
Australian Energy Market Commission

CONSULTATION PAPER

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

1 MARCH 2019

REVIEW

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.

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SUMMARY

- 1 The Australian Energy Market Commission (AEMC or Commission) has been 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 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 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.
- 3 The Independent Review into the Future Security of the National Electricity Market (“the Finkel Review”) also recommended in 2017 that the COAG Energy Council should direct the AEMC 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. In light of these recommendations, and building on work previously undertaken by its Energy Market Transformation Project Team (EMTPT), the COAG Energy Council directed the Commission to conduct this review on 23 August 2018.
- 4 Under the terms of reference for the review, the Commission is considering two priority areas:
 - Priority 1 focuses on the development of a national framework for customers that move from grid-connected supply to stand-alone systems provided by local DNSPs.
 - Priority 2 focuses on the development of a national framework to support the supply of electricity from stand-alone power systems by parties other than their local DNSPs (third parties). In practice, this may include community groups, local councils, developers or NEM market participants.
- 5 This consultation paper commences the Commission’s consideration of Priority 2 of the review.

Background

- 6 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, which relate only to single customers.
- 7 Currently, the national energy laws and rules only apply to the interconnected electricity grid on the east coast of Australia that forms the National Electricity Market (NEM). 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. State and territory regimes for SAPS differ quite widely, and regulation is not necessarily comprehensive. Most

jurisdictions have licensing and exemption systems that allow certain conditions to be applied to licensees. Customers of SAPS often have some pricing protections but there is little in the way of reliability standards, for example.

8 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 solutions, might be inhibiting the use of the most efficient technological solutions to supply some customers.

9 Jurisdictions will decide whether and when to transition individual power systems and microgrids that have been established and are currently operating under jurisdictional legislative frameworks to the national framework for SAPS that the Commission has been asked to develop as part of this review.

This paper

10 This consultation paper sets out the background to Priority 2 of the review and its scope. It summarises current regulatory frameworks that apply to third-party SAPS, in addition to some examples of current systems across the different jurisdictions. The paper then sets out the Commission's framework for assessment of issues and recommendations in relation to the regulation of third-party SAPS, the scope of such regulation, whether it should apply to both individual power systems and microgrids, and whether national or jurisdictional arrangements would be more appropriate.

11 The paper discusses potential issues, comparator arrangements and policy considerations across seven dimensions that the Commission has scoped:

- registration and licensing, which covers eligibility criteria, licensing and supply continuity
- third party access and connections, which considers the extent to which users should be able to gain access to component services provided by third-party microgrid infrastructure, and any obligations that should be placed on third-party SAPS providers to offer to supply and/or connect new customers
- economic regulation, including tendering and price regulation
- consumer protections, which covers contractual standards, dispute resolution, billing requirements and vulnerable customer protections
- reliability of supply, and the extent to which regulatory protections in respect of reliability should be applied
- network operations, including system security and technical standards, in addition to metering and settlement
- safety of the design and installation of third-party SAPS and system components.

12 The focus of the paper is on systems supplying small customers (as opposed to large industrial customers), and therefore on providing appropriate protections to these customers. The Commission is interested in stakeholder feedback on whether some or all of the above

aspects of regulation should only apply to small customers.

- 13 The paper also discusses the likely importance of proportionality in developing any regulatory arrangements: it may be more appropriate to apply comprehensive regulatory frameworks to microgrids supplying thousands of customers than it would be to those supplying a handful of customers, for instance. Stakeholder views are sought on the criteria that might be used to determine the level of regulation that should be applied.
- 14 Written submissions from stakeholders commenting on the Commission's assessment framework, issues and policy considerations across the seven policy dimensions for both individual power systems and microgrids, and whether any additional dimensions should be considered are requested by **29 March 2019**.
- 15 Under the terms of reference, the Commission is required to publish a draft report for Priority 2 by 30 June 2019, and a final report by 31 October 2019.

Other related work

- 16 Priority 2 complements work underway on Priority 1 of the review. The Commission commenced consultation on Priority 1 of the review with the publication of an issues paper on 11 September 2018. The Commission published a draft report for Priority 1 on 18 December 2018. Twenty five submissions were received in response to the Priority 1 draft report. The Commission will publish a final report for Priority 1 of the review by 31 May 2019.
- 17 Under Priority 1, the Commission was asked to develop a mechanism that will form part of the national regulatory arrangements to facilitate the transition of customers currently supplied by a DNSP to a stand-alone power system that is provided by a party other than a DNSP, such as a developer or community group. Consequently, the Priority 1 draft report contained recommendations for such a mechanism.
- 18 The issues to be 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 draft report on 31 January 2019.¹ The draft report 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*. A final report will be published by 31 May 2019.
- 19 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 is closely coordinating and considering linked policy and legal issues between the SAPS Priority 1, SAPS Priority 2 and Embedded networks workstreams.

¹ AEMC, *Updating the regulatory frameworks for embedded networks*, Draft report, 31 January 2019.

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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 considers three options involving the transition of grid-connected customers to:

- DNSP-led SAPS under a national SAPS framework (Priority 1)
- third-party SAPS under a jurisdictional framework
- third-party SAPS under a national framework (Priority 2).

This chapter outlines:

- the background to the Review of the regulatory frameworks for stand-alone power systems, and specifically 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 paper
- an overview of other related ongoing work
- the Commission's plan for stakeholder consultation and timeframes.

The following sets these out in detail.

1.1 Background

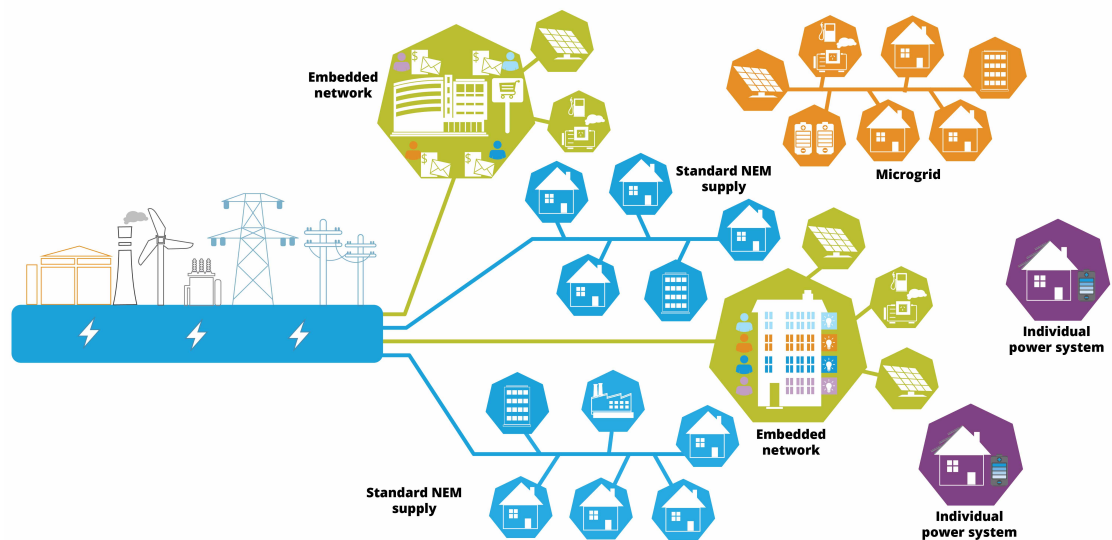
The falling costs of renewable generation and batteries are leading to significant decreases in the costs of providing off-grid electricity supply. In some areas such as those that are bushfire risk prone or heavily vegetated, off-grid supply may now be less costly than standard supply. There are potential 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"
- 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, or 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 (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 is being considered in a concurrent review by the Commission discussed in Section 1.3.

1.1.2

Overview of related reforms

SAPS are currently 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.² 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 to develop a workshop report.³

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 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.⁴

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.

² COAG Energy Council, Stand-alone power systems in the electricity market, Consultation on regulatory implications, 19 August 2016.

³ 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.

⁴ AEMC, Alternatives to grid-supplied network services, Final rule determination, 19 December 2017.

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 paper is a national 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.⁵ 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.

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

⁵ ACCC, Restoring electricity affordability and Australia's competitive advantage, Retail Electricity Pricing Inquiry - Final Report, June 2018, p. 221.add footnote content here

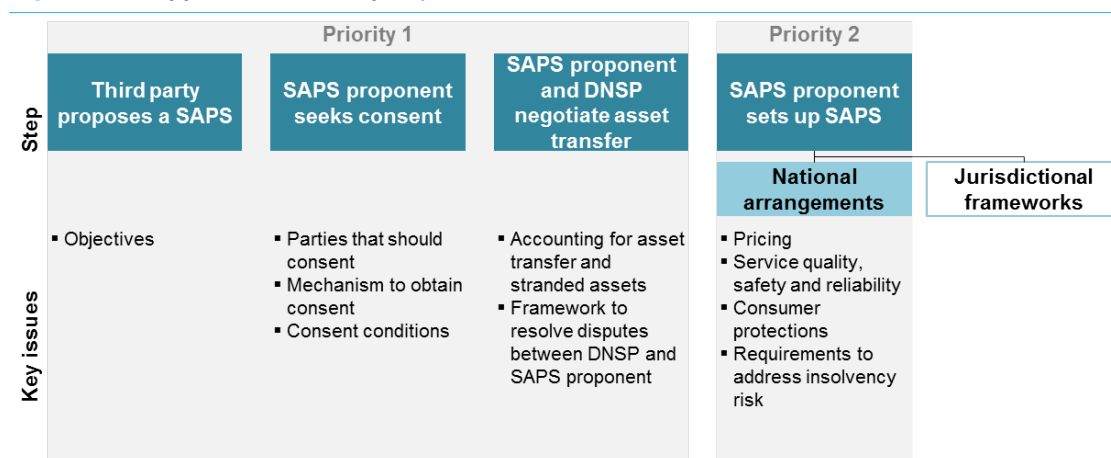
Rules (NER), the National Energy Retail Law (NERL) and National Energy Retail Rules (NERR), and associated regulations and other subordinate instruments including guidelines issued by the Australian Energy Market Operator (AEMO) and AER. Legacy SAPS operating under jurisdictional legislation are not be a focus of the review.

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

- Priority 1 focuses on 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 which will subsequently be regulated under a jurisdictional framework.
- Priority 2 will focus on the development of additional arrangements within the 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.⁶

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 a draft report on 18 December 2018 for Priority 1, to identify the key issues, risks and solutions to enable grid-connected customers to transition to a DNSP-led SAPS.⁷ The Commission will publish a final report by 31 May 2019.

The Commission's draft recommendations in relation to DNSP SAPS covered the planning, economic regulation, decision-making mechanism to trigger transition, treatment of SAPS assets, consumer protections and options for retaining retail competition.

⁶ AEMC, *Review into the regulatory frameworks for stand-alone power systems - Priority 1*, Draft report, 18 December 2018

⁷ AEMC, *Review of the regulatory frameworks for stand-alone power systems - Priority 1*, Draft report, 18 December 2018.

The Commission's draft 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 since the costs of transitioning will only be borne by the transitioned customers that consent to the decision to transition
- the third party should obtain the Explicit Informed Consent of all relevant customers in written form to transition them from the DNSP grid to a third-party microgrid (subject to jurisdictional exemptions), and the AER will have a role in the asset transfer process
- 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.

1.2.3

Priority 2 and structure of the paper

Priority 2 of the Review of the regulatory frameworks for stand-alone power systems aims 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 would cover the ongoing regulation of any systems transferred from local DNSPs to third parties as well as newly established systems.

Before setting out recommendations for a national framework, the Commission seeks to obtain stakeholder views on the following:

- Scope of the regulatory framework - policy drivers in key areas and 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.

The paper sets out at a high level the national and jurisdictional arrangements that currently apply. The paper also highlights the Commission's recommendations in related reviews of DNSP SAPS and embedded networks.

The rest of the paper is structured as follows:

- Chapter 2 summarises national and jurisdictional arrangements that apply to third-party stand-alone power systems, and provides some examples of current systems
- Chapter 3 discusses the Commission's assessment framework in developing recommendations for the regulation of third-party SAPS
- Chapters 4 to 10 set out issues for discussion, current arrangements and regulatory options for the key areas of provision of service, third party access and connections, efficiency regulation, consumer protections, safety of supply, security and reliability.

1.3

Related work

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

Embedded networks review 2018

The Commission self-initiated the *Updating the regulatory frameworks for embedded networks* review on 30 August 2018, and published a draft report on 31 January 2019.⁸ The Commission has developed a draft package of changes to the NEL and NER, NERL and NERR to implement the new regulatory approach for embedded networks. The Commission will publish a final report by 31 May 2019.

The purpose of the *Updating the regulatory frameworks for embedded networks* review is to advise on the detailed amendments to the regulatory framework that are 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 networks into the national framework, and better regulate new and legacy embedded networks.

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

Western Australian Parliamentary Inquiry into Microgrids and Associated Technologies

The Western Australian Government commenced in February 2018 a Parliamentary Inquiry into Microgrids and Associated Technologies in WA. This Inquiry has considered both stand-alone power systems and embedded networks, and is planned to be concluded on 28 March 2019.

The Commission has put in a submission to this inquiry and participated in a hearing. The Commission has continued to follow this Inquiry closely as it progresses both Priority 1 and Priority 2 of this review.

Behind the Meter Distributed Energy Resources Provider Code

In 2017, a Behind the Meter (BTM) 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 BTM Working Group consists of Australian Energy Council, Clean Energy Council, Consumer Action Law Centre, Energy Consumers Australia, Energy Networks Australia, Public Interest

⁸ AEMC, *Updating the regulatory frameworks for embedded networks*, Draft report, 31 January 2019.

Advocacy Centre, Renew and Smart Energy Council. The BTM Working Group published a draft code for consultation in November 2018.⁹

The Commission is following the development of the draft code as it may provide additional protections to customers with IPS, if the SAPS provider is a signatory to the Code.

1.4 Stakeholder consultation and timeframes

Under this review, the COAG Energy Council has requested the Commission to 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 and consumer groups. The Commission intends to utilise stakeholder meetings and roundtables to facilitate consultation at appropriate times as the review progresses.

The Commission plans to publish a draft report for Priority 2 in June 2019, and a final report in October. The Commission will publish a final report for Priority 1 in May 2019.

The following table summarises the project timelines.

Table 1.1: Key deliverables and timeframes

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

⁹ Consultation draft, Behind the Meter Distributed Energy Resources Provider Code, November 2018.

2 CONTEXT AND APPROACH

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

As discussed in the draft 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.¹⁰

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

- community group (customers of a microgrid)
- local council
- developer
- embedded network operator
- an electricity market participant that is not the LNSP - for example a retailer or a ring-fenced affiliate of the LNSP 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 section provides an overview of the regulatory treatment of these systems in current national and jurisdictional frameworks. Chapters 4 to 10 then provide further detail on the application of these current frameworks to the seven areas of service provision, third-party access, economic regulation, consumer protections, safety, reliability and security.

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, and discusses some concepts in the frameworks that would be relevant for a third-party SAPS. Unless otherwise specified, references in this section to microgrids and individual power systems refer to both LNSP and third-party systems.

In general, the National Electricity Law (NEL) and the National Electricity Rules (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.

¹⁰ Review into the regulatory frameworks for stand-alone power systems - Priority 1, Draft report, 18 December 2018.

The NEL defines the interconnected electricity system as:¹¹

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

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

“Connected” is defined 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.

Individual jurisdictions can choose to nominate distributors that would not otherwise be covered by the NEL and NER in respect of a specific distribution system (for example a distributor in a microgrid).¹² The nominated distributor would then be subject to specified provisions of the NER relating to connection services, retail support obligations and credit support obligations. This provision could be used by states if they wish to ensure that distributors operating microgrids are subject to parts of the NER. To do so, a state would need to amend the regulations under the Act which applies the NEL in that state (the application Act). 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).¹³

The NERL and NERR, together the National Energy Customer Framework (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 an “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.

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
- product safety

¹¹ Section 2 of the NEL.

¹² Section 6A of the NEL.

¹³ 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.

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

Therefore, the sale of electricity service 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, whether or not 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 there is little in the way of reliability standards or choice of retailer/ operator.

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.¹⁴

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

¹⁴ Terms of Reference, *Review of the regulatory frameworks for stand-alone power systems*, p. 6.

BOX 1: SURVEY OF OFF GRID CUSTOMERS

In the context of this review, 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.

Out of 130 survey participants, 57 have disconnected from the national grid and they have generally done so for cheaper and more sustainable energy, citing the following objectives:

- 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.

New South Wales

In New South Wales (NSW), the Commission is aware of one microgrid that is regulated under site-specific legislation: Lord Howe Island.¹⁵

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.¹⁶

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.¹⁷ There are two inclining block

¹⁵ Lord Howe Island Service Rules, 2011.

¹⁶ 2016 Census QuickStats Code SSC12387.

¹⁷ Lord Howe Island Board, <https://www.lhib.nsw.gov.au/infrastructure/electricity>

tariff structures, for domestic and commercial customers, with the rates set annually by the LHIB.

Northern Territory

In the Northern Territory, Indigenous Essential Services Pty Ltd, a subsidiary of Power and Water Corporation (PWC), performs system control, 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.

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.

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. Retail prices are regulated in areas outside south-east Queensland.

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.¹⁸ Box 2 describes this project.

¹⁸ AER submission to EMTPPT 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.

BOX 2: WEIPA MICROGRID

RTA Weipa Pty Ltd (RTAW) holds a mining license, and to fulfill 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 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 EMPTT 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.

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.¹⁹

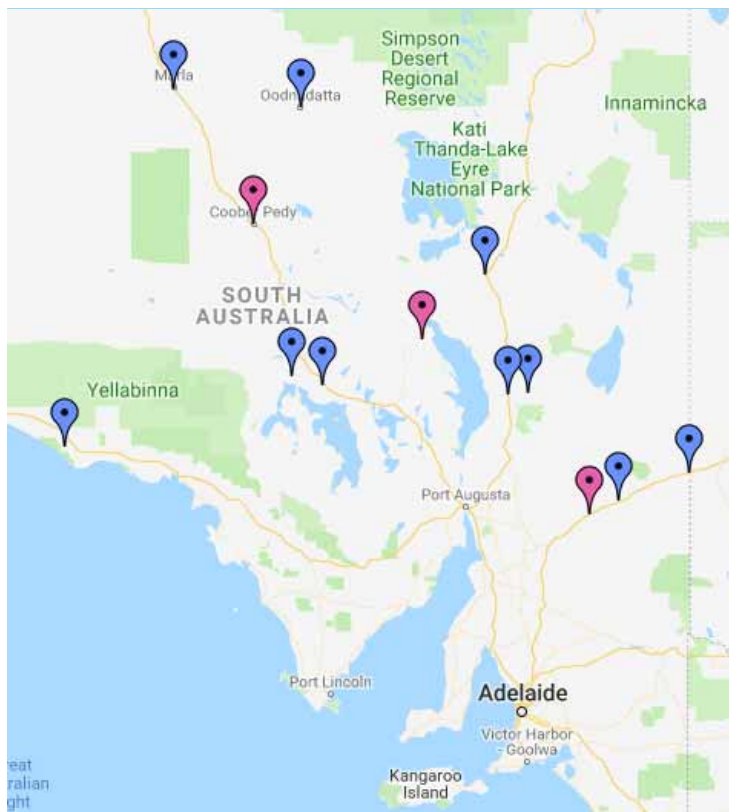
In South Australia, the Essential Services Commission (ESCOSA) regulates off-grid electricity networks under the Remote Area Energy Supply (RAES) scheme that is run by the South Australian government and includes the RAES State/Independent scheme and the RAES Aboriginal Communities scheme.

The RAES State/Independent scheme covers around 2,400 customers in 13 towns and supplies more than 15 GWh of electricity annually.²⁰ 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.

¹⁹ 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.

²⁰ 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



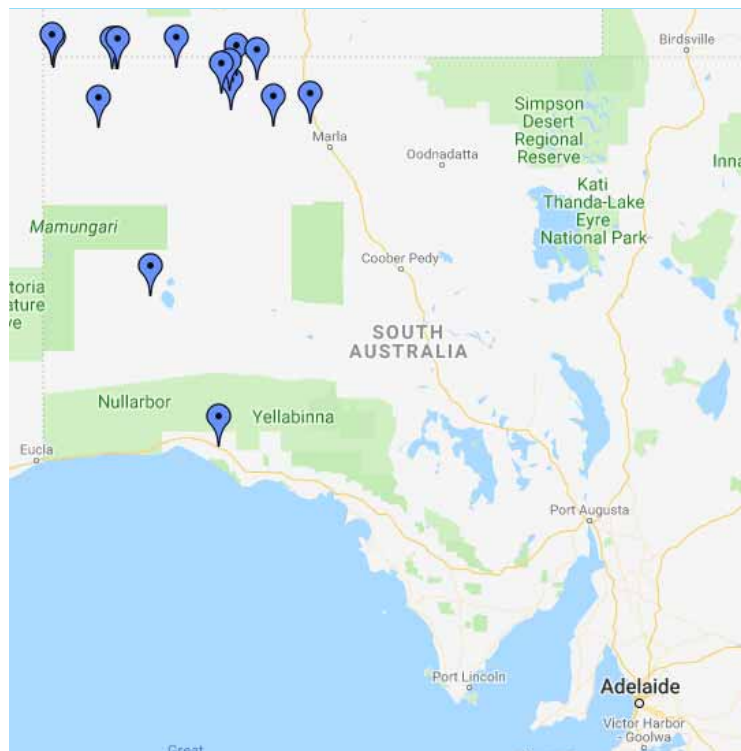
Source: South Australia Department of Energy and Mining

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 2.2.²¹

²¹ 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.

Victoria

In Victoria, the Retail Code applies protections similar to many of those in the NECF to customers of retailers.²² 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.²³ 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.

The Distribution Code contains additional customer protection provisions that would apply to microgrid customers, including:²⁴

- restrictions on disconnection and requirements regarding reconnection

²² 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.

²³ Electricity Industry Act 2000 (Vic), s. 16. General Exemption Order 2017, Victoria Government Gazette N. S 390, 15 November 2017, ss. 4-5.

²⁴ 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.

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. However, these provisions are specific to the Bass Strait Islands. 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 were provided by licensed electricity entities). Customers of new SAPS would not, however, be covered by the customer billing provisions and reliability standards that are set for the BSI power system. The NECF does not apply to Tasmanian SAPS.

Hydro Tasmania operates microgrids on King and Flinders Islands (on the Bass Strait) 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.²⁵

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.

Box 3 discusses research in Tasmania around household individual power systems for 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.

²⁵ Hydro Tasmania KIREIP, <https://www.hydro.com.au/clean-energy/hybrid-energy-solutions/success-stories/king-island>

BOX 3: INDIVIDUAL POWER SYSTEMS IN TASMANIA

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

The key findings have been 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.
- 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.

3 ASSESSMENT FRAMEWORK FOR THE REGULATION OF THIRD-PARTY STAND-ALONE POWER SYSTEMS

This chapter sets out the Commission's assessment framework and criteria for the consideration of the regulation of third-party stand-alone power systems, encompassing both individual power systems and microgrids.

3.1 What is regulation and why do we regulate?

When people consume any good or service, including electricity, they are concerned about various attributes of that good/service including price and non-price attributes.

The non-price attributes revolve around the quality of the product, and include the following:

- Does the good or service perform to a level consistent with what is promised by the seller? That is, is the product *reliable*?
- Does the good or service pose an unacceptable risk to consumers? That is, is the product *safe and secure*?

In theory, competition and competitive markets could provide sufficient assurance around both the price and quality aspects of a good or service. If consumers are unhappy with a product's price and/or quality, they can switch suppliers or exit the market entirely. This behaviour, or potential behaviour, provides a discipline on sellers to provide products that meet consumer preferences regarding quality, with price differentials occurring either:

- Between sellers, reflecting differences in sellers' costs and/or
- Between products, reflecting differences in quality.

Furthermore, competition would also discipline the pricing behaviour of sellers, such that prices are set at economically-efficient levels. Therefore, competition would be effective in achieving welfare-enhancing outcomes with respect to both price and quality.

3.1.1 Market failures and market power

For virtually all goods and services in an economy, this theoretical ideal is just that: theoretical. While markets and competition can promote pro-consumer outcomes with respect to economically-efficient prices and acceptable levels of quality, it is rarely sufficient to rely solely on competition (and markets) to achieve such outcomes. Decker (2015) provides various reasons why competition alone may not be sufficient in achieving pro-consumer outcomes. These are when:²⁶

- Consumers only make infrequent purchases from a supplier, such that the mechanism of rewarding (or punishing) suppliers for good (or poor) quality services is insufficiently engaged.

²⁶ Decker, C., *Regulatory implications of new products and services in Australian electricity markets*, Final Report, in AEMC, *Submission to the COAG Energy Council consultation on consumer protections behind the meter – regulatory implications*, October 2016.

- Suppliers adopt a short-term view of their activities and do not care sufficiently about fostering a long-term reputation for being a good quality and reliable supplier
- Pronounced information asymmetries between suppliers and consumers – either where consumers possess less information than suppliers about a product or service, or where suppliers cannot ascertain buyers’ preferences – which can distort consumer decision-making in ways that are inefficient.
- A perceived need to protect certain types of consumers (for example, the financially vulnerable), and/or the timing and magnitude of any potential consumer harm associated with problems with supply of the service.

Furthermore, informational asymmetries and unpredictable consumer behaviour can even lead to *market failure*, which is where there is no price that clears the market.

Akerlof (1970) uses the second-hand car market as an example of how asymmetric information, if left unchecked, can lead to market failure. Consumers are assumed to be uninformed about the differences in quality between individual second-hand cars, but they know there are two broad types of cars: a high-quality car (a ‘peach’) and a low-quality car (a ‘lemon’). Consumers therefore only offer a fixed price that averages the prices for a peach and a lemon. As this price is below the cost of supplying some ‘peaches’, some of these cars are withdrawn from the market. Buyers are aware of this, and so continually revise down the price they are willing to pay. In the extreme, this can drive all the ‘peaches’ from the market.²⁷

Therefore, actual outcomes in competitive markets may depart from what is considered efficient because:

1. *market power* is being exercised (either by sellers or by buyers), and/or
2. a *market failure* exists, which may arise for various reasons, for example informational asymmetries between buyers and sellers, and/or the presence of externalities²⁸ that cannot be internalised into prices through the competitive process.

Market failure and market power are distinct concepts and one does not imply the existence of the other – though they are often incorrectly conflated. Market failures can occur in perfectly competitive markets – the classic example is when the costs of environmental harm are not reflected in market prices – and markets may still clear even when market power is being exercised.

3.1.2

Types of regulation

Departures from efficient outcomes *may* create a need for regulations to provide assurance to consumers about the quality of the product, and in some cases assurance also about the efficiency of the price of that product. At a high level, regulation seeks to impose controls on the behaviour of buyers and sellers, and can arise in two dimensions:

²⁷ Akerlof, G., *The market for ‘lemons’: quality uncertainty and the market mechanism*, Quarterly Journal of Economics, Vol. 84 (3), August 1970, pp. 488–500

²⁸ A good or service has externalities when the gains (positive externalities) or losses (negative externalities) associated with its production or consumption differs from the cost to the market participant. Examples of negative externalities include traffic congestion on public roads, and environmental pollution caused by overexploitation of natural resources.

1. Regulations that aim to limit the extent of market power exercised by a market participant (or participants). These regulations aim to incentivise efficient investment and operation.
2. Regulations that aim to limit the potential for market failure by resolving some of the reasons why markets may fail (for example, informational asymmetries). These regulations aim to provide a degree of quality assurance regarding what is produced and consumed.

3.1.3

Determining the appropriate scope of a regulatory framework

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 – such as the car market noted above – there may be no concerns about exercise of market power; instead, the issue may be resolving informational asymmetries between buyers and sellers. In this situation, regulations that only aim to limit the extent of market power would be wholly inappropriate, and the role for regulation may be largely to limit the potential for market failure – for example, 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 different scope of regulation (that is, a greater focus on economic regulation) compared to the market for second-hand cars.

Furthermore, even where there are demonstrated instances of market failure, it does *not* necessarily follow that regulation (or additional regulation) is the best or only remedy. In the case of informational asymmetry-induced market failure, a range of collective reputational mechanisms exist that can address such issues, such as:

- word-of-mouth recommendations from friends and family
- information sharing platforms (for example, web-based product reviews and ratings provided by various third parties)
- sellers' discretionary provision of guarantees or warranties, and
- other forms of quality control such as minimum qualifications or other accreditation techniques for suppliers that are enforced by suppliers (for example, 'self-regulation').

The limits to competition are even greater for essential services, such as energy, water and telecommunications. Services like energy are 'needed' (as opposed to 'wanted'). This imposes a further limit on the extent to which competition can achieve pro-consumer outcomes, since consumers cannot completely forgo consuming energy – to do so would be prohibitively expensive.

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.

The next section discusses the need for regulation, and its potential breadth and depth, in the context of third-party stand-alone power systems.

3.2 Whether and how to regulate third-party stand-alone power systems

The previous section discussed the ways in which competitive markets may not deliver efficient outcomes for consumers, and how this could be rectified through imposing regulations on the market. This section discusses these issues within the context of a third-party SAPS.²⁹ The discussion is grounded within a proposed economic assessment framework. With respect to this assessment framework, this chapter raises the following three questions:

1. Should third-party stand-alone power systems be subject to regulation to promote long term interests of consumers in relation to electricity provision?
2. If a third-party SAPS ought to be regulated, to address the limits of what competition may be able to achieve within a SAPS, is there a need for energy-specific regulations or can the existing broad-based regulatory framework be applied? The additional limits of competition for essential services (discussed above) may create the need for regulations *additional* to that needed for non-essential goods and services. If additional regulations are needed for a third-party SAPS, should these regulations be the same as that proposed for a DNSP-led SAPS and for NEM-connected customers?
3. If the answer to 2. is 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 the NEM, what may be an appropriate regulatory framework to apply to third-party stand-alone power systems such that electricity provision within a SAPS is consistent with the long term interests of consumers?

The Commission is interested in stakeholders' answers to each of these three questions. These questions provide a framework that is used in Chapters 4 to 10 for each of seven potential dimensions of regulation that the Commission has scoped for third-party stand-alone power systems - with stakeholder views sought on each dimension.

This paper scopes the following potential dimensions for regulation:

1. Registration and licensing, which covers licensing obligations to provide assurance that the parties to a transaction are 'fit and proper'.
2. Third-party access and connection, which includes obligation to supply, connect and/or provide access – this is a form of economic regulation, as it constrains the ability of a seller to withhold supply and thereby drive prices up for a consumer (or group of consumers).
3. Economic regulation, which the Commission uses to refer to the regulation of prices charged or revenues earned by the seller.

²⁹ In this chapter, unless otherwise noted, 'stand-alone power systems' covers both microgrids and individual power systems.

4. Consumer protections – these regulations pose constraints or deterrents on the behaviour of sellers (and buyers) and allow for remedies in the event of unacceptable behaviour
5. Reliability – in the context of electricity, reliability refers to the extent to which customers have an uninterrupted supply of electricity, and there are obligations placed on electricity network businesses to ensure adequate reliability. Such obligations can be and often are extensions of the economic regulatory framework.
6. Network operations, including system security and technical standards, in addition to metering and settlement.
7. Standards relating to the safety of inputs that can be used to produce a good or service and/or relating to the performance of the good or service (for example, standards on the functioning of electrical appliances). These reduce the risk that buyers and sellers face harm or injury when consuming or producing the associated good or service.

The focus of the discussion in Chapters 4 to 10 is on systems supplying small customers,³⁰ and the provision of consumer protections to those customers. Large customers benefit from substantially fewer customer protections under current arrangements, based on a rationale that they should be able to negotiate satisfactory commercial outcomes. The Commission is interested in stakeholder feedback on whether any or all aspects of regulation that might be applied to third-party SAPS should apply only to small customers, or whether it would be appropriate for these to be extended to also cover large customers. For instance, it might not be necessary to apply economic regulation to a remote mine site where one related party supplies another, but it would likely be appropriate to enforce safety obligations.

It is worth noting that there is a high degree of overlap between these dimensions of regulation, reflecting the potential for market power to be exercised by sellers by limiting the quantity supplied. Therefore, some of the potential areas for regulation mentioned above – such as provision of service and third-party access – necessarily cross over into economic regulation. This overlap means that the approach to regulate or not regulate at a national or jurisdictional level each of these dimensions should not be determined completely in isolation from the approach taken to regulate or not regulate at a national or jurisdictional level any other one.

Unless noted otherwise, the term ‘regulation’ in this and subsequent chapters of this consultation paper covers both of economic and other regulation (and the various sub-dimensions of other regulation).

The Commission is also interested in stakeholder views on whether the regulatory framework for a third-party SAPS should distinguish between microgrids and iIPSs and whether it should distinguish microgrids based on size. The Commission welcomes stakeholder submissions on the criteria that might be proposed to apply in order to distinguish between regulatory approaches across different SAPS types and sizes. 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

³⁰ Under the NERL, 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.

which a microgrid starts to exhibit the same market characteristics as the interconnected grid. Throughout this and subsequent chapters, we seek stakeholder views on whether each dimension of the overall regulatory framework should be designed in a manner that distinguishes between microgrids and IPSs.

There is an additional set of questions discussed in Section 3.4 below: should the regulatory framework that emerges from answering the above three questions be harmonised and streamlined into one overarching set of regulatory arrangements. 'Harmonising' can occur in three ways:

1. Within many jurisdictions, as discussed in Chapter 2, there are multiple regulatory frameworks for stand-alone power systems. Should these frameworks be streamlined and made more consistent but remain under separate jurisdictional frameworks?
2. Should a national framework for third-party stand-alone power systems be designed, which can harmonise some aspects of existing individual jurisdictions' regulatory frameworks for SAPS?
3. If it is infeasible or inappropriate to develop one national regulatory framework that applies fully in each and every jurisdiction, can and should jurisdictions opt into some elements of the national framework for some or all stand-alone power systems in that jurisdiction?

In considering these issues and answering these questions, the Commission is informed by its proposed approach to regulating:

- DNSP-led stand-alone power systems, as set out in the Commission's issues paper and draft report for DNSP-led stand-alone power systems³¹, and
- embedded networks, as set in the Commission's 2017 final report, and draft report for the 2018 review³².

31 Respectively, AEMC, *Stand-alone power systems review*, Issues paper, 11 September 2018; and AEMC, *Review of stand-alone power systems*, Draft report, 18 December 2018.

32 Respectively, AEMC, *Review of the regulatory arrangements for embedded networks*, Final report, 28 November 2017; and AEMC, *Updating the regulatory frameworks for embedded networks*, Draft report 31 January 2019

The Commission is interested in stakeholders' views on these high-level, conceptual issues, as set out in Question 1.

QUESTION 1: SHOULD WE REGULATE THIRD-PARTY STAND-ALONE POWER SYSTEMS?

- (a) Is there a need for regulation of a third-party SAPS? Why or why not?
- (b) If there is a need for regulation, is this sufficiently provided for via the existing broad-based regulatory framework (for example, the Australian Consumer Law)? Why or why not?
- (c) If the existing broad-based regulatory framework is insufficient for the purposes of regulating a third-party SAPS, which additional regulations are needed? Should these additional regulations be national or jurisdictional?
- (d) Do the seven dimensions identified by the Commission capture all the potential areas for regulation of a third-party SAPS? If not, which areas are not covered?
- (e) Should the regulatory framework for a third-party SAPS distinguish between an IPS and a microgrid? Why or why not?
- (f) Should the regulatory framework for a third-party SAPS distinguish between microgrids based on size or some other criteria? If so, what might these criteria be?
- (g) Should the regulatory framework for third-party SAPS address large customers as well as small customers? Why or why not?

3.3 Assessment criteria for a regulatory framework for third-party stand-alone power systems

In developing recommendations on whether and how to regulate SAPS, the Commission will apply the national electricity objective (NEO) and the national energy retail objective (NERO). The Commission will assess 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.

The proposed assessment criteria to be used to determine the scope and breadth of a fit-for-purpose regulatory framework for a third-party SAPS is the same as that used by the Commission in its review of an DNSP-led SAPS; namely³³:

- Do the regulatory arrangements facilitate competition and consumer choice in energy services and products?

³³ AEMC, *Review of the regulatory frameworks for stand-alone power systems – priority 1*, Draft report, 18 December 2018.

- 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?

These questions apply to both economic and other regulation. As an example of the *other regulation* dimension, determining the scope and breadth of consumer protections in a third-party SAPS can and should be influenced by, amongst others, the fit-for-purpose and proportionality assessment criterion. Furthermore, facilitating workable competition within a third-party SAPS may lessen the need for extensive and prescriptive consumer protections.

These questions and considerations are relevant for three types of customers:

1. existing NEM-connected customers that are considering taking up a third-party SAPS solution
2. DNSP-led SAPS-connected customers are considering transitioning their SAPS to a third-party supply model, and
3. new customers to a third-party SAPS, for example a person moving to a community that is served by a third-party SAPS provider or a person establishing a new property in an area that is currently not served by a DNSP or a SAPS.

3.3.1

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.

Competition in a third-party SAPS supply model can occur in two possible ways:

1. Competition associated with the choice of SAPS provider – as noted in the Introduction, a third-party SAPS provider could be a non-LNSP DNSP, or any party proficient in the supply and delivery of a SAPS. For a NEM-connected consumer (or consumers) considering going off-grid, an effective regulatory framework would be one that:

- a. is sufficiently flexible to encourage emerging technologies and services
 - b. empowers consumers to choose between competing SAPS providers and competing SAPS business models, and
 - c. promotes, rather than hinders, innovation and competition in the provision of electricity services – though with an adequate level of consumer protections.
2. Competition in the provision of the various components of a stand-alone power system, once a system is installed. For example, the generation and retailing functions of a larger microgrid could potentially be provided on a contestable basis, where parties other than the SAPS provider are able to offer services that may be cheaper than those that are part of the original SAPS installation.

The influence of competition on the scope and extent of economic regulation is discussed in Chapter 4.

3.3.2 Proportionality and regulatory burden

This review will consider 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 – covering both economic and other aspects of regulation – may be different for an IPS compared to a microgrid. For economic regulation, the potential for market power to be exercised in an IPS is likely to be lower than for a microgrid – especially if the IPS is owned by the SAPS customer – thereby weakening the rationale for applying the same economic regulatory framework to both microgrids and IPSs. Moreover, the size of the microgrid may also be a determining factor in whether and how it is economically regulated.

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. The Commission will consider whether the administrative and compliance burden created by its recommendations is likely to be proportionate to the benefits it is seeking to achieve.

3.3.3 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.

This allocation should lead to:

- mitigation of risk - in the instance the risk (that is, the potential for financial or physical loss) materialises, the consequences should be avoided or lessened
- incentives to improve risk management over time - risk should be allocated to a party who can, relative to others, better manage the consequences of that risk.

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, will

consider how costs and risks are allocated between third-party SAPS service providers and SAPS customers.

The influence of risk and cost allocation on the scope and extent of economic regulation is discussed in Chapter 4.

3.3.4

Appropriate consumer protections and compliance mechanisms apply

Subject to stakeholder views on the need for third-party SAPS to be regulated, this review will consider 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.

In its draft report on a regulatory framework for DNSP-led SAPS, the Commission considered that customers should not be disadvantaged as a result of being transitioned to a SAPS. This lack of disadvantage related to protections around:³⁴

- pricing and access to the SAPS – this covers the connection arrangements and access regimes for both generators and loads
- other existing national energy-specific consumer protections
- reliability, and
- other jurisdictional consumer protections, including safety and technical regulation, access to concessions and rebates and access to independent dispute resolution.

The Commission does not necessarily consider that the same consumer protections should apply to customers that have chosen to transition to a third-party SAPS explicitly trading off some of these consumer protections.

3.3.5

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.³⁵ As such, clear information around the consumer protections which apply when being supplied by a SAPS would assist consumers in making decisions about transitioning to a third-party SAPS model

³⁴ AEMC, *Review of stand-alone power systems*, Draft report, 18 December 2018.

³⁵ As noted previously, the presence of postage-stamp pricing across a distribution network means that a NEM-connected customer (or a DNSP-led SAPS customer) transitioning to a third-party SAPS would lose this cross-subsidy.

of supply (the transition could be either from a NEM grid connection, from an IPS, or from an DNSP-led SAPS supply model).

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

3.3.6

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 will consider 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 so as to be treated as a third-party SAPS rather than an embedded network under the regulatory framework. The Commission intends for its recommendations will create incentives around efficiency and consumer benefits rather than regulatory arbitrage.

In the lead up to this review, stakeholders expressed concern about potential network flight of low cost to serve customers. Stakeholders are particularly concerned of network flight among customers that subsidise high cost to serve customers that an DNSP is obliged to serve.

There is also a need for consistency between the designs of the *economic* and *other* regulatory frameworks for a third-party SAPS. There are some parts of 'other' regulation – for example, obligations to connect and/or supply – that cross over into economic regulation. This overlap means that the economic regulatory framework and approach cannot and should not be determined completely in isolation from the approach taken to the 'other' regulatory framework.

The Commission is interested in stakeholders' views on the proposed assessment criteria discussed above.

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

- (a) Are there assessment criteria included that should not be? If so, what are these?
- (b) What should be the broad objectives under the Commission's assessment of a third-party SAPS regulatory framework?

3.4 Should a national or jurisdictional regulatory framework apply for a third-party SAPS?

This section addresses whether a national or jurisdictional framework would be more appropriate for third-party SAPS, or whether some provisions should be part of a national framework whereas others should be jurisdictional. The section also discusses options for jurisdictions to opt into a national third-party SAPS framework for legacy or new SAPS.

3.4.1 Appropriateness of national versus jurisdictional regulation

The Commission is interested in stakeholder views on 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.

This preference is partially linked to the policy driver discussion earlier in the paper. The form of regulation discussed in the previous section may have implications on this as well.

In recommending a draft position on this, the Commission will consider 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. The Commission will also consider the interaction of national provisions with 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 IPS and/or microgrids.

In addition, the Commission's approach will be based on the Australian Energy Market Agreement (AEMA) and the scope under the NEL/NERL. As such, aspects like 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.

3.4.2 Jurisdictional opt in arrangements

As discussed in Chapter 2, the NEL defines distribution system in broad terms to cover microgrids as well. Under Chapter 6A of the NEL, any licensed operator of a distribution system that would not otherwise be covered by the NEL could be nominated by a jurisdiction as a distributor. Jurisdictions may nominate distributors in respect of a specific distribution system to be subject to specified provisions of the NER relating to connection services, retail support obligations and credit support obligations. As such, a jurisdiction may nominate a microgrid service provider to be subject to parts of the NER. To date, it appears that 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).

One option for the design of the framework could be to allow a jurisdiction may opt into all or parts of a national third-party SAPS framework for all or some legacy or new SAPS, for example a jurisdiction may:

- allow some parts of the interconnected grid to transition to a community SAPS regulated under a jurisdictional framework
- regulate some or all SAPS under a national framework.

Potentially, an electricity microgrid in a jurisdiction may be subject to one of:

- jurisdictional framework, which may be a discrete framework such as Lord Howe or Bass Strait Islands, and this will be the case for legacy SAPS unless transitioned
- national framework for a DNSP SAPS
- national framework for a third-party SAPS (as far as a jurisdiction opts in).

The Commission is interested in stakeholder views on jurisdictional arrangements to opt into a third-party SAPS framework. The Commission is particularly interested in stakeholder views around having multiple SAPS frameworks nationally as well as in each jurisdiction.

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

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

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

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

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

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

4 REGISTRATION AND LICENSING

4.1 Overview and issues for discussion

It is generally the case that, as compared to the rest of the economy, service providers intending to become involved in the supply of electricity are subject to relatively stringent checks to ensure that they are capable of facilitating the supply of electricity on an ongoing basis and meeting specific regulatory obligations placed on them.

This chapter discusses the extent to which it might be necessary to place such entry requirements on third-party SAPS service providers to verify that they are appropriately prepared and resourced. It 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.

4.1.1 Eligibility criteria

As discussed earlier, 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.

Current jurisdictional legislation recognises this policy driver. For example, the Queensland and South Australian Electricity Acts cite the objective of protecting the interests of electricity customers.³⁶

While consumers of other products might switch supplier if their current provider was not meeting its obligations, for electricity it is still necessary to place regulatory requirements on market participants to permit this transfer process to happen in a way that prevents or minimises supply interruptions. Further, 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 particularly important that the service provider is able to meet all its responsibilities.

The nature of electricity as a product also leads to numerous other regulatory requirements (discussed in later chapters) being imposed 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:

- Retailers must be authorised by the AER (in NECF jurisdictions)

³⁶ Section 3 of the South Australia Electricity Act 1996 and Section 3 of the Queensland Electricity Act 1994.

- Network owners/operators must be registered by AEMO and licensed by jurisdictional governments or regulators³⁷
- Generators must also be registered by AEMO and, in some jurisdictions, are also subject to licensing requirements.³⁸

The scope of a regulator's considerations in deciding whether or not to grant such an authorisation or licence can be illustrated by the entry criteria 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.³⁹ In relation to the suitability criterion, the AER may take into consideration such matters as it thinks relevant, including, for example:⁴⁰

- 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.

Through the review, the Commission will need to consider the extent to which similar checks would be appropriate for electricity supplied by third-party SAPS, and whether different types of SAPS, for instance whether the SAPS is an IPS or microgrid, would affect this.

³⁷ Network licences are referred to as authorities in Queensland, under the *Electricity Act 1994*.

³⁸ For example, generators require licenses or authorities in South Australia, Victoria and Queensland, but not in New South Wales.

³⁹ NERL s. 90(2).

⁴⁰ NERL s. 90(4).

BOX 4: ELECTRICITY LICENSING IN THE NORTHERN TERRITORY

The Northern Territory's electricity system represents a pertinent case study when considering potential regulatory regimes for SAPS in NEM jurisdictions, being comprised of three main, but still relatively small, systems where the supply chain has been unbundled and a number of still smaller, vertically integrated systems.

Licensing in the Northern Territory is undertaken by the Utilities Commission of the Northern Territory, which grants licenses for generation, networks, retail and system control, as well as an isolated system licence that is used for third-party SAPS. In addition to considering the technical characteristics of the relevant generation plant or network (if applicable), the Utilities Commission may only issue a licence if it is satisfied that the applicant is a suitable person to hold the licence.

Section 16(3) of the Electricity Reform Act 2000 specifies that, in deciding whether an applicant is a suitable person, the Utilities Commission may consider:

- the applicant's previous commercial and other dealings and the standard of honesty and integrity shown in those dealings
- the financial, technical and human resources available to the applicant
- the officers and, if applicable, major shareholders of the applicant and their previous commercial and other dealings and the standard of honesty and integrity shown in those dealings (including breaches of statutory and other legal obligations).

4.1.2

Providing for 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.⁴¹ 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

⁴¹ NERL s. 122.

and step-in operator as well as conferring rights on the step-in operator.⁴² 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 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.

As such, the Commission intends to consider whether requirements could 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 failure of the provider/operator. The workability of such a scheme is likely to vary between larger microgrids and IPSs.

4.2 SAPS comparator arrangements

Useful comparators for a potential regulatory regime for third-party SAPS are provided by the recommendations in the draft reports for priority 1 of this review and the embedded network review, as well as conditions imposed on licensees or operators of microgrids under existing jurisdictional regulation, for instance the licenses issued by ESCOSA.

4.2.1 SAPS Priority 1 review

The approach being adopted by the Commission for Priority 1 of this review, which covers the provision of SAPS by DNSPs, is to depart from existing NEM regulation only where necessary. As such, existing arrangements for the authorisation, registration and licensing of retailers, network service providers and generators would be maintained.

It may also be possible to retain the existing RoLR arrangements for DNSP SAPS. In the draft report for Priority 1 of this review, the Commission set out two service delivery models, with the prime difference between the two relating to the retail activity.⁴³ In the "NEM consistency model", existing arrangements for retail competition would be maintained, which would also enable the retention of the existing RoLR arrangements. However, in the "Integrated service delivery model", the retailer would be appointed by the DNSP. As such, it would follow that the DNSP would also be responsible for appointing any replacement retailer, if required.

⁴² Part 6A, *Electricity Supply Act 1995* (NSW).

⁴³ AEMC, *Review of the regulatory frameworks for stand-alone power systems*, draft report, 18 December 2018, section 4.4.

4.2.2

Embedded networks review

The Commission's final recommendations in the 2017 embedded networks review and draft recommendations in the 2018-2019 embedded networks review would create two new types of market participant: the Embedded Network Service Provider (ENSP) and the off-market retailer. These participants would be assessed for registration by AEMO and authorisation by the AER, respectively.

The Commission considers that 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.⁴⁴

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 assume the customers of the failed off-market retailer.⁴⁵

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 for the embedded network.⁴⁶ The Commission is currently giving further consideration to this matter to satisfy itself that this would not be likely to lead to any interruption in supply or any undue interruption in commercial or market transactions.

4.2.3

Current jurisdictional frameworks for third-party SAPS

Licensing and registration

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 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.⁴⁷

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 they qualify for an exemption.⁴⁸

Exemptions from licensing requirements are available in the following cases:

- electricity generators with a nameplate output of 100kVA or less⁴⁹

⁴⁴ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, pp. 26-27.

⁴⁵ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, p. 133.

⁴⁶ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, p. 134.

⁴⁷ [Electricity Act](#) 1996 (SA) s15(1) – (3).

⁴⁸ ESCOSA website, www.escosa.sa.gov.au/industry/electricity/licensing, viewed 18 January 2019.

⁴⁹ Electricity (General) Regulations 2012 (SA) - s15(2)(a).

- electricity generators who do not supply electricity for reward to or by means of a transmission or distribution network⁵⁰
- when electricity generated, transmitted and/or distributed is:
 - for personal use⁵¹
 - used by a designated body gazetted by the relevant minister⁵²
 - charged for as an unspecified component of rent charged to an occupant of a premises owned by the generator/ transmitter/ distributor or a designated body (for example, where an owner of a property has an established PV system and leases the property to an occupant).⁵³
- network operators and retailers (other than authorised retailers) in an “inset network”, defined as a network that serves only a group of premises in the same ownership or community or strata title premises, provided that customers in the inset network have access to a licensed retailer of the customer’s choice.⁵⁴

Unless a SAPS operator meets one of the conditions for exemption above, it will be subject to licence conditions which cover a range of matters, including audit, financial capacity, access, quality standards, insurance and safety obligations.⁵⁵

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.⁵⁶

Even if an entity is exempt from the requirement to obtain a licence, it will still be required to comply with the relevant provisions of the Electricity Act and Regulations as if it were licensed to carry out the relevant electricity sector activity. Additional conditions may also be imposed where exemptions are granted.⁵⁷ ESCOSA or the Technical Regulator may provide exemptions from specific requirements in the Electricity Act or Regulations.⁵⁸

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.⁵⁹

50 Electricity (General) Regulations 2012 (SA) - s15(2)(b).

51 Electricity (General) Regulations 2012 (SA) - s15(1)(a).

52 The Commission understands that no designated bodies have been gazetted. Refer to Electricity (General) Regulations 2012 (SA) - s15(1)(b).

53 Electricity (General) Regulations 2012 (SA) - s15(1)(c).

54 Electricity (General) Regulations s15(3). This appears to be similar to on-market customers in an embedded network. This exemption would be unlikely to apply to third-party SAPS, unless the SAPS is established in such a way that retail competition is preserved.

55 Electricity (General) Regulations Part 3 Division 1, Licensing of electricity entities.

56 For example, [Electricity Generation/ Distribution/ Retail Licence for District Council of Coober Pedy](#), issued 21 June 2007.

57 Electricity (General) Regulations s15(5).

58 Electricity (General) Regulations s15(6).

59 ESCOSA, Cowell Electric Supply Pty Ltd Electricity Retail, Distribution and Generation Licence, 26 September 2018, p. 5.

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.⁶⁰ ESCOSA may appoint a suitable entity to continue operations of an electricity entity it has taken over.⁶¹

4.3 Policy considerations for third-party SAPS

As noted earlier in this chapter, consideration needs to be given to whether any eligibility criteria would be appropriate for entities seeking to provide third-party SAPS services, and whether different types of SAPS, for instance whether the SAPS is an IPS or a microgrid, would affect this.

Similarly, consideration also needs to be given to 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.

4.3.1 Eligibility criteria and licensing

In assessing whether it would be appropriate to impose eligibility criteria and licensing requirements on third-party SAPS providers, it is firstly worth considering the potential differences between an IPS and a microgrid.

For IPSs, perhaps the most likely business model would be for the equipment comprising these systems to be sold by installers to individual customers. As such, this would appear to resemble any other sale of electrical equipment, as opposed to an ongoing sale of energy. In such circumstances, Australian Consumer Law (ACL) would apply.⁶²

Whether or not there is a case for additional specific regulatory requirements to be applied for IPSs is considered further in subsequent chapters but, even if so, it seems unlikely that a registration or licensing framework would be an appropriate mechanism to give effect to these. However, the Commission is conscious that business models other than the sale of equipment may be pursued - for instance, leasing of equipment or ongoing ownership or operation by a service provider. Stakeholder views of the appropriateness of a registration or licensing framework in such circumstances would be welcomed.

The considerations for microgrids would appear to be more similar to those for the NEM or the existing South Australian or Northern Territory jurisdictional approaches. As electricity is an essential service and the customer would not easily be able to move to an alternative network provider, there would seem to be a rationale for a licensing or registration framework (although this may include some scope for exemptions to be granted). Further, given the seeming likelihood of vertical integration in all but the biggest third-party microgrids, any licenses would likely cover all segments of the supply chain.

⁶⁰ Electricity Act, Part 3 - Division 5.

⁶¹ Electricity Act, Part 3 - Division 1.

⁶² 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.

Against this however, it is arguable that, over the longer term, third-party SAPS customers might have more alternatives than NEM customers:

- in areas that are part of a DNSP's service area, customers could get an offer to connect to and get supply from the main grid
- they might be able to purchase their own IPS, and this may represent a more economic substitute for supply from a microgrid than from the main grid, as microgrid customers would not benefit from cross-subsidies in the same way that customers of the main grid do.

The Commission would be interested in stakeholder views as to whether these factors should affect its preliminary view that there is likely to be a case for some form of licensing or registration framework for third-party stand-alone microgrids.

To the extent it is required, such a framework could be implemented through jurisdictional regulation or a combination of jurisdictional and national frameworks. To a large extent, the most appropriate choice would be driven by the nature of the regulation to apply. For instance, if a decision was made to apply to the consumer protections in the NERL and NERR, authorisation of retailers by the AER might be the most appropriate solution. However, retailers could equally be licensed on a jurisdictional basis, as is the case in South Australia (for SAPS) and the Northern Territory.

Similarly, given that network operators are generally licensed at a jurisdictional level, operators of SAPS networks could be included in these regimes. Registration of network operators and generators at a national level by AEMO is driven by AEMO's functions in operating the national system and settling the market. Since these functions would be unlikely to apply in third-party microgrids, it is not immediately clear that registration at a national level would be required.

4.3.2

Providing for supply continuity

As indicated earlier, given the likely nature of third-party SAPS service providers as being smaller and less established than service providers in the NEM, arrangements to address or mitigate the potential for (or impacts of) the failure of a third-party SAPS service provider will arguably be of greater relative importance than in the NEM. Indeed, the NEM framework arguably does not provide a complete answer in this regard, as arrangements to manage the failure of network service providers may be incomplete, and the Commission has previously found that the RoLR arrangements may be inadequate were a large retailer to fail.⁶³

To provide protections for customers being supplied via a SAPS and help maintain electricity supply to those customers, a first step in risk mitigation could be to require operators or owners of third-party SAPS to insure against key risks that may lead to their failure or insolvency, and potentially to offset the costs of insolvency were this to occur. Attachment 1 of the review's terms of reference noted that many stakeholders who responded to the COAG

⁶³ AEMC, *NEM financial market resilience*, final report, 6 March 2015, p. v.

Energy Council's consultation paper agreed that such an insurance scheme to offset the costs of insolvency would be appropriate.⁶⁴

A number of submissions to the Energy Council's consultation paper also suggested that, in the event of a SAPS operator becoming insolvent, a market body such as AEMO or the AER could take control of the assets and appoint a temporary service provider until a receiver or administrator has made alternative arrangements. The ENA suggested that, if third-party systems are operating under a jurisdictional licensing regime, then it would be the responsibility of the jurisdictional government to seek an alternative operator. Further, the ATA (now Renew) considered that an operator of last resort scheme would require a register of accredited network operators with pre-determined responsibilities.⁶⁵

BOX 5: PROPOSED NSW OPERATOR OF LAST RESORT SCHEME FOR WATER

In considering an operator of last resort scheme for third-party SAPS, it may be useful to examine operator of last resort schemes for other essential services. An example would be the proposed operator of last resort provisions in Division 3 of Schedule 1 of the *Water Industry Competition Amendment (Review) Act 2014* (NSW).

Although not yet in force, Division 3 of Schedule 1 of the Act provides for the continuity of essential services including the designation of last resort providers. Under the obligations, the last resort provider must be a public water utility or a licensee. The last resort provider must develop a contingency plan to be used in the event of the failure of a provider for which it is the designated last resort provider. The existing provider must, amongst other things, 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. Some of the obligations in this Act may be appropriate for an operator of last resort scheme for third-party SAPS.

Source: Division 3, parts 55-56, *Water Industry Competition Amendment (Review) Act 2014* (NSW).

The Commission welcomes stakeholder views on an appropriate operator of last resort scheme for third-party SAPS, including feedback how an operator of last resort might be selected and funded.

⁶⁴ Terms of reference, Attachment 1, p. 6.

⁶⁵ Terms of reference, Attachment 1, pp. 6-7.

QUESTION 4: REGISTRATION AND LICENSING

- (a) Would it be appropriate to apply either a licensing regime or a registration regime (or both) for third-party SAPS?
- (b) Does the justification for a licensing or registration regime for third-party SAPS differ for microgrids and IPSs?
- (c) Does the justification for a licensing or registration regime for third-party SAPS differ based on microgrid size? Why or why not?
- (d) Should any licensing or registration regime for third-party SAPS be applied solely at a jurisdictional level, or a national level where this is consistent with NEM arrangements?
- (e) Is there a requirement for specific arrangements to be developed to maintain the continuity of supply in the event of the failure of a third-party SAPS service provider? How might an operator of last resort be selected and funded?
- (f) Are there any other issues related to eligibility criteria and arrangements for maintaining the continuity of supply that the Commission should consider?
- (g) Should any regulation address both large industrial customers and small customers?

5 THIRD PARTY ACCESS AND CONNECTIONS

5.1 Overview and issues for discussion

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 (referred to here as third parties), whether the service is the provision of electricity itself or relates to part of the electricity supply chain.

This chapter discusses 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, 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.

5.1.1 Access for third 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.⁶⁶ 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.

Third party access 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.⁶⁷ As such, these network service providers are prohibited from denying access to their network for any third party, provided the third party 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

⁶⁶ This is discussed further in Chapter 6.

⁶⁷ 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 third parties.

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 NGL and 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. In case 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 third-party 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 X.

BOX 6: NATIONAL THIRD PARTY ACCESS REGIME

Part IIIA of the Competition and Consumer Act 2010 (Cth) (CCA) establishes the National Third Party 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 third parties 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 Australian Competition and Consumer Commission (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).

5.1.2

Obligation to offer to 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.⁶⁸

⁶⁸ 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.⁶⁹ 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 third party access and to offer 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:⁷⁰

- 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.

5.2 **SAPS comparator arrangements**

As in the previous chapter, the following section contains information relating to useful comparators for a potential regulatory regime for third-party SAPS. These are the Commission's recommendations in the draft reports for Priority 1 of this review and the embedded networks review, in addition to current jurisdictional frameworks that apply to third-party microgrids.

5.2.1 **SAPS Priority 1 review**

In Priority 1 of this review, the Commission is currently considering whether to replicate or modify the current NEM arrangements for application to the provision of SAPS by DNSPs. As highlighted in the previous chapter, the Commission is assessing two potential service delivery models, and these would have different implications for third-party access, in particular:

⁶⁹ Section 22(1) of the NERL.

⁷⁰ Section 66(1) of the NERL.

- The NEM consistency model would maintain third party access (there would, in effect, be a virtual transportation service) for customers with an existing connection. The existing obligation on designated retailers to offer supply would also be maintained.
- In contrast, the integrated service model would not facilitate third-party access, as all supply would be arranged by the DNSP. There would still be an obligation to offer supply, and this would likely be provided by the DNSP appointing a retailer and providing the retailer with energy to supply the customer. As such, amendments to the definition of designated retailer might be required.

The Commission's position in the Priority 1 draft report was that distributors should not be able to meet their obligation to offer a connection by use of a new SAPS. However, distributors should be able to offer to connect a new customer to a pre-existing DNSP-led SAPS where it is more efficient to do so than to connect that customer to the interconnected grid.⁷¹

5.2.2

Embedded networks review

The Commission's final recommendations in the 2017 embedded networks review and draft recommendations in the 2018 embedded networks review would expand obligations to offer third-party access to a much wider range of embedded networks.⁷² Most new embedded network providers would be required to register as an ENSP, and ENSPs would have the same requirements to allow all authorised retailers access to their networks as do DNSPs currently.

The governance around the existing obligation to offer to supply contained in exemption conditions would be strengthened by requiring off-market retailers to be authorised, and therefore subject to the NERL. The off-market retailer 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 and to make requested alterations to existing connections within the embedded network. However, the obligation on ENSPs to extend their networks to facilitate new connections would be limited geographically.

The Commission considered that it would be impractical for new customers to an embedded network to seek connection to the local DNSP's network, making the ENSP a monopoly provider. In addition, the Commission sought to address the issue that customers in existing embedded networks faced problems with the standard of their connections and difficulties in agreeing alterations.

5.2.3

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

⁷¹ AEMC, *Review of the regulatory frameworks for stand-alone power systems*, draft report, 18 December 2018, p. 67.

⁷² AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, p. 31.

obligations to connect and reconnect customers' premises in a timely manner and to have a standard terms and conditions on which it will connect customers and sell and supply electricity to them approved by ECOSA.⁷³

In New South Wales, the LHIB is a statutory authority that is responsible for the supply of electricity through the Lord Howe Island microgrid.⁷⁴ 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.⁷⁵

5.3 Policy considerations for third-party SAPS

This section considers whether there should be obligations on operators of third-party microgrids to offer third-party access, the supply of electricity or network connections, and whether such obligations should be applied at a national or jurisdictional level.

These concepts do not appear relevant for IPSs. For instance, it would not appear appropriate to place obligations on owners of IPSs to have to offer to connect other customers to their systems and provide a supply of electricity. However, the Commission would welcome any stakeholder views on this position.

5.3.1 Drivers for regulation

Obligations to offer third-party access

With regards to the question as to whether obligations should be placed on operators of third-party microgrids to offer third-party access, it appears likely that some microgrids would have similar natural monopoly characteristics as the interconnected electricity grid.

As such, there may be a case for third-party access to some third-party microgrids to be regulated to allow new customers to access spare capacity if:

- the duplication of such capacity would be inefficient
- there is sufficient potential to develop competition "upstream" or "downstream" in the SAPS, that is in generation or retail sectors through multiple generators or retailers.

However, it is not clear that competitive generation and/or retail markets would be likely in all but the largest of microgrids (for instance, of a comparable size to the Mount Isa grid in Queensland or the Darwin-Katherine or Alice Springs systems in the Northern Territory). The costs of any such access framework should also not be disproportionate to the benefits it would offer (as discussed in Chapter 3).

The Commission is therefore interested in stakeholder views on whether there should be a regulatory framework that provides reference terms and conditions for access negotiations between third-party microgrid service providers and third parties.

⁷³ 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, 21 June 2007.

⁷⁴ Lord Howe Island Act 1953 (NSW).

⁷⁵ National Energy Retail Law (Adoption) Regulation 2013 (NSW) s. 22.

Obligations to offer to supply and connect

It appears that an obligation to offer to supply might be more relevant to most third-party microgrids, given that the scale of these is likely to imply a vertically-integrated business model. An obligation to supply is also likely to be less complex than a third-party access regime and so might be a more proportionate response.

However, the Commission would be interested in stakeholder views regarding this proposition, given that:

- if the third-party microgrid was in the service area of a DNSP, potential customers could get offers for supply and/or connection from the DNSP grid
- IPSs might also represent an economic substitute for supply from the microgrid.

The considerations regarding an offer to connect might be similar to those for an obligation to offer to supply, and would be linked. However, one specific issue would be whether there should be any obligation on the service provider to extend the geographic scope of its network to connect a new customer (as opposed to just facilitating a connection to the existing network). Such an obligation would potentially be burdensome for the service provider even if the customer provided a contribution to cover the costs of the extension.

5.3.2

Potential forms of regulation

To the extent that it is required, regulation governing access, supply or connections could be implemented in one of a number of ways.

Firstly, if a third-party access regime is considered appropriate, it is likely that bespoke arrangements will be required. While a declaration could be sought for a microgrid under Part IIIA of the CCA as discussed in Box 6, it is unlikely that it would be considered infrastructure of national significance or satisfy the criteria for declaration listed below:⁷⁶

- (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

⁷⁶ National Competition Council, *Declaration of Services - A guide to declaration under Part IIIA of the Competition and Consumer Act 2010 (Cth)*, April 2018.

conditions, as a result of a declaration of the service would promote the public interest.

The Commission is therefore interested in stakeholder views on how a third-party access regime for third-party SAPS might be implemented (if it is determined to be necessary), and whether any such access regulation should be at a national or jurisdictional level. The third party access regime in Australia is national and aims to achieve national consistency, although its application in the gas sector allows for jurisdictional ministers to be the decision-maker in many cases.

Obligations to offer to supply and to connect could be implemented through either national or jurisdictional regulation. For example, in Queensland, the NERL applies to microgrids and this would include the obligation to make an offer to small customers in s. 22 and to provide customer connection services in s. 66.

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.

Finally, there may be a case in either scenario for limiting the microgrids that these obligations would be applied to, for instance below a certain size threshold. The Commission would welcome views as to how such a threshold might be specified.

QUESTION 5: THIRD PARTY ACCESS TO THIRD-PARTY MICROGRIDS

- (a) Should third-party microgrids be subject to a third-party access regime?
- (b) Should only third-party microgrids above a certain size be subject to a third party access regime?
- (c) Should third-party microgrid service providers be obliged to offer to supply or connect customers? Should these obligations address small customers only or both small customers and large industrial customers?
- (d) To the extent that it would be appropriate to place obligations on operators of third-party microgrids to offer third-party access and/or to offer to supply new customers, should these obligations be applied through national or jurisdictional legislation?
- (e) Do the concepts of third-party access or supply and connection obligations have any relevance for individual power systems?
- (f) Are there any other issues relating to third-party access or supply and connection obligations that the Commission should consider?

6 ECONOMIC REGULATION

6.1 Overview and issues for discussion

The previous chapter discussed the potential services that a third-party SAPS provider might be obliged to offer to provide to potential users or end-use customers. 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 (that is, the economies of scale) of provision by a single entity (that is, a natural monopoly), whilst reducing the risks of inefficiencies arising from the use of substantial market power by that single entity.⁷⁷ Put another way, in those markets where the disciplines of competition are weak or absent, the purpose of economic regulation is to act as a 'visible hand' to guide service providers towards pricing outcomes that would have occurred had the market been subject to those competitive disciplines.⁷⁸

The Commission uses economic regulation in this paper to refer to potential regulations to create outcomes equivalent to workable competition in the absence of effective competition for or within a SAPS. This section introduces these concepts by reference to the NEM and the gas market.

However, the Commission is conscious that the same considerations may not apply to third-party SAPS as for the NEM. The arguments for or against the application of economic regulation may be affected by the business model of the third-party SAPS provider, and there are a number of likely such models. For example, in its consultation paper on stand-alone power systems,⁷⁹ the COAG Energy Council presented the following models:

- Landlord model: a landlord installing a microgrid or individual power system on-site and providing power to tenants under a lease agreement.
- Co-op model: multiple individuals or companies cooperatively owning and managing a microgrid to meet their power needs, with other individuals or companies opting in on a voluntary basis and being served under contract.
- District model: an independent firm owning and managing a microgrid and selling power to multiple customers in the area under contractual arrangements.
- Municipal model: a municipal body, such as a council, engaging a third party to provide a microgrid.

The incentives acting on the owners of a third-party SAPS being operated under a co-op model might be quite different to those acting on the owner of a distribution network in the

⁷⁷ 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.

⁷⁸ This is a more modern explanation of 'economic regulation'. Other explanations for economic regulation include: the creation of, or influence on, markets; government-imposed restriction on a firm's decisions regarding prices and quantities produced; and the protection of sunk investments made by service providers.

⁷⁹ COAG Energy Council, *Stand-alone energy systems in the Electricity Market*, consultation paper, 19 August 2016.

NEM, and this should be borne in mind when considering the case for or against economic regulation.

6.1.1 Barriers to competition and consumer choice

A microgrid, either in whole or in part, is likely to display natural monopoly characteristics akin to those of distribution networks.

However, it is typically the case that not all parts of the electricity supply chain exhibit the same extent of natural monopoly attributes. For example, the generation part may have less economies of scale than the poles and wires part. This means that there may be lower barriers to competition in generation, and it is often the case that a competitive market can be established in generation.

However, a minimum scale is likely to be needed at which competition becomes workable in a third-party SAPS supply model. As such, there is likely to be less scope for competition (at least with respect to generation and retail services) within a microgrid than within the NEM, given the latter's larger scale.

Having said this, a recent report for the Australian Energy Council argued that technological change was reducing the economies of scale for generation technologies, in particular batteries, solar PV and wind – precisely the kinds of generation technologies that may be expected to emerge in a SAPS supply model. Technological change implies that future generation investment is likely to be smaller and less 'lumpy', and therefore quicker to build..⁸⁰

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.

For many essential infrastructure services (for example, electricity), the type of technology, the diminishing marginal costs of use within capacity constraints and the lumpy and fixed nature of the assets (irreversible or sunk investment) dictate that one supplier rather than two or more can provide the service more efficiently. This may or may not also be the case for a third-party SAPS. 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 - this is most likely to be the case for an individual power system
- certain components of the SAPS, such as the network assets.

While a single supplier may represent the most efficient market structure, the natural protection available against competitive entry confers substantial market power on the incumbent. The owner of these assets has both the capacity and the commercial incentive to take advantage of this market power to monopoly price, and sacrifice both productive and allocative efficiency at the expense of the users of the service.

⁸⁰ Frontier Economics, *NEM structure in light of technology and policy changes*, A report for the Australian Energy Council, 13 December 2018.

A SAPS provider could monopoly price the SAPS solution for the customer, or the price of electricity produced by a SAPS (for example, in an integrated microgrid).

Moreover, a SAPS provider may be incentivised to attain allocative and productive efficiency whilst still covering its fixed costs. Productive efficiency is concerned with the production of a good or service with the optimal input combination (for example, most efficient inverter), whereas allocative efficiency is concerned with the optimal distribution of the good or service (for example, energy efficiency appliances). A SAPS provider may seek both allocative and productive efficiency where the SAPS provider is owned by, or otherwise has a close financial and legal relationship with, the SAPS customers – for example, in a landlord or co-op model.

On the other hand, a third-party SAPS provider may be unwilling to attain allocative or productive efficiency to the extent that it perceives a risk of asset stranding and an inability to retrieve the costs of any such stranded assets from customers:

- The third party may not attain productive efficiency - such as from cheaper generation alternatives both in front of and behind a SAPS customer's meter - if it perceives a risk of stranding of its existing generation assets.
- Similarly, the third party may be unwilling to attain allocative efficiency – such as via allowing for third parties to enter and offer differentiated tariffs and/or products to its customers – if this could strand either its generation or retailing assets (for example, billing systems).

6.1.2

Economic regulation in the NEM

In the NEM, the scope for effective competition is weakest for markets relating to the transportation of electricity – that is, the provision of transmission and distribution network services – as opposed to the generation or the retailing of electricity. This is why the breadth and depth of economic regulation in the electricity supply chain is greatest for network services.

This 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:⁸¹

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

However, another type of economic regulation exists in the NEM in the form of retail price regulation in some jurisdictions. 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

⁸¹ Chapters 6 and 6A of the NER.

competitiveness of the retail sector, and there are currently proposals to expand the number of jurisdictions in which such regulation is applied.

6.2 SAPS comparator arrangements

There currently are no national economic regulation provisions for third-party SAPS. However, this section provides details of two jurisdictional case studies on price regulation from Queensland and South Australia. It also discusses the Commission's recommendations in the draft reports for priority 1 of the review and the embedded networks review.

6.2.1 SAPS priority 1 review

Under priority 1 of the review, the network functions provided by a DNSP - which would include the provision of generation, in that it would partly form a substitute to network capacity - would be economically regulated under the existing arrangements in chapter 6 of the NER.

As noted in previous chapters, the Commission is currently considering two service delivery models, with the prime difference between the two relating to the retail activity. Under the "NEM consistency model", existing retail arrangements would be maintained, which is to say that competition would be relied on as a pricing discipline for retailers. However, under the "Integrated service delivery" model, retail competition would not be possible and, consequently, some form of retail price regulation would be required.⁸²

6.2.2 Embedded networks review

The Commission's final recommendations in the 2017 embedded networks review and draft recommendations in the 2018-19 embedded networks review aim to increase the scope for, and effectiveness of, retail competition by allowing competing retailers better access to child connection points in embedded networks. The introduction of these arrangements would replace the current reliance on a form of price regulation, whereby the AER restricts on-sellers in embedded networks from selling at a price in excess of the local retailer's standing offer.

As part of the new arrangements to facilitate competition, embedded network service providers would be subject to a form of price regulation, whereby they would be prohibited from charging on-market retailers accessing child connection points on the ENSP's network more than the "shadow price", that is the amount that the LNSP would charge an equivalent customer connected to its network.⁸³

6.2.3 Jurisdictional energy frameworks

Licensed participants who engage in the sale and supply of electricity to small customers in South Australia (which would capture licensed SAPS retailers and microgrid distributors) can be subject to price regulation by ESCOSA and the Treasurer.⁸⁴ However, ESCOSA deregulated

⁸² AEMC, *Review of the regulatory frameworks for stand-alone power systems*, draft report, 18 December 2018, section 4.4.

⁸³ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, p. x.

⁸⁴ Electricity Act Part 3, Division 2A – Price regulation, and Division 3AA – Special provisions relating to small customers.

electricity and gas retail prices on 1 February 2013, when the NECF became applicable in South Australia.⁸⁵

Therefore, 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.

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.⁸⁶ 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.

6.3 Policy considerations for third-party SAPS

The Commission is interested in stakeholder views on the extent of economic regulation, if any, that should apply to third-party individual power systems or microgrids or both. The Commission considers that this is likely to depend on:

- the extent to which the services offered in a SAPS can be unbundled and made individually contestable, and
- 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 under the "fit for purpose" and "proportionality" assessment criteria discussed in Chapter 3. These criteria indicate that the recommended regulatory framework should be commensurate to the regulatory issue being addressed.

As highlighted earlier, the relationship between the SAPS provider and the end-users is also likely to be important, for example the difference between a scenario where the end-users own the SAPS provider (co-op scheme) compared to where a greenfield developer appoints as SAPS provider under a long-term contract and then sells the new properties to end users who have no direct choice of or recourse against the SAPS provider. Similarly, different financing options may provide a different balance in bargaining power between the consumer and the third-party SAPS provider, and have implications on potential options for economic regulation.

⁸⁵ <http://www.escosa.sa.gov.au/electricity-overview/pricing-access.aspx> as accessed on 18 January 2019.

⁸⁶ Queensland Competition Authority, *Final determination - Regulated retail electricity prices for 2018-19*, May 2018.

There is a broad spectrum of options that the Commission may propose for economic regulation of third-party SAPS, from:

- no economic regulation; that is, no controls placed either on the amounts third-party SAPS providers can recover from their customers or on the ways (that is, the structure of network and retail tariffs within a third-party SAPS) in which these costs can be recovered
- a 'light-handed' approach to economic regulation that is limited to tendering, price disclosure or price monitoring requirements
- 'full' economic regulation, under which prices for the end customers or access within the SAPS chain are regulated.⁸⁷

As discussed previously, the Commission considers that the approach taken for the economic regulatory framework of a third-party SAPS should be as consistent as feasible and appropriate with the approach taken for the other elements of the overall regulatory framework for a third-party SAPS, most importantly the approach to third-party access and obligations to supply/connect.⁸⁸

6.3.1

Light-handed regulation

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

- transparent tendering process
- price monitoring
- negotiate-arbitrate regime.⁸⁹

As discussed in Sections 2.2 and 6.1.1, limited information about potential third-party SAPS providers and the absence of transparent tendering procedures in some cases may inhibit competition for the provision of a third-party individual power system or microgrid and limit consumer choice. As such, an economic regulation framework could include a transparent tendering process for stand-alone power systems, whether individual power systems or microgrids. The process could provide for various models and various financing options, as discussed above.

Price monitoring of a third-party SAPS could require the provider to report on reasons behind changing price offers. As a further step along the spectrum, regulation could specify permitted reasons for increasing prices, and/or the permitted rate of increase (for example, no more than X% p.a.), and give a regulator power to review compliance with these provisions and to tell the SAPS provider to come back with a revised price proposal if the initial one failed to meet these provisions.

⁸⁷ The terms 'full' and 'light' regulation – and the role for economic regulation within each of these regulatory approaches – echo those used in the economic regulation of gas pipelines.

⁸⁸ For example, it would not be consistent to place obligations on a service provider not to deny customers access to a service, but then allow it to price that service without constraint – a sufficiently high price would be equivalent to denial of access.

⁸⁹ This is discussed in Chapter 5.

6.3.2

Full regulation

As discussed in Section 6.1.1, there may be instances where it is economically efficient for only one party to supply either:

- the entire SAPS, including the generation assets, network assets and metering assets - this is most likely to be the case for an individual power system
- certain components of the SAPS, such as the network assets.

In the former case, full regulation in a third-party SAPS would seek to control the price paid by end-customers (that is, retail price regulation).

In the latter case, assuming the network assets are the only natural monopoly within the SAPS, the breadth and depth of full economic regulation would be greatest for the network service. An entity could be assigned the role of economic regulator for third-party SAPS and would control the prices charged by the SAPS provider for network access (that is, network access price regulation). The economic regulator could set a reference tariff that would apply to a common SAPS network service (for example, the connection of customer loads), based on its assessment of the efficient costs associated with providing that network service. The reference tariff can also serve as a basis for network access seekers to negotiate prices for other network services supplied by a third-party SAPS provider.

In this case, there may be concerns that a lack of competition may inhibit the design and implementation of efficient tariffs in those components of a third-party SAPS considered to be a natural monopoly (as discussed in Section 6.1.2). The role for full regulation here would be to simulate outcomes in regards to tariff structures that would have occurred if competition were to be workable and effective in that component of the SAPS. As such, the economic regulator may also set tariff structures such as time of use tariffs to stimulate allocative efficiency.

Governance of regulation

To the extent that economic regulation is required for third-party SAPS systems, either retail price regulation in a vertically integrated structure or some other form of economic regulation for some part of the supply chain, a question arises as to the governance of the regulation.

Under the AEMA, retail energy price controls are the responsibility of jurisdictions, whereas functions relating to the economic regulation of electricity networks reside with the AER. Consequently, the governance of any economic regulation might be linked to the form it takes, with any regulation of end-use prices consistent with regulation at a jurisdictional level.

To the extent that full regulation is applied to SAPS networks, this might most efficiently be undertaken by the AER. However, the more the regulatory approach diverges from current arrangements for the regulation of distribution networks under chapter 6 of the NER, the less compelling the rationale might be for this activity to be undertaken by the AER. State regulators might offer an alternative.

QUESTION 6: ECONOMIC REGULATION

- (a) Should third-party SAPS be economically regulated and what should the scope of regulation be?
- (b) Should a different approach be taken for an IPS compared to a microgrid, or for different sized microgrids? If so, why? If not, why not?
- (c) Which of 'full', 'light', or 'no' economic regulation is most appropriate for a third-party SAPS? Why?
- (d) Are there other more appropriate approaches to economic regulation of a third-party SAPS not discussed above?
- (e) Should economic regulation of third-party SAPS be undertaken at a national or jurisdictional level?

7 CONSUMER PROTECTIONS

7.1 Overview and issues for discussion

The regulatory framework for electricity should promote new and innovative services, however, not at the expense of an enforceable set of consumer protections or access to retail market competition (if practicable). The Commission's view in the Western Power rule change was that consumer protections for an essential service should depend on the needs of consumers rather than the model of supply of that service.⁹⁰ The Commission has maintained this view in the draft report for Priority 1 of the SAPS review, and the draft report for the current embedded networks review.

Under the national electricity regulatory framework there are a number of energy-specific consumer protections for grid-connected customers. National energy-specific consumer protections are found primarily in the NECF, the main legal instruments of which are the NERL and the NERR. The NECF:⁹¹

- 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.

The state and territory energy functions complementing the NECF and that need to be considered to provide a complete set of consumer protections 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.

As part of the review, consideration needs to be given to which energy-specific consumer protections are appropriate for the third-party SAPS model(s) of supply, and whether different service delivery models, whether the SAPS is an IPS or microgrid, and the availability of alternative supply options for the customer impact the consumer protections that are required.

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

⁹⁰ AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, p. 36. This view was also taken in the 2017 embedded networks review: AEMC, *Review of regulatory arrangements for embedded networks*, final report, 28 November 2017.

⁹¹ 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.

- dispute resolution procedures
- minimum contractual standards
- billing, tariff and payment minimum requirements, and
- protections for vulnerable customers.

Depending on the jurisdiction, customers receiving supply via a third-party SAPS may not be covered by the current consumer protections under the NERL and NERR (the NECF). If they are supplied by an authorised retailer, customers receiving supply from a microgrid in Queensland and the ACT (if any) may be covered by the consumer protections under the NECF.⁹² Similarly, consumers 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.⁹³

7.1.2

Protections under the Australian Consumer Law

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 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. 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.

Although the consumer protections under the ACL provide a base level of consumer protections, because electricity is an essential service, additional consumer protections are generally provided for energy consumers and the question is to what extent these additional protections should apply to third-party SAPS customers.

⁹² The Acts adopting the NERL in Queensland and in the ACT do not limit the application of the NECF to the sale of electricity to customers connected to the interconnected national grid. If the seller of electricity in a microgrid in those jurisdictions is an authorised retailer it would be subject to the full provisions of the NECF.

⁹³ The Acts adopting the NERL in each of these jurisdictions specify that 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.

BOX 7: BEHIND THE METER DISTRIBUTED ENERGY RESOURCES PROVIDER CODE

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 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.

The BTM 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). A draft Code was published in November 2018, with obligations relating to pre-sale, sale, payment and finance, post-sale and installation, complaint handling and warranty, and business management, which would apply to those entities that voluntarily become signatories to the Code (once it is finalised). The Code could be particularly important in terms of providing protections over and above those in the ACL for off-grid customers 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).

Source: COAG Energy Council, Energy Market Transformation Bulletin No. 05 - Work Program Update, 3 August 2017, p. 1-2; Consultation draft, Behind the Meter Distributed Energy Resources Provider Code, November 2018.

7.1.3

Jurisdictional consumer protections for grid-connected customers

There are a number of jurisdictional consumer protections which should 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 energy-specific jurisdictional 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 and emergency assistance towards energy costs. In addition to concessions and rebates, 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 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.⁹⁴

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.

7.2 SAPS comparator arrangements

When considering the most appropriate consumer protections for third-party SAPS it may be useful to review the recommendations in the draft reports 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.

7.2.1 SAPS Priority 1 review

The Commission's recommendation in the draft report for Priority 1 of this review was 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-grid supply without consent. Depending on the final model of supply, the Commission considered that the majority of the consumer protections under the NERL, NERR should be applied without change, and recommended that jurisdictional consumer protections be extended to DNSP-led SAPS. Some additional SAPS-specific consumer protections were recommended such as specific consultation and information provision requirements.⁹⁵

7.2.2 Embedded networks review

In the draft report for *Updating the regulatory frameworks for embedded networks* the Commission proposed a framework 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.⁹⁶ In addition, there were a small number of obligations that were not recommended to be extended to off-market retailers in embedded networks, for example it was recommended that off-market retailers not be required to publish price variations in a newspaper.⁹⁷

⁹⁴ Section 86 of the NERL.

⁹⁵ AEMC, *Review of the regulatory frameworks for stand-alone power systems*, draft report, 18 December 2019, pp. 112-113, 115-117.

⁹⁶ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, pp. 102-103.

⁹⁷ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, p. 130.

7.2.3

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 consumer protections in the licence conditions for the provider of the South Australian Remote Area Energy Supply scheme, Cowell Electric, include requirements relating to:⁹⁸

- standard contractual terms and conditions approved by ESCOSA
- 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.

7.3

Policy considerations for third-party SAPS

As detailed at the beginning of this chapter, consideration needs to be given to which energy-specific consumer protections are appropriate for the third-party SAPS model(s) of supply, and if different service delivery models, whether the SAPS is an IPS or microgrid, and the availability of alternative supply options for the customer impact the consumer protections that are required.⁹⁹

Residential customers under a third-party SAPS model of supply will currently 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.

Whether it is appropriate to apply all the consumer protections in the NERL and NERR, as well as the jurisdictional consumer protections to all third-party SAPS, or a subset of those protections is a key consideration of this review. It may be reasonable that the full suite of consumer protections applicable to grid-connected customers are extended to third-party SAPS customers, or that a key set of consumer protections to apply to microgrids be developed, on either a national or jurisdictional level. However, careful consideration will need

⁹⁸ ESCOSA, *Electricity retail, distribution, and generation licence Cowell Electric Supply Pty Ltd*, 26 September 2018.

⁹⁹ This is discussed further in Chapters 3 and 6.

to be given to the impacts on customers, as well as the distortionary impacts of forum-shopping, of not extending all the current obligations to third-party SAPS (for example if any consumer protections are considered too onerous or not proportionate for SAPS).

It may be necessary to provide additional SAPS-specific consumer protections for consumers being supplied via a third-party SAPS compared with those currently contained in the NERL, NERR and jurisdictional instruments. For example, it is likely there will be additional consumer consultation and consent requirements and information provision requirements for third-parties seeking to transition customers to a SAPS, and potentially obligations relating to retail price controls.¹⁰⁰ The Commission would be interested in stakeholder views as to whether there are any additional consumer protections should apply to 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. If all or a large proportion of the consumer protections under the NERL and NERR are to apply to third-party SAPS, it may be appropriate to extend the NERL and NERR, or a subset of the provisions under the NERL and NERR to cover third-party SAPS. Alternatively, jurisdictional instruments could be developed to provide the pertinent set of consumer protections for third-party SAPS customers. Alternatively, jurisdictional regulators could impose relevant consumer protections through license conditions. Similarly, any additional SAPS-specific consumer protections could be provided under a national framework by incorporating the requirement into the NERR, or provided via jurisdictional instruments. If access to state-based energy concessions and rebates, and energy ombudsman schemes are extended to third-party SAPS customers, these will remain jurisdictional functions.

In assessing whether it would be appropriate to impose on third-party SAPS the current full suite of consumer protections, and/or additional SAPS-specific consumer protections, the potential differences between an IPS and a microgrid customer need to be considered. A more comprehensive suite of consumer protections may be required for microgrids than IPS. Whilst the application of all of the consumer protections appropriate for a microgrid may not be appropriate for an IPS which is procured by, owned and maintained by a customer, it is possible that there are a number of basic consumer protections and safety obligations which should apply in addition to those protections under the ACL. For example, it is likely reasonable that all energy users have access to energy concessions, rebates and emergency energy assistance, including IPS customers. If the IPS is provided under a different arrangement, for example if the customer is leasing the SAPS, or otherwise paying a third-party for electricity from an IPS, then it is likely that more comprehensive consumer protections would be required.

The Commission welcomes stakeholders' views on what additional consumer protections specific to the third-party SAPS model of supply may be appropriate, and whether all or some of these protections should apply to microgrids only, or IPS as well.

¹⁰⁰ For example, on page 15 in its submission to the Priority 1 issues paper PIAC considered that on transition to a SAPS a third party should disclose detailed product information, offer supply interruption guarantees, provide information on the differences between living with a grid-connection and with a SAPS, demonstrate the explicit informed consent of the customer and provide clear and fair contract terms.

QUESTION 7: CONSUMER PROTECTIONS

- (a) Is it appropriate to apply the full suite of energy-specific consumer protections (national and jurisdictional) to third-party SAPS? Are there any consumer protections which would not be appropriate and proportionate for third-party SAPS?
- (b) Are there any additional SAPS-specific consumer protection provisions which should apply to third-party SAPS? If so, what are they?
- (c) Is there a justification for the consumer protection provisions applied to third-party SAPS differing between microgrids and IPSs? or between microgrids of different sizes?
- (d) Should consumer protections generally be applied to third-party SAPS on a national basis (excluding concessions and rebates and ombudsman schemes), or a jurisdictional basis?
- (e) Are there any other consumer protection issues the Commission should consider?

8 RELIABILITY OF SUPPLY

8.1 Overview and issues for discussion

A power system is reliable when there is enough generation, demand-side response and network capacity to supply customers with the energy they demand with a high degree of confidence. In the context of SAPS, the reliability of supply of electricity will be determined by the capacity of the SAPS (including network, generation and demand-side assets) to meet demand at any point in time.

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 that are generally used to supply electricity mean that it is 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 be made by regulators and governments on behalf of consumers as a whole. This situation may differ for customers of third-party microgrids and IPSs.

For these reasons, it is important that reliability is explored in detail in this review. However, the standards and measures for the reliability of third-party SAPS may not necessarily need to be exactly the same as those that apply to grid-connected customers. Some measures or incentive targets used for grid-connected customers may not be appropriate for third-party SAPS systems.

In the NEM, the reliability that customers experience is a combination of the service provided by generators, transmission networks, and distribution networks. However, most of the outages that customers experience are due to issues on the distribution networks.¹⁰¹ Each state and territory government retains control over how transmission and distribution reliability is regulated, which has resulted in different regulations in each jurisdiction.¹⁰²

In the context of stand-alone power systems, the reliability of supply of electricity will be determined by the characteristics of that system. 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 system 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 control of the distribution business.¹⁰³ In this work on Priority 2, the Commission will need

101 The Commission has recently noted that 95.63% of supply interruptions over the period 2007/08 to 2016/17 were caused by outages on the distribution network. See: AEMC, *Enhancement to the reliability and emergency reserve trader*, draft rule determination, 7 February 2019, p. 10.

102 COAG, Australian Energy Market Agreement, Annexure 2.

103 AEMC, *Review of the regulatory frameworks for stand-alone power systems - Priority 1*, Draft report, 18 December 2018, p. 116.

to consider 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 national 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 targets set by the AER under the economic regulation arrangements relates to reliability. This is the service target performance incentive scheme (STPIS).¹⁰⁴

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.¹⁰⁵

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 entirety of the existing rules governing economic regulation of distribution services, and therefore the STPIS, would be applied to 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 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

¹⁰⁴ 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.

¹⁰⁵ The STPIS is applied in the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria.

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).

8.2 SAPS comparator arrangements

When considering the most appropriate reliability requirements for third-party SAPS it may be useful to review the recommendations in the draft reports 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.

8.2.1 SAPS Priority 1 review

In the draft 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 include DNSP-led SAPS in the calculation of DNSPs' targets. As such, for DNSP-led SAPS the Commission's draft recommendation was not to introduce additional reliability standards or targets for individual SAPS, rather it was that customers in DNSP-led SAPS should receive protections equivalent to grid-connected customers.¹⁰⁶

8.2.2 Embedded networks review

In the draft report for *Updating the regulatory arrangements for embedded networks* it was noted that there was a gap in regulatory coverage, with customers in embedded networks generally not receiving any reliability protections. The Commission considered that consumers in embedded networks would benefit from some reliability protections, but noted that embedded networks generally have a much smaller number of customers connected to their networks than DNSPs.

Consequently, the Commission concluded that applying SAIDI and SAIFI in the same way as for DNSPs would likely not be appropriate. Instead, the Commission suggested that the most reasonable approach to providing reliability protections within embedded networks would

¹⁰⁶ AEMC, *Review of the regulatory frameworks for stand-alone power systems*, draft report, 18 December 2018, pp. 121-122.

likely to 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.¹⁰⁷

8.2.3 Current jurisdictional frameworks for third-party SAPS

An example of jurisdictional reliability arrangements that apply to third-party SAPS are 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, however, the licensee must "use its best endeavours to minimise the frequency and duration of supply interruptions".¹⁰⁸

8.3 Policy considerations for third-party SAPS

The Commission is interested in stakeholder views on whether there should be any regulatory reliability protections for third-party SAPS, the appropriate form of any such protections and whether these should be specified as part of national or jurisdictional regulatory frameworks.

8.3.1 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 and forms part of the NEO.¹⁰⁹

In its work on DNSP-led SAPS and embedded networks, the Commission has expressed a view that customers should receive the same protections regardless of how they receive their electricity supply. However, for third-party SAPS, consumers may have access to more substitute sources of electricity (e.g. supply from the main grid or from an IPS). They may also have explicitly consented to the transition to third-party SAPS supply, aware of the likely changes in the price they would pay and the service they would receive in return.

As discussed, reliability targets or standards for individual customers are not currently used in the NEM as individual grid-connected customers cannot trade off reliability for price and negotiate individual reliability levels. This is not necessarily the case for IPSs or for customers in a microgrid (as a collective), especially if few in number, who could potentially negotiate reliability and be subject to a reliability standard that is applicable to that particular SAPS.

For IPSs that are, procured by, and become the responsibility of, an individual customer, the application of reliability targets or standards might be less relevant, and product guarantees under the ACL may apply.¹¹⁰ For IPS which are provided under a business model where a party other than the customer or a DNSP own and operate the IPS and sell electricity services to the customer, reliability standards or customers having an ability to negotiate reliability appears more important. For all IPS it would likely be important for potential

¹⁰⁷ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, pp. 180-181.

¹⁰⁸ ESCOSA, *Electricity retail, distribution and generation licence Cowell Electric Supply Pty Ltd*, 26 September 2018, p. 6.

¹⁰⁹ NEL s. 7.

¹¹⁰ The ACL is discussed in more detail in Chapter 7 of this review.

purchasers of IPSs to provided with information which enables them to ascertain the likely reliability of the system once installed.

For microgrids, there will be an entity (which may be one of the SAPS customers) responsible for operation of the SAPS on which multiple customers will be reliant. Reliability protections may therefore be more appropriate for microgrid customers than for IPS customers. Taking all these factors into account, the Commission is therefore interested in stakeholder views as to whether imposing regulatory reliability standards for third-party SAPS would be appropriate.

8.3.2

What methods of reliability protections would be most appropriate?

Third-party SAPS providers are unlikely to have many thousands of customers connected to a single microgrid, therefore 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. The Commission did not recommend the extension of SAIDI and SAIFI targets to embedded network service providers in the embedded networks draft report for similar reasons. Rather, the Commission recommended that jurisdictions develop and apply a type of GSL scheme for reliability. A similar scheme may be appropriate for third-party microgrids.

An alternative lighter-handed approach to reliability protections for third-party SAPS than a GSL scheme or a reliability standard could be a general requirement for third-party SAPS providers/operators to minimise the duration and frequency of outages as is currently the case under the ESCOSA licensing scheme in South Australia. This could include reporting requirements and, if continued issues are identified, requirements to prepare a plan to resolve the reliability concerns.

Stakeholder views on how any regulatory reliability protection might be implemented are therefore welcome. In addition, the Commission would be interested in stakeholder views on the suggestion for the development of an Australian Standard 'reliability rating' for supply arrangements other than through the interconnected grid, and on what the methodology for such a standard might be. A reliability rating would be intended to allow consumers to make a meaningful comparison between the reliability of the available supply models, when they are considering moving to a different supply model.¹¹¹

8.3.3

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 determined by jurisdictions, consistent with existing allocation of functions between jurisdictions and national bodies under the AEMA.

¹¹¹ Page 8 of Attachment 1 to the terms of reference of this review notes that the development of a standard reliability rating for third-party SAPS to provide consumers with a meaningful comparison when presented with a reliability standard from a third-party provider was suggested by the Consumer Action Law Centre and the Consumer Utilities Advocacy Centre in submissions to the COAG Energy Council's consultation paper.

However, it may be possible for a nationally cohesive approach to the reliability of third-party SAPS to be developed by a national body, with jurisdictions choosing to adopt this consistent set of reliability protections if desired.

QUESTION 8: RELIABILITY

- (a) Would it be appropriate to apply some form of regulatory reliability protections to third-party SAPS? If so, how might such protections be specified?
- (b) Should IPSs be subject to any reliability standards, targets or benchmarks? If so, what may be appropriate?
- (c) Should reliability standards for third-party SAPS be governed under jurisdictional frameworks, consistent with the existing governance for network reliability? Is there a case for having any element of reliability protections specified or developed at a national level?
- (d) Are there any circumstances under which customers should be able to determine an acceptable level of reliability in consultation with the third-party SAPS provider? If so, what are those circumstances, and would any additional protections or information requirements be needed in relation to that negotiation?
- (e) Are there any other issues related to the reliability of third-party SAPS that the Commission should consider?

9 NETWORK OPERATIONS AND SYSTEM SECURITY

9.1 Overview and issues for discussion

This chapter sets out issues and policy options for consultation 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.

9.1.1 System security

System security as it relates to the NEM refers to the scheduling, operation and control of the power system on a continuous basis, within defined technical limits (even if there is an incident such as the loss of a major transmission line or large generator). Power system security relates to the technical parameters of the system such as frequency and voltage, and the rate at which these may change, as well as the ability of the system to withstand faults.¹¹²

The power system is secure when technical parameters such as voltage and frequency are maintained within defined limits. To maintain frequency the power system has to instantaneously balance electricity supply against demand. The system security standards needed for a reliable and secure electricity market are defined in the NER and also by the AEMC's Reliability Panel. AEMO and network businesses operate the NEM in line with these standards.

The system security requirements in the NER apply to the national grid and it is likely that appropriate security settings could be quite different for microgrids than those developed for the national grid. For individual power systems, the concept of system security appears to be less relevant.

¹¹² Chapter 4 of the NER.

9.1.2

Technical standards

Technical standards imposed on parties connected to the national grid are an important tool in managing system security and ensuring that the grid is operated within technical limits. In particular, 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. Networks businesses are responsible for managing power quality against technical standards, and a DNSP can impose conditions on entities and individuals connecting to its network through connection agreements. Technical standards and obligations are placed on DNSPs via jurisdictional instruments.

Under jurisdictional instruments, DNSPs must adhere to a number of technical regulations and design and performance standards when supplying grid-connected customers, and designing their networks. For example, there are design standards relating to overhead lines, underground lines, substations, generators, services and customer installations. In addition, there are quality of supply obligations relating to voltage range, frequency, and disturbances as well as enforcement regimes to monitor compliance with the obligations.¹¹³

Australian Standard 3000 (AS 3000), the Wiring Rules, is incorporated in certain jurisdictional technical standards in part, and provide fundamental safety principles for safe electrical installation. The Wiring Rules generally apply to work carried out by licensed electrical practitioners on electrical installations,¹¹⁴ Technical standards are also regulated by Service and Installation Rules (or similar) in each jurisdiction. The Service and Installation Rules are primarily designed to regulate the relationship between a licensed distributor and its grid connected customers and to assist in maintaining power quality. Further, the rules are designed to provide reasonable technical requirements that meet legislative and other regulatory requirements for connection to DNSP networks, and compatible requirements of the electrical installation which is to be connected to the DNSP's network.¹¹⁵

For stand-alone power systems, there is also 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 and covers equipment up to and including the output of the stand-alone power system.¹¹⁶ The Commission is interested to understand the extent to which this standard is being applied in practice.

¹¹³ For example, in NSW 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.

¹¹⁴ AS/NZS 3000: 2018, Electrical Installations.

¹¹⁵ 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.

¹¹⁶ AS/NZS 4509.1.209(R2017); AS/NZS 4059.2:2010 (R2017).

9.1.3

Metering and settlement

Accurate data is important in the NEM to settle the wholesale market by measuring consumption and generation so that retailers can be billed and generators paid accurately, network businesses can manage their networks safely and customers can be provided with accurate bills. 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 customer's 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.

Chapter 7 of the NER sets out arrangements for metering matters including:

- 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.

Some form of metering and settlement will be important to every sale of energy, irrespective of whether the system is as large and complex as the NEM.¹¹⁷

9.2

SAPS comparator arrangements

Useful comparators relating to system security, technical standards and metering and settlement functions for third-party SAPS are provided by the recommendations in the draft reports for priority 1 of this review and the embedded network review, as well as conditions imposed on licensees or operators of microgrids under existing jurisdictional regulation, for instance the licenses issued by ESCOSA.

9.2.1

SAPS Priority 1 review

System security

System security was not directly addressed in the draft report for Priority 1 of this review, however, the potential for some system security requirements for larger microgrids was touched on briefly in the Priority 1 issues paper. Responsibility for system security might depend on the size of the generating units in the microgrid: if the generating units are of sufficient size to be registered in the NEM (if they were connected to the national grid), there may be a role for AEMO in managing system security; otherwise it is likely that this role would fall to the DNSP. Recommendations have not yet been made in this area.

¹¹⁷ 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.

Technical standards

In the draft report for Priority 1 of this review the Commission considered that the same technical standards that apply to a DNSP's grid-connected network should apply to DNSP SAPS.¹¹⁸ The Commission considered that technical regulations and design and performance standards that DNSPs must adhere to, as well as quality of supply obligations, may automatically extend to DNSP-led SAPS, if SAPS are considered to be part of the distribution system under jurisdictional definitions.

The report included a draft recommendation that jurisdictions review their legislative frameworks to confirm that consumer protections including DNSP technical regulations, design and performance standards and quality of supply obligations would extend to customers in a DNSP-led SAPS, and make any necessary amendments to the regulatory framework, codes, guidelines and any other legislative instruments if any of the protections are found to not apply to customers in DNSP-led SAPS in their current form.¹¹⁹

Metering and settlement

Metering and settlement requirements were considered in the Priority 1 draft report for this review in the context of the differences in metering and settlement which would be required in the two proposed DNSP SAPS models of service provision. Under the NEM consistency model, AEMO would be able to use existing market settlement systems, but these may require minor changes. Under the Integrated Service Delivery model it was noted that metering and settlement arrangements would be different from current NEM arrangements. Existing metering roles, responsibilities and processes may be able to be used with only minor changes under the Integrated Service Delivery model, but settlement arrangements would be quite different.¹²⁰

9.2.2

Embedded networks review

System security

System security was not directly addressed in the draft report for the embedded networks review. In large part this is because embedded networks are connected to the interconnected national electricity system, where there are already robust existing arrangements for AEMO to manage system security.

Technical standards

The recommendations in the draft report would see new embedded networks elevated into the national regulatory framework. Consequently, the conditions relating to technical standards in the AER's Network Exemption Guideline would not apply to new embedded networks. The Commission's initial recommendations were that the technical obligations such as equipment and performance standards should be analysed in each jurisdiction to

¹¹⁸ AEMC, *Review of the regulatory frameworks for stand-alone power systems*, draft report, 18 December 2018, p. 125.

¹¹⁹ AEMC, *Review of the regulatory frameworks for stand-alone power systems*, draft report, 18 December 2018, pp. 125-126.

¹²⁰ AEMC, *Review of the regulatory frameworks for stand-alone power systems*, draft report, 18 December 2018, pp. 98, 102.

determine if it would be appropriate to extend current jurisdictional regulations in part or in full to embedded networks.¹²¹

Metering and settlement

In the embedded networks review draft report the Commission considered that the metering framework in Chapter 7 of the NER should be extended to embedded networks, with retailers responsible for the appointment of a metering coordinator. The benefits for embedded network customers include a higher standard for meter reading, testing, and inspection standards, greater security requirements, and greater access rights for customers to their metering information.¹²²

The report also included a recommendation that ENSPs implement network billing and settlement in line with a procedure to be made by AEMO to promote consistency with the billing practices of DNSPs, and thereby promote greater retail competition in embedded networks.¹²³

9.2.3

Current jurisdictional frameworks for third-party SAPS

When considering the most appropriate network operations requirement for third-party SAPS it may be useful to review the obligations imposed on licensees or operators of current jurisdictional microgrids, for example the licence conditions imposed on a licensee supplying electricity via multiple SAPS in South Australia.

In South Australia, ESCOSA imposes licence conditions relating to metering, system security and technical standards on the operators of SAPS. Conditions include:¹²⁴

- 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.

¹²¹ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, p. 185.

¹²² AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, p. 63.

¹²³ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, p. 41.

¹²⁴ ESCOSA, Cowell Electric Supply Pty Ltd Electricity Retail, Distribution and Generation Licence, 26 September 2018, pp. 6-8.

9.3 Policy considerations for third-party SAPS

The Commission is interested in stakeholder views on which, if any, operational and technical aspects of a third-party SAPS supply should be regulated and how.

Consideration needs to be given to what, if any, system security requirements and technical standards would be appropriate for third-party SAPS services, and whether different types of SAPS, for instance whether the SAPS is an IPS or a microgrid, would affect this.

Similarly, consideration also needs to be given to whether any specific requirements should be placed on third-party SAPS service providers in relation to metering, and what requirements regarding settlement functions, if any, would be appropriate within third-party SAPS.

9.3.1 System security

The system security requirements in the NER apply to the national grid and it is likely that appropriate security settings could be quite different for third-party SAPS. In determining the need for, and the form of, any system security requirements which may be required for third-party SAPS, the potential differences between microgrids and IPS should be considered.

For microgrids, in particular large microgrids, some system security requirement may potentially be required to assist in the safe scheduling and control of the power system and to maintain acceptable frequency and voltage levels. However, as it is unlikely that multiple large generators will be connected to a third-party SAPS (with the possible exception of very large microgrids), appropriate security settings will likely not be the same as those developed for the NEM. The size and complexity of microgrids may be a relevant consideration for the appropriateness of any system security obligations.

For IPS, the concept of system security appears to be less relevant, with any voltage or frequency fluctuations likely stemming from the SAPS itself, and therefore just a matter for the IPS's internal control systems.

It may be necessary, particularly in the context of a larger microgrid, to consider the need for a system operator role to maintain distribution safety and system security as the SAPS network and energy resources become more complex. The Commission is interested in stakeholder views on whether there is a requirement for such a role, whether an existing entity or a new one would be best placed to perform it, and whether the role could be performed at a national or jurisdictional level.

To the extent that a framework for system security is required, such a framework could be implemented through jurisdictional regulation or a combination of jurisdictional and national frameworks. The most appropriate choice may be driven by the system security requirements that are determined to be appropriate, and if a system operator's role is required for third-party SAPS of a certain size.

9.3.2 Technical standards

It is likely that an analysis of the technical obligations such as equipment and performance standards in each jurisdiction, and the appropriateness of the application to third-party SAPS,

will be required to determine if current technical obligations can be extended either in full or with amendment, or whether alternative technical standards may be more appropriate. The size and complexity of the third-party SAPS may be a consideration when determining the most appropriate approach.

The need for, and the form of, any technical obligations which may be required for third-party SAPS may differ for microgrids and IPS. There are different technical requirements and standards applicable to DNSP's networks and to smaller electrical installations in the current regulatory frameworks. Similarly, different technical standards and quality of supply obligations may be appropriate for IPS and microgrids. It is also likely a more comprehensive enforcement regime would be required for microgrids than for IPSs.

A framework for technical standards, and network quality of supply obligations for third-party SAPS, will be required to be implemented through jurisdictional regulation, and jurisdictional regulators will ultimately determine the most appropriate technical standards and network quality of supply framework for governing third-party SAPS.

The Commission is interested in stakeholders' views on the appropriate technical standards and quality of supply obligations for third-party microgrids, and whether these should apply in part or full to IPSs.

9.3.3

Metering and settlement

To enable accurate billing and apportion electricity consumption within a third-party SAPS, it is likely that some metering service requirements governing the installation, accuracy and maintenance of meters and collection and provision of metering data at a minimum, as well as a settlement requirements for the electricity produced and consumed in the third-party SAPS would be appropriate for microgrids.

For individual power systems where the customer is leasing the IPS, or otherwise paying a third party for electricity from the IPS, then accurate metering will be an important consideration. If the customer owns the IPS, or under some other arrangement is not paying for the electricity on a kilowatt hour consumption basis, then metering and settlement arrangements may not be needed.

A framework for metering and settlement could be implemented through jurisdictional regulation or a combination of jurisdictional and national frameworks. The most appropriate choice may be driven by the metering requirements that are determined to be appropriate for the third-party SAPS, and the parties involved in settlement. For instance, if a decision was made to apply the current metering provisions in the NER then a national framework may be appropriate.

The Commission is interested in stakeholders' views on the appropriate metering obligations and settlement framework for third-party microgrids, and whether these should apply in part or full to IPSs.

QUESTION 9: NETWORK OPERATIONS

- (a) What are the key system security and technical standards that should be applied to all third-party microgrids at a minimum? Are there any minimum system security and technical standards that should apply to IPSs?
- (b) Should there be a system operator role for large third-party SAPS? If so, what party would be most appropriate to perform this role, and what SAPS size threshold should trigger the need for this role?
- (c) What are the key metering and settlement obligations that should be applied to all third-party microgrids at a minimum? Are there any metering or settlement requirements that would be relevant for IPS?
- (d) Should the regulatory frameworks for system security and metering and settlement be national or jurisdictional, or a combination of both?
- (e) Are there any other issues related to system security, technical standards or metering and settlement that the Commission should consider in respect of third-party SAPS?

10

SAFETY

10.1

Overview and issues for discussion

A framework for safety of electricity is of critical importance to help prevent death and injury to the public and persons 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.¹²⁵

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 and 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.

10.1.1

Safety arrangements under the ACL

Under the ACL, consumer products must be safe and meet consumer guarantees before they can be sold. In addition, some products must also meet product specific mandatory standards. If products are found to be unsafe consumers have a right to a refund, and products may be banned and/or recalled if they could cause injury. Customers can claim for loss or damage, including economic loss, caused by goods with a safety defect.

Mandatory reporting of accidents in particular situations is also required under the ACL.

For products that require particular safety or information features, mandatory standards may be developed and imposed. Products with mandatory standards include aquatic toys, bicycles and cots. There are no current mandatory standards for SAPS.

¹²⁵ Australian Energy Market Agreement, Annexure 2.

10.1.2 Jurisdictional electricity safety arrangements

As noted earlier in this section, the safety of electricity networks and electrical installations are governed by jurisdictional instruments. Some jurisdictions have different safety legislation for DNSPs than other 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.

BOX 8: 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)*.

10.2 SAPS comparator arrangements

When considering the most appropriate safety requirements for third-party SAPS it may be useful to review the recommendations in the draft reports 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 and the regulatory arrangements for the Bass Strait Islands in Tasmania.

10.2.1 SAPS Priority 1 review

In the draft report for the Priority 1 of this review the Commission recommended customers in DNSP-led SAPS receive consumer protections that are equivalent to what they received prior to transitioning to a SAPS, including the DNSP's safety obligations. It was noted in the review that if DNSP-led SAPS are considered to be part of a distribution system (or similar under jurisdictional definitions), then this may extend the DNSP's safety obligations to DNSP-led SAPS, depending on the exact wording of the jurisdictional instrument in question.

The report included a draft recommendation that jurisdictions review their legislative frameworks to confirm that DNSP safety obligations would extend to customers in a DNSP-led SAPS, and make any necessary amendments to the regulatory framework, codes, guidelines and any other legislative instruments if any of the protections are found to not apply to customers in DNSP-led SAPS in their current form.¹²⁶

10.2.2 Embedded networks review

Under the current arrangements for embedded networks, the AER's Network Exemption Guideline contains a condition that exempt networks must be installed, operated and maintained in accordance with all applicable requirements for the safety of persons and property within the jurisdiction in which the embedded network is located. This includes relevant industry codes, guidelines or other instruments applicable to a network service provider providing similar services. Larger networks are required to obey any of the local safety requirements to have and maintain a safety management plan.¹²⁷

The embedded networks framework proposed in the draft report will see new embedded networks elevated into the national framework. Consequently, the safety condition in the AER's Network Exemption Guideline would not apply to new embedded networks, and the application of jurisdictional electricity safety frameworks to embedded networks required consideration.

In the embedded networks review draft report the Commission found that extending the jurisdictional safety Acts, Regulations, guidelines and licence conditions to all new embedded networks in their entirety may not be proportionate, and could place onerous obligations on smaller embedded networks.¹²⁸ The Commission considered that analysis of the safety

¹²⁶ AEMC, *Review of the regulatory arrangements for stand-alone power systems*, draft report, 18 December 2018, pp. 125-126.

¹²⁷ AER, *Electricity Network Service Provider - Registration Exemption Guideline*, version 6, March 2018, p. 36.

¹²⁸ AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, 31 January 2019, p. 172.

obligations in each jurisdiction, and the appropriateness of applying them to embedded networks, would be required to determine if current obligations can be extended either in full or with amendment, or whether alternative safety obligations may be more appropriate.

It is likely that the same considerations are relevant for third-party SAPS. The safety obligations in the AER's Network Exemption Guidelines may be a relevant starting point when determining a base level of safety obligations required for third-party SAPS, as will be the jurisdictional safety obligations that are determined to be appropriate for new embedded networks.

10.2.3 **Current jurisdictional frameworks for third-party SAPS**

When considering the most appropriate safety standards for third-party SAPS it may be 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 commissioning of electricity infrastructure owned or operated by the licensee. The plan is required to cover:¹²⁹

- 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 ensuring contractors 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.

¹²⁹ ESCOSA, Cowell Electric Supply Pty Ltd Electricity Retail, Distribution and Generation Licence, 26 September 2018, p. 6.

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)* regarding 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.¹³⁰ The Tasmanian Electricity Code additionally confirms that the Bass Strait Islands power system operator must ensure that the power system operates safely, and imposes specific rules regarding system operations and controls.¹³¹

10.3 Policy considerations for third-party SAPS

Consideration needs to be given to the appropriate safety framework for third-party SAPS. Simply extending the jurisdictional safety Acts, Regulations, guidelines and licence conditions in their entirety to all SAPS may not be proportionate, and could place onerous obligations on operators of smaller microgrids and IPS. Further analysis of the energy specific safety obligations in each jurisdiction, and the appropriateness of applying them to third-party SAPS, will be required, as well as analysis of broader product safety laws, particularly in relation to IPS systems.

A safety framework for third-party SAPS will be required to be implemented through jurisdictional regulation, as electricity safety is regulated at a jurisdictional level. Jurisdictional governments or regulators will ultimately determine the most appropriate safety frameworks governing third-party SAPS including details of safety obligations. However, due to the importance of safety in determining a suitable overall framework for the regulation of third-party SAPS it is important that safety is considered and stakeholder feedback sought on safety requirements in this review.

In assessing the appropriate safety obligations to impose on third-party SAPS consideration needs to be given to the potential differences between an IPS and a microgrid. For IPS, the safety obligations relating to design and installation are likely to be key. Whilst safe design and installation are also important for microgrids, there are likely to be broader safety concerns that should be considered for microgrids such as public and worker safety, and protection of property and the environment from damage by electricity.

The Commission welcomes stakeholder views on whether current jurisdictional energy specific safety obligations should be extended either in full or with amendment to microgrids and IPS, or whether alternative safety obligations may be more appropriate.

¹³⁰ *Electricity Industry Safety and Administration Act 1997 (Tas)*, Part 5 & Part 6.

¹³¹ Chapter 4A, Tasmanian Electricity Code.

QUESTION 10: SAFETY

- (a) Is it appropriate to apply the current jurisdictional safety obligations that are imposed on DNSPs on third-party SAPS? Are there any provisions which would not be proportionate for third-party SAPS?
- (b) What are the key safety obligations that should be applied to all third-party microgrids at a minimum? What are the minimum safety obligations for IPS?
- (c) What compliance, monitoring and enforcement powers relating to safety are appropriate for third-party SAPS?
- (d) Are there any other issues related to safety that the Commission should consider?

11 LODGING A SUBMISSION

Written submissions on this consultation paper must be lodged with Commission by 29 March 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 Sherine Al Shallah on (02) 8296 7889 or sherine.alshallah@aemc.gov.au.

ABBREVIATIONS

ACCC	Australian Competition and Consumer Commission
ACL	Australian Consumer Law
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
COAG	Council of Australian Governments
Commission	See AEMC
DNSP	Distribution network service provider
ECA	Energy Consumers Australia
EMPTP	Energy Market Transformation Project Team
ENSP	Embedded network service provider
ESCOSA	Essential Services Commission of South Australia
GSL	Guaranteed Service Level
IPS	Individual power system
LHIB	Lord Howe Island Board
LNSP	Local network service provider
MCE	Ministerial Council on Energy
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
NGL	National Gas Law
NGO	National gas objective
NSW	New South Wales
PV	Photovoltaic
PWC	Power Water Corporation
RAES	Remote Area Energy Supply
RoLR	Retailer of Last Resort

RTAW

SAIDI

SAIFI

SAPS

STPIS

RTA Weipa Pty Ltd

System Average Interruption Duration Index

System Average Interruption Frequency Index

Stand-alone power system

Service target performance incentive scheme