

Australian Energy Market Commission

DRAFT REPORT

**REVIEW OF THE REGULATORY
FRAMEWORKS FOR STAND-ALONE
POWER SYSTEMS - PRIORITY 1**

18 DECEMBER 2018

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 The objective of the review is to develop a package of law and rule changes to allow stand-alone power systems to be used as an alternative to standard grid supply where it would be economically efficient to do so, while preserving consumer protections comparable to those afforded to customers supplied via the interconnected grid.
- 3 This draft report sets out the analysis undertaken by the Commission over the course of the review to date and explains the Commission's developing views on mechanisms for transitioning customers to off-grid supply, the regulatory and commercial arrangements that would then apply on an ongoing basis, and the consumer protections that should be put in place.
- 4 Stand-alone power systems could potentially be used in a range of situations in the future, but this report focusses on customers who are currently connected to the grid and are transitioned to off-grid supply by their distributor. The COAG Energy Council asked us to look at this as the first priority for the review.
- 5 The report presents, for stakeholder feedback, proposed positions on issues associated with off-grid transition and consumer protections. With regard to the arrangements for ongoing supply to off-grid customers after they have been transitioned away from grid supply, the report includes two illustrative service delivery models as options for consultation. The Commission welcomes stakeholder input to refine these models or to identify further options.

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).¹ Where there are stand-alone systems not connected to this grid, generally in remote areas, these are subject only to regulation by states and territories at the jurisdictional level.²
- 8 Some states with significant numbers of stand-alone power systems have relatively well-developed regulatory frameworks. However, other jurisdictions, notably those without SAPS (or with relatively few SAPS), do not. Jurisdictional regulation is also not well suited to circumstances where distribution network service providers (DNSPs) might seek to supply current NEM customers on a stand-alone basis, as DNSPs are otherwise regulated largely

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

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

through national frameworks, particularly in terms of economic regulation.

Increasing viability of stand-alone power systems

- 9 Technological developments, in particular the falling costs of renewable generation and batteries, are making stand-alone power systems an increasingly viable way of supplying power. The economics of SAPS is becoming more favourable, especially for providing electricity services to customers for whom the costs of continuing to provide a grid connection may be high.
- 10 These developments are prompting DNSPs to consider the case for using SAPS solutions in suitable circumstances, in particular, the use of individual power systems. In trials to date, and currently planned deployments, these systems generally comprise solar photovoltaic panels, lithium-ion batteries, an inverter and backup diesel generator. Projected continuing falls in battery costs are likely to further improve the economics of such systems.
- 11 The distribution costs associated with supplying customers across the grid vary significantly, and increase as customer density decreases. As such, the costs of providing a grid-connected service are at their highest in remote areas, at the “fringes” of the grid. As the assets providing service to these areas reach the end of their service lives, DNSPs are assessing the most cost-efficient way of continuing to provide service to these remote customers.
- 12 In addition to customer density, there are a number of other drivers of high distribution costs, including the need to use more expensive network equipment in order to mitigate risks associated with bushfires in susceptible areas, and costs associated with vegetation management or poor access.
- 13 As their costs fall, SAPS solutions may increasingly represent a more economic alternative to replacing existing network assets in areas that are costly to serve. To the extent that DNSPs are able to reduce costs, the benefits would flow through, over time, to all of a DNSP’s customers by reducing the overall amount of revenue that would be required by the DNSP. The customers moving to SAPS supply would also likely experience benefits directly in terms of improved service reliability.
- 14 Information provided to the Commission by DNSPs suggests that the numbers of customers that DNSPs might seek to supply via SAPS solutions might be relatively small in the context of the NEM as a whole – perhaps less than 10,000 over the next ten years. However, these customers account for a disproportionately high share of DNSPs’ costs, and transitioning these customers to off-grid supply could result in significant cost savings.

Regulatory barriers to DNSP provision of off-grid supply

- 15 Given their potential benefits, there is a risk that the current regulatory frameworks, by not adequately supporting the use of stand-alone power systems and the transition of existing grid-connected customers to stand-alone solutions, might be inhibiting the use of the most efficient technological solutions to supply some customers.
- 16 One form of regulatory barrier arises from the way distribution costs are recovered. Distribution tariffs tend to reflect the average cost of supplying power to all customers in a

distributor's service area, which means that tariffs paid by most grid-connected remote customers do not reflect the high costs of supplying those customers.

- 17 While it allows any cost savings arising from the use of SAPS to benefit all of a DNSP's customers, this socialisation of costs means that individual customers do not have a direct financial incentive to move away from DNSP supply to an alternative off-grid provider, where the cost of off-grid supply would be lower than maintaining a grid connection. Consequently, such customers are likely to retain their DNSP grid connection given its lower price, even if an off-grid solution would be lower cost.
- 18 While it would be economically efficient to incorporate locational signals into cost-reflective tariffs to improve the incentives on customers, the Commission acknowledges that jurisdictional policies and consumer preferences mean it is unlikely that distribution network tariffs will include strong locational signals in the foreseeable future. Consequently, to allow for the use of SAPS solutions, where this would be efficient, requires the establishment of arrangements to allow for their provision by DNSPs under current DNSP tariff structures.
- 19 The provision of distribution services by DNSPs in the NEM is regulated by the National Electricity Law (NEL) and National Electricity Rules (NER). A "distribution service" is defined as a service provided by means of, or in connection with, a distribution system. A "distribution system" is defined as a distribution network, together the connection assets associated with the distribution network, *which is connected to another transmission or distribution system*.
- 20 In 2017, the Commission considered a rule change request made by Western Power that sought to allow DNSPs to deploy alternative technologies and methods of providing distribution services, such as transitioning customers to off-grid supply. To do so, Western Power proposed to amend the definition of distribution service in the NER in order to enable to use of SAPS by DNSPs. However, the proposed changes would have led to inconsistencies between the term "distribution service" in the NER and the term "electricity network service" in the NEL, which would have made the proposed rule invalid. As such, the Commission was unable to make the rule change.

BOX 1: CONSUMER PROTECTIONS FOR OFF-GRID CUSTOMERS

The sale and supply of energy to retail customers is regulated by the National Energy Retail Law (NERL) and National Energy Retail Rules (NERR) in all participating NEM jurisdictions, except Victoria. These instruments include key electricity consumer protection measures and contract terms and conditions.

However, in New South Wales, South Australia and Tasmania, the NERL and NERR only apply to customers supplied via the interconnected national electricity system. This means that any customers supplied off-grid by DNSPs would not benefit from these fundamental consumer protections. The Commission was not able to address this issue through changes to the NER under the Western Power rule change, and this was a key factor in the Commission's decision not to make the rule change.

- 21 In its final determination for the Western Power rule change, the Commission concluded that broader framework changes, beyond amendments to the NER, would be required to properly implement the reforms required to facilitate DNSP provision of SAPS. Consequently, the Commission recommended that the COAG Energy Council ask it to provide advice on the law and rule changes that would be required.
- 22 Similar conclusions were reached by the *Independent Review into the Future Security of the National Electricity Market* ('the Finkel Review') and the Australian Competition and Consumer Commission (ACCC) in its retail electricity pricing inquiry. The Finkel Review recommended 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, and the ACCC recommended that immediate work should be undertaken to identify and implement changes to the national energy laws and rules to allow DNSPs to develop off-grid supply arrangements where efficient.
- 23 In light of these recommendations, and building on work previously undertaken by its Energy Market Transformation Project Team (EMTPT), on 23 August 2018, the COAG Energy Council directed the Commission to conduct a review of changes required to the national electricity framework for stand-alone power systems.
- 24 In developing these changes, the Commission is mindful that stand-alone systems have the potential to be used by DNSPs in a wide variety of circumstances, ranging from supplying a single bore pump to a microgrid covering a whole town. This will require the arrangements to be put in place to be adaptable to these different conditions, and is of particular relevance to the ongoing service delivery options that are presented in this report for stakeholder feedback and which will be subject to further development.

Approach

- 25 Under the terms of reference for the review, the Commission is to consider 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 DNSPs.
 - Priority 2 focuses on the development of a national framework to support the supply of electricity from stand-alone power systems provided by parties other than DNSPs.
- 26 Additionally, under priority 1, the Commission has been 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. The terms of reference for the review contemplate that such systems could then be regulated on an ongoing basis under jurisdictional frameworks or under the national arrangements to be developed by the Commission in accordance with priority 2.
- 27 The Commission is closely coordinating the review with its further work on embedded networks. The *Updating the regulatory frameworks for embedded networks* review commenced on 30 August 2018, and will provide advice to governments on the detailed

amendments to the regulatory framework that are required to implement the recommendations from the Commission's earlier *Review of regulatory arrangements for embedded networks*. The two reviews will consider similar, potentially linked policy and legal issues, particularly in relation to consumer protections. Both reviews are likely to result in recommendations for changes to national energy laws, and the COAG Energy Council may subsequently decide to progress these as a single legislative package.

28 As the national electricity frameworks do not apply in Western Australia, the national arrangements for stand-alone power systems developed through this review will not apply in Western Australia. Consideration will need to be given to which parts of the national framework (if any) would apply in the Northern Territory.

29 Consistent with the terms of reference, existing legacy SAPS (individual power systems and microgrids) which have been established and are currently operating under jurisdictional legislative frameworks need not be captured by the new national framework for SAPS.

30 The Commission commenced consultation on the review through the publication of an issues paper on 11 September 2018. Submissions were received from 24 stakeholders in response to the issues paper.

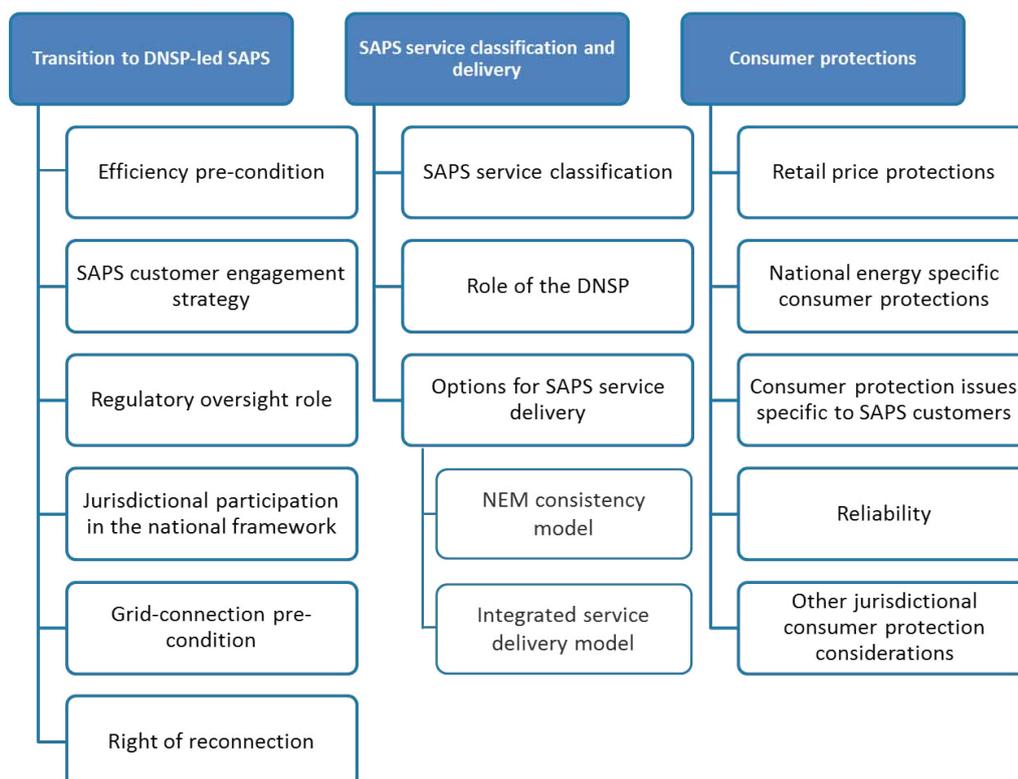
This report

31 This draft report presents the Commission's analysis and developing policy positions for priority 1 of the review.

32 Consistent with the approach presented in the issues paper, the Commission has divided the key issues associated with the transition of grid-connected SAPS into three discrete areas:

- transition to SAPS supply
- service classification and delivery
- consumer protections.

Figure 1: Breakdown of key issues for DNSP-led SAPS



Transition to DNSP-led SAPS

33 Consistent with the objective of review, under arrangements to facilitate the use of SAPS, DNSPs should only seek to transition customers to a SAPS where this meets an **efficiency pre-condition** (i.e. SAPS provision would be cheaper than maintaining grid supply). This would be supported by the Regulatory Investment Test for Distribution (RIT-D) where projects meet the relevant financial threshold (currently \$6 million). Given the level of this threshold, a new set of minimum SAPS evaluation requirements where the RIT-D threshold is not met is proposed. The main purpose of the new minimum evaluation requirements would be to provide transparency to potential SAPS proponents for smaller projects. The Commission intends to consider further whether any additional detailed amendments may be needed to the distribution network planning and expansion framework, including the types of costs and benefits assessed under the RIT-D, in the next stage of the review.

34 The Commission proposes that DNSPs should not be required to obtain explicit consent from customers in order to transition them to off-grid supply. This position is informed by the view that the customers involved should continue to benefit from equivalent price and reliability

protections. Obtaining explicit customer consent would also be logistically challenging and present risks that small numbers of customers could veto changes that would benefit all consumers. Instead, DNSPs would be required to develop a **SAPS customer engagement strategy** based around notifying and consulting affected parties well in advance of any transfer, recognising that implicit customer consent will generally be required for DNSPs to install individual power systems.

35 However, it should be noted that this approach to customer consent is most consistent with market arrangements that allow customers to retain their existing retail offer with their current retailer (see next section). The impacts of any arrangements that would require customers to move to different retail arrangements may need further consideration.

36 At this stage, the Commission has not identified any specific additional **regulatory oversight role** that should be put in place, on the basis that the functions and powers of the Australian Energy Regulator (AER) in relation to monitoring, investigating and enforcing compliance, are appropriate and would provide sufficient regulatory discipline on DNSP behaviour in respect of their identification and assessment of SAPS as an efficient alternative to network investment. To the extent that any criteria beyond economic efficiency and consumer protections, such as wider social policy or economic development impacts, are identified, it may be appropriate for jurisdictional governments to consider additional oversight requirements.

37 The Commission has given further consideration to the issues associated with **jurisdictional participation in the national framework** raised in the terms of reference, and is of the view that the national framework for DNSP-led SAPS should take effect consistently across all relevant jurisdictions at the same time. While the national rules would apply uniformly, they would include a restriction on DNSPs using SAPS solutions in each jurisdiction until such time as the Minister in the relevant jurisdiction has given notice that the national arrangements for SAPS are applicable there. Jurisdictions wishing to enable these provisions would be encouraged to review applicable jurisdictional legislation and regulation, and to make necessary changes on a coordinated basis with the implementation of the national arrangements.

38 The Commission continues to hold the concerns it outlined in the final determination for the Western Power rule change that led it to recommend a **grid-connection pre-condition**, which is to say that new SAPS connections should be supplied through competitive processes for SAPS and not provided by DNSPs. However, the Commission also recognises the likelihood that SAPS will be deployed predominately in remote areas where the competitive market may be slow to develop, if at all. As such, the Commission intends to give further consideration to this matter over the remainder of the review. The Commission does propose to clarify that DNSPs should be able to offer new connections to pre-existing stand-alone systems, such as microgrids.

39 On the basis that equivalent consumer protections, including service quality and reliability standards, that apply for grid-connected customers should apply to DNSP-led SAPS, the Commission does not propose that off-grid DNSP customers should have any specific, additional **right of reconnection** to the interconnected grid. Further, as the definition of a

DNSP's distribution system would be amended to include stand-alone systems, then a SAPS customer would, by definition, still be connected to the DNSP's network.

SAPS service classification and delivery

- 40 The current provisions in the economic regulatory framework governing distribution **service classification** provide the AER with considerable discretion in respect of how it classifies (and therefore economically regulates) the activities and services provided by DNSPs. While the Commission considers that the outcomes desired by this review — that is, the provision of SAPS by DNSPs as a regulated service — can be achieved under the current network regulatory framework, it would be interested in stakeholder views as to whether any additional direction or guidance should be provided to the AER in respect of how the activities and services associated with SAPS should be classified.
- 41 In its previous consideration of the **role of the DNSP** in the Western Power rule change, the Commission highlighted its concerns with DNSPs potentially owning individual power system assets, instead preferring that DNSPs should contract the services from the contestable market. To the extent that SAPS assets are considered to provide services in addition to distribution services, the AER's distribution ring-fencing guidelines and rules would apply, and these are appropriate and well-suited to supporting the development of competitive markets where competition is feasible, and allowing for exemptions where it is not.
- 42 This report presents two illustrative **options for SAPS service delivery**. The service delivery arrangements would govern the relationship between the distribution service provided by the DNSP and all the other activities required to provide an electricity supply service to end consumers. The two options presented are as follows:
- The "NEM consistency model" is based on proposal made by AusNet Services. By using existing NEM settlement arrangements for wholesale energy payments, this model would preserve customers' existing relationships with their retailers and would facilitate the continuation of retail competition despite the transition to SAPS supply.
 - This model would consequently facilitate a seamless transition for customers to SAPS supply and, by using existing systems and arrangements, would have very low implementation costs.
 - However, under this model, customer demand would be settled using the wholesale spot price and, to the extent that they were exposed to these prices, customers would be presented with incentives to alter their consumption that might be unrelated to conditions on their stand-alone system. Similarly, retailers would continue to incur potentially unnecessary hedging costs.
 - The "integrated service delivery model" is based on arrangements developed by HoustonKemp for the EMTPT, and would arguably be more tailored to the off-grid environment.
 - This model would aim to achieve efficiency benefits by having DNSPs tender for services on an integrated basis, to provide "competition for the market" (as opposed to "competition in the market" for retail in the NEM consistency model).

- The discontinuation of retail competition for SAPS customers would, however, require new processes for retail price regulation and would require transitioning customers to change retailer and retail offer. This could impact customer consent requirements.
- While such a model could arguably be more optimised to SAPS service provision, the creation of parallel regulatory arrangements would be costly and, for low levels of SAPS uptake, potentially uneconomic.

43 Given that the suitability of either of the two options presented is somewhat dependent on the level of adoption of SAPS by DNSPs, and that both have advantages and disadvantages, the Commission does not, at this stage, have a position regarding a preferred model. Selecting a model may require making difficult trade-offs.

44 Over the next phase of the review, the Commission intends to further consider and develop the models, in particular to assess whether it is possible to overcome or mitigate their disadvantages (for example, the price signals that would arise in the NEM consistency model). Different models or a hybrid of the two existing options may also be considered before a final recommendation is made. As such, stakeholder views and input in this regard would be welcome.

Application of consumer protections

45 As noted above, if the model of supply for DNSP-led SAPS does not enable customers to access retail competition, then new **retail price protections** will be required in those geographic areas that do not currently have retail price regulation. This would be required to ensure that customers should not be financially disadvantaged as the result of being transitioned to SAPS supply. However, it will be difficult to design any form of price regulation that allows customers to retain the benefits they may have been able to access through the competitive market.

46 Customers transitioned to SAPS supply should continue to be subject to other existing **national energy specific consumer protections** in the NERL and NERR, to the extent these remain relevant. This would be achieved by SAPS retail activities being performed by entities in possession of a retail authorisation from the AER, consistent with standard supply arrangements.

47 Any **consumer protection issues specific to SAPS customers** will, to some extent, depend on the model of supply implemented. However, such specific protections would likely be relatively minor, focussing on information relating to the technical characteristics of the new supply equipment.

48 The setting of network **reliability** standards is a jurisdictional responsibility; however, the Commission considers an important feature of the national SAPS framework will be that customers of DNSP-led SAPS should receive reliability protections equivalent to grid-connected customers. This may require jurisdictions to review legislative instruments for reliability standards and guaranteed service level schemes, and make any changes required to cater for SAPS supply. While reliability frameworks do not prescribe outcomes for specific customers, trials undertaken to date suggest that SAPS customers in remote areas are likely to experience significantly improved reliability as compared to grid supply.

49 Jurisdictions will also need to consider a number of **other jurisdictional consumer protections**, such as safety and technical regulation, access to concessions and rebates and access to independent dispute resolution. These should all be extended to DNSP-led SAPS customers. In general, once any required definitional changes are made, these protections are likely to automatically apply for DNSP-led SAPS, given that the distribution function will be undertaken by existing licensed DNSPs and retail activities by authorised retailers.

Transition to third party SAPS

50 As required by the terms of reference, priority 1 also includes another deliverable, the required amendments to the national frameworks to enable the transition of DNSP customers to a SAPS provided by a party other than a DNSP. The Commission's initial views are that the following arrangements should be established:

- a **decision-making framework**, which includes a requirement for explicit informed consent from customers being transitioned as, unlike customers being transitioned to DNSP-led SAPS, these customers would be likely to experience a different service offering and different pricing (including loss of any cross-subsidy that they would have previously benefited from), and would essentially be disconnected from the DNSP's network
- an AER-supervised mechanism to account for **asset transfers and stranded assets** in the DNSPs' regulatory accounts that would compensate a DNSP for assets it agrees to transfer to a third party SAPS proponent and for any efficiency loss associated with the stranding of assets previously required to supply customers transitioned to third party SAPS but which are not included in the asset transfer.

51 Under priority 2 of the review, the Commission will review the ongoing regulatory arrangements for service delivery and consumer protections for third party stand-alone power systems – that is, stand-alone systems provided by parties other than DNSPs. The Commission's recommendations under priority 2 will set out a national framework for third party SAPS that jurisdictions could opt into.

Next steps

52 Written submissions from stakeholders commenting on the matters raised in this draft report for priority 1 are requested by **5 February 2019**.

53 Following receipt of submissions, the Commission intends to consider the extent to which further consultation is required on priority 1, particularly in respect of the supply model options. The Commission may make use of stakeholder workshops and/or roundtable meetings to progress any matters requiring further consideration.

54 Given the breadth of issues across the review as a whole, a separate consultation process will be undertaken for the further issues associated with priority 2, beginning in early 2019.

55 Under the terms of reference for the review, the Commission is required to provide the COAG Energy Council with a final report for priority 1 by 31 May 2019 and a final report for priority 2 by 31 October 2019.

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1 INTRODUCTION

On 23 August 2018, the COAG Energy Council requested that the Australian Energy Market Commission (AEMC or Commission) undertake a review of the regulatory arrangements for stand-alone power systems. Stand-alone power systems (SAPS) are electricity supply arrangements that are not physically connected to the national grid.

The terms of reference for this review distinguishes between SAPS that are managed by a distribution network service provider (DNSP) and SAPS that are managed by other providers. The key focus of this draft report is the regulatory arrangements under the national energy laws and rules for stand-alone power systems facilitated by DNSPs. However, Chapter 6 touches on possible amendments to the national framework to enable the transition of grid-connected customers to a SAPS facilitated by a party other than a DNSP.

This draft report sets out the Commission's views to date and analysis undertaken on issues primarily relating to SAPS facilitated by DNSPs. It includes options for the model of SAPS supply and the Commission's draft findings on key issues for further stakeholder comment.

This chapter provides an introduction to the review and provides:

- an overview of stand-alone power systems
- some background to the review of the regulatory framework for stand-alone power systems
- a summary of the terms of reference for the review
- details of related work being undertaken by the AEMC
- an overview of stakeholder consultation undertaken to date.

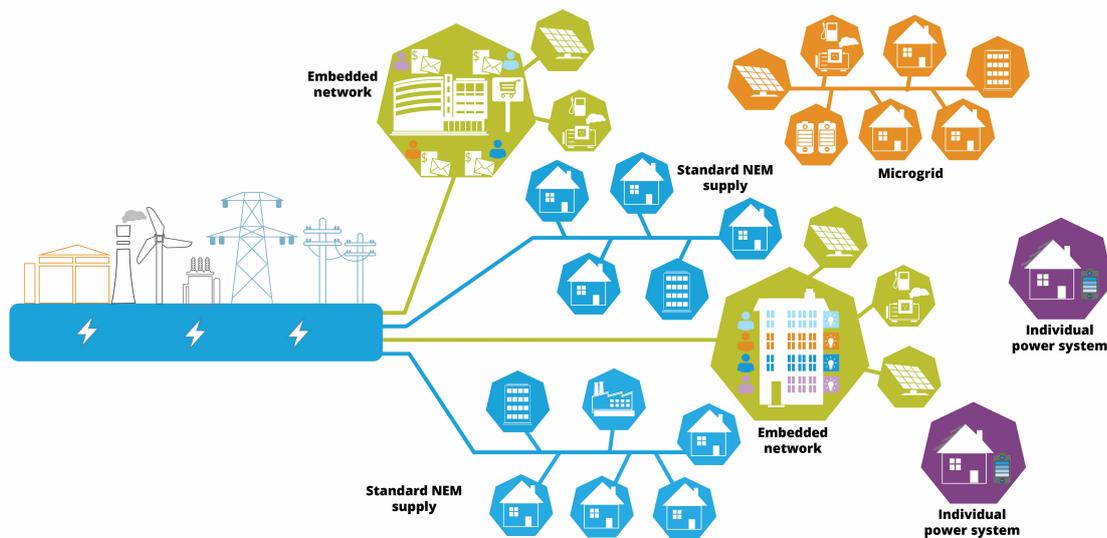
1.1 Overview of stand-alone power systems

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 AEMC.

Box 2 explains embedded networks and other definitions used in this paper.

BOX 2: KEY DEFINITIONS USED IN THIS PAPER

DNSP

A DNSP is the distribution network service provider or the party that is responsible for the electricity distribution system in a particular geographical area. This area has been allocated by the authority responsible for administering the jurisdictional