless, the Commission acknowledges the benefits that might be associated with a nationally consistent regime in terms of reducing barriers to entry to service providers seeking to operate in multiple jurisdictions, and intends to consider further how consistency might best be promoted.

With regards to the regulation of retail activities, the Commission notes that, in some jurisdictions (Queensland and the ACT), the application of the NECF has not been restricted to the interconnected network. Consequently, in those jurisdictions, parties engaging in the sale of energy in isolated microgrids would need to hold a retail authorisation from the AER (unless exempt).

While the Commission can see benefits in the application of a nationally consistent set of consumer protections in the form of the NERL and NERR, there are a number of disadvantages associated with this approach. Many of the consumer protections in the NERL and NERR apply to the distributor (as there is a "tripartite" relationship between the customer, retailer and distributor under standard supply), and to provide those protections would require the participation of the SAPS service provider as a distributor under both the NEL and NERL. While there are provisions in the NEL and NERL on "nominated distributors" to support this (including through the application of Chapters 5A and 6B of the NER to "nominated distributors"),[106] some provisions - for instance, the RoLR arrangements - would still not function.

More fundamentally, maintenance of this arrangement would see third-party SAPS service providers regulated by two regulatory bodies - the AER and the local regulator - as opposed to one. Having a single jurisdictional regulator may be simpler. While jurisdictional regulators no longer have a role in licensing retailers, many retain some functions associated with the retail market (for example, IPART monitors the performance and competitiveness of the energy retail market in NSW). Others, such as ESCOSA, already have a role in licensing retailers outside of the interconnected grid.

On balance, therefore, the Commission's initial view is that it would be more appropriate to implement a licensing process at a jurisdictional level that is proportionate to the level of retail services provided by an applicant. This would be likely to reduce barriers to entry in the long-term and provide a regime that is flexible and resilient. The implication of this is that, while some jurisdictions will need to expand the coverage of the NECF to cover DNSP-provided SAPS and category 1 third party SAPS, others will need to reduce its coverage to only these stand-alone systems and therefore exclude category 2 and 3 third party SAPS.

The Commission's initial views for category 2 are therefore that:

- Operating licenses should be issued by jurisdictional regulators. The jurisdictional regulator would have compliance and enforcement powers, and maintain a public registry of registered category 2 third-party SAPS which can be based on the license details. We will consider how to provide for national consistency over the remainder of this review.

106 See NEL, s. 6A and NERL, s. 12.

- License conditions for category 2 third-party SAPS should be determined on a risk-based approach. For example, a relatively small microgrid in a regional area may require more stringent license conditions to manage bushfire risk than a larger microgrid in a metropolitan area. The jurisdictional regulator should retain discretion to vary license conditions based on a risk-based assessment for individual SAPS.
- Jurisdictional regulators would also administer retailer licensing. This approach would avoid service providers having to be licensed by two regulators, and it is likely to be the case that jurisdictional regulators would be better placed than the AER to vary entry criteria so that the criteria needing to be satisfied are proportionate to the risks involved, and to specify consumer protections in a more appropriate manner than the NECF arrangements.

The Commission has considered whether there would be merit in allowing a category 2 retailer to elect to become a category 1 retailer, authorised by the AER and regulated under the NECF framework. However, this would require the third-party SAPS provider to disaggregate the retail function. The Commission is interested in stakeholders views on allowing category 2 retailers to elect to become category 1 retailers.

Category 3

Category 3 SAPS would comprise very small microgrids with perhaps a handful of small customers, microgrids with only large customers and IPS where there is a sale of energy. In submissions to the consultation paper, some stakeholders suggested that a licensing regime would not be necessary. Others considered that a licensing regime would be required, albeit with less stringent requirements.

Licensing and authorisation

For small microgrids and IPS, the focus of a licensing regime may be different to category 2 in some respects. For example, as some safety risks are present irrespective of whether a large or a small network is operated, it might be important to have a licensing regime protecting the long-term interest of consumers with respect to safety, but less so with respect to reliability. Similarly, electricity consumers would expect the same level of billing transparency regardless of whether they are connected to a small or a large SAPS, but may accept a lower level of reliability for a lower price.

It is important to acknowledge that regulatory requirements, in particular for new entrants, can create significant barriers to entry. License requirements should therefore be commensurate with risks, and it may be worth considering whether licensing frameworks should be nationally consistent where appropriate. There are a number of different ways of achieving this:

- Regulators could retain some discretion in varying license conditions.
- Different licenses to cater for different levels of risk.
- A framework to exempt low risk third-party SAPS from requiring a license, with accompanying conditions of exemption.

As discussed in subsequent chapters, the Commission's initial view is that it will be necessary to impose some regulatory obligations on category 3 service providers, and the Commission intends to give further consideration to the most appropriate way of applying these. In any event, jurisdictional regulators should have discretion to vary license conditions proportionate to the risks involved in operating third-party SAPS. It should also be noted that not imposing licensing requirements might also lead to an incentive to break up larger projects to avoid the need to obtain a licence.

In general, the Commission considers that a licensing framework would not be required for IPS owned and operated by individuals. As described in subsequent chapters, in the main, existing legislation such as the ACL[107] and standards are sufficient for these systems. As discussed in chapter 10, jurisdictions may wish to consider ways to continue the Clean Energy Council's accreditation scheme for installers following the end of the Small-scale Renewable Energy Scheme, and this may involve some form of licensing, either of systems or installers.

Registration

As with category 2, category 3 third-party SAPS will not need to be registered with AEMO as they will neither be part of the interconnected electricity system nor from part of the national electricity market. Again, as with category 2, category 3 SAPS would still be recorded on a central register to the extent that most jurisdictional regulators already maintain public registers of all licences and exemptions.

In summary, the Commission's initial views are that:

- Category 3 third-party SAPS should be subject to either a risk-based licensing regime or an exemptions scheme (with exemption conditions) administered by jurisdictional regulators.
- Category 3 third-party SAPS would be registered as part of the licensing process or would be required to register if exempted from a requirement to hold a license. As such, there is no further requirement for a central registry.
- IPS owned and operated by the end user do not need to be licensed or registered.

4.3.2 Operator of last resort schemes

For category 1 third-party SAPS, the existing RoLR scheme will apply for retail functions, but there may need to be Operator of Last Resort arrangements for network and generation activities. Category 2 third-party SAPS will generally be vertically-integrated, and so would require an OoLR able to step in to provide the entire service. For category 3 third-party SAPS, the Commission's initial view is the risk of supply disruption would apply to such a small number of customers and systems are likely to be highly tailored to the customers' needs, meaning that OoLR arrangements would likely be difficult to implement and the costs would be disproportionate.

107 The ACL is discussed further in chapter 7. A person - or business - is considered a consumer for the purposes of the ACL if they purchase goods or services that cost less than $40,000, or if the goods or services cost more than $40,000 but are of a kind ordinarily acquired for domestic, household or personal use or consumption.

The Commission notes that in considering an operator of last resort scheme for third-party SAPS, there may be more relevant comparators in other essential service industries, such as water. The NSW operator of last resort scheme for water is discussed in the box below.

BOX 6: PROPOSED NSW OPERATOR OF LAST RESORT SCHEME FOR WATER

In NSW, the *Water Industry Competition Act* 2006 (NSW) (WICA) establishes a licensing regime for private sector entrants to ensure the continued protection of health, consumers and the environment. WICA licensees can include private sector utilities constructing, maintaining or operating any water industry infrastructure or supplying potable or non-potable water and providing sewerage services.

In 2014, the NSW government passed the *Water Industry Competition Amendment (Review) Act* 2014 (Amending WIC Act). Although the Amending WIC Act is not yet in force, it will provide for stronger provisions for last resort arrangements. The aim of the arrangements is to ensure the supply of essential services to customers of failed retailers and operators under the Amending WIC Act. Under the Amending WIC Act:

- The regulator cannot grant a licence for an operator of essential infrastructure, if the operator fails to designate a last resort provider (except for councils).
- The Minister has the power to appoint a person as a last resort provider of an essential service in case of operator failure. This is a further safeguard in addition to the point above.
- Last resort providers are required to undertake contingency planning and if necessary use step-in powers to operate the scheme of a failed licensee. The existing provider must allow the last resort provider to inspect infrastructure and the provider's operation as reasonably required and inform the last resort provider of any change in systems that may require modification of the contingency plan.
- The last resort provider must submit a contingency plan to the regulator within four months of being appointed. Contingency planning costs are recovered from the licensee and can be subject to a review by the regulator.
- The Minister may ask the regulator to assess the reasonable costs and expenses of the last resort provider for the purpose of cost recovery.

Source: *Water Industry Competition Act* 2006 (NSW); *Water Industry Competition Amendment (Review) Act* 2014; IPART, *Fact Sheet, Changes to the Water Industry Competition Act (2006)*, July 2017.

In submissions to the consultation paper, there was broad agreement that OoLR arrangements were likely to be necessary. A number of stakeholders, including DNSPs, suggested that DNSPs would be well-placed to act as operators of last resort for third-party SAPS. They also suggested that arrangements should be designed to guard against the risk that the costs of a potential failure are passed onto the OoLR or, if the OoLR is a regulated network service provider, its customers.

Appointing an operator of last resort

In developing an OoLR scheme, there are a number of issues to consider associated with the appointment of an OoLR for third-party SAPS, including when and how they should be appointed and who should be eligible to be appointed.

In its submission, Western Power suggested that the backing of an OoLR should be part of the set of minimum standards a third-party SAPS would have to meet before being allowed to operate.[108] This would be consistent with the legislated WICA arrangements in NSW.

The advantage of such a requirement is that it would ensure that appropriate arrangements are in place before customers are connected to a third-party SAPS. It would also provide clarity and assurance to consumers, investors and governments about the ongoing operation of a third-party SAPS and the costs involved.

One disadvantage of such an approach is that it might create a barrier to entry for smaller market entrants. One option to address this could be to create a jurisdictional default OoLR, and a default process for risk allocation, for example, insurance and ongoing fees. The costs of the OoLR should be borne by the licensee (the owner/operator of the SAPS) and not the customers of the OoLR (for example the local distributor).

The other issue is whether the local DNSP is the only possible OoLR or if other third-party SAPS operators or other potential providers (such as other DNSPs) could act in a similar function. The advantage of allowing parties other than the local DNSP to compete for the provision of OoLR services would be to create a more competitive market for the service, with the aim of allowing the market to provide an efficient price for provision of these services. However, to do so would require potential providers other than the local DNSP to be willing to enter and capable of entering this market segment.

The Commission's initial view is that there would likely be value in including the appointment of a nominated OoLR in the licensing framework, with the OoLR for a third-party SAPS appointed upfront, with DNSPs and other parties such as other third-party SAPS providers able to compete for provision of OoLR services. For category 1, the jurisdictional OoLR scheme would not apply to retail activities, which would be covered by the RoLR arrangements administered by the AER. For category 2, the OoLR scheme would need to cover the full supply chain.

Getting the incentives right

A further key issue to consider relates to the costs of providing OoLR services. In submissions to the consultation paper, DNSPs in particular raised concerns that an OoLR scheme may dampen incentives to prudently manage third-party SAPS.

To address this risk, it is likely that some form of guidance will be required - either at a national or jurisdictional level - to provide transparency on how risks can be allocated between the different parties involved and how insurance can be used to manage residual risks. Ring-fencing guidelines should be included in this framework to ensure that existing

108 Submission to consultation paper: Western Power, p. 1.

customers of potential OoLR service providers do not cross-subsidise customers of a failed third-party SAPS.

Such a framework should not prevent potential providers being able to negotiate bespoke arrangements with third-party SAPS operators if this was to the advantage of both parties and not to the detriment of consumers. For example, for some DNSPs it may be more efficient to influence the design of a power system of the third-party SAPS, rather than having to mitigate risks arising from an ill-designed system. Equally, however, it would likely be unduly onerous to require all third-party SAPS operators to meet all DNSP technical standards.

4.4 Commission's draft position

As discussed, consistent with our assessment framework and the application of the overarching principles to third-party SAPS, the Commission's draft position is that a proportionate approach should be taken to registration and licensing. This will underpin and give effect to the overarching tiered approach.

The Commission's initial views on the appropriate registration and licensing arrangements for each category under the tiered framework are detailed in table 4.1, below.

Table 4.1: Proposed registration, licensing and supply continuity arrangements

CATEGORY	REGISTRATION, LICENSING AND SUPPLY CONTINUITY
Category 1	Registration and licensing arrangements should be as for standard supply: • Network service providers would require a jurisdictional licence. Generators may require licences, depending on the jurisdiction. • Retailers would be required to hold a retail authorisation from the AER. • Network service providers and any connected generating units of a sufficient size would need to be registered with AEMO. Retailers would be registered with AEMO as market customers. Existing NEM RoLR arrangements will apply. There may need to be jurisdictional OoLR schemes for network and generation activities.
Category 2	Licensing should be undertaken on a jurisdictional basis: • Jurisdictional regulators would be able to issue combined licenses for network, generation and retail activities. Licence conditions would be determined on a risk-based basis. • No form of registration with AEMO or authorisation by the AER would be required. Jurisdictional OoLR arrangements should be introduced, with OoLRs nominated and resourced on a pre-emptive basis.

CATEGORY	REGISTRATION, LICENSING AND SUPPLY CONTINUITY
Category 3	Licensing/exemptions should be undertaken on a jurisdictional basis: • Jurisdictional regulators should use either a risk-based licensing regime with proportionate licence conditions or an exemptions framework with exemption conditions. • To the extent an exemptions framework is used, exemption holders should be registered by the jurisdictional regulator. No OoLR arrangements would apply. Such arrangements would likely be disproportionate given the small number of customers involved.

Source: AEMC

In the next stage of the review, the Commission intends to give further consideration to two key issues:

- the most appropriate means of imposing conditions on category 3 third-party SAPS, whether through licenses or exemptions
- further detailed design of an OoLR scheme, including the processes for appointing an OoLR and ensuring appropriate risk allocation.

In doing so, however, the Commission notes that these arrangements would ultimately be implemented by jurisdictional governments and regulators. While the Commission is of the view that its advice may be helpful, it does not intend to set out highly prescriptive final recommendations. Nevertheless, stakeholder feedback on these issues would be welcome.

In addition to stakeholder feedback on the above issues, the Commission would also welcome views on the proposed national and jurisdictional split between the three categories of third-party SAPS. In particular, the Commission would welcome feedback on the proposal to register and licence category 2 and 3 SAPS jurisdictionally, particularly for retail activities.

5 ACCESS AND CONNECTIONS

A key regulatory requirement placed on many electricity service providers is an obligation to offer to provide services to end-user customers, potential end-user customers and/or commercial parties wanting access to the electricity service in order to sell their own services, whether the service is the provision of electricity itself or relates to part of the electricity supply chain.

This chapter sets out the Commission's views on the extent to which it would be appropriate to place such requirements on third-party SAPS providers. This covers any obligations that could be placed on a SAPS service provider to offer access to part of its system (for example to generators), to offer to supply electricity to customers and offer to connect new customers. Issues related to the prices that service providers might charge for such services are discussed in the following chapter on economic regulation.

5.1 Background

5.1.1 Access for other parties

Commercial negotiation is usually the preferred means to determine the prices and other terms and conditions of access to services provided by infrastructure or other facilities. Where services are available in a competitive market environment, access to those services can be expected to be provided efficiently and at an appropriate competitive price. In this situation, access regulation is generally unnecessary.

However, in some circumstances there may only be one facility that provides necessary services and it may be uneconomical to duplicate such a facility due to economies of scale or scope. Single supply could confer market power on the entity that owns or operates that facility, and the entity may exercise its market power, for instance by denying access to all or part of its facility to potential access seekers.

Access regulation is most relevant in the context of energy where some unbundling of the supply chain is possible. For instance, in the electricity supply industry, competition has been introduced to the generation and retail sectors in most jurisdictions. However, these providers need to be able to access transmission and distribution networks, which have traditionally been viewed as natural monopoly infrastructure.

As a result, in the NEM, network service providers have obligations to offer to connect both load (end-user customers) and generators.[109] As such, these network service providers are prohibited from denying access to their network for any entity, provided that entity agrees to the connection offer and complies with the connection requirements placed on it.

Natural gas pipeline access framework

Natural gas pipelines provide an interesting case study for microgrids in that they are privately owned and operated infrastructure that need not be interlinked and could confer

109 Connections are governed by chapters 5 and 5A of the NER.

substantial market power on their service providers that might lead them to limit access for other entities.

Access to transportation capacity on natural gas pipelines in Australia is regulated under a declaration and negotiation/arbitration regime that is set out in the National Gas Law (NGL) and National Gas Rules (NGR).

Whether or not a pipeline should be "covered" by this regime is determined by reference to a set of coverage criteria in s.15 of the NGL. The pipeline coverage criteria are:

(a) that access (or increased access) to pipeline services provided by means of the pipeline would promote a material increase in competition in at least 1 market (whether or not in Australia), other than the market for the pipeline services provided by means of the pipeline;

(b) that it would be uneconomic for anyone to develop another pipeline to provide the pipeline services provided by means of the pipeline;

(c) that access (or increased access) to the pipeline services provided by means of the pipeline can be provided without undue risk to human health or safety;

(d) that access (or increased access) to the pipeline services provided by means of the pipeline would not be contrary to the public interest.

An application for a coverage (or a revocation of coverage) determination can be made by any person to the National Competition Council (NCC). Once such an application is received, the NCC is required to assess the application and make a recommendation to the relevant Minister who makes the decision based on the national gas objective and the coverage criteria.

A covered pipeline can be subject to either full or light regulation. Pipelines that are fully regulated under the NGL and NGR have regulator-approved access arrangements. Access arrangements set the reference price and non-price terms and conditions for pipeline access, and provide a default negotiation offer. If negotiations for access on these pipelines fail, the access arrangement is used to determine the arbitration outcome. Pipelines that are lightly regulated under the NGL and NGR are subject to information disclosure and arbitration requirements.

The access regime for gas is modelled on the economy-wide third-party access regime contained in the Competition and Consumer Act, a summary of which is provided in Box 7.

BOX 7: NATIONAL ACCESS REGIME

Part IIIA of the *Competition and Consumer* Act 2010 (Cth) (CCA) establishes the National Access Regime for services provided by significant monopoly infrastructure. Such

infrastructure may be a natural monopoly or otherwise uneconomical to duplicate. The regime sets out several pathways by which access seekers can gain a legally enforceable right to access services provided by publicly and privately owned facilities in order to enable them to compete (or compete more effectively) in markets where competition is dependent on such access, and access is not contrary to the public interest. These pathways include:

- **access undertakings**: Providers of infrastructure services may voluntarily submit access undertakings to the ACCC. An undertaking may concern existing or proposed infrastructure and it should set out the terms and conditions on which a provider will provide access to relevant services.
- **effective access regimes**: State and Territory governments may also create and implement access regimes for particular infrastructure services within their jurisdiction. A State or Territory government can apply to the NCC to have such an access regime certified.
- **declaration and negotiation/arbitration**: A party may apply to the NCC to have the service(s) provided by a facility regulated. This is the first step in a two stage process:
  - In stage 1, declaration, an application is made to the NCC to consider and make a recommendation to the decision-making Minister on whether the criteria for applying access regulation are met such that the service(s) should be declared. These criteria are similar to those in the gas regime, but not identical.
  - In stage 2, negotiation/arbitration, a service provider and access seeker can negotiate terms and conditions of access to a declared service, and failing agreement the ACCC can be called upon to arbitrate and make an access determination.

Various elements of the regime have been applied to services provided by facilities such as rail tracks, airports, grain handling facilities at ports, water and waste water reticulation pipes, port terminals and natural gas pipelines.

Source: Part IIIA of the *Competition and Consumer Act* 2010 (Cth).

It is important to note that some gas pipelines that are not covered by the negotiation/arbitration regime are subject to a lighter handed form of negotiate/arbitrate regulations under Part 23 of the NGL.

5.1.2 Obligation to offer supply

As discussed previously, the Commission considers electricity to be an essential service regardless of the source or service provider. Substitutes for electricity are very limited and, as such, supply and sale of electricity to consumers is generally regulated.

To ensure that consumers are able to access a supply of electricity, the NERL establishes the concept of a designated retailer such that each existing or newly connecting customer has a default retailer from which it is able to obtain supply.[110]

110 Where there is an existing connection, the existing financially responsible retailer for the premises is the designated retailer. Where there is no existing connection, the local area retailer is the designated retailer. NERL s. 2, s. 11.

In jurisdictions that have adopted the NERL, an authorised retailer must make an offer to provide customer retail services to small customers for whom it is the designated retailer.[111] This offer forms the standing offer. While customers are free to enter into a market offer with any retailer, the standing offer means that any small customer is guaranteed to be able to obtain a supply of electricity if connected to a registered DNSP's network.

The designated retailer concept also applies to gas, and similarly means that a small customer is able to obtain a supply of gas on standing offer terms if connected to a covered distributor's network.

5.1.3 Obligation to offer to connect

In order to give effect to obligations to offer generators access and to offer potential customers supply, it is necessary for recipients of these offers to be able to connect to the system providing these services.

As noted, the NER contains extensive provisions governing connections in chapters 5 and 5A. In jurisdictions that have adopted it, an obligation to provide connection services is also imposed on distributors under the NERL that provides that the distributor must provide customer connection services for the premises of a customer:[112]

- who requests those services; and
- whose premises are connected, or who is seeking to have those premises connected, to the distributor's distribution system.

In NECF jurisdictions, since third-party access is an intrinsic feature of the regulatory regime for electricity, this obligation applies to all regulated distribution system operators. However, in gas the obligation to offer to connect is driven by the access regime. As such, the above provision only applies to covered distribution pipelines.

5.1.4 SAPS comparator arrangements

The box below contains information relating to useful comparators for a potential regulatory regime for third-party SAPS. These include the Commission's final recommendations for priority 1 of this review and the embedded networks review, in addition to current jurisdictional frameworks that apply to third-party microgrids.

SAPS priority 1 review

In priority 1 of this review, the Commission recommended replicating the current NEM arrangements for the provision of SAPS by distribution businesses. Specifically, the Commission's recommended ongoing SAPS service delivery arrangements would maintain the ability for retailers to provide retail services to customers with an existing connection.[113] The existing obligation on designated retailers to offer supply would be maintained, as would the existing obligation on distribution businesses to offer to connect new customers.

111 Section 22(1) of the NERL.
112 Section 66(1) of the NERL.
113 AEMC, *Review of the regulatory frameworks for stand-alone power systems - priority 1*, Final report, 30 May 2019.

However, the Commission recommended that distributors not be allowed to meet their obligation to offer a connection by use of a new SAPS. Rather, distributors would only be able to offer to connect a new customer to the interconnected grid or to a pre-existing DNSP-led SAPS where it is more efficient to do so than to connect that customer to the interconnected grid.

Embedded networks review

The Commission's final recommendations in the embedded networks review would expand obligations on certain legacy and all new embedded networks to offer embedded network customers (with or without small generating units) access to retail competition. Under the final proposed framework, embedded network operators would be required to register as an ENSP (unless the activities of the embedded network operator fit into one of the exempt network categories), and like a DNSP they will be required to allow and facilitate all authorised retailers access to customers in their network. Although it would not be economic or appropriate for each ENSP to be subject to an AER revenue determination, the use of 'shadow pricing' to enable ENSPs to calculate network costs for each on-market customer - effectively, the use of the local network service provider's distribution tariffs - means that retail competition would be feasible in even the smallest embedded networks.

Whereas in the past, embedded network operators selling to their exempt embedded networks were subject to AER exemption conditions (and in turn, obligations to supply to those networks), the new framework strengthens obligations on those sellers by requiring them to register as off-market retailers, subject to consumer protection obligations under the NERL and NERR.

The off-market retailer (where appointed as such for an embedded network) would be the designated retailer for the purposes of the NERL for new connections and where it was already the financially responsible retailer.

Further, ENSPs would have new obligations to make offers to connect new customers (with or without small generating units), and to make requested alterations to existing connections within the embedded network, to the extent they do not require augmentation to the parent connection point of the embedded network. However, the obligation on ENSPs to extend their networks to facilitate new connections would be limited to the area they have geographically identified as being the embedded network site for which they will be responsible.[114]

Current jurisdictional frameworks for third-party SAPS

In South Australia, ESCOSA includes obligations relating to the connection, sale and supply of electricity in licence conditions for those activities. For example, the licence conditions for a SAPS provider with combined generation, distribution and retail licences will typically include obligations to connect and reconnect customers' premises in a timely manner and to have standard terms and conditions on which it will connect customers and sell and supply electricity to them approved by ESCOSA.[115]

114 AEMC, *Updating the regulatory frameworks for embedded networks*, Final report, 20 June 2019.

115 ESCOSA, Cowell Electric Supply Pty Ltd Electricity retail, distribution and generation licence 21 June 2007, sections 24 and 27-29.

In New South Wales, the Lord Howe Island Board is a statutory authority that is responsible for the supply of electricity through the Lord Howe Island microgrid.[116] LHIB is exempt from the NERL and NERR due to the limitation of their application in New South Wales to NEM connected customers. However, LHIB is required to provide connection services and retail services to local customers on request.

5.2 Stakeholder submissions

Stakeholder views on access and connections were mixed. Some stakeholders expressed support for access arrangements and connection obligations for all microgrids. Other stakeholders considered that most microgrids would be too small to warrant such regulations.

5.2.1 Access

The AER expressed support for regulations that would give SAPS customers access to generation and retail competition to the greatest extent possible. It considered that customers should have the option of obtaining supply from another provider if dissatisfied with the incumbent SAPS provider. The AER also expressed support for regulations that minimise the barriers to exit for SAPS customers, so that they can choose from a range of alternatives to the incumbent SAPS provider, including installing an IPS, reconnecting to the grid (where possible), or seeking supply from a third-party.[117]

The AER was of the view that third-party access could reasonably be scaled to suit the needs of different SAPS arrangements. It agreed that a third-party access regime modelled on Part IIIA of the CCA may be a good starting point for a scaled down version of on-grid network access arrangements. This could involve establishing benchmark pricing or model terms and conditions, which could then be negotiated by an access seeker.[118]

The AER noted that it would prefer to allow third-party access to apply as widely as possibly to all microgrid SAPS, but acknowledged that there are a number of risks that could limit the effectiveness of a third party access regime in stimulating competition within a SAPS. It also considered that a more 'light-handed' third-party access regime may not offer customers the same ease of switching between service providers compared to on-grid retail competition and, as such, may not be sufficient to protect customers from poor customer service or excessive pricing by an incumbent SAPS provider, even with the availability of a dispute resolution mechanism.[119]

The National Farmers Federation (NFF), speaking on behalf of those who may seek to access or connect to a pre-existing third party system, suggested that third party access and connection be conducted through negotiations between a new customer and a third party SAPS provider. It considered that, where augmentation is required to meet the need of the new customer, costs should be negotiated between the parties.[120]

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116 National Energy Retail Law (Adoption) Regulation 2013 (NSW) cl. 22.
117 AER, submission to consultation paper, pp. 5-6.
118 AER, submission to consultation paper, pp. 5-6.
119 AER, submission to consultation paper, pp. 5-6.
120 National Farmers Federation, submission to consultation paper, p. 4.

The ENA was of the view that, unless a third-party SAPS provider had obtained the explicit informed consent of all customers to forgo certain third-party access, then all third-party microgrids - irrespective of size – should be subject to a third party access regime.[121] On the basis that microgrids would be expected to become the new electricity providers in the growth areas they service, the ENA considered these providers should expect to serve customers with different needs and expectations, and operate effectively and efficiently.[122]

Where a small number of customers have entered into a SAPS arrangement without the expectation of third-party access, the ENA suggested treating such SAPS as IPS for regulatory purposes. The ENA also suggested that the same treatment be extended to customers wishing to install solar PV, batteries or other new technologies within a microgrid.[123]

Endeavour Energy was supportive of third-party microgrids being subject to an access regime on the basis that this would facilitate customer choice and lead to beneficial and outcomes. Endeavour considered there are many similarities between microgrids and embedded networks and, as such, considers that microgrid providers should have the same obligations to provide access as distribution businesses and ENSPs.[124]

In contrast, the CEC did not consider that third-party microgrids should be subject to an access regime. In its view, most microgrids would be too small to warrant such a degree of regulation. If appropriate at all, the CEC considered that only third-party microgrids above a certain size should be subject to a third-party access regime – for example, extremely large, city-scale grid. It considered that imposing an onerous framework on small scale microgrids may create an incentive for customers to use IPS when a microgrid might have been more cost effective.[125] That said, the CEC recognised that a light-handed access framework for third-party microgrids would need to consider issues around transparency and consumer protections.[126]

5.2.2 Obligations to supply and connect

The AER, ENA, Ausgrid, Endeavour Energy and Essential Energy all supported establishing supply obligations for SAPS providers consistent with the proposed embedded networks framework.

The AER was supportive of establishing supply obligations for SAPS providers, as well as regulations to govern connection charging. It noted that, in most cases, a SAPS would replace a DNSP's local network which otherwise would have existed close to a customer's premises. This means that many SAPS customers will have little practical choice between connecting to the DNSP's network or connecting to a SAPS. On this basis, it considered that

121 ENA, submission to the consultation paper, pp. 14-15.
122 ENA, submission to the consultation paper, pp. 14-15.
123 ENA, submission to the consultation paper, pp. 14-15.
124 Endeavour Energy, submission to the consultation paper, p. 9.
125 CEC, submission to the consultation paper, pp. 8-9.
126 CEC, submission to the consultation paper, pp. 8-9.

a requirement for a SAPS provider to supply customers within a defined geographic SAPS boundary would be appropriate.[127]

The AER also considered there is a case to establish regulatory obligations to govern a SAPS provider's connection charging practices. It was concerned that, absent such restrictions, a SAPS provider may be incentivised to charge customers up to the cost of alternatives to connection (such as the cost of an IPS or the cost of connecting to the DNSP's network), rather than a connection charge that reflects the true cost (or benefit) that an additional customer has for a microgrid.[128]

The AER noted that the AEMC's proposed supply obligation and connection charging process for embedded networks could be appropriate for SAPS.[129]

The ENA was of the view that third-party microgrid providers should be obliged to offer to supply or connect new customers. It also considered that supply and connection obligations should apply to large industrial customers, but not to the detriment of existing microgrid customers. It considered that a key challenge would be ensuring that ongoing microgrid costs were shared fairly between existing customers and the new customer.

The ENA did not consider that the third party access or supply and connection obligations have any relevance for individual power systems on the basis that IPS arrangements may be tailored to the individual customer. The ENA was also of the view that matters related to the equity of supply to microgrid customers would also need to be considered by the Commission.[130]

Essential Energy also expressed support for the Commission's position that all customers should have access to the essential service of electricity. On this basis, it considered that an obligation on third-party SAPS providers to provide an offer to connect would be appropriate. It would also enhance consumer choice as a connecting customer would have the choice between connecting to the local DNSP's network (either the main grid or existing DNSP SAPS), connecting to the third-party SAPS or procuring their own SAPS.[131]

To ensure consistency across supply models and avoid inefficient outcomes, Essential Energy considered that third-party SAPS providers should be obliged to provide new customers with an offer to connect that reflects the cost of that connection. It noted the Commission's proposal to require embedded network service providers to offer to connect new customers within their defined geographical boundary, and considered that the same requirements should be imposed on third-party SAPS providers. This would avoid potential inconsistent and "forum shopping" between regulatory arrangements for different supply models.[132]

Ausgrid considered that, consistent with proposed new arrangements for embedded networks, third party SAPS providers should have obligations to connect new generation

127 AER, submission to the consultation paper, pp. 5-6.
128 AER, submission to the consultation paper, pp. 5-6.
129 AER, submission to the consultation paper, pp. 5-6.
130 ENA, submission to the consultation paper, pp. 14-15.
131 Essential Energy, submission to the consultation paper, p. 4.
132 Essential Energy, submission to the consultation paper, p. 4.

facilities and to offer to connect new customers. However, it considered that there may be circumstances where connecting a new customer to an existing third-party SAPS may not be the most appropriate option — for example, where the third-party SAPS is small or where it is more efficient to connect the new customer to the main distribution network.[133]

Citipower, Powercor, and United Energy were of the view that SAPS operators should be required to forecast for load growth and connect new customers. Where a network has been removed at the request of a SAPS provider, it would be uneconomic for new customers to have it reinstated. In this case, the only option would be to join the SAPS. On the basis that electricity is an essential service, Citipower et al. considered it important that the SAPS be able to accommodate the needs of new customers. It also considered it likely that regulations for SAPS connection charges will be needed.[134]

In contrast, the CEC did not support arrangements whereby small microgrids subject to contractual arrangements with a small number of customers would be obligated to offer to supply or connect customers. However, it was of the view that it may be appropriate to apply these obligations to very large, NEM-like grids, new suburban off-grid developments or any other third-party microgrids that are large enough to warrant regulation by the AER.[135]

The CEC did not consider that the concept of third party access or supply and connection obligations has any relevance to individual power systems - the only exception being where the third party purports to provide an ongoing service to the customer, rather than the customer owning the generation outright. How an individual customer could transition back to a DNSP-led arrangement or to an IPS was an additional issue that the CEC identified for consideration by the Commission.[136]

Endeavour Energy considered that economic efficiency would be approved by requiring microgrid providers to offer to supply and connect customers. From a connection perspective, Endeavour Energy considered that without an obligation to connect, customers may be forced to seek a more expensive IPS or grid connection. It noted the AEMC's proposal to require ENSPs to make connection offers to customers on the basis that it would be impractical for new customers within an embedded network to seek a grid connection. It encouraged the AEMC to consider the concept of a "microgrid area" similar to the proposed "embedded network area".[137]

TasNetworks considered that existing NEM regulatory frameworks should apply for third-party access. That is, operators should be obliged to offer and connect customers to existing microgrids. However, it considered these obligations should apply only for small customers or groups looking after the interests of small customers, e.g. community groups, but not to IPSs. TasNetworks was also of the view that the framework should be a national one but provide jurisdictions flexibility in terms of the timing to opt in.[138]

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133 Ausgrid, submission to the consultation paper, p. 5.
134 Citipower, Powercor and United Energy, submission to the consultation paper, p. 1.
135 CEC, submission to the consultation paper, pp. 8-9.
136 CEC, submission to the consultation paper, pp. 8-9.
137 Endeavour Energy, submission to the consultation paper, pp. 9-10.
138 TasNetworks, submission to the consultation paper, p. 6.

In respect of the regulatory treatment of the various SAPS and embedded network supply models, TasNetworks cautioned against differences that could lead to unintended consequences, both for those seeking to operate and maintain SAPS and the customers within them. It suggested that further consideration be given to the consistency or otherwise of these proposed regulatory settings.[139]

5.3 Commission's analysis

This section sets out the Commission's initial views on whether and what obligations should apply to the operators of third-party microgrids in respect of offering access, the supply of electricity and network connections, and whether such obligations should be applied at a national or jurisdictional level.

The Commission's thinking on this dimension has been guided by the overarching objective that an obligation to connect and supply customers within a defined boundary area should be applied where it is considered to be not too onerous or disproportionate. Further, access to services required to facilitate competitive markets should be provided if the SAPS is large enough to support competition.

In respect of access regulation, it is the Commission's view that such arrangements should be applied to those third-party microgrids that can be expected to exhibit natural monopoly characteristics similar to the interconnected electricity grid and large enough to support competition. Subjecting these microgrids to an access regime would enable new customers — that is, generators and retailers — to access spare capacity where: the duplication of such capacity would be inefficient; and there is sufficient potential to develop competition "upstream" or "downstream" in the SAPS infrastructure — that is, in generation or retail sectors through multiple generators or retailers.

The Commission considers that the potential for the development of competitive generation and/or retail markets within third-party microgrids would only be likely in the largest of microgrids — for instance, of a comparable size to the Mount Isa grid in Queensland or the Darwin-Katherine or Alice Springs systems in the Northern Territory. Therefore, for most third-party microgrids, an obligation to offer to supply and connect load (that is, end-user customers) is likely to be more relevant, given that the scale of these is likely to imply a vertically-integrated business model, without scope for competing generators and retailers. An obligation to supply and connect is also likely to be less complex than a comprehensive access regime and so represents a more proportionate response.

The Commission's initial views on the appropriate obligations in respect of access regulation, the supply of electricity and network connections, for each category of third-party SAPS are discussed below.

139 TasNetworks, submission to the consultation paper, p. 6.

5.3.1 Category 1

As noted in chapter 3, the Commission's draft recommendation is that category 1 third-party microgrids be identified by a form of coverage test. This test would determine whether the application of access regulation to these microgrids would be appropriate.

Category 1 microgrids can be expected to exhibit natural monopoly characteristics similar to the interconnected electricity grid and, given the potential scale of these systems, there is likely to be potential for competition to develop in the generation and/or retail segments of the market. For these reasons, the Commission considers it appropriate that category 1 microgrids be regulated in a manner equivalent to standard supply customers, and DNSP-led SAPS.

In respect of access, this means that all category 1 third-party microgrid providers would be subject to an access regime which requires them to allow all authorised retailers to access customers of their microgrids, thereby facilitating retail competition. In addition, category 1 microgrid providers would be required to offer to connect both load (end-user customers) and generators. Provided that the party seeking connection agrees to the connection offer and complies with the connection requirements placed on it, category 1 microgrid providers would be prohibited from denying access to their network for any party.

In terms of the ability of generators (and, indeed, customers with DER) connected to a third-party microgrid to provide generation services to the relevant market, these parties, like grid-connected generators and customers in increasingly constrained open-access networks, may be physically limited in their ability to provide their services to the relevant market.[140] The ability to "access" these markets to provide generation services requires that there must be both sufficient spare capacity on the network and sufficient demand on the system to absorb the generation.

Ultimately, decisions on whether there is value to be gained from connecting to a third-party microgrid would need to be made by each generator on a case by case basis, having regard to the specific characteristics of the microgrid – for example, the availability of capacity and system constraints, current and forecast load as well as other technical limitations of the microgrid.

To this end, to the extent that category 1 third-party microgrids are regulated in a manner equivalent to distribution networks in the NEM, an obligation to offer to connect generation to a third-party microgrid would not necessarily provide an automatic right to access the relevant markets within that microgrid to provide generation services. Similar to current arrangements in the NEM, the third-party microgrid operator would have the discretion to constrain generation export down to zero if required to meet regulatory obligations.

140 In the NEM, distribution networks, like transmission networks, operate under an open access regime. While all parties have a right to connect to the network, there is no firm access. For generation (including DER) connected to the distribution network, this means that 'access' to the NEM to provide generation services requires that there is sufficient spare capacity on the network to export their electricity.

Implementing an access regime for category 1 SAPS

As noted above, it is the Commission's view that regulatory 'coverage' under the national framework should be applied only to the largest of third-party microgrids (forming category 1). This implies the need to establish a test for coverage which reflects the features of the microgrids that the access regime is intended to capture.[141]

While a declaration could be sought for a third-party microgrid under Part IIIA of the CCA as discussed in Box 7, it is unlikely that it would be considered infrastructure of national significance or satisfy the criteria for declaration listed below:[142]

(a) that access (or increased access) to the service, on reasonable terms and conditions, as a result of a declaration of the service would promote a material increase in competition in at least one market (whether or not in Australia), other than the market for the service;

(b) that the facility that is used (or will be used) to provide the service could meet the total foreseeable demand in the market:

  (i) over the period for which the service would be declared; and

  (ii) at the least cost compared to any 2 or more facilities (which could include the first mentioned facility);

(c) that the facility is of national significance, having regard to:

  (i) the size of the facility; or

  (ii) the importance of the facility to constitutional trade or commerce; or

  (iii) the importance of the facility to the national economy; and

(d) that access (or increased access) to the service, on reasonable terms and conditions, as a result of a declaration of the service would promote the public interest.

For this reason, the Commission's draft recommendation is to establish an alternative coverage test to determine which third-party microgrids fall into category 1. While this test would be modelled closely on the economy-wide third party access regime, it will need to reflect the characteristics of third-party microgrids.

As noted in section 5.1.1, given the similarities between third-party microgrids and natural gas pipelines,[143] the national gas pipeline coverage criteria in s.15 of the NGL is likely to provide a useful starting point for considering an alternative coverage test to apply to third-party microgrids.

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141 This differs from electricity networks in the NEM where regulatory "coverage" is universally applied and there is no coverage test.

142 *Competition and Consumer Act* 2010 (Cth) s 44CA.

143 Natural gas pipelines, like third-party microgrids, are privately owned and operated infrastructure that need not be interlinked and could confer substantial market power on their service providers that might lead them to limit access for third parties.

The Commission notes that the focus of criterion (a) of the coverage tests for both the National Access Regime and National Gas Regime is on the promotion of competition in related markets. In respect of third-party microgrids, the notion of competition is also central to the decision to apply access regulation. However, the Commission also notes that the objective of regulation in the electricity market — the National Electricity Objective — relates to economic efficiency for the long term interests of consumers with respect to a range of factors including price, quality, safety, reliability and security of supply of electricity.[144]

To this end, when determining the potential for the development of competition in the retail and generation segments of the market, consideration would also need to be given to whether the application of access regulation to a third-party microgrid would enhance economic efficiency and therefore be consistent with the NEO.

The considerations in designing a coverage test are therefore likely to include:

- whether the microgrid is of sufficient scale to warrant the unbundling of services in order to support competitive markets upstream and/or downstream of the SAPS infrastructure
- whether the microgrid is of sufficient scale for the AER to be able to undertake a cost-effective regulatory determination, and
- more broadly, whether the microgrid is of sufficient scale that imposing an access regime would enhance economic efficiency and therefore be in the long term interests of consumers.

In respect of the design of the access regime, the intention is for category 1 third-party microgrids to be regulated in the same way as other electricity networks in the NEM — that is, most prices and services would be subject to regulation by the AER, and there would be no ability for customers — that is, retailers and generators — to negotiate the price for access.[145]

5.3.2 Category 2

In respect of the microgrids captured within category 2 of the tiered framework, the Commission considers that microgrids falling into this category would be those that are not large enough to support competition upstream or downstream of SAPS infrastructure (but do not satisfy the test for category 3). As discussed in chapter 3, third-party microgrids of this category will generally range from those that supply smaller towns to microgrids connecting more than a few customers. At this scale, effective retail competition is unrealistic as network tariffs would be specific to each microgrid. In addition, retailers generally require many thousands to tens of thousands of customers before it becomes cost effective to develop specific retail tariffs for a group of customers.

Therefore, given that the scale of category 2 third-party microgrids implies that these will generally be vertically integrated, an obligation to offer to supply customer load is likely to be appropriate whereas offering access to additional retailers and generators may not be. An

144 NEL s 7.

145 Regulatory coverage of electricity networks in the NEM differs from the national gas regime in that, in gas, only some services are subject to full price and service regulation (reference services) and there is the ability to negotiate away from the reference tariff ("full regulation") or negotiate/arbitrate ("light regulation").

obligation to supply is also likely to be less complex than a comprehensive access regime and so represents a more proportionate response.

The considerations in respect of network connections are similar to those in respect of the supply of electricity. As such, it is the Commission's view that, in addition to obligations to offer supply, category 2 microgrids should have obligations to offer to connect customer loads and certain generation.

In respect of generation, the Commission is of the view that the obligation on third-party SAPS providers to offer connection services would, in the first instance, apply to the connection of micro embedded generators — for example, residential rooftop solar systems and battery storage.[146] That said, while the connection of micro embedded generators to a microgrid would be more straightforward than the connection of larger generating systems, the ability of these smaller systems to be able to receive value from generating activities will depend on the technical limitations of the microgrid in question.

The Commission has not yet reached a view on whether embedded generators that are larger than micro embedded generators but with generating systems smaller than 5MW should be captured by the obligation on third-party microgrid providers to offer connection. While these generators would be more straightforward to connect than large generators, it is likely that some augmentation would be required to connect them. In addition, the ability of a category 2 microgrid to be able to absorb the generation from these systems will depend on the technical characteristics, and hence limitations, of each microgrid.

For the avoidance of doubt, the obligation on third-party microgrid providers to offer to connect would not be extended to large generators — that is, those with generating systems large enough to require registration with AEMO under NER chapter 2 (currently 5MW or greater), consistent with the Commission's recommendations for embedded networks.

Implementing obligations to supply and connect for category 2 SAPS

Obligations to offer to supply and to connect could be implemented through either national or jurisdictional regulation. For example, the jurisdictional restrictions on the application of the NERL to grid-connected customers could be removed, so the obligation to make an offer to small customers in s. 22 and to provide customer connection services in s. 66 would apply to microgrids.[147] Alternatively, supply and connection obligations for third-party microgrid service providers could be left for jurisdictional instruments and linked to other jurisdictional consumer protections or licensing obligations by area.

As discussed in chapter 4, it is the Commission's view that category 2 microgrids – that is, smaller and likely vertically-integrated microgrids – would be subject to a jurisdictional licensing regime. This will allow the regulatory framework to be tailored as required to best manage risk and balance regulatory costs associated with the breadth of microgrids within this category.

146 Micro embedded generators are retail customers who propose to operate embedded generating units for which a connection of the kind contemplated by Australian Standard AS4777 is appropriate. NER cl 5A.A.1.

147 Noting that changes to certain definitions in the NEL would also be required for NERL s 66 to apply to microgrids, as discussed in the final report for Priority 1 of this review.

Similar to the regulatory framework for SAPS in South Australia,[148] supply, sale and connection obligations for third-party microgrid service providers would be included in licence conditions for those activities. For example, the licence conditions for a SAPS provider with combined generation, distribution and retail licences could include obligations to connect and reconnect customers' premises in a timely manner. They could also include standard terms and conditions on which the licence holder would connect customers and sell and supply electricity to them.

If a category 2 third-party SAPS increases in size to a point where it meets the coverage test for a category 1 SAPS, a category 2 SAPS would then transition to a category 1 SAPS and be regulated under the framework for category 1. It is likely this would rarely occur, and that the third-party SAPS provider would be able to anticipate in advance that is was likely to meet the criteria for category 1 coverage and therefore prepare for the transition to the higher category. The Commission welcomes stakeholder feedback on the application of the coverage test and the possible transition between category 2 and category 1.

5.3.3 Category 3

As discussed in chapter 3, category 3 is intended to cover those third-party microgrids with very few customers (or only large customers), and IPS where there is a sale of energy. These third-party microgrids and IPS would be regulated through jurisdictional registered exemptions or jurisdictional licenses with more limited conditions.

In all cases, these systems will not be large enough to support competition in upstream or downstream markets, and therefore providing access to generation and retail services for the purposes of developing competition is unnecessary.

In addition, while there would still only be one facility providing the necessary services to the customers of category 3 microgrids, these customers would have much greater bargaining power and a higher degree of control over system specifications and requirements than customers of larger microgrids are likely to have.

For these reasons, the Commission's draft recommendation is not to impose any obligations on providers of category 3 microgrids and IPS to connect and supply customers on the basis that such obligations are unnecessary and, in any case, would likely be too onerous and disproportionate.

5.4 Commission's draft position

The Commission considers it is appropriate to apply an access regime to those third-party microgrids that can be expected to exhibit natural monopoly characteristics similar to the interconnected electricity grid. This would enable new customers — that is, generators and retailers — to access spare capacity where this is efficient.

For most third-party microgrids, an obligation to offer to supply and connect load (that is, end-user customers) is likely to be relevant, whereas access arrangements for generators

148 See, for example, chapter 4 'Connection, Sale and Supply' of the license of Jeril Enterprises Pty Ltd for generation, distribution and retail in regional South Australia, ESCOSA, 21 June 2007.

and retailers may not be, given that the scale of these microgrids is likely to imply a vertically-integrated business model.

The Commission's initial view on the proposed application of obligations in respect of access, supply and connection under each category of the tiered framework are detailed in table 5.1 below.

Table 5.1: **Proposed access, supply and connection obligations**

CATEGORY	APPLICATION OF OBLIGATIONS TO OFFER ACCESS, SUPPLY AND CONNECTION
Category 1	A form of "coverage test" will be used to determine those third-party microgrids which are large enough to fall in Category 1 and therefore warrant the application of an access regime. This access regime would be the same as the regime that applies in the NEM. Retailers would also have access to the customers of Category 1 SAPS in the same way they have access to grid-connected customers.
Category 2	An obligation to offer to supply and connect would be placed on third-party microgrid providers, implemented through a jurisdictional licensing regime. The obligations to connect would cover end users, including micro embedded generators, but would not apply to the connection of generators greater than 5MW.
Category 3	No obligations would be placed on third-party SAPS providers to offer to connect and supply customers on the basis that these obligations would be onerous and disproportionate to the scale of the SAPS in this category.

Source: AEMC

The Commission intends to give further consideration to these matters in the next stage of the review, in particular the design and governance of the proposed coverage test to identify category 1 microgrids. The Commission would therefore welcome input from stakeholders in this regard.

6 ECONOMIC REGULATION

The previous chapter discussed the potential services that a third-party SAPS provider might be obliged to offer to provide. This chapter discusses whether and how those services might be economically regulated. The application of economic regulation would, to a greater or lesser extent, constrain the price that the service provider could charge.

The purpose of economic regulation is to capture the efficiency benefits (economies of scale) of provision by a single entity, whilst reducing the risks of inefficiencies arising from the use of substantial market power by that single entity.[149] Put another way, in those markets where competition is weak or absent, economic regulation is intended to act as a 'visible hand' to guide service providers towards pricing outcomes that would have occurred had the market been subject to effective competition.

This chapter provides background context on economic regulation in the energy industry and stakeholder views on the application of economic regulation to third-party SAPS. It then considers the appropriate form of economic regulation, if any, which may be appropriate for third-party SAPS under each of the three categories proposed by the Commission.

6.1 Background

The Commission uses economic regulation in this report to refer to potential regulations to create outcomes equivalent to workable competition in the absence of effective competition for or within a SAPS. The Commission is conscious that the same considerations may not apply to third-party SAPS as for the NEM, with arguments for or against the application of economic regulation potentially affected by the size and risks posed by the third-party SAPS as well as the business model or operating structure of the third-party SAPS provider.

6.1.1 Economic regulation, competition and choice for third-party SAPS

The rationale for economically regulating a third-party SAPS (or a component of it) would be a concern that efficient outcomes would not be achieved due to the exercise of market power within the SAPS. A microgrid, either in whole or in part, is likely to display natural monopoly characteristics, however, not all parts of the electricity supply chain will typically exhibit the same extent of natural monopoly attributes.

The general approach to the provision of electricity in the NEM is to unbundle services to facilitate competition where possible. For distribution and transmission networks, the type of technology, diminishing marginal costs of use within capacity constraints and the lumpy and fixed nature of the assets dictate that one supplier rather than two or more can provide the service more efficiently, i.e. monopoly service provision. Generation may have less economies of scale than distribution and transmission, which means that there may be lower barriers to competition in generation, and it is often the case in electricity systems that a competitive

149 Beale, R., Houston, G., Kenny, P., Morton, E., and J. Tamblyn, *Expert panel on energy access pricing*, Report to the Ministerial Council on Energy, April 2006.

market for generation can be established. For retail competition, a minimum scale is likely to be needed before competition becomes workable.

For a third-party SAPS, there may be instances where it is economically efficient for only one party to supply one of the following:

- the entire SAPS, including the generation assets, network assets and metering assets, or
- certain components of the SAPS, such as the network assets.

In a third-party SAPS there is likely to be less scope for competition with respect to retail services, and to a lesser extent for generation, than within the NEM, given the latter's larger scale. As there is less scope for unbundling of services, many third-party SAPS are likely to be vertically integrated. While a single supplier may represent the most efficient market structure, the lack of competition may confer substantial market power on the SAPS provider. In such circumstances, the owner of these assets would have both the capacity and the commercial incentive to take advantage of this market power to monopoly price.

However, customers who are seeking to be supplied by a third-party SAPS are likely to have choices as to whether to connect to the third-party SAPS or obtain electricity supply elsewhere. Customers being supplied by a third-party SAPS would generally not be able to access the jurisdictional pricing cross- or direct subsidies that NEM customers would benefit from. Therefore, supply via IPS could be a comparable financial cost to supply via a third-party microgrid. In addition, customers would have the choice to request a connection offer from the local DNSP.

The availability of competition and customer choice will influence the approach taken for economic regulation of third-party SAPS, with a broad spectrum of options from:

- no economic regulation with no controls placed either on the amounts third-party SAPS providers can recover from their customers or the structure of network and retail tariffs within a third-party SAPS
- a 'light-handed' approach to economic regulation that is limited to tendering, price disclosure, price monitoring requirements and potentially a negotiate/arbitrate regime.
- 'full' economic regulation, under which prices for the end customers or access within the SAPS chain are regulated.

6.1.2 Economic regulation in the NEM

In the NEM, the scope for effective competition is weaker for the provision of transmission and distribution network services, than generation or retailing. Consequently, the breadth and depth of economic regulation in the electricity supply chain is greatest for network services.

Concern about the potential exercise of market power in the NEM by transmission and distribution network businesses has driven the design of the following aspects of the economic regulatory framework for network businesses:[150]

- revenues are set at an efficient level by the Australian Energy Regulator (AER)

150 Chapters 6 and 6A of the NER.

- there are various incentive regimes in place to encourage network businesses to achieve efficient outcomes
- there are various 'network pricing principles' that influence both the level and structure of network tariffs.

Another type of economic regulation exists in the NEM in the form of retail price regulation. Although there is more scope for competition to provide effective outcomes for consumers in the retail sector than for networks, retail price regulation has continued to be used in some jurisdictions where there are concerns regarding the competitiveness of the retail sector. In addition, the AER has also developed a default market offer (DMO) price at the request of the Commonwealth Treasurer and Minster for Energy. The DMO prices are to apply from 1 July 2019 for standing offer customers in network distribution areas which are not subject to jurisdictional price regulation,[151] and will also be used as a reference point for retailers in these jurisdictions to provide discounts off for market offers.[152]

6.1.3 SAPS comparator arrangements

When considering the appropriate economic regulation of third-party SAPS, the Commission considers it may be useful to review the final recommendations for priority 1 of this review and the embedded networks review, as well as existing conditions imposed on licensees or operators of current jurisdictional microgrids in South Australia and Queensland.

SAPS priority 1 review

Under priority 1 of the review, the Commission recommended that the network functions provided by a DNSP, including DNSP-led SAPS, would be economically regulated under the existing arrangements in chapter 6 of the NER.[153]

Under the Commission's proposed service delivery model, existing retail arrangements would be maintained, with competition forming a pricing discipline for retailers in areas with effective retail competition, and existing jurisdictional retail price regulation continuing to operate in areas without effective retail competition.

Embedded networks review

The Commission's final recommendations in the embedded networks review aim to increase the scope for, and effectiveness of, retail competition by allowing competing retailers better access to customers in embedded networks. The introduction of these arrangements would reduce the current reliance on a form of price regulation, whereby the AER restricts all exempt sellers in embedded networks from selling at a price in excess of the local retailer's standing offer.

As part of the recommended new arrangements to facilitate competition, embedded network service providers would be subject to a form of network price regulation, whereby they would

151 The DMO will apply in New South Wales, South Australia and South-Eastern Queensland.

152 AER, *Default Market Offer Prices 2019-20*, Final determination, 30 April 2019.

153 AEMC, *Review of the regulatory frameworks for stand-alone power systems - priority 1,* Final report, 30 May 2019, p. 57.

be prohibited from charging more than the amount that the local DNSP would charge an equivalent customer connected to its network.[154]

Jurisdictional energy frameworks

In South Australia, ESCOSA does not currently regulate SAPS pricing, although it does review pricing information annually as part of information received from licensees. However, in practice those customers supplied by microgrids covered by the South Australian government's RAES scheme (discussed in Chapter 2) benefit from a price protection in the form of a subsidy paid by the government to reduce prices to approximately the level of the local retailer's standing offer in those parts of South Australia that are part of the NEM.[155]

In the remote areas of Queensland where the microgrids operated by Energy Queensland are located, retail electricity prices are regulated by the Queensland Competition Authority and set at a level derived from the competitive market in South-East Queensland. In practice, this requires Energy Queensland to sell electricity at a substantial loss, with the shortfall being funded by the Queensland government.

The prices of network services for the Mount Isa-Cloncurry microgrid are regulated by the AER under the NER. The Commission understands that there is some competition in the wholesale sector (i.e. generators and large loads) in this larger microgrid.

6.2 Stakeholder submissions

Most stakeholders were generally in agreement that different forms of economic regulation would be appropriate for IPS than microgrids. Further, many stakeholders considered that a different approach to economic regulation of microgrids would be required once a microgrid reached a certain size.

Forms of economic regulation considered by stakeholders included full economic regulation, lighter economic regulation such as price disclosure and monitoring, or no economic regulation.

To facilitate consistency of treatment of third-party SAPS with DNSPs (where needed), the ENA suggested economic regulation at a national level. In addition, this was considered to allow for alignment with national tariff reform initiatives, and assist SAPS providers operating across multiple jurisdictions to gain efficiencies.[156] TasNetworks and Endeavour Energy also considered that national economic regulation of third-party SAPS would be most effective.[157] However, the CEC suggested building on the jurisdictional systems already in place, incorporating a level of commonality and consistency, with a national framework on an opt-in basis.[158]

154 AEMC, *Updating the regulatory framework for embedded networks,* Final report, 20 June 2019, p. 146.
155 http://www.escosa.sa.gov.au/electricity-overview/pricing-access.aspx as accessed on 18 January 2019.
156 ENA, submission to the consultation paper, p. 16.
157 Submission to the consultation paper: TasNetworks, p. 6; Endeavour Energy, p. 11.
158 CEC, submission to the consultation paper, p. 10.

6.2.1 Economic regulation of microgrids

Most stakeholders considered that some from of economic regulation was required for third-party microgrids, with the form of economic regulation potentially differing depending on factors such as size, risk and ownership structure of the SAPS.[159]

ENA, in its submission, suggested that the scale of economic regulation for third-party microgrids could be determined using risk-based assessment criteria, while the CEC suggested that there may be a need to distinguish between third-party SAPS which are commercial arrangements and those which are smaller community arrangements. Further the CEC considered that for small systems price monitoring, and price disclosure would be more appropriate than full economic regulation.[160]

In its submission, the AER was of the view that most third-party SAPS will likely be small, with market power risks mitigated by light-handed economic regulation (such as price and billing transparency), in most cases, and few cases where full regulation would be warranted. The AER suggested that the NERL bill content and accuracy obligations, along with price information disclosure would support transparency, with some additional controls on pricing potentially justified. However, the AER considered that setting regulated retail prices for third-party SAPS customers would likely be resource-intensive and costly for the relevant regulator and would reduce customers' flexibility to make trade-offs between price, reliability, and other objectives that might motivate the creation of a SAPS in the first place.[161]

Endeavour Energy considered that economic regulation should apply, as competitive pressures for SAPS service may be weak, and that microgrids should be subject to light handed to full regulation.[162] Consistent with the Embedded networks review, Essential Energy considered that for larger microgrids economic regulation in the form of price regulation may be appropriate. Essential Energy suggested price disclosure and price monitoring requirements be placed on these larger microgrids, with the AER's default market offer or jurisdictionally set reference rates being used as a price cap.[163]

Aligning large-scale microgrids which can support competition with the national framework was suggested by Tesla, while medium-scale microgrids should have light-handed regulation facilitating transparent information flows and including price provisions.[164]

Where there is no access to retail competition, EWON considered that price protections must be in place, as initial intended benefits of the third-party SAPS can erode over time.[165]

In its submission, the National Farmers' Federation considered that where the system is built to meet the need to the customer, there is no need for economic regulation.[166]

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159 Submissions to the consultation paper: ENA, pp. 15-16; CEC, pp. 9-10; Tesla, p. 2; AER, pp. 6-7; Endeavour Energy, p. 10; Essential Energy, p. 4.

160 CEC, Submissions to the consultation paper, ENA, pp. 15-16; CEC, pp. 9-10.

161 AER, submission to the consultation paper, pp. 6-7.

162 Endeavour Energy, submission to the consultation paper, p. 10.

163 Essential Energy, submission to the consultation paper, p. 4.

164 Tesla, submission to the consultation paper, p. 2.

165 EWON, submission to the consultation paper, p. 3.

166 National Farmers' Federation, submission to the consultation paper, p. 4.

6.2.2 Economic regulation of IPS

A number of stakeholders considered that economic regulation was not required for IPS.[167] For example, ENA considered that economic regulation is not required for IPS as the customer would contract directly with the provider. However, ENA considered that the full life cycle costs of the IPS should be made clear, including expected on-going operation and maintenance costs, and end-of-life disposal costs.[168]

No to light economic regulation was considered to be required for an IPS by Endeavour Energy, as there would be limited potential for the providers to exercise market power.[169] TasNetworks considered that the regulatory treatment may differ depending on the type of IPS, with less requirement for economic regulation of an IPS owned directly by a customer, compared to one rented by the customer.[170]

6.3 Commission's analysis

The extent of economic regulation, if any, that should apply to third-party SAPS is likely to depend on:

- the extent to which the services offered in a SAPS can be practically unbundled and made individually contestable
- the size of the SAPS — all else equal, the case for economic regulation is likely to be weaker the smaller the size of a SAPS (and weakest in the case of an individual power system) as the potential exercise of market power is less material and the costs of regulation proportionately greater, and
- the relationship between the SAPS provider and the end-users.

As noted in section 6.1.1, the Commission is considering a spectrum of options for economic regulation of third-party SAPS, from:

- no economic regulation, with no controls placed on the amounts third-party SAPS providers can recover from their customers or on the ways (the structure of network and retail tariffs) in which these costs can be recovered
- a 'light-handed' approach with options including any or a combination of tendering, price disclosure, price monitoring requirements and potentially a negotiate/arbitrate regime
- 'full' economic regulation, under which prices and/or access within the SAPS chain are regulated.

To the extent that economic regulation is required for third-party SAPS systems, a further consideration is whether the economic regulation function should be national, or jurisdictional. Under the AEMA, retail energy price controls are the responsibility of jurisdictions, whereas functions relating to the economic regulation of electricity networks

167 Submissions to the consultation paper: Endeavour Energy, p. 10; TasNetworks, p. 6; ENA p. 16.
168 ENA, submission to the consultation paper, p. 16.
169 Endeavour Energy, submission to the consultation paper, p. 10.
170 TasNetworks, submission to the consultation paper, p. 6.

reside with the AER. Consequently, the governance of any economic regulation might be linked to the form it takes.

The appropriate forms of economic regulation for each category of third-party SAPS are discussed in more detail below.

6.3.1 Category 1

Category 1 SAPS are very large microgrids, and the Commission has proposed that the provider of these third-party SAPS will be required to register with AEMO as a DNSP. As for DNSPs in the NEM, it would be economically efficient for only one party to supply the network assets, with the DNSP providing a monopoly service.

To alleviate any concerns surrounding the potential for the DNSP to exercise its market power, the national economic regulatory framework for network businesses under the NER should apply for category 1 third-party SAPS with:[171]

- revenues set at an efficient level by the AER through a regulatory determination
- incentive regimes encouraging network businesses to achieve efficient outcomes (including in respect of their contracts with generators for the provision of electricity for the SAPS), and
- 'network pricing principles' influencing both the level and structure of network tariffs.

In areas with retail competition (NSW, South-Eastern Queensland, Victoria, South Australia and Tasmania) category 1 third-party SAPS should be open to retail competition, in the same way as DNSP SAPS.

In some areas it has been determined by the jurisdiction that retail competition is not effective, with the jurisdiction choosing to provide a form of retail price regulation. If a jurisdiction considers that retail competition is not effective in a category 1 SAPS, then that jurisdiction could also choose to apply a form of retail price regulation. The Commission considers that, should a jurisdiction determine that price regulation for a category 1 SAPS is appropriate, retail prices specific to that SAPS will likely be required to reflect the underlying differences in costs to supply customers connected to the SAPS (unless a jurisdiction with existing direct or cross subsidies decides to extend those subsidies to the category 1 third-party SAPS).

The DMO would likely not apply automatically to category 1 third-party SAPS. Although the definition of "distribution region" within the Competition and Consumer (Industry Code — Electricity Retail) Regulations 2019 (Cth) is open to interpretation in respect of SAPS, it appears the DMO would only apply to regions with electricity retailers supplying more than 100,000 customers,[172] and it appears unlikely that there would be any third-party SAPS of this scale. However, jurisdictions could choose to consider the level of the DMO when setting regulated prices for third-party SAPS.

171 Chapters 6 and 6A of the NER.

172 Section 8 of the Competition and Consumer (Industry Code- Electricity Retail) Regulations 2019 (Cth).

6.3.2 Category 2

Under category 2 the SAPS is likely to be vertically integrated, with the generation assets, network assets, metering assets and retail functions the responsibility of the same entity.

Vertical integration could potentially provide opportunities for the provider to misuse its market power. Not only would network services be provided on a monopoly basis, but customers would also be unable to access retail competition within the microgrid. However, it is likely that full economic regulation by the AER to constrain network pricing (providing network tariffs that would also be used to facilitate retail competition) would be disproportionately costly, with the costs of regulation greater than the harm that is trying to be avoided given the small number of customers.

As discussed in section 6.1.1, for customers in a category 2 third-party SAPS supply via an IPS may be a comparable financial cost, and therefore provide an alternative to supply via the microgrid (in addition to the option of staying connected to, or requesting an offer for connection to, the national grid). In addition, customers may be able to protect themselves to an extent by signing a long-term pricing contract with the provider at the time of installation. Considering the costs of full economic regulation, and the potential availability of financially comparable alternatives, a light-handed form of economic regulation would likely be more appropriate for category 2 SAPS. Stakeholder submissions to the consultation paper were generally in agreement with this approach.

Possible options for light-handed regulation could include the following (noting they are not mutually exclusive):

- transparent tendering process
- price monitoring
- negotiate-arbitrate regime.[173]

To reduce the risk of third-party SAPS providers misusing their monopoly power, the Commission considers that some form of price transparency and price monitoring would be required for both retail and connection charges. More prescriptive forms of economic regulation could also be considered, including a requirement for the provider to report on reasons for price changes, regulation specifying permitted reasons for increasing prices, or caps on the amount of any price increases.

Another possible form of pricing transparency and monitoring which may be appropriate for third-party SAPS would be an arrangement similar to the connection charge framework the Commission has recommended for ENSPs in the embedded networks review. Under the recommended framework, the ENSP will be required to apply the connection charge principles under section 5A of the NER when determining connection charges, along with the AER's connection charge guidelines, to prepare a connection policy. The connection policy specifies the circumstances under which charges will apply and how they will be calculated, and is required to be consistent with both the connection charge principles and the AER's

173 This is discussed in Chapter 5.

guideline. The connection applicant will be able to raise a dispute with the AER on connection charges or any other terms and conditions for a determination.

A similar approach to the NEM connection charge framework could be taken for retail and/or connection charges in a category 2 SAPS. Under such an approach the jurisdictional regulator could determine pricing principles and guidelines for the development of prices/connection charges. The third-party SAPS provider could then develop a pricing policy in line with the principles and guidelines, with customers being able to raise disputes on pricing or terms and conditions with the jurisdictional regulator for a determination.

A negotiate-arbitrate regime might be appropriate for large customers, and could operate in conjunction with or instead of price monitoring. Under a negotiate-arbitrate regime a service provider and access seeker can negotiate terms and conditions of access to the microgrid. If negotiation fails, parties would be able to escalate the issue to the regulator for arbitration and to make an access determination.

Any form of economic regulation to apply to category 2 SAPS would be included in jurisdictional license conditions and/or jurisdictional regulatory instruments for a category 2 SAPS. Whichever form of light economic regulation is chosen, the Commission considers that it would be appropriate for the jurisdiction to monitor compliance with these provisions, and have powers to require the SAPS provider to justify, and potentially revise, prices if a misuse of market power was found to be occurring.

The analysis above is indicative of the direction that the Commission is considering, however, further analysis of the economic regulation to apply to category 2 SAPS will be a key focus of the next stage of the review.

6.3.3 Category 3

Category 3 third-party SAPS are either very small microgrids, microgrids supplying only large customers, or IPS with one party providing energy services to another party. The customer in a category 3 third-party SAPS is likely to have a reasonable degree of countervailing market power, and has the option to source supply via their own IPS, or to request a connection to the interconnected grid, should the customer have any concerns regarding the services provided by the third-party SAPS operator. In addition, customers may be able to protect themselves to an extent by signing a long-term pricing contract with the provider at the time of installation. Consequently, the Commission considers that is unlikely that any form of economic regulation is required for category 3 SAPS.

6.4 Commission's draft position

The Commission considers that for third-party SAPS, practical application of the overarching principles and assessment framework will result in some variations in the economic regulation of each category of third-party SAPS.

The Commission's initial views on the proposed economic regulation of each category under a tiered framework are detailed in table 6.1, below.

Table 6.1: **Proposed economic regulation of third-party SAPS**

CATEGORY	APPLICATION OF ECONOMIC REGULATION
Category 1	Economically regulated by the AER in the same manner as existing DNSPs, including revenue determinations and incentive schemes (which would cover the SAPS provider's arrangements for generation in the SAPS). Retail competition would be available to the same extent it is currently available in different regions of the NEM, and price regulation would apply to SAPS in jurisdictions with current retail price regulation.
Category 2	Some form of light-handed economic regulation by jurisdictions such as price monitoring or a negotiate/arbitrate regime.
Category 3	Not economically regulated.

Source: AEMC

The Commission intends to explore the appropriate economic regulation for each category in more detail in the next stage of this review, and is interested in stakeholders' feedback on the form of economic regulation (if any) required under each category, particularly the form of regulation for category 2. The economic regulation of third-party SAPS will be a key area of focus in the next stage of the review.

7 CONSUMER PROTECTIONS

The regulatory framework for electricity should allow for new and innovative services, while maintaining access to appropriate consumer protections providing rights for consumers, and preventing unfair practices and unscrupulous behaviour.

Under the national electricity regulatory framework there are a number of energy-specific consumer protections for grid-connected customers. These protections are found primarily in the NECF, the main legal instruments of which are the NERL and the NERR. The NECF:[174]

- establishes the consumer protections and obligations regarding the sale and supply of electricity and natural gas to consumers, with a particular focus on residential and small customers
- defines the rights, obligations and protections relating to the relationship between customers, energy retailers and energy distributors
- complements and operates alongside the generic consumer protections in the ACL and state and territory safety and concession regimes.[175]

State and territory energy functions complementing the NECF need to be considered to provide a complete set of consumer protections. These functions include access to state and territory concessions and rebates and access to independent dispute resolution for both distribution and retail services. Consumer protections provided to third-party SAPS customers under the ACL also need to be considered.

This chapter considers which energy-specific consumer protections are appropriate for third-party SAPS under each of the three categories proposed by the Commission in Chapter 3, and whether differences are required in applying the Commission's overarching principles in each category.

7.1 Background

7.1.1 Current consumer protections in the NEM

Consumer protections provided to grid-connected customers under the NECF relate primarily to:

- rights to access energy services and obligations to offer supply as a designated retailer
- informed consent requirements
- dispute resolution procedures
- minimum contractual standards
- billing, tariff and payment minimum requirements
- disconnection and reconnection obligations, and
- protections for vulnerable customers.

174 The NECF currently applies, with jurisdictional specific amendments, in Queensland, New South Wales, South Australia, Tasmania and the Australian Capital Territory. The NERL and NERR do not apply in Victoria or the Northern Territory.

175 The relative scopes of the NECF and the ACL are discussed in more detail in the Commission's *2019 Retail Competition Review*, published on 28 June 2019.

As discussed in section 2.1.1, depending on the jurisdiction, customers receiving supply via a third-party SAPS may not be covered by the current consumer protections under the NECF. Customers receiving supply from a microgrid in Queensland and the ACT (if any) may be covered by the consumer protections under the NECF if they are supplied by an authorised retailer.[176] Similarly, SAPS customers in Victoria would likely be covered by protections under the Victorian Energy Retail Code if they are supplied by a licensed retailer. Consumers in NSW, Tasmania and South Australia who move off-grid would currently lose their energy-specific consumer protections under the NECF, even if they are supplied by an authorised retailer.[177]

7.1.2 Protections under the ACL

The ACL applies nationally to all Australian businesses, and provides protections to consumers including:

- provisions on unfair contract terms covering standard form consumer and small business contracts
- provisions guaranteeing certain consumer rights when buying goods and services
- product safety requirements
- penalties, enforcement powers and consumer redress options.

The ACL applies for goods or services that are priced at less than $40,000, or that are priced at more than $40,000, but are 'of a kind ordinarily acquired for personal, domestic or household use or consumption'.[178]

The consumer protections that are likely most relevant to the issues discussed in this chapter include unfair contract terms and consumer guarantees. The unfair contract terms provision voids contract terms which cause a significant imbalance in the parties' rights and obligations where those terms are not reasonably necessary to protect the legitimate interests of a party and would cause financial or non-financial detriment to the other party.[179] Products under the ACL are subject to consumer guarantees, for example, a suppliers' and manufacturers' guarantee that products are of acceptable quality when sold to a consumer, including being fit for all the purposes for which products of that kind are commonly supplied, and being safe, free from defects, and reasonably durable.[180]

176 The Acts adopting the NERL in Queensland and in the ACT do not limit the application of the NECF to the sale of energy to customers connected to the interconnected national grid. The seller of electricity in a microgrid in those jurisdictions would need to be an authorised retailer, and therefore subject to the full provisions of the NECF, unless it was exempt.

177 The Acts adopting the NERL in each of these jurisdictions specify that, in relation to electricity, the NERL applies only in relation to the sale of electricity to customers connected to the interconnected national grid. *National Energy Retail Law (South Australia) Act* 2011 (SA) s. 16; *National Energy Retail Law (Adoption) Act* 2012 (NSW) Schedule 1, s. 11 and National Energy Retail Law (NSW) No.37a, s. 3A; *National Energy Retail Law (Tasmania) Act* 2012 (Tas) s. 17.

178 Section 3, Australian Consumer Law.

179 Part 2-3, Australian Consumer Law.

180 Part 3-2, Australian Consumer Law.

BOX 8: NEW ENERGY TECH CONSUMER CODE

The New Energy Tech Consumer Code (previously the Behind the Meter Code) stems from work the COAG Energy Council commenced through the EMTPT. The EMTPT undertook consultation on the consumer protections required for behind the meter (BTM) products in 2016. Although it was found that current consumer protections provided by the NECF and ACL were generally sufficient for BTM products, the development of an industry-led Code of Conduct to support consumer protections for customers acquiring new energy products and services was considered to be of benefit.

A Working Group was established to develop a code of practice for behind the meter and distributed energy resource products such as solar, battery storage systems, energy management systems, electric vehicle charging products and off-grid systems supplying one site (individual power systems). The draft New Energy Tech Consumer Code was submitted to the ACCC for authorisation on 29 April 2019, with obligations relating to marketing and promotion, quoting, sale, payment and finance, installation, operating, complaint handling and warranty, and business management, applying to those entities that voluntarily become signatories to the Code (once it is finalised).

The Code could provide some protections over and above those in the ACL for off-grid customers purchasing a SAPS where the NECF does not apply. However, it will not have the same enforcement regime as the ACL or NECF, and may not cover all entities providing SAPS services (unless all such entities choose to become signatories to the Code). In addition, some aspects of off-grid provision such as technical specifications and operations and microgrids are considered to be outside of the scope of the Code.

Source: COAG Energy Council, Energy Market Transformation Bulletin No. 05 - Work Program Update, 3 August 2017, p. 1-2; CEC, Attachments B & C to the Application for authorisation made under sections 88(1) of the Competition and Consumer Act 2010, 29 April 2019.

7.1.3 Jurisdictional consumer protections for grid-connected customers

There are a number of jurisdictional consumer protections to be considered under priority 2 of this review. This section focuses on access to state-based energy concessions and rebates, and independent dispute resolution. Other jurisdictional protections such as safety, reliability, technical standards and retail price controls are discussed in other chapters of this paper.

Vulnerable customers may be eligible for jurisdictional energy-specific concessions or rebates to assist with their energy costs. These are generally in the form of concessions and rebates for pension and concession card holder and/or low income customers, life support and medical energy cost rebates. In addition, customers who meet certain conditions and are experiencing severe financial hardship may be eligible to access emergency assistance towards the costs of their energy bills.

Small customers who are grid-connected can access jurisdictional energy ombudsmen schemes free of charge to resolve disputes and complaints with their retailer and/or distributor, with the retailer or distributor bound by the ombudsman's decision. Registered

distributors and authorised retailers are required to be members of jurisdictional energy ombudsman schemes under the NERL.[181]

If energy ombudsman schemes are not extended to consumers being supplied via a third-party SAPS, consumers will still be covered by the ACL and in some cases, depending on the ownership model of the third-party SAPS, may have access to dispute resolution under some form of tenancy agreement. However, any dispute resolution avenues under the ACL or a tenancy agreement may be more difficult or expensive for consumers to access, and may have less experience resolving consumers' energy issues, than jurisdictional energy ombudsmen.

7.1.4 SAPS comparator arrangements

When considering the most appropriate consumer protections for third-party SAPS it is useful to review the final recommendations for Priority 1 of this review and the embedded networks review, as well as existing conditions imposed on licensees or operators of current jurisdictional microgrids, for example the licence conditions imposed on licensees supplying via a SAPS in South Australia.

SAPS Priority 1 review

The Commission recommended in Priority 1 of this review that, for DNSP-led SAPS, consumer protections should be equivalent to those under standard supply arrangements. This was considered appropriate in the context of DNSPs being able to transition customers to off-gird supply without consent. The Commission recommended that all of the consumer protections under the NERL, NERR and jurisdictional instruments should cover DNSP-led SAPS. In addition, a small number of SAPS-specific consultation and information provision requirements were recommended.[182]

Embedded networks review

In the final report for *Updating the regulatory frameworks for embedded networks* the Commission recommended extending almost all of the consumer protections under the NERL and NERR to customers in new embedded networks, with minor amendments required to accommodate the multiple parties and broader relationships present in embedded networks. A few relatively minor obligations were not recommended to be extended to off-market retailers in embedded networks, for example, the requirement to publish price variations in a newspaper.[183]

Current jurisdictional frameworks for third-party SAPS

In South Australia, ESCOSA includes consumer protections in the licence conditions for third-party SAPS providers. For example, the licence conditions for the provider of the South

181 Section 86 of the NERL.
182 AEMC, *Review of the regulatory frameworks for stand-alone power systems,* Final report, 30 May 2019, p. 84.
183 AEMC, Updating the regulatory frameworks for embedded networks, Final report, 20 June 2019, p. 94.

Australian Remote Area Energy Supply scheme, Cowell Electric, include requirements relating to:[184]

- standard contractual terms and conditions
- bill contents
- billing frequency
- meter reading and minimum accuracy standards for meters
- undercharging and overcharging
- tariff variations
- payment and payment methods
- payment difficulties
- instalment plans
- bill reviews
- disconnection and reconnection obligations
- life support.

7.2 Stakeholder submissions

In submissions to the consultation paper, most stakeholders supported the application of some energy-specific consumer protections to third-party SAPS, but many were of the view that differing consumer protections would be required between microgrids and IPS.

7.2.1 Consumer protections for microgrids

Most stakeholders suggested a higher level of consumer protections should apply for microgrids than for IPS,[185] with some stakeholders suggesting that consumer protections for microgrids should align with those for grid-connection including the full suite of consumer protections under NECF and jurisdictional regulations.[186] EWOSA and TasNetworks considered that both IPS and microgrids should be subject to the same or very similar consumer protections as standard supply customers.[187]

A number of stakeholders considered that as well as consumer protections for customers being supplied via a microgrid aligning with the protections for standard supply, protections should be consistent with the Commission's recommended framework for new embedded networks and DNSP-led SAPS to provide a level playing field and reduce uncertainty for customers.[188] For example, Essential Energy considered that the same level of consumer protections should apply regardless of how energy is supplied, in line with the Commission's principles in priority 1 of this review, and the embedded networks review.[189]

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184 ESCOSA, *Electricity retail, distribution and generation licence Cowell Electric Supply Pty, Ltd,* 26 September 2018.

185 Submissions to the consultation paper: AER, p. 5; EWON, p. 1; Tesla, p. 2; Energy Queensland, p. 4; Citipower, Powercor and United Energy, p. 1; National Farmers Federation, p. 2; TasNetworks, p. 7; EWOSA, p. 1.

186 Submissions to the consultation paper: ENA, pp. 16-17; Essential Energy, p. 5; Endeavour Energy, p. 11; EWON, p. 2; AEC, p. 1.

187 Submissions to the consultation paper: EWOSA, p. 1; TasNetworks, p. 7.

188 Submissions to the consultation paper: EWON, p. 1; Essential Energy, p. 5.

189 Essential Energy, submission to the consultation paper, p. 5.

It its submission, the AER considered that, where possible, customers being supplied via a SAPS should have the same level of protection that they would have under standard supply, suggesting on-grid consumer protections be used as a starting point for determining the appropriate consumer protections for third-party SAPS, with regulations removed or adapted that are clearly unsuited to SAPS, noting third-party SAPS may be vertically integrated.[190]

For third-party microgrids, energy-specific consumer protections were overwhelmingly seen as necessary with the consumer protections under the ACL viewed to be inadequate, particularly for vulnerable customers.[191] The AEC suggested a consistent, though not necessarily uniform, approach to consumer protections, with minimum standards determined for SAPS supply.[192]

EWON suggested that the consumer protections which apply to grid-connected customers and are relevant to SAPS supply include:[193]

- rights to access energy services and obligations to offer supply as a designated retailer
- informed consent requirements
- dispute resolution procedures
- minimum contract term
- billing, tariff and payment obligations
- disconnection procedures, and
- protections for vulnerable customers.

In contrast to the general view that regulations should differ between microgrids and IPS, Ausgrid suggested that whether supply is via an IPS or a microgrid should not solely determine consumer protections, with a standard level of consumer protections for small customers.[194] Further, Western Power considered that inconsistent consumer protections and reliability between models of supply was a potential issue.[195]

7.2.2 Consumer protections for IPS

Many stakeholders considered that IPS (and potentially very small microgrids) would not require the same level of consumer protections as microgrids, especially in cases where the IPS is owned by the customer.[196] If the IPS is owned by the customer, some stakeholders considered that there would be no sale of energy, and the IPS would therefore be outside of the energy regulatory framework. For example, ENA were of the view that if an IPS is bought outright, the ACL and, once in operation, the New Energy Tech Consumer Code, would

190 AER, submission to the consultation paper, p. 7.

191 Submissions to the consultation paper: AER, p. 2; EWON, p. 1; Tesla, p. 2; Energy Queensland, p. 4; Citipower, Powercor and United Energy, p. 1; National Farmers Federation, p. 2; TasNetworks, p. 7; EWOSA, p. 1.

192 AER, submission to the consultation paper, p. 3.

193 EWON, submission to the consultation paper, p. 3.

194 Ausgrid, submission to the consultation paper, p. 6

195 Western Power, submission to the consultation paper, p. 1.

196 Submissions to the consultation paper: ENA, p. 2; EWON, p. 3; EWOSA, p. 2; CEC, p. 11; Tesla, p. 2; Energy Queensland, p. 3, Endeavour Energy, p. 4.

provide sufficient protections. However, IPS provided under an ongoing agreement would require additional regulatory oversight.[197]

In its submission, Tesla suggested that there should be a minimum level of consumer protections for IPS, including access to concessions, rebates and emergency assistance, with the full suite of consumer protections not necessary.[198] The CEC considered that lesser consumer protections should apply for IPS than microgrids, as the owner of the IPS can determine the level of energy security and reliability to suit its needs. EWOSA, in its submission, suggested that in cases where there is no ongoing sale of electricity in an IPS then consumer protections could be provided by the ACL, plus safety, security and reliability protections.[199]

7.2.3 Other consumer protection considerations

In developing the consumer protection framework for third-party SAPS, a number of stakeholders suggested exercising caution in allowing customers to trade away consumer protections, with significant information asymmetries likely between customers and third-party SAPS providers, and potentially harmful consequences.[200]

To address potential information asymmetries, some stakeholders suggested that additional consumer protections regarding information provision would be required. The information provision obligation would provide customers with clearly articulated and easily understood information on the risks or trade-offs of supply via a third-party SAPS compared to standard connection, with the customer providing full consent to supply via a third-party SAPS.[201] The AER considered that information disclosure and customer consent should be required for greenfield SAPS, and for customers moving into an established third-party SAPS, as well as for those transitioning from standard supply.[202]

In its submission, the AER also considered that there was a potential for microgrids to be developed in which the operator can control customers' distributed energy resources (DER) or smart appliances, and suggested that potential consumer protection issues in this area be monitored.[203]

7.3 Commission's analysis

Although the consumer protections under the ACL provide a base level of consumer protections, electricity is an essential service for which additional consumer protections are generally provided. The Commission has given consideration to the extent to which these additional protections should apply to third-party SAPS customers, and whether there are any

197 ENA, submission to the consultation paper, p. 2.
198 Tesla, submission to the consultation paper, p. 2.
199 EWOSA, submission to the consultation paper, p. 2.
200 Submissions to the consultation paper: Ausgrid, p. 6; Endeavour Energy, p. 6, Endeavour Energy, p. 11.
201 Submissions to the consultation paper: Essential Energy, p. 1; Agriculture Energy Taskforce, p. 4; Energy Queensland, p. 2; ENA, pp. 5-6.
202 AER, submission to the consultation paper, p. 3.
203 AER, submission to the consultation paper, p. 7.

differences in the scope of the consumer protections, or the way in which they are provided to customers, under each of the categories under the proposed tiered framework.

In applying consistent principles between DNSP-led SAPS, embedded networks and standard supply, the Commission is guided by the overarching principle that energy-specific consumer protections should apply to customers in a proportionate manner where there is a sale of energy. The size and risks of the SAPS, as well as the customers' control and bargaining power, may impact the level of consumer protections required.

Currently, residential customers under a third-party SAPS model of supply will receive protections under the ACL, and protections under any applicable jurisdictional licence conditions or frameworks. In some jurisdictions, customers in a third-party SAPS would not receive the benefits of the energy specific protections contained in the NERL and NERR. Depending on the wording of jurisdictional provisions, they also may not be able to access state-based concessions and rebates, nor independent dispute resolution via the energy ombudsman schemes.

The Commission has given consideration to whether it is appropriate to apply all the consumer protections in the NERL and NERR, as well as the jurisdictional consumer protections, to each category of third-party SAPS, or whether a subset of those protections is adequate.

It is appropriate that the full suite of consumer protections applicable to grid-connected customers is extended to large third-party SAPS which can sustain effective competition. For smaller third-party SAPS, which are likely vertically integrated, consumer protections need to be proportionate and reflect the vertically integrated nature of the SAPS. A set of comprehensive consumer protections would be appropriate, however, there are a number of consumer protections which would not be required. As there will be no retail competition in a vertically integrated third-party SAPS, obligations including those relating to marketing, customer transfers and the relationship between retailers and distributor would be unnecessary. Very small SAPS may require few energy-specific consumer protections.

Although differences in consumer protections are likely appropriate between the different categories of third-party SAPS, the Commission is cognisant that careful consideration is required of the impacts on customers, as well as the potential distortionary impacts of forum-shopping, if some of the current obligations are not extended to all third-party SAPS.

A consumer protection framework for third-party SAPS could be implemented through jurisdictional regulation, or a combination of jurisdictional and national frameworks. In line with the Commission's recommendations in chapters 4 and 5, it would be appropriate for category 1 SAPS to be regulated under the full suite of consumer protections under the NECF, and current jurisdictional regulations, with retailers authorised by the AER. For categories 2 and 3, under the proposed framework consumer protections would be provided through jurisdictional licence or exemption conditions and potentially jurisdictional regulatory instruments. State-based energy concessions and rebates, and energy ombudsman schemes, remain jurisdictional functions, and it is appropriate that these are extended to some of the categories of third-party SAPS.

Energy-specific consumer protections for an IPS which is procured by, owned and maintained by a customer are likely not required and would not involve a sale of energy so would be outside of the general scope of energy-specific rules. However, it may be reasonable that all energy users have access to energy concessions, rebates and emergency energy assistance, including consumers with their own IPS.

In priority 1 of the review, the Commission recommended that providers of third-party SAPS be required to obtain a customer's explicit informed consent in writing prior to transitioning that customer to a third-party SAPS.[204] For a customer to provide their consent they will need to be fully aware of all of the differences between supply via a third-party SAPS and standard supply. It would be the responsibility of the third-party SAPS provider to clearly, fully and adequately disclose all matters relevant to the consent of the customer. It may be helpful to provide additional information provision guidelines indicating the minimum information that should be provided to customers prior to them transitioning to a third-party SAPS. There may also be SAPS-specific information provision obligations which would be appropriate for customers who are moving into a third-party SAPS.

The Commission's initial views on the appropriate consumer protections framework for each category of third-party SAPS are discussed in more detail below.

7.3.1 Category 1

For very large microgrids the Commission has proposed that the third-party provider will be required to register as a DNSP with AEMO and obtain a jurisdictional licence as a DSNP. In addition, category 1 third-party SAPS will have retail competition (in areas with retail competition), and retailers will be required to be authorised with the AER. It is therefore appropriate that the full suite of consumer protections in the NERL and NERR be extended to customers being supplied electricity via a third-party SAPS that meets the coverage test to be classified as category 1.

In most jurisdictions, changes similar to the changes recommended in priority 1 in relation to DNSP SAPS will be required to extend the application of the NERL and NERR to SAPS. In Queensland, changes will be required to restrict the application of the NERL and NERR to category 1 microgrids if it is determined that the NECF should not apply to categories 2 and 3 of third-party SAPS. [205]

7.3.2 Category 2

The Commission is proposing that category 2 third-party SAPS should be licensed by jurisdictions, both for retail and distribution functions. As discussed in Chapter 5, it is unlikely that anything other than a very large microgrid would be able to sustain effective competition, as many retailers would not develop specific offers for a third-party SAPS unless there are many thousands of customers.

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204 AEMC, *Review of the regulatory arrangements for stand-alone power systems — Priority 1* final report, p. 102.

205 The NERL and NERR would likely apply to all categories of microgrids under Queensland's current application Act (unless an exemption applies).

Therefore, a third-party SAPS under category 2 will likely be vertically integrated, and some of the consumer protections under the NERL and NERR would not be relevant as there would be no marketing and transfer activities, and no requirement to provide consumer protections around the shared customer and tripartite relationship considerations. It is also likely that Retailer of Last Resort provisions would not be applicable as the third-party SAPS provider will likely be vertically integrated and subject to any operator of last resort provisions, or protections from operator insolvency. This is discussed in more detail in Chapter 4.

Reviewing the other consumer protections contained in the NERL and the NERL, the consumer protections which the Commission considers should apply to category 2 third-party SAPS, likely under jurisdictional license conditions, relate to:

- customers' rights to access energy services and the third-party SAPS providers' obligations to offer supply as a designated retailer
- informed consent requirements to enter into a supply arrangement
- minimum contractual standards
- billing, tariff and payment minimum requirements
- planned interruptions to supply
- disconnection and reconnection obligations
- protections for vulnerable customers including payment plans and obligations relating to life support customers, and
- reporting and compliance obligations.

ESCOSA has included similar consumer protections in the license conditions for third-party SAPS providers supplying customers under the South Australian Remote Area Energy Supply scheme (see section 7.1.4).

In addition, the Commission considers that customers should have access to dispute resolution, preferably via jurisdictional energy ombudsman schemes. Customers being supplied by third-party SAPS should also have access to jurisdictional concession, rebate and emergency assistance schemes. This is in line with the Commission's recommendations in the embedded networks review and priority 1 of this review.

SAPS-specific consumer protections which may be appropriate for inclusion in license conditions include information provision obligations for customers who are starting to receive supply from established third-party SAPS, for example relating to any differences between third-party SAPS supply and standard supply.

7.3.3 Category 3

For category 3 third-party SAPS, applying a risk based approach, it is likely disproportionate to apply fulsome energy-specific consumer protections. Category 3 third-party SAPS are likely to be very small microgrids connecting a small number of premises, an IPS where there is one party controlling the electricity supply of another party, or microgrids only supplying large customers. Customers in this category would likely have a higher degree of market power and control over the SAPS requirements than those in category 2. In addition, these

customers are likely to have the choice to buy an IPS outright at a comparable cost, or request a connection from a DNSP if they are not satisfied with the conditions offered by the third-party SAPS provider.

The ACL will provide some aspects of consumer protections for these customers, including provisions on unfair contract terms and consumer guarantees. In addition to the ACL and the New Energy Tech Consumer Code (noting that not all SAPS providers may become signatories to the code), the Commission considers a minimum standard of consumer protections should be provided in jurisdictional exemption or license conditions. These minimum consumer protections should cover issues such as bill content and frequency, payment terms, disconnection of supply, and some protections for vulnerable customers. This will still enable flexibility and choice for many aspects of the SAPS and the relationship between the customer and the third-party SAPS provider.

7.4 Commission's draft position

The Commission considers that for third-party SAPS, practical application of the overarching principles and assessment framework will result in some variations in the suite of consumer protections, and the instruments under which they are applied under each category of third-party SAPS.

The Commission's initial views on the proposed application of consumer protections under each category of a tiered framework are detailed in table 7.1, below.

Table 7.1: Proposed consumer protections for third-party SAPS

CATEGORY	APPLICATION OF CONSUMER PROTECTIONS
Category 1	Retailers will be authorised by the AER, with the full suite of consumer protections under the NECF and any applicable jurisdictional consumer protections. Consumers should be able to access jurisdictional energy ombudsman and concessions, with rebate and emergency payment assistance schemes applying.
Category 2	Consumer protections will be provided through jurisdictional license conditions. Protections the Commission considers should be contained in license conditions include: • minimum contractual terms and conditions • rights to access energy services, and obligations to offer supply • informed consent requirements • billing, tariff and payment minimum requirements • disconnection and reconnection obligations • protections for vulnerable customers including payment plans and life support obligations. Customers should have access to jurisdictional energy ombudsman and concession, rebate and emergency payment assistance schemes.

CATEGORY	APPLICATION OF CONSUMER PROTECTIONS
	SAPS-specific information provision obligations for customers starting to receive supply is likely required.
Category 3	Minimum consumer protections such as billing information, payment minimum requirements and disconnection and reconnection obligations in exemption/license conditions.

Source: AEMC

Jurisdictions may wish to consider the application of concession schemes to individual power systems where there is no sale of energy.

The Commission intends to explore consumer protections in more detail in the next stage of this review and is interested in stakeholders' feedback on the minimum consumer protections proposed to be required under each category, particularly for categories 2 and 3. In addition, the Commission is interested in stakeholder views as to whether there are any additional consumer protections that should apply to third-party SAPS.

8 RELIABILITY OF SUPPLY

Reliability is a key measure of the electricity supply service received by consumers and, consequently, is a factor specifically considered in the national energy objectives. The nature of shared networks serving multiple customers means that it is usually not possible to offer individual consumers different levels of reliability (other than in respect of any dedicated assets used to connect them to the shared network). Rather, the trade-off that exists between reliability and price has to made by regulators and governments on behalf of consumers as a whole. This situation may differ for third-party microgrids and IPS.

For these reasons, it is important that reliability is explored in detail in this review. However, the standards and measures that might be used to govern the reliability of third-party SAPS may not necessarily need to be exactly the same as those that apply to grid-connected customers. For example, some measures or incentive targets used for grid-connected customers may not be appropriate for third-party SAPS systems.

This chapter provides background information on the regulation of supply reliability, summarises stakeholder views on the issues raised in the consultation paper, and discusses the Commission's initial views on the extent to which reliability outcomes for third-party SAPS might be subject to regulation, and how this might be specified.

8.1 Background

A power system is reliable when there is enough generation, demand response and network capacity to supply customers with the energy they demand with a high degree of confidence. In the NEM there are different reliability frameworks for generators, transmission networks, and distribution networks. However, most of the outages that customers experience are due to issues on the distribution networks.[206] Each state and territory government retains control over how transmission and distribution reliability is regulated, which has resulted in different reliability standards in each jurisdiction.[207]

In the context of stand-alone power systems, the reliability of supply of electricity will be determined by the characteristics of that system and its capacity (including network, generation and demand-side assets) to meet demand at any point in time. For individual power systems, any outages experienced by the customer will likely primarily relate to issues associated with the generation of electricity or imbalances between demand and generation; for microgrids, outages experienced by customers may be caused by a combination of issues relating to generation and the network, as well as demand/supply imbalances.

In priority 1 of the review, the Commission considered that, irrespective of the source of an interruption to customer supply, the reliability associated with a DNSP-provided SAPS should be regulated, and considered as 'distribution reliability' for regulatory purposes on the basis that any interruptions to SAPS customers would be considered to be primarily within the

206 The Commission has recently noted that 94.38% of supply interruptions over the period 2008/09 to 2017/18 were caused by outages on the distribution network. See: AEMC, *Enhancement to the reliability and emergency reserve trader*, Rule determination, 2 May 2019, p. 10.

207 COAG, Australian Energy Market Agreement, Annexure 2.

control of the distribution business.[208] In this work on priority 2, the Commission is considering whether there is a need for any regulatory standards or protections relating to reliability for third-party SAPS customers and, if so, how they should be specified.

8.1.1 National reliability arrangements

The national nature of the NEM means that the standard and settings used to drive reliability in the wholesale market are determined on a NEM-wide basis. The reliability standard is set in the NER and is periodically reviewed by the Reliability Panel. The current standard requires there to be sufficient generation, demand-side and transmission interconnector capacity in a region to meet 99.998% of forecast annual demand.

In contrast, as discussed below, network reliability is primarily a jurisdictional function. However, the economic regulation of networks is a national function under Chapter 6 of the NER. As such, one of the incentive schemes administered by the AER under the economic regulation arrangements relates to reliability. This is the service target performance incentive scheme (STPIS).[209]

The primary purpose of the STPIS is to encourage distributors to maintain existing levels of reliability and make improvements where customers are willing to pay for that improvement. Under the STPIS, DNSPs receive revenue increments (or decrements) for given levels of performance. The reliability supply parameters measured under the STPIS relate to both the duration and frequency of unplanned outages.[210]

As the STPIS is applied to economically regulated DNSPs under Chapter 6 of the NER, it does not currently apply to third-party SAPS providers. While the Commission is considering the case for economic regulation of third-party SAPS (see chapter 6), it appears unlikely that the rules governing economic regulation of distribution services, and therefore the STPIS, would be applied to categories 2 and 3 of third-party SAPS.

8.1.2 Jurisdictional reliability arrangements for grid-connected customers

As mentioned, network reliability remains primarily a jurisdictional function, and there are different regulations governing reliability in each jurisdiction for both transmission and distribution networks.

Transmission reliability standards are generally input-based and are specified in terms of redundancy levels (e.g. N-1). In some jurisdictions, the standards are explicitly based on economic analysis and set on an ex ante basis, while in Victoria the level of reliability associated with each transmission investment is determined on a case-by-case basis.

For distribution, each state and territory generally has reliability standards for the average number and duration of unplanned outages that each distribution network should not exceed

208 AEMC, *Review of the regulatory frameworks for stand-alone power systems — Priority 1*, Final report, 30 May 2019, p. 96.

209 AER, Electricity distribution network service providers — Service target performance incentive scheme, version 2.0 (November 2018). Section 3 sets out the reliability of supply component.

210 The STPIS is applied in the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria.

each year. For each network, these standards are often further split into specific standards for different levels of customer density, geographic areas, or customer types.

The levels of reliability that must be provided by distribution networks are measured by the System Average Interruption Duration Index (SAIDI) and the System Average Interruption Frequency Index (SAIFI). These measures are averaged across large numbers of customers in a DNSP's distribution network. Some jurisdictions also have a number of other measures to regulate distribution reliability.

Additionally, there are jurisdictional Guaranteed Service Level (GSL) schemes which DNSPs are subject to (by way of local legislation or codes) which include GSLs relating to both duration and frequency of supply interruptions. If the distributor does not achieve a minimum service level, it is required to pay the customer a nominal amount (ranging from $20 to $605 depending on the jurisdiction) in recognition that the GSL has been breached. The GSL payments are not intended to be reflective of the costs the customers may have incurred as a result of the interruption(s), but rather are some financial recognition of the outage(s).

8.1.3 SAPS comparator arrangements

The Commission has given consideration to reliability requirements in its work on priority 1 of the review and the embedded networks review. Another useful comparator would be existing jurisdictional conditions imposed on licensees or operators of current microgrids, for example the licence conditions imposed on licensees supplying via a SAPS in South Australia.

SAPS priority 1 review

In the final report for priority 1 of this review the Commission recommended that reliability standards including SAIDI and SAIFI, and GSLs for unplanned outages, should cover DNSP-led SAPS, and that jurisdictional schemes should be reviewed and amended, if required, to facilitate the coverage of DNSP-led SAPS. In addition, it was recommended that the STPIS should include DNSP-led SAPS in the calculation of DNSPs' targets. As such, for DNSP-led SAPS the Commission's recommendation was not to introduce additional reliability standards or targets for individual SAPS, rather it was that customers in DSNP-led SAPS should receive protections equivalent to grid-connected customers.[211]

Embedded networks review

Through its work on *Updating the regulatory arrangements for embedded networks*, the Commission has noted that there is a gap in regulatory coverage, with customers in embedded networks generally not receiving any reliability protections. The Commission considers that consumers in embedded networks would benefit from some reliability protections, but notes that embedded networks generally have a much smaller number of customers connected to their networks than DNSPs.

Consequently, in the final report for the review, the Commission concluded that applying SAIDI and SAIFI in the same way as for DNSPs would likely not be appropriate. Instead, the

211 AEMC, *Review of the regulatory frameworks for stand-alone power systems -priority 1,* Final report, 30 May 2019, p. 99.

Commission suggested that the most reasonable approach to providing reliability protections within embedded networks would be for jurisdictions to develop and apply a type of GSL scheme, with consideration given to the required monitoring and enforcement regime that should apply.[212]

Current jurisdictional frameworks for third-party SAPS

An example of jurisdictional reliability arrangements that apply to third-party SAPS is the licence conditions imposed on Cowell Electric by ESCOSA for the operation of its multiple SAPS in South Australia. Licence conditions for Cowell Electric's SAPS cover quality of supply and interruption of supply. There is no specific reliability target set or reporting requirements; instead, the licensee must "use its best endeavours to minimise the frequency and duration of supply interruptions".[213] However, the Commission understands that where networks are supported by the South Australian government under its RAES scheme, which includes those operated by Cowell Electric, specific reliability targets are set and reported on through the contractual arrangements between the government and the service provider.

8.1.4 Appropriate reliability protections for third-party SAPS

The Commission sought stakeholder views on the appropriate reliability protections for customers of third-party SAPS through the consultation paper. In particular, the paper focussed on three key questions:

- **Is reliability protection warranted for third-party SAPS?** It is likely that some form of reliability protections would be appropriate for third-party microgrids, as reliability of supply is a key concern for customers. On the other hand, for third-party SAPS, consumers may have access to more substitute sources of electricity (e.g. supply from the main grid or from their own IPS) than they would do if they received standard supply. Where customers are few in number, there may be increased scope for them to negotiate reliability targets with the service provider or otherwise be subject to a reliability standard that is applicable to that particular SAPS.
- **What methods should be used to provide reliability protections?** Given the much lower number customers connected to them, the application of SAIDI and SAIFI and similar reliability standards to individual third-party SAPS in the same manner as for DNSPs may not be appropriate, particularly for smaller microgrids. Alternative lighter-handed approaches might be a GSL scheme, or a general requirement to minimise the duration and frequency of outages. This could include reporting requirements and, if continued issues are identified, requirements to prepare a plan to resolve the reliability concerns.
- **Should reliability protections for third-party SAPS be a jurisdictional or national function?** If the reliability of third-party microgrids is considered to be primarily 'distribution reliability' as the Commission recommended for DNSP-led SAPS in Priority 1 of this review, then it is likely that the main reliability standards will be

212 AEMC, *Updating the regulatory frameworks for embedded networks,* Final report, 20 June 2019, pp. 306-307.

213 ESCOSA, *Electricity retail, distribution and generation licence Cowell Electric Supply Pty Ltd,* 26 September 2018, p. 6.

determined by jurisdictions, consistent with the existing allocation of functions between jurisdictions and national bodies under the AEMA.

8.2 Stakeholder submissions

In submissions to the consultation paper, stakeholder views on reliability were mixed, although most agreed that reliability for IPS should be negotiable.[214] Some stakeholders proposed that microgrids should be able to have tailored reliability standards, while others proposed jurisdictional reliability standards and, in some cases, GSLs.

ENA considered that while IPS reliability levels may be negotiable on a price basis, it was not appropriate for microgrids to offer lower levels of reliability than the interconnected grid and that jurisdictional reliability protections including GSLs should apply to all SAPS.[215] TasNetworks also considered that GSLs should apply, but noted issues with reliability standards that differ between DNSP customers, and SAPS and IPS customers, and the potential for perverse incentives.[216]

Endeavour Energy recommended that there should be scope for customers to negotiate reliability targets, otherwise the same jurisdictional reliability standards that apply to DNSPs should apply to SAPS. It considered that in all cases reliability performance should be subject to reporting requirements.[217]

Essential Energy suggested that SAIDI and SAIFI may be appropriate in large microgrids, but for smaller SAPS, availability and time to repair measures should be adopted. Customers should be made aware of reliability outcomes and have recourse for poor reliability, noting the ESCOSA approach.[218]

Ausgrid observed that reliability standards are a jurisdictional responsibility and noted IPART's forthcoming review of distribution reliability standards in NSW, recommending that this should consider how reliability standards should evolve to cater for new technologies and delivery models, including SAPS.[219]

The AER supported a framework that gives customers certainty over reliability of supply and has minimum reliability standards. It noted that where a SAPS provider has control over DER, or restricting use of customer appliances, it would restrict the value the customer realises from the appliances. It also suggested that consistency between jurisdictional standards for reliability may lower the barriers to entry for SAPS providers.[220]

The Agriculture Industries Energy Taskforce recommended a value-based approach to reliability with a 'right-size' system trade-off for users, and that consumer preference should be primary principle. It also recommended that SAPS customers should have access to a

214 Submissions to the consultation paper: Agriculture Industries Energy Taskforce, p. 4; CEC, p. 12; Endeavour Energy, p. 12; ENA, p. 18; Essential Energy, p. 5; National Farmers' Federation, p. 4.

215 ENA, submission to the consultation paper, p. 17.

216 TasNetworks, submission to the consultation paper, p. 7

217 Endeavour Energy, submission to the consultation paper, p. ?.

218 Essential Energy, submission to the consultation paper, p. 5

219 Ausgrid, submission to the consultation paper, p. 7.

220 AER, submission to the consultation paper, pp. 7-8.

certain level of reliability standards, if not at the same level as grid-supplied customers.[221] In contrast, the National Farmers' Federation saw no need for regulatory protections or standards relating to reliability, considering that systems should be tailored to needs.[222]

The CEC recommended that IPS purchasers should be provided with information to assess reliability/price trade-offs, and that IPS and community-based microgrid customers should be able to decide on their desired level of reliability without regulatory intervention. It also recommended access to dispute resolution, ombudsman or legal processes if a system is not performing to expectations.[223]

8.3 Commission's analysis

Determination of reliability levels consistent with customer values, without imposing undue complexity, is a key consideration of this review. Development of appropriate definitions and measurements of SAPS reliability for each category of third-party SAPS, along with processes for data verification, will be required.

Reliability performance measures such as SAIDI, SAIFI, and performance incentive schemes such as STPIS, are well-established and uniformly applied and managed by jurisdictional regulators and the AER for DNSPs. The applicability of these measures and incentives to each of the categories for third-party SAPS should be considered by jurisdictions, as well as the process used to establish and monitor reliability performance targets.

In the interconnected grid, reliability is impacted by services provided by generators, transmission networks and distribution networks, with most outages due to issues on the distribution network. In third-party SAPS, it is unlikely there will be transmission networks, and in many third-party SAPS the generation and distribution services will be vertically integrated. Therefore, the reliability of supply of electricity in a third-party SAPS will be determined by the characteristics of the particular system. Outages will relate both to issues associated with the generation of electricity (or imbalances between demand and generation), and network issues in microgrids.

To the extent that SAIDI and SAIFI are used in third-party SAPS, a number of parameters may need to differ. One area which may need to differ is the outages excluded from SAIDI and SAIFI calculations. The causes of supply interruptions in third-party SAPS are likely to be different from the interconnected grid, for example, in vertically integrated third-party SAPS it may not be appropriate to exclude outages caused by generation. It may, however, be reasonable to exclude interruptions that are caused by or within customer installations, and major event days should be excluded.

In addition to reliability standards and targets, under jurisdictional GSL schemes, DNSP customers may be entitled to claim financial compensation where the DNSP has exceeded

221 Agriculture Industries Energy Taskforce, submission to the consultation paper, p. 4.
222 National Farmers' Federation, submission to the consultation paper, p. 4.
223 CEC, submission to the consultation paper, pp. 12-13

the interruption duration threshold and/or the interruption frequency threshold under the conditions of each jurisdictions scheme.[224] A similar scheme may be appropriate for SAPS.

The appropriate reliability measures for each category of third-party SAPS, along with the form of monitoring required, and any avenues customers may have to address poor reliability, are discussed further below.

8.3.1 Category 1

The efficacy of reliability performance measures such as SAIDI and SAIFI and incentive schemes such as STPIS relies on data averaged over a large population of customers. It can be argued that the same measures should be applied to category 1 SAPS on the basis that a sufficiently large customer base is present, so reliability performance can be averaged across the customer population in a way that recognises the difference in reliability expected and experienced by urban, suburban and rural electricity customers who may be supplied from a Category 1 SAPS. Consideration needs to be given to whether the parameter segments in STPIS are appropriate for category 1 third-party SAPS.

Reliability performance averaged across a significant customer population does not accurately capture individuals or small groups of customers whose reliability performance may be a statistical outlier. As a result, reliability performance measures for DNSPs in many jurisdictions may also include thresholds for interruption duration and frequency measures for individuals and/or sub-groups of customers, with reporting and further analysis undertaken when the thresholds are exceeded, or alternatively, reporting required on the worst performing sub-groups of customers. A similar approach would be appropriate for category 1 third-party SAPS.

Reliability of transmission is unlikely to be a consideration for third-party SAPS. However, reliability of generation will be a consideration, with the third-party SAPS provider requiring some control over generation capacity to meet its distribution reliability targets. This would involve the third-party SAPS provider contracting with generators to provide adequate generation capacity to meet customer demands, in line with DNSP-led SAPS. To the extent that they are required, reliability measures for independent generation will be considered further in the next stage of the review.

Therefore, the Commission recommends that reliability for category 1 SAPS is regulated by both the AER and jurisdictions, in line with current arrangements for DNSPs, with STPIS, jurisdictional reliability standards and GSLs applying. Consideration should be given to whether any changes would be required to reliability targets for each group of customers (ie. urban, suburban, rural) that may be supplied from a category 1 SAPS, as well as to the exclusions from reliability calculations, and the parameters for STPIS.

8.3.2 Category 2

When considering the reliability measures which should apply to category 2 SAPS, the application of current jurisdictional reliability measures could be used as a starting point.

224 For example, in NSW see Schedule 5 of IPART's NSW Electricity Networks Licence Conditions and Regulatory Instruments.

However, SAIDI and SAIFI may be subject to statistical distortion when applied to smaller customer populations. Conversely, accurate measurement of reliability performance for individuals and small groups of customers becomes more practical when applied to smaller customer populations such as those in a category 2 SAPS.

The Commission considers that each jurisdiction should develop consistent definitions and monitoring and reporting requirements for category 2 SAPS. Targets or standards could be specified using SAIDI and SAIFI, which would take into consideration the value of customer reliability for the customer group (if available). Additionally, a GSL scheme providing payments to customers within the SAPS if specified reliability thresholds are exceeded could be applied.

The monitoring and compliance regime should include a requirement for the provider to develop and implement an improvement plan where reliability standards are exceeded, along with some form of financial sanction if rectification of the poor reliability does not occur in a reasonable timeframe (this could be instead of, or in addition to, a GSL scheme).

The Commission will further consider reliability of category 2 third-party SAPS in the next stage of the review, providing some recommendations on reliability measures. Jurisdictions will be best placed to determine the final reliability measures and monitoring and compliance regimes for category 2 SAPS.

8.3.3 Category 3

The Commission does not propose that reliability performance for category 3 SAPS should be subject to a jurisdictional monitoring and compliance scheme. Reliability performance would be addressed in the contract between the SAPS provider and individual customers, with the customer likely able to negotiate reliability with the provider when the contract for supply is being entered into.

The development of standard metrics for supply interruption duration and frequency, potentially leveraged from the standards developed for category 2 SAPS, may be a useful benchmark for customers being supplied via a category 3 SAPS. These benchmarks could assist customers to develop their reliability expectations against price models offered by the SAPS provider, and could act as a starting point for negotiations.

The ACL would apply, with the ACL's consumer guarantees likely to be relevant in cases of very poor reliability or where reliability is not consistent with claims made by the SAPS service provider at the time of sale of the SAPS equipment.

8.4 Commission's draft position

The Commission considers that for third-party SAPS practical application of the overarching principles and assessment framework will result in some variations in the reliability standards or targets that apply under each category of third-party SAPS.

The Commission's initial views on the appropriate reliability standards, targets or measures under each category of a tiered framework are detailed in table 8.2 below.

Table 8.1: Proposed reliability measures for third-party SAPS

CATEGORY	APPLICATION OF RELIABILITY MEASURES
Category 1	Same reliability measures as DNSPs, including jurisdictional reliability standards (SAIDI and SAIFI), GSL schemes and STIPS. Some variations to the STPIS incentive scheme and jurisdictional standards may be required as feeder categories may not be appropriate. Reliability performance reporting to jurisdictional regulator on jurisdictional reliability standards and GSL payments, and to the AER on STPIS target performance.
Category 2	Reliability targets in jurisdictional licence conditions (which may not be as prescriptive as SAIDI and SAIFI). Reporting on performance against reliability targets and any rectification requirements for poor reliability also included in jurisdictional licence conditions.
Category 3	Potential for customers to negotiate reliability targets with third-party SAPS provider, but no regulated reliability obligations.

Source: AEMC

The Commission is interested in stakeholders' feedback on the proposed reliability measures under each category for third-party SAPS.

9 NETWORK OPERATIONS AND SYSTEM SECURITY

This chapter sets out the Commission's analysis and draft recommendations in relation to the network operation of a third-party stand-alone power system, including system security, technical standards and metering and settlement.

Technical standards and the management of system security are key in keeping a power system operating within technical limits, such as those relating to voltage and frequency, and providing it with the ability to withstand faults. To maintain frequency, the power system has to instantaneously balance supply against demand. Although a major operational task in the NEM, much day to day operation of stand-alone systems is likely to be automated. Nevertheless, such operational functions are vital to ensuring that customers receive a satisfactory supply of electricity.

In the NEM, another activity performed by the network operator, AEMO, is the settlement of the market. To do so, AEMO draws on metering data from electricity generation and consumption within the power system in order to allocate payments to and from the appropriate parties. The accuracy and timeliness of these financial flows are crucial to support the ongoing operation of the market.

The issues and potential policy options discussed in this chapter apply to both individual power systems and microgrids unless otherwise stated.

9.1 Background

9.1.1 System security and technical standards

System security

In the NEM the power system is in a secure operating state if it is operating within technical limits, and if it will return to a stable state where it is operating within technical limits following the occurrence of any credible contingency (or specific non-credible contingencies as declared by the Reliability Panel). Technical limits include allowed frequency and voltage limits and equipment current and fault ratings.[225]

The system security requirements in the NER apply to the national grid and it is likely that appropriate security settings for microgrids could be quite different to those developed for the national grid. For individual power systems, the concept of system security appears to be less relevant.

Technical standards

Technical standards are an important tool in managing system security and operating the grid within technical limits. They are also important tools for managing reliability and safety obligations. The safety and reliability aspects are discussed separately in chapters 8 and 10 respectively.

225 Clauses 4.2.4, 4.2.3(f) and 4.2.2 of the NER.

Registered generators in the NEM must meet a range of technical performance standards, in accordance with limits specified in chapter 5 of the NER. Generator technical performance standards are negotiated by the generator with the network it is connecting to, with AEMO providing advice on some matters.

Technical standards also assist in managing power quality problems, which are generally localised to a small part of the power system. Network power quality obligations are imposed on DNSPs through jurisdictional instruments and network businesses are responsible for managing power quality including voltage, harmonics and flicker within allowed technical limits. In order to manage a customer's impact on network power quality, as well as reliability and safety, a DNSP can impose conditions on entities and individuals connecting to its network through connection agreements. DNSPs also rely to a significant extent on Service and Installation Rules (or similar) in each jurisdiction.[226] Service and Installation Rules are primarily designed to define and co-ordinate the relationship between a licensed distributor and its grid connected customers, including the respective parties' obligations in maintaining power quality. These rules provide reasonable technical requirements that allow the customer's installation to work safely and in harmony with the DNSP networks, as well as helping to define the limits of the service that the DNSP is providing to the customer.[227]

DNSPs can also draw from a number of technical design and performance standards when supplying grid-connected customers and designing their networks. For example, there are standards, codes and guidelines covering overhead line clearances and designs, underground cable installations, substation electrical and civil aspects, fire segregation and customer installations. In addition, there are quality of supply standards relating to voltage range, frequency, and disturbances.[228] For stand-alone power systems, there is an Australian Standard (AS 4509) which sets out safety and installation requirements for SAPS supplying a single load, single residence or building or a group of residences or buildings.[229]

While a broad suite of Australian Standards are currently in place,[230] Standards Australia has identified a need for further work in the areas of microgrids, distributed energy coordination and electrical system operations.[231] In particular, Standards Australia identified a need for further engagement with and contribution to the International Electrotechnical Commission (IEC) on non conventional distribution networks and microgrids.[232] Australia is now a

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226 State of New South Wales through Division of Energy, Water and Portfolio Strategy, NSW Department of Planning & Environment, *Service and Installation Rules of New South Wales - The electricity industry standard of best practice for customer connection services and installations*, November 2018; Citipower, Jemena, Powercor, Ausnet, United Energy, *Victorian Electricity Distributors Service & Installation Rules 2014;* Energex and Ergon Energy, *Queensland Electricity Connection Manual - Service and Installation Rules,* effective from 24 August 2018; SA Power Networks, *Service and Installation Rules - Manual No. 32,* August 2017; TasNetworks *Service and Installation Rules*, September 2018; Government of Western Australia, Department of Commerce, Energy Safety, *WA Electrical Requirements,* January 2014; NT Power and Water Corporation, *Network Policy NP 003 Installation Rules,* 20 July 2009*;* Evoenergy, *Service and Installation Rules,* November 2018.

227 For example, the Victorian Service and Installation Rules cover topics such as supply application, connection and disconnection, supply types, use and protection, connection to the low voltage network, low voltage metering, and high voltage electrical installations.

228 In NSW these are called up in the *Electricity Supply Act 1995 (NSW)*, the *Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)* and licence conditions provide technical regulations and design and performance standards.

229 AS/NZS 4509.1.209(R2017); AS/NZS 4059.2:2010 (R2017).

230 Standards Australia, GB 3000-2017, Quick reference guide - wiring rules 2007 and electrical safety standards, provides a more comprehensive list of safety related standards. Other standards, such as some of those in the IEC and AS/NZS 61000 series are also relevant.

231 Standards Australia, Roadmap for standards and the future of distributed electricity, Final Report, May 2017, p. 12.

participating member of the IEC subcommittee responsible for developing standards covering technical requirements for microgrids.[233]

Energy Networks Australia also publishes a number of network asset management and design guidelines on its website,[234] as well as grid connection guidelines covering the installation of distributed energy resources.[235]

9.1.2 System operator

A system operator is responsible for dispatching controlled generation and maintaining the network in a safe and stable operating state. In the NEM the system operator, AEMO, is also responsible for maintaining the system in a secure operating state, so that system collapse does not occur.[236] As noted in section 9.1.1, this explicit requirement may be less relevant in a microgrid, where the extent of a collapse due to a generator failure or other supply constraint is much more limited, and where restoration times following a system collapse are far lower, potentially less than or commensurate with restoration times following faults on a network element. In these circumstances system security may be considered more generally with reliability. This is discussed further in chapter 8.

9.1.3 Metering and settlement

AEMO also settles wholesale sales and purchases in the NEM.

Accurate data is important in settling the NEM and in billing and paying NEM participants and retail customers. AEMO currently carries out wholesale market settlement in the NEM.

Settlement is based on data from meters. Under the NER, NEM retailers are responsible for arranging metering services for small customers. Retailers must appoint a metering coordinator for each of their small customers' connection points and obtain a NMI for each meter. In general, the retailer provides instructions to the metering coordinator for any metering work needed by the customer.

NEM participants are required to adhere to metering procedures, guidelines and processes prescribed by AEMO,[237] and meters themselves must comply with technical requirements set out in metrology procedures, including obligations to comply with the *National Measurement Act* 1960 (Cth) and a number of Australian metering standards.[238] Metrology procedures also deal with reading, validation, estimation and substitution.[239]

Chapter 7 of the NER sets out arrangements for metering matters including:

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232 Standards Australia, Roadmap for standards and the future of distributed electricity, Final Report, May 2017, p. 14.

233 IEC subcommittee 8B. Microgrid technical requirements are set out in the IEC Technical Standard 62898, which is broken up in to a series of parts. Two parts, "Guidelines for microgrid projects planning and specification" and "Guidelines for operations" have been published to date. Part 3 "Technical requirements" is currently under development. www.iec.ch, accessed 24 May 2019.

234 www.energynetworks.com.au/industry-guidelines, accessed 24 May 2019.

235 https://www.energynetworks.com.au/national-grid-connection-guidelines, accessed 24 May 2019.

236 NEL, section 49(1)(e).

237 https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Retail-and-metering/Metering-procedures-guidelines-and-processes, accessed 24 May 2019.

238 AEMO, *Metrology procedure: Part A, National electricity market*, Version 6.04, 1 December 2017.

239 *Metrology procedure: Part B, Metering data validation, substitution and estimation*, Version 6.0, 1 December 2017.

- Provisions on installation, accuracy and maintenance of a metering installation
- Collection and provision of metering data
- Minimum requirements for new meters
- Security of and rights of access to metering data.

For SAPS, some form of metering and settlement will be important wherever there is a sale of energy (in the narrow sense), irrespective of system size, but the full NEM metering requirements may not be appropriate for some SAPS.[240]

9.1.4 Current jurisdictional frameworks for third-party SAPS

When considering the most appropriate network operating obligations for third-party SAPS it is useful to review the jurisdictional obligations imposed on licensees or operators of current microgrids.

In South Australia, ESCOSA imposes licence conditions relating to metering, system security and technical standards on the operators of SAPS. Conditions include:[241]

- quality of supply specifications for voltage, voltage fluctuations and harmonic voltage distortions
- a requirement to have a safety, reliability, maintenance and technical plan covering areas such as:
  - monitoring compliance with imposed safety and technical requirements
  - monitoring electricity infrastructure to identify any safety risk or risk of failing or malfunctioning
  - information about the facilities that customers must provide for connection to the network and procedures that customers must follow in order to prevent damage to or interference with the network
- if the licensee or its contractor undertakes metering, the development of a metering plan in respect of installation and ownership of meters, minimum accuracy standards, collection of metering data, maintenance and testing of meters.

9.2 Stakeholder submissions

9.2.1 System security and technical standards

The consultation paper included a combined question on system security and technical standards. Responses were as follows.

ENA and Endeavour Energy thought that all technical and system security standards should be applied to third party SAPS, apart from IPS. In ENA's view microgrid customers should

240 For third-party IPS (and potentially small microgrids) some other arrangements could be used that do not constitute a sale of energy, for instance supplying non-metered electricity bundled with other services. An example for microgrids is that in some remote "company towns" electricity may be supplied with housing, and paid for as a component of rent. These arrangements would still constitute a sale of energy in the broader sense outlined in chapter 3.

241 ESCOSA, Cowell Electric Supply Pty Ltd Electricity Retail, Distribution and Generation Licence, 26 September 2018, pp. 6-8.

expect the same customer experience as if they were connected to the grid. IPS would be subject to a dedicated and bespoke contract.[242]

TasNetworks contended that minimum standards should be similar amongst all SAPS varieties to ensure adequate customer protections and confidence in SAPS provision.[243]

Citipower, Powercor and United Energy submitted that, generally, a risk based assessment could be used to determine the level of regulation required for a particular third-party SAP and that a microgrid, for instance, should be subject to a similar regulation to a distributor. The key areas of regulation should include reliability and quality.[244]

Western Power suggested that, in order to have the backing of an operator of last resort, licence conditions should include a requirement for the SAPS third party provider to have a set of minimum technical (and financial) standards to be met at the outset.[245]

Ausgrid noted that technical standards are currently a jurisdictional responsibility and that any minimum base set of national standards should be outlined in jurisdictional instruments.[246]

The National Farmers' Federation and Agriculture Energy Taskforce generally supported minimal regulation for third party SAPS, observing that they provide an opportunity for farmers and those on the fringe of the network to exercise autonomy and create or design a system that is tailored to their needs.[247]

Wattwatchers considered that the AEMC should pay particular attention to issues such as open standards, industry-standard cloud infrastructures, machine-readable formats and suitability for emerging solutions, to provide for portability and interoperability between technologies and aggregator business models.[248]

The CEC noted that it maintains a list of inverters on the Australian market and the standards to which they have demonstrated compliance.[249]

9.2.2 System operator

ENA, TasNetworks and Endeavour Energy considered that a system operator role would be required in microgrids. TasNetworks and Endeavour Energy thought that the local DNSP could potentially undertake this role.[250]

The AER raised potential concerns about situations where a SAPS microgrid provider could control a customer's behind the meter distributed energy resources or smart appliances, which could pose consumer protection issues. These may include:

242 Submissions to the consultation paper: ENA, Attachment A, p. 11; Endeavour Energy, Attachment 1, p. 9.
243 TasNetworks submission to the consultation paper, p. 8.
244 Citipower, Powercor and United Energy submission to the consultation paper, p. 1.
245 Western Power submission to the consultation paper, p. 1.
246 Ausgrid, submission to the consultation paper, p. 6.
247 Submissions to the consultation paper: National Farmers' Federation, p. 3; Agriculture Energy Taskforce, pp. 3-4.
248 Wattwatchers, submission to the consultation paper, p. 6.
249 CEC, submission to the consultation paper, p. 13.
250 Submission to the consultation paper: ENA, Attachment A, p. 11; TasNetworks, p. 8; Endeavour Energy, Attachment 1, p. 9.

- limitations on the types or brands of equipment that the customer can install in order to facilitate integration with the SAPS control system
- restriction on or curtailment of the use of appliances, which may restrict the value that customers can derive from them.[251]

The CEC noted that in a small microgrid many aspects of system operation can be automated and remotely monitored, and that the most important aspects of system operation is likely to be ongoing maintenance to ensure system reliability and safety.[252]

9.2.3 Metering and settlement

The AER considered that:

- for customers to have confidence in their billing data, the standards for metering accuracy that apply to on-grid customers under the NEL should also apply to SAPS
- SAPS customers should have the flexibility to determine their own settlement process
- the AEMC could consider whether there should be a requirement for settlement processes to allow for third party access, so that settlement does not become a barrier to competition.[253]

ENA suggested that, for microgrids, the level of regulation for metering should be part of a risk assessment. The degree of regulation would then depend, in part, on the capability of the SAPS provider.[254]

Similarly, Endeavour Energy submitted that metering and settlement obligations would largely depend on the SAPS delivery model and arrangements agreed to by customers.[255]

TasNetworks considered that consistency with current NEM processes would likely improve overall efficiency, with the exception that mandating communications enabled smart meters in every SAPS, which in TasNetworks opinion would likely provide cost savings in terms of data accuracy and collection.[256]

AEMO recommended mandating minimum requirements for metering within microgrid SAPS. AEMO considered that a requirement to establish and maintain NEM compliant metering installations within microgrid SAPS would:

- provide sufficient flexibility for market mechanisms and elements of the NEM frameworks to be deployed within microgrids SAPS, should they be considered desirable in future
- provide customers connected within microgrid SAPS to have confidence in the veracity of the data and
- minimise barriers to integration if it became beneficial for the microgrid to be, or remain, connected to the interconnected grid.

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251 AER, submission to the consultation paper, p. 7.
252 CEC, submission to the consultation paper, p. 13.
253 AER, submission to the consultation paper, p. 8.
254 ENA, submission to the consultation paper, Attachment A, pp. 11-12.
255 Endeavour Energy, submission to the consultation paper, Attachment 1, p. 10.
256 TasNetworks, submission to the consultation paper, p. 8.

The CEC also noted that metering and settlement requirements are not necessary for an IPS but that, whenever a customer is paying on the basis of metering, it is important for the metering to be accurate and to an appropriate standard.[257]

Wattwatchers considered that metering and control technologies should not be bound by the current NEM requirements for billing meters, including pattern approval requirements, as these are outdated. Wattwatchers suggested that a number of core requirements, including accuracy, be retained, and that five minute measurements be reported in real time through the cloud, with data retention required for a specified period.[258]

9.2.4 National consistency

ENA considered that a national system is preferable as it provides consistency across jurisdictions, but that the regulatory framework for metering should be under a combination of national and jurisdictional frameworks.[259]

TasNetworks considered that consistency with current NEM processes would ensure optimal customer protections and impose least regulatory costs in terms of market development.[260]

Endeavour Energy also submitted that the efficiencies and regulatory consistencies delivered through a national framework make it more desirable.[261]

The CEC thought that if pricing is regulated at the jurisdictional level then it would also make sense to regulate metering and settlement at the jurisdictional level. The CEC also noted that the Australian Standard governing inverter capabilities only covers grid connected inverters, not IPSs and that, in the absence of incentives under the SRES there would be no means of enforcing the use of CEC approved products. The CEC strongly recommended that in future these standards should be captured in safety regulations.[262]

The EWOSA supported the development and application of a nationally consistent regulatory framework for third-party SAPS, that would apply across the NEM.[263]

9.3 Commission's analysis

9.3.1 System security and technical standards

System security

As noted in section 9.1.1, system security is less of an issue for microgrids than in the NEM, as the scale of an interruption caused by a system shutdown is contained and system restart can be quite rapid in a microgrid. It may therefore not be necessary to maintain a SAPS in a secure operating state. System security is unlikely to be relevant for an IPS. Customer

257 CEC, submission to the consultation paper, p. 13.
258 Wattwatchers submission to the consultation paper, p. 5.
259 ENA, submission to the consultation paper, Attachment A, p. 12.
260 TasNetworks, submission to the consultation paper, p. 8.
261 Endeavour Energy, submission to the consultation paper, Attachment 1, p. 10.
262 CEC, submission to the consultation paper, p. 14.
263 EWOSA, submission to the consultation paper, p.1.

outcomes can instead be defined in terms of the reliability and quality of supply outputs, inclusive of system security obligations.[264]

Third-party SAPS will have a suite of options available to deliver required levels of reliability. These could include generation that is centralised or generation that is distributed throughout a microgrid, alternative paths for switching around network faults, a mix of automatic and manual fault isolation or high speed battery or load response. Prescribing the method for delivering reliability and quality of supply outcomes, particularly for a vertically integrated microgrid, may restrict the ability to adopt the most cost effective solutions. Historical NSW reliability standards that prescribed the mix of assets to be built rather than the reliability outcomes to be achieved have been cited as a major contributor to higher than necessary network investment.[265]

The Commission is therefore not proposing separate system security obligations for vertically integrated third-party SAPS, typically category 2 and 3. Rather, security obligations will be dealt with through overarching reliability obligations. These are discussed in chapter 8.

The Commission recognises that some third-party SAPS, and in particular large category 1 SAPS, may choose to or be required to provide access to market generators, allowing competition benefits to flow through to consumers. In those cases, system security requirements, which may be a simplified version of the NER requirements, may need to be made explicit and published in order to provide transparency, so that market generators can determine what services will be called for, and to enable the market operator to dispatch generation and ancillary services that it requires in accordance with system security needs. The system operator role is discussed later in section 9.3.2.

Technical standards

The role of standards in delivering safe outcomes for workers, consumers and the public is discussed separately in chapter 10. This section deals with technical standards that are related to quality of supply and the interface between customers and the third-party SAPS.

Many standards relate to civil, mechanical and electrical design and operation. While customers will be impacted by reliability and safety outcomes, which are discussed in chapters 8 and 10 respectively, and will be impacted by quality of supply, discussed below, the only design and operating standards that will be of interest to microgrid supplied consumers would relate to their interface (or connection) with the third-party SAPS. The Commission agrees with those submissions that suggested that the customer experience was important. What the customer receives matters more than how it is provided.

Interface co-ordination issues would also directly impact the design of the customer's installation, and potentially constrain the activities that the SAPS customer could undertake.

In the Commission's view it is not necessary to explicitly require adherence to standards that do not relate to customer outcomes or to customer rights and obligations. Standards would of course inform the third-party SAPS operator in delivering outcomes and also assist the

264 System security obligations would be analogous to the NER definition of *satisfactory operating state.* NER cl 4.2.2.

265 Grattan Institute, *Down to the wire: A sustainable electricity network in Australia*, March 2018, pp. 17-18

third-party SAPS operator in managing its general obligations and potential liabilities, but design and operating standards that are unrelated to the service they are receiving would not be relevant to the SAPS customers.

Regulators and consumers will however want to be confident that the outputs required or promised by a third-party SAPS developer, particularly for a large SAPS, will be delivered. Similarly, the third-party SAPS developer itself will need to determine how to deliver the required outputs.

In order to provide confidence in the capabilities of third-party microgrids the Commission supports ESCOSA's approach, which among other things requires a SAPS operator to develop an asset management plan.[266] Having the microgrid provider produce an asset management plan would allow the plan, potentially developed against a set of specified criteria, to be proportionate to the size and complexity of the third-party SAPS.

In the case of very simple SAPS, the asset management plan may be provided by the installer and may largely involve adopting original equipment manufacturer's maintenance manuals and an assurance from the supplier that the equipment complies with relevant standards. For larger microgrids recognised standards could be called up as appropriate, and the expected performance of the SAPS given its design and maintenance regime could be described.

For category 1 SAPS it may be appropriate to require a fully certified asset management framework in compliance with the Australian asset management standards, as is required for some DNSPs.[267]

For IPS, the customer's experience will be determined by the characteristics of the IPS installation itself. Therefore, appropriate technical specifications covering the design and installation of the third-party SAPS should be required.[268] For example, the IPS should not be capable of imposing unacceptable voltages or waveforms on the customer's installation, even where it is purchased and owned by the customer. In particular, the Commission notes the Clean Energy Council's concerns regarding the lack of any obligation for IPSs to comply with the Australian Standard governing inverter capabilities, which should similarly form part of the required technical specifications.

Quality of supply

The electricity that customers are supplied with needs to be usable and fit for purpose. This means that the voltage that is supplied must remain within an allowed range, and that the waveform is of an appropriate quality (for example, limited harmonics, direct current components and flicker). Consumer equipment such as appliances, wiring and accessories

266 Strictly a "Safety, Reliability, Maintenance and Technical Management Plan (SRMTMP)", South Australian *Electricity (General) Regulations 2012,* Part 10, division 5. Essential Services Commission of South Australia, *Off-Grid Regulatory Performance Report*, 2017-18, p. 1.

267 AS ISO 55000 series.

268 In particular, the AS/NZS 4509 series.

are designed to operate within a particular voltage range and supply quality, which DNSP network operators are required to deliver.[269]

The quality of supply for one customer can also be affected by other customer loads, which can impose voltage fluctuations or harmonics on the network.

For some SAPS, it may therefore be necessary to constrain the performance of certain types of customer-installed equipment and also, in some cases, how it is operated.

Interface co-ordination

A number of other matters also need to be co-ordinated between the customer and the microgrid operator, with requirements clearly documented. Examples include:

- The amount of capacity available to the customer, and the mechanism to apply for additional capacity.
- Settings for fuses and circuit breakers, so that they will see faults anywhere on the third-party SAPS and on the customer installation, but also so that a fault on the customer's premises doesn't cause a blackout on the SAPS.
- The point where the third-party SAPS assets (and maintenance obligations) end and the customer's assets start, so that the parties know what they are responsible for.

As with quality of supply obligations, the obligations of both parties need to be clearly defined, irrespective of the size and complexity of any third-party SAPS and the size and complexity of the customer installation, which could range from a street light to a factory. Each party needs to know what constraints there are on the design and operation of their installations, and what their obligations are.

Rail gauge/interoperability

The Commission notes the AER's concerns regarding potential limitations that the microgrid operator may impose on the types or brands of equipment that the customer can install, to facilitate integration with the third-party SAPS control system. While the technology adopted within a microgrid may be a matter solely for a third-party SAPS operator, restrictions on the technology that a consumer can use, or requirements on customers to use a particular proprietary technology, are not.

These inter-operability or "rail gauge" issues are important, as they are for DNSP networks. The Commission agrees with Wattwatchers that ideally SAPS should facilitate, rather than constrain, innovation and competition and that it is therefore important not to lock in proprietary interfaces.

In the Commission's view this is an extension to the interface co-ordination issue discussed above, and could be dealt with in the same manner. That is, standard interface requirements, including communications standards, should be clearly documented and approved. The form of this documentation is discussed further in section 9.3.4 below.

269 AS 60038, AS/NZS 61000.3.100-2011, AS 6100.3.3:2012

9.3.2 System operator

As noted in section 9.1.2, a system operator is responsible for dispatching controlled generation and maintaining the network in a safe and stable operating state, within allowed limits. While many of the system operator functions can be automated or carried out remotely, all SAPS need a person or entity that is responsible for this function, including any automated system.

For IPS or small category 3 third-party SAPS this would be the supplier. For vertically integrated category 2 third-party microgrids this may be the party who owns, or is contracted to manage the SAPS.

For category 1 third-party SAPS, with potentially multiple generation providers including the SAPS operator itself, competitive neutrality issues may arise. In these cases an independent system operator would be desirable. The Commission's draft position is for category 1 SAPS to be elevated to the National Electricity Law, with the ability for AEMO to take on system operation functions where this is appropriate.

The Commission notes the issue raised by the AER and discussed previously about the potential for the system operator to restrict or curtail the use of appliances, which may restrict the value that customers can derive from them.[270] In the Commission's view, any arrangement where the system operator reaches through the meter to control the customer's appliance usage should be explicitly agreed to by the customer, as a variation to standard supply arrangements.

9.3.3 Metering and settlement

Meters

Third-party SAPS arrangements don't necessarily have to involve a sale of electricity (in the narrow sense). An IPS could be owned by the customer. Separate electricity related charges may not be payable for a SAPS supplying a holiday resort, caravan park or group of shops, where average energy costs may be taken into account in setting the site fees. However, wherever there is a sale of electricity then the electricity needs to be metered.

Third-party SAPS operators and consumers need to be confident that meters will be:

- accurate over their measurement range under all climate and environmental conditions
- physically robust
- secure from tampering
- immune to interference and disturbances; and
- easily read.

These issues are all dealt with in the pattern approval and verification processes.[271] Pattern approval and verification would therefore appear to be a sensible minimum requirement for SAPS electricity meters. While the Commission notes the pattern approval concerns raised by

270 AER submission to the consultation paper, p. 7.

271 National Measurement Institute, *NMI M 6-1 - Electricity Meters* and *NITP 14 - National Instrument Test Procedures for Utility Meters*.

Wattwatchers, the issues raised appear to apply equally to NEM connected and SAPS meters. If and to the extent that Wattwatchers concerns have merit, then these concerns are best dealt with though the National Measurement Institute's process for amending pattern approval requirements, rather than through the NER itself.

Pattern approved meters are commonly available from a number of manufacturers in a variety of styles.

Utility meters used for trade are subject to the National Measurement Act, unless the meter is prescribed by regulation as an exempt utility meter.[272] The National Measurement Act requires measuring instruments which are used for trade to be pattern approved and verified.[273]

The Commission notes the submissions by AEMO and TasNetworks recommending communications enabled smart meters in every third-party SAPS. The Commission agrees that this is appropriate for large, category 1 SAPS where competition can or may exist and that NEM compliant meters should be installed in these locations. However, in the Commission's view, requiring NEM compliant meters with communications capabilities is likely to be overly onerous for category 2 and 3 third-party SAPS. The Commission notes the submissions by the National Farmers' Federation and the Agriculture Energy Taskforce calling for minimal regulation in order to minimise costs. The Commission believes that the appropriate type of meter will depend on the circumstances. For example, a meter with communications might be of little advantage where the operator is on site, whereas communications might be a significant advantage where the operator is remote.

Settlement process

The NEM settlement procedures described in section 9.1.3 are only relevant in a multipartite arrangement, where it is necessary to settle the wholesale market so that retailers can be billed and generators and networks can be paid. Some of these features may be present in category 1 third-party SAPS but are unlikely to be necessary for smaller vertically integrated SAPS, where simpler settlement and billing procedures can be adopted.

However, there are some minimum requirements for any billing procedure, including clarity about:

- who is responsible for metering, including meter testing, inspection and audit
- who is responsible for maintenance, billing and the billing process
- where there is an obligation to connect, meter installation timeframes
- estimation procedures where meter data is unavailable
- change of land ownership procedures
- reconciliation between energy produced, energy consumed and losses
- transparency and auditability of the billing process. A customer should clearly be able to reconcile their bill to their consumption.

272 *National Measurement Act* 1960 (Cth), sections 4A and 20(1)(f).

273 *National Measurement Act* 1960 (Cth), sections 18GA-18GB.

- procedures relating to confidentiality and privacy of individual customer data
- security and storage of data
- record retention
- audit procedures.

While these minimum requirements should be specified, in the Commission's view detailed metrology procedures do not need to be mandated for category 2 and 3 third-party SAPS, where there are only two sets of parties (customers and the SAPS operator) involved in settlement. Rather, the Commission prefers the lighter handed approach in South Australia, where the provider is obliged to develop a metering plan that is approved by the regulator.[274] Category 2 and 3 third-party SAPS providers should be free to adopt simpler procedures provided they address the minimum requirements above.

Consistent with elevation into the NEL framework, NEM settlement procedures should be applied to category 1 third-party SAPS with multiple generation sources.

9.3.4 National consistency

Technical standards

There is already a high degree of national consistency in technical standards. As discussed in section 9.1.1, many standards are already Australian or international standards, which will automatically lead to a degree of consistency. Third-party SAPS service providers are likely to adopt appropriate design and operating standards in order to manage their duty of care and diligence obligations, and to underpin service delivery. As noted in section 9.3.1, the Commission does not believe that design, construction and operating standards need to be separately mandated for the core components of microgrids. Rather, mandatory requirements should relate to quality of supply and to coordinating the interface between the customer's installation and the microgrid.

Third-party SAPS quality of supply limits should be clearly set and if possible nationally consistent. Given the availability of relevant Australian and international standards,[275] national consistency should not be difficult to achieve. Reliability standards are dealt with separately in chapter 8.

For interface co-ordination, the Commission notes the extensive documentation that is in place in each jurisdiction, in the form of service and installation rules,[276] that set out the obligations of the parties, and in particular the customer's obligations, at the interface between the DNSP network and the customer's installation. The Commission is mindful of the effort that would be required to separately develop high quality service and installation

274 Essential Services Commission of South Australia, *Off-Grid Regulatory Performance Report*, 2017-18, p. 1.

275 AS 60038, AS/NZS 61000.3.100-2011, AS 6100.3.3:2012.

276 NSW Department of Planning & Environment, *Service and Installation Rules of New South Wales - The electricity industry standard of best practice for customer connection services and installations*, November 2018; Citipower, Jemena, Powercor, Ausnet, United Energy, *Victorian Electricity Distributors Service & Installation Rules 2014;* Energex and Ergon Energy, *Queensland Electricity Connection Manual - Service and Installation Rules,* effective from 24 August 2018; SA Power Networks, *Service and Installation Rules - Manual No. 32,* August 2017; TasNetworks *Service and Installation Rules*, September 2018; Government of Western Australia, Department of Commerce, Energy Safety, *WA Electrical Requirements,* January 2014; NT Power and Water Corporation, *Network Policy NP 003 Installation Rules,* 20 July 2009; Evoenergy, *Service and Installation Rules,* November 2018.

rules for each third-party microgrid, and also the substantial time that regulators, as well as customers, their advocates and representatives would need to invest to understand each bespoke interface document to determine whether it was fair and reasonable.

In the Commission's view there would be significant efficiency benefits in jurisdictions developing and publishing a nationally consistent standard set of service and installation rules for third-party SAPS.[277] This would remove the need for each third-party SAPS proponent to develop their own document, and would provide a consistent and fair basis for microgrid connections. Third-party SAPS proponents could if desired be allowed to propose variations, but because these would be variations of a standard document, changes to cost and risk allocation would be transparent.

Metering

Meter specifications are already nationally consistent, through the operation of the National Measurement Act and the NEL.

As discussed previously, the Commission is not proposing a standardised settlement process for category 2 and 3 third-party SAPS. Category 1 third-party SAPS with multiple energy providers would be expected to adopt the NEM procedures, also enabling migration to the NEM in the future.

9.4 Commission's draft position

The Commission considers that for third-party SAPS practical application of the overarching principles and assessment framework will result in some variations in system security, technical standards, system operation and metering and settlement arrangements that apply under each category of third-party SAPS.

The Commission's initial views on the appropriate system security, technical standards, system operation and metering and settlement arrangements under each category of a tiered framework are detailed in table 9.1 below.

Table 9.1: **Proposed network operation and system security requirements**

CATEGORY	SYSTEM SECURITY, TECHNICAL STANDARDS, SYSTEM OPERATION AND METERING AND SETTLEMENT
Category 1	The same jurisdictional system security and technical standards that apply to DNSPs. There is the ability for AEMO to become the independent system operator, for example where registered generation is connected to the system. For metering and settlement, existing NEM arrangements would apply, including AEMO settlement and metrology procedures and NEM

277 Jurisdictions have previously collaborated in the development of nationally consistent electrical requirements. A number of recent projects are cited on the Electrical Regulatory Authorities Council website — see erac.gov.au, accessed 3 June 2019.

CATEGORY	SYSTEM SECURITY, TECHNICAL STANDARDS, SYSTEM OPERATION AND METERING AND SETTLEMENT
	compliant metering.
Category 2	Jurisdictional system security and technical standards should include: • adoption of the relevant Australian Standards covering quality of supply including voltage, harmonic and flicker limits • development of standard, nationally consistent service and installation rules, and • a requirement for SAPS operators to prepare and submit for approval asset management (technical and maintenance) plans. For metering and settlement, jurisdictional licence conditions should require SAPS operators to use pattern approved meters and develop a metering plan for approval by the jurisdictional regulator.
Category 3	Jurisdictional system security and technical standards for microgrids should include: • adoption of the relevant Australian Standards covering quality of supply including voltage, harmonic and flicker limits • development of standard, nationally consistent service and installation rules, and • a requirement for SAPS operators to prepare and submit for approval asset management (technical and maintenance) plans For IPS, jurisdictions should require compliance with relevant Australian Standards, in particular the AS/NZS 4509 series, where this is not already the case. For metering and settlement, jurisdictional licence conditions should require SAPS operators to use pattern approved meters.

Source: AEMC

The Commission is interested in stakeholders feedback on the proposed system security, technical standards, system operation and metering and settlement arrangements under each category for third-party SAPS.

10 SAFETY

A framework for safety of electricity is of critical importance to help prevent death and injury to the public and people working with electricity, and to protect property and the environment from being damaged or destroyed by electricity.

Under the AEMA, distributor safety and technical authorisations, including licensing and authorisation schemes that require demonstration of technical capability, are jurisdictional functions.[278]

Safety obligations are generally placed on DNSPs via jurisdictional safety Acts, Regulations, guidelines and licence conditions. In most jurisdictions DNSPs and other operators of large electricity networks, such as railways, have more onerous safety obligations than other entities or individuals interacting with electricity. This is due in part to the greater public safety risks of electricity networks where members of the public are interacting with or in close physical proximity to the electricity networks on a continuous basis.

Many of the jurisdictions have different obligations either within the same regulatory instruments, or in separate regulatory instruments, for 'electrical installations'. Electrical installations are private electrical facilities which can be either domestic or commercial, and are often connected directly to a DNSP's network. Safety frameworks for electrical installations tend to focus on the safe design and installation of electrical facilities by licensed electricians, including testing that must be carried out prior to energisation of the installation. The ongoing management of the safety of the electrical installation does not appear to be the primary focus in many jurisdictions.

In addition to energy-specific safety obligations, businesses have some product safety obligations imposed under the ACL. These are discussed further below.

10.1 Background

10.1.1 Safety arrangements under the ACL

Under the ACL, consumer products must be safe and meet consumer guarantees before they can be sold. However, given the complexity of a SAPS and its relationship with consumers of electrical energy, the ACL may not be the best or only vehicle for the development of instruments that provide an assurance of safety.

A separate and additional regulatory framework exists for the safe operation of DNSP networks and the Commission considers that this model should be used as a starting point for consideration of the safety performance of SAPS.

This is informed by the view that, with the exception of IPS, SAPS are present in public space and the safety interactions with workers and the public are similar to any DNSP network. For example, the public safety risk posed by an individual overhead line in a public road is similar regardless of whether it is operated by a DNSP or a third-party SAPS provider, regardless of

278 Australian Energy Market Agreement, Annexure 2.

scale. The safety of the line is determined by its design and construction standards, and how it is maintained and operated over its life.

10.1.2 Jurisdictional electricity safety arrangements

The safety of electricity networks and electrical installations is governed by jurisdictional instruments. Some jurisdictions have different safety legislation for DNSPs than for other parties working on electrical infrastructure or 'electrical installations', while other jurisdictions have one set of legislative instruments applying to electricity safety in general.

DNSPs, when designing their grid connected networks, are generally required to comply with a range of detailed safety obligations, taking all reasonable steps to make the network safe. Safety obligations vary between jurisdictions, and some jurisdictions impose obligations on DNSPs to implement a safety management system that expressly considers safety of the public, workers, property, the environment, and safety risks arising from a loss of supply. Jurisdictional regulators generally have audit and enforcement powers, and can apply penalties for failure to comply with these requirements. The box below gives the example of the electrical safety regime in Queensland.

BOX 9: ELECTRICAL SAFETY FRAMEWORKS IN QUEENSLAND

The legislative framework for electrical safety in Queensland is provided by the *Electrical Safety Act* 2002 (Qld), and the Electrical Safety Regulation 2013 (Qld). There are different obligations under the framework depending on whether the person is an electrical entity (such as a DNSP or railway operator) or whether the work is being carried out on an electrical installation.

Amongst other things, the Electrical Safety Act establishes standards for industry and the public to abide by, imposes obligations on individuals who may affect the electrical safety of others, establishes safety management systems for DNSPs, provides licensing and penalty systems and consumer protections against improperly performed or completed electrical work.

The Electrical Safety Regulation complements the Act by imposing further obligations in relation to areas such as:

- electrical work
- licensing
- works of an electrical entity (such as a DNSP)
- safety management systems
- working near overhead and underground electric lines
- electricity supply
- electrical installations
- incident notification and reporting.

Source: *Electrical Safety Act* 2001 (Qld); Electrical Safety Regulation 2013 (Qld).

10.1.3 Current jurisdictional frameworks for third-party SAPS

When considering the most appropriate safety standards for third-party SAPS it is useful to review the safety obligations currently imposed under jurisdictional frameworks on licensees or operators of existing microgrids, for example the licence conditions imposed on licensees supplying electricity via a SAPS in South Australia, and the obligations imposed on the operator of the Bass Strait Islands power system in Tasmania.

In South Australia, ESCOSA imposes licence conditions relating to safety on the operators of SAPS. A typical condition placed on SAPS licensees is that the licensee must prepare a safety, reliability, maintenance and technical plan. This plan covers the safe design, installation, commissioning, operation, maintenance and decommissioning of electricity infrastructure owned or operated by the licensee. The plan is required to cover:[279]

- maintaining supply quality
- safety measures and training programs to reduce the risk of death or injury, or damage to property
- competence and proper training of employees performing work in respect of the electricity infrastructure
- provision of a safe system of work for employees and contractors
- confirming that contractors performing work have processes and procedures to ensure the people carrying out the work are competent and properly trained
- a process for dealing with, reporting and investigating accidents and unsafe situations
- monitoring compliance with imposed safety and technical requirements
- monitoring electricity infrastructure to identify any safety risk or risk of failing or malfunctioning
- monitoring compliance with requirements for vegetation clearance
- communication of information to the public for the purpose of reducing the risk of death or injury, or damage to property
- information about the facilities that customers must provide for connection to the network and procedures that customers must follow in order to prevent damage to or interference with the network.

In Tasmania, the Bass Strait Island power system and other microgrids are subject to provisions in the *Electricity Industry Safety and Administration Act* 1997 (Tas), covering the inspection, safety and rectification of electrical infrastructure. If safety issues are identified after an inspection, the entity may be directed to rectify the issue or discontinue operation.[280] The Tasmanian Electricity Code additionally requires the Bass Strait Islands power system operator to ensure that the power system operates safely, and imposes specific rules regarding system operations and controls.[281]

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279 ESCOSA, Cowell Electric Supply Pty Ltd Electricity Retail, Distribution and Generation Licence, 26 September 2018, section 23; Electricity (General) Regulations 2012 (SA).

280 *Electricity Industry Safety and Administration Act* 1997 (Tas), Part 5.

281 Chapter 4A, Tasmanian Electricity Code.

10.1.4 Detailed safety considerations

Safety can be considered in three dimensions, each of which is discussed further below:

- Customer installation safety
- SAPS public safety
- SAPS worker safety.

Customer installation safety

The safety aspects of design and construction of customer installations within SAPS are relatively well-covered by jurisdictional licensing regimes which call up Australian Standard 3000 Wiring Rules (AS 3000). This regime focuses on the initial design and construction aspects of an installation immediately prior to the network connection process and contains little detail about how the installation is to be maintained in a safe condition over its operating life. Electricians are subject to jurisdictional licensing and audits, which depending on jurisdiction, may be carried out by the Electrical Safety Regulator or under powers delegated to a DNSP.

Subsequent work within an installation is required to be carried out in accordance with Australian Standard 4836:2011 Safe working on or near low-voltage electrical installations and equipment, which generally requires apparatus to be de-energised during work processes (see also further information below regarding worker safety). No monitoring regime generally exists to confirm that these processes are being followed, although accident investigation processes exist in all jurisdictions.

A SAPS — particularly an IPS — may also contain generation and energy storage facilities located within a customer's premises. To date, it appears that these have usually been covered under an installer's licensing regime administered by the Clean Energy Council using Australian Standard 4509:2009 Stand-alone Power Systems (AS 4509), in addition to AS 3000. To be eligible for a certificate under the Small-scale Renewable Energy Scheme (SRES), an agent must use a licensed installer. Agents and installers work with customers to ensure their system is installed correctly.[282] Again, this regime focuses on initial design and construction with no maintenance requirement. It should be noted that this licensing regime is voluntary and may fall away once the obligations of the agent (generally a retailer) under the SRES cease.

AS 3000 and AS 4509 both apply to an IPS and those parts of a SAPS that exist within a customer installation but do not apply to those parts of a SAPS that exist outside a customer installation. The case of centralised generation facilities existing outside customers' premises must also be separately covered (see below).

SAPS Public Safety

The part of a microgrid that is constructed and operated in public space poses the same physical public safety risks as an electricity distribution network operating under a jurisdictional licensing and authorisation scheme, although at a smaller scale. It can

282 For further information, see: http://cleanenergyregulator.gov.au/RET/Scheme-participants-and-industry/Agents-and-installers.

therefore be argued that to achieve a similar safety outcome, these risks should be identified, assessed and controlled with the same rigour as network infrastructure operated by a DNSP.

Risks arise from numerous sources, including public accessibility, inadvertent contact with live electrical conductors leading to electric shock, fire and explosion, vehicle collisions, etc. These risks must be managed at each stage of the electricity infrastructure asset management life cycle: planning, design, construction, commissioning, operation, maintenance and de-commissioning.

For example, overhead electrical lines operated by a DNSP are designed and maintained to deliver a minimum distance between ground level and conductors under a range of foreseeable operating conditions over the entire life of the overhead line. This is intended to manage a number of risks, including the risk of inadvertent contact by the public, which has the potential to seriously injure or kill a person. Clearly, to achieve a similar safety outcome for an overhead line that is part of a SAPS, a similar distance should be specified. Many of these distances are prescribed in Australian\New Zealand Standard 7000:2016 Overhead Line Design (AS 7000).[283]

Australian Standards do not have legal force unless they are called up by a law or regulation. In this case, AS 7000 can be awarded legal status by direct requirement in a jurisdictional regulation or through a requirement for a safety scheme which in turn calls up AS 7000. Alternatively, a jurisdictional regulator may specify in license that a DNSP must have a Safety Management System compliant with AS 5577:2013 Electricity Network Safety Management Systems (AS5577 — see box below). AS 5577 in turn requires that a Network Operator "shall identify the published national or international technical standards used by it in… the design and construction of… network assets" or "document… the reason for the non-use of or non-compliance with the standard".[284]

In this way, the minimum distance between an electrical overhead line and ground becomes a legal requirement for the Network Operator, and these distances apply throughout the network. In order to determine whether these distances have been maintained, regular inspections are usually carried out, which leads to rectification work if the distance limit has been breached. These inspections form part of a maintenance plan for overhead lines in a network as required by AS 5577.[285]

BOX 10: AS 5577-2013 ELECTRICITY NETWORK SAFETY MANAGEMENT SYSTEMS

The objective of AS 5577 is to provide nationally consistent requirements for a network operator's network safety management system.

In January 2012, Commonwealth, State and Territory first ministers signed the

283 Australian Standard 7000:2016 Overhead Line Design S3.10

284 AS 5577:2013 Electricity Network Safety Management Systems S4.3.4 Standards and Codes.

285 AS 5577:2013 Electricity Network Safety Management Systems S 4.4 Implementation.

Intergovernmental Agreement (IGA) on energy supply industry safety to progress the national harmonisation of energy technical and safety regulation across Australia. This IGA endorsed the development of an Australian Standard for Electricity Network Safety Management Systems for electricity transmission and distribution networks to be prescribed in jurisdictional legislation, leading to the development of AS 5577.

AS 5577 requires network operators to conduct formal safety assessments and to develop a network safety management system in order to manage risks to a level that is as low as reasonably practicable. The safety management system covers the management of assets from conception to disposal, including design, inspection and maintenance regimes, and provides a formal basis for network operators to adopt relevant technical standards and industry codes.

Source: AS 5577

Continuing with the example of a "simple" overhead line, numerous other safety issues must be considered. These include the safe positioning of line supports ("poles"), prevention of public climbing access, structural integrity of line components including poles, crossarms and fastenings, correct sizing and type of conductors, vegetation management to manage fire risk and inadvertent contact, addition of new services, presence of other infrastructure (e.g. public lighting, telecommunications cables), the impact of maintenance activities, etc.

SAPS may contain various other components and sub-systems that exist in public space. These include underground cables, telecommunications facilities, earthing systems, protection and control systems, and (depending on scale) substations and centralised generators. A township-sized SAPS, for example, may include a high-voltage reticulation system. The risks associated with each of these components must be identified, assessed and controlled.

In the case of an electrical safety incident, a court, coroner or safety regulator will often identify and refer to applicable existing standards as part of a process to identify whether safety precautions met a test of defensibility.[286] This means that a SAPS operator, in terms of managing its business risk exposure, needs to be familiar with these standards and how they are applied to manage safety risk.

SAPS Worker Safety

Further to the above, a SAPS operator is subject to Work Health and Safety (WHS) legislation. The Commonwealth, states and territories are responsible for implementing, regulating and enforcing WHS laws in their jurisdictions.

Safe Work Australia is the national policy body responsible for the development and evaluation of the model WHS laws, which comprise the model WHS Act, the model WHS Regulations and the model Codes of Practice.

286 For example, Coroners Court NSW, Inquest into the death of AC, 4-5 August 2015, S23.

The model WHS laws have been developed for implementation by all jurisdictions (that is, the Commonwealth, states and territories). However, the model WHS laws do not apply in a jurisdiction unless the jurisdiction has separately taken action to implement the model WHS laws as its own WHS laws.

The model WHS laws have been implemented in all jurisdictions except Victoria and Western Australia; Western Australia is currently consulting on options to implement elements of the model WHS laws.

In the jurisdictions where the model WHS laws have been implemented, each state and territory is expected to make variations to ensure the laws operate effectively in their jurisdictions. In some instances, states and territories have also made more substantial variations.[287]

Under WHS legislation the SAPS meets the definition of a 'workplace'[288] and the SAPS operator meets the definition of a "person conducting a business or undertaking".[289] WHS legislation does not discriminate between small and large undertakings nor whether that undertaking is incorporated unless regulations specifically exclude them from the definition. The responsibilities of an employer apply regardless of whether a worker is working within a customer installation or in that part of a SAPS that exists in public space.

10.2 Stakeholder submissions

10.2.1 Summary of issues

Where stakeholders considered the electrical safety of SAPS to be a major consideration, the general view was that the level of safety should meet minimum standards. In some cases it was recommended that this minimum level of safety should be equivalent to that provided by DNSPs.

ENA and several DNSPs were of the view that safety regulation of SAPS should be similar, if not identical, to that of DNSP-operated networks under a jurisdictional framework including ongoing regulatory surveillance and maintenance planning.

The CEC suggested the development of minimum standards under ACL, and expressed particular concern about the lack of coverage of ongoing maintenance and safety under existing regulatory frameworks.

Other submissions (National Farmers' Federation, Tesla, Agriculture Industries Energy Taskforce) proposed a tiered or proportionate approach to SAPS safety regulation.

10.2.2 Summary of submissions

Ausgrid noted that "maintaining public safety when moving customers from distributor supply to third party supply is of critical importance" and suggested that jurisdictional instruments should be used to outline requirements for SAPS, and suggested that the CEC installer

287 Further information is available at: https://www.safeworkaustralia.gov.au/law-and-regulation
288 *Work Health and Safety Act* 2011 (Cth) (following the model WHS Act), clause 8.
289 *Work Health and Safety Act* 2011 (Cth), clause 5.

accreditation scheme could potentially become a jurisdictional requirement for stand-alone systems.[290]

The AER was in favour of using jurisdictional regulation of safety and harmonisation of state-based regulation.[291]

Citipower Powercor United Energy was in favour of risk-based regulation of SAPS and regulation of SAPS operators to ensure safety.[292]

Endeavour Energy considered that it would be appropriate to apply the same obligations as DNSP-led SAPS and prohibit providers from negotiating lower safety standards. The considered that it may be appropriate to require safety management systems and report safety incidents with a jurisdictional scheme for monitoring and enforcing compliance.[293] TasNetworks considered it appropriate to apply jurisdictional safety obligations, compliance and enforcement regimes currently imposed on DNSPs to third-party SAPS.[294]

The Energy and Water Ombudsman SA noted that the only protections for the customer of a SAPS may reside under the ACL.[295]

ENA recommended that the current jurisdictional safety obligations that apply to DNSPs should apply to third-party SAPS. It noted that microgrids require additional safety standards compared to individual power systems, and recommended that on-site audits be required for all third-party SAPS. ENA considered that a Safety Management System would be a minimum requirement for a SAPS including a preventative maintenance plan, noting that the safety condition of a system changes with age.[296]

The National Farmers' Federation did not see the need for licensing of microgrids, noting that NEL requirements already exist for personnel carrying out electrical work and this is administered by jurisdictions and subject to Australian Standards. The NFF were not opposed to a central register of SAPS, and considered that safety should be covered in other national legislation, not an electricity-specific regulatory framework.[297]

Western Power recommended that third-party SAPS providers be required to adhere to a minimum set of technical standards, including safety.[298]

The Agriculture Industries Energy Taskforce considered that "protections for the safety of the design of the system are conditionally supported, but must be confined only to what is deemed to be necessary protections". It assumed that SAPS must meet existing safety

290 Ausgrid, submission to the consultation paper, pp. 6-7.
291 AER, submission to the consultation paper, p. 8.
292 Citipower Powercor United Energy, submission to the consultation paper, p. 1.
293 Endeavour Energy, submission to the consultation paper, p. 13.
294 TasNetworks, submission to consultation paper, p. 9.
295 EWOSA, submission to the consultation paper, p. 2.
296 ENA, submission to the consultation paper, pp. 21-22.
297 NFF, submission to the consultation paper, p. 4.
298 Western Power, submission to the consultation paper, p. 1.

standards, but was opposed to the imposition of new or higher safety standards, particularly for existing installations.[299]

The CEC considered that there may be a useful role for ACL, as "jurisdictional electrical safety regulations address, product and installation issues, but generally do not address ongoing operation, maintenance and safety". It recommended the same level of safety between DNSP-led SAPS and third-party SAPS, noting some aspects of DNSP safety are irrelevant for small systems. The CEC suggested some merit in developing mandatory standards for ongoing safety and maintenance for SAPS under ACL to close existing regulatory gaps, and noted the absence of product standards for off-grid batteries.[300]

Essential Energy considered that safety is a primary objective regardless of energy service delivery model, and that safety is likely to be the major risk management are in third-party SAPS provision. The recommended that the Commission consider how models would operate under jurisdictional safety regulation in terms of assurance, inspection, standards and penalties, and examine what "best practice" would look like to assist in developing consistency across the NEM.[301]

10.3 Commission's analysis

If all the safety risks arising from the operation of a SAPS in public space are to be considered and controlled to a minimum standard, a structured process must be used. If it is not, the potential for an unacceptable risk remaining unidentified and uncontrolled becomes significant.

Due to complexity, the potential level of risk, and the degree of interaction with the public and workers, a systematic approach must be taken if the operator is to fully demonstrate duty of care resulting in a level of safety equivalent to that of a DNSP.

While the operator of a category 2 or 3 SAPS microgrid may only be carrying out a modest undertaking, many of the safety risks are equivalent to those of category 1 SAPS and networks operated by DNSPs, albeit with a greater degree of geographic localisation. However, the safety risks related to IPS are likely to be less complex than for microgrids.

10.3.1 Safety Management Systems for microgrids

Given the above considerations, the Commission's initial view is that it is likely to be appropriate for all microgrid operators to undertake a structured risk assessment and develop and maintain a safety management system (SMS) to address identified risks. Once risks are identified, SAPS operators will be able to draw on appropriate national, jurisdictional and industry standards and guidelines in order to address those risks.

The features of such an approach would include:

- Information generated should be stored in a retrievable form.

299 Agriculture Industries Energy Taskforce, submission to the consultation paper, p. 4.
300 CEC, submission to the consultation paper, p. 14.
301 Essential Energy, submission to the consultation paper, p. 5.

- Incident reporting should be carried out in a fashion which enables any rectification activities to be carried out effectively.
- Designs should be verified, workers should be appropriately trained and equipped, maintenance activities should be carried out and recorded, asset locations should be recorded, and the public should be made aware of hazards.

Such requirements are no more onerous than those imposed on the operator of any other industrial facility, except that a portion of SAPS infrastructure exists in uncontrolled public space, which greatly increases its exposure.

Safety incidents within customer installations and on DNSP networks must be reported to the relevant safety regulator under the current regulatory regime. A similar reporting regime should therefore apply to SAPS. In some cases, depending on scale, complexity and risk, it may be appropriate to implement an active regulatory surveillance scheme to assess the ongoing compliance of a SAPS with appropriate safety requirements.

The trigger for a consideration of safety risks and controls is not the scale or complexity of a SAPS, it is the presence of potentially hazardous infrastructure in uncontrolled public space and the consequent public risk exposure. While category 3 microgrids may be of a generally much smaller scale than category 1 or 2 systems, this driver would suggest that all three categories of third-party SAPS (excluding IPS) should be treated in a similar fashion in terms of the management of safety risk.

The Commission has considered a number of potential alternatives to establishing safety management systems, but is of the view that these would be likely to have significant drawbacks. Two alternatives are discussed in the box below.

BOX 11: POTENTIAL ALTERNATIVES TO SAFETY MANAGEMENT SYSTEMS

One alternative would be to develop mandatory SAPS standards to ensure a minimum level of safety. However, given the complexity of electricity infrastructure (whether DNSP-led or third party SAPS) and its interaction with the public, these mandatory standards could also be highly onerous in terms of their development and ongoing management, as well as their implementation by SAPS operators. Ultimately, it is highly likely that mandatory standards would resemble an "applicable subset" of the safety requirements that apply to electricity distribution networks. Also, given that SAPS are themselves not identical and risk is subject to a variety of locational factors, mandatory standards would still need to be applied in a way that embraces risk analysis and management, to cater for the particular risks and circumstances of the SAPS network.

Another alternative could be for jurisdictional regulators to make certain established Standards and Codes mandatory for each category of SAPS pending agreement on a classification model. However, available Standards and Codes are not necessarily comprehensive or fully applicable in all circumstances, and so would need to be applied in a way that considers risks and allows decisions to be made where the mandatory Standard is either not applicable, silent or absent. For example, while there are several design standards

that can be beneficially applied to SAPS, there are relatively few documents that provide guidance in terms of maintenance practices for an integrated system consisting of inter-dependent electrical components forming a SAPS or network on any scale.

Source: AEMC

It could be argued that the development and maintenance of an SMS or scheme such as those implemented by DNSPs would be a daunting prospect for the owner and operator of a SAPS. However, the documentation required by an SMS is in large part already required under general safety legislation, and an SMS usefully provides a set of processes to keep information current and in an implementable form.

The model used by ESCOSA in South Australia which imposes license conditions on SAPS is instructive. The coverage of those licence conditions closely resembles the content and intent of an SMS based on AS 5577.

Following this approach, where not already in place, jurisdictions would:

- introduce a regulatory framework where the operator of a microgrid is required to develop and maintain a SAPS SMS similar to AS 5577, in a similar manner to the ESCOSA licence conditions arrangements
- implement an SMS monitoring regime[302]
- provide for the jurisdictional regulator to take appropriate enforcement action where necessary.[303]

This would have several benefits:

1. An SMS is scalable around the size and complexity of a SAPS and the operator needs to identify and control only the risks that arise from its SAPS.
2. The operator is compelled to deeply understand and consider the safety risks arising from its particular SAPS in terms of public safety worker safety, the protection of property and SAPS assets, and safety aspects arising from the protection of the environment or from the loss of electricity supply.
3. The SMS becomes a structured framework which addresses all phases of asset management, allowing for easier maintenance, auditing, and improvement of safety knowledge.
4. The SMS can be used to establish traceability to a very large library of existing applicable Standards and Codes of Practice.
5. There is a considerable amount of knowledge already present in the public domain which would assist a SAPS operator to develop an SMS, including public reports by DNSPs.

302 For example, section 11 of the Electricity Supply (Safety and Network Management Plan) Regulation 2014 (NSW) requires DNSPs to have their safety management system audited by a nominated auditor.

303 For example, section 13 of the Electricity Supply (Safety and Network Management Plan) Regulation 2014 (NSW) provides for IPART to take action to enforce or modify an SMS.

6. An SMS embraces the need for a Maintenance Plan which points towards ongoing monitoring of an asset and its safety performance.
7. Should the regulatory framework include a requirement for independent audits, SMS structured in a relatively uniform way greatly assist an auditor to check whether safety is being managed effectively.
8. A well-managed SMS provides a sound platform for legal defence in the case of liability claims arising from safety incidents.
9. It is relatively practicable to develop guidance information in the form of manuals or codes to assist SAPS operators to prepare an SMS.

The SMS should cover all elements of the relevant SAPS, including those that exist within a customer's premises and in public space.

Jurisdictional regulators should determine whether the compliance verification regime covers, and will continue to cover, all electrical installations, regardless of how they are supplied, with consideration of any existing or emerging gaps.

10.3.2 Individual power systems

The Commission considers that individual power systems should be treated as customer installations for the purpose of AS 3000, and that AS 3000 should therefore continue to be enforced.

The Commission notes that the existing installers' licensing regime administered by the Clean Energy Council that provides for AS 4509 to apply may fall away with the end of the SRES schemes. The implementation of any new licensing scheme for IPS or a requirement for installers to continue the application of AS 4509 would be a matter for jurisdictions.

Similarly, jurisdictions may also wish to consider supplementing their existing regimes with additional requirements for maintenance and inspection to provide for the safety of installations over their operating lives.

10.4 Commission's draft position

The Commission recommends that jurisdictional regulators should review frameworks for registration, licensing and safety performance monitoring of SAPS, including enforcement mechanisms, to confirm the comprehensiveness, appropriateness and proportionality of coverage for third-party SAPS. The safety framework for third-party SAPS is reflective of the differing safety risks they present.

The Commission's initial views on the safety regulation for each category of third-party SAPS is detailed in table 10.1, below.

Table 10.1: Proposed safety arrangements for third-party SAPS

CATEGORY	SAFETY
Category 1	The same jurisdictional safety arrangements as for DNSPs.
Category 2	Operators of microgrids should be required to develop and maintain a Safety Management System under AS 5577. Consideration should be given to the development of a national model regulatory framework for the SMS requirement, for incorporation in jurisdictional statutes. Jurisdictional regulators should consider whether there are particular jurisdictional circumstances that justify making certain Standards and Codes mandatory for third-party SAPS. Mandatory jurisdictional reporting schemes for safety incident reporting should apply.
Category 3	For microgrids, jurisdictional requirements based on category 2, rationalised to account for system risk. For IPS, AS 3000 and AS 4509, as well as any other standards the jurisdictions consider appropriate, should be enforced.

Source: AEMC

The Commission is interested in stakeholders' feedback on the safety framework required under each category of third-party SAPS.

11 LODGING A SUBMISSION

Written submissions on this draft report must be lodged with Commission by 8 August 2019 online via the Commission's website, www.aemc.gov.au, using the "lodge a submission" function and selecting the project reference code EMO0037.

The submission must be on letterhead (if submitted on behalf of an organisation), signed and dated.

Where practicable, submissions should be prepared in accordance with the Commission's guidelines for making written submissions. The Commission publishes all submissions on its website, subject to a claim of confidentiality.

All enquiries on this project should be addressed to Alisa Toomey on (02) 8296 0633 or alisa.toomey@aemc.gov.au.

ABBREVIATIONS

ACCC	Australian Competition and Consumer Commission
ACL	Australian Consumer Law
ACT	Australian Capital Territory
AEC	Australian Energy Council
AEMA	Australian Energy Market Agreement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
BTM	Behind the meter
CCA	Competition and Consumer Act
CEC	Clean Energy Council
COAG	Council of Australian Governments
Commission	See AEMC
Cth	Commonwealth
DER	Distributed energy resources
DMO	Default market offer
DNSP	Distribution network service provider
ECA	Energy Consumers Australia
EMPTP	Energy Market Transformation Project Team
ENA	Energy Networks Australia
ENSP	Embedded network service provider
ESCOSA	Essential Services Commission of South Australia
EWON	Energy and Water Ombudsman NSW
EWOSA	Energy and Water Ombudsman South Australia
GSL	Guaranteed Service Level
GWh	Gigawatt hour
IGA	Intergovernmental Agreement
IPART	Independent Pricing and Regulatory Tribunal
IPS	Individual power system
LHIB	Lord Howe Island Board
MCE	Ministerial Council on Energy
MW	Megawatt
MWh	Megawatt hour
NCC	National Competition Council
NECF	National Energy Customer Framework
NEL	National Electricity Law
NEM	National electricity market

NEO	National electricity objective
NER	National Electricity Rules
NERL	National Energy Retail Law
NERO	National energy retail objective
NERR	National Energy Retail Rules
NFF	National Farmers' Federation
NGL	National Gas Law
NGR	National Gas Rule
NSW	New South Wales
OoLR	Operator of Last Resort
PV	Photovoltaic
PWC	Power Water Corporation
RAES	Remote Area Energy Supply
RoLR	Retailer of Last Resort
RTAW	RTA Weipa Pty Ltd
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SAPS	Stand-alone power system
SMS	Safety Management System
SRES	Small-scale Renewable Energy Scheme
STPIS	Service target performance incentive scheme
WHS	Work health and safety
WICA	Water Industry Competition Act 2006 (NSW)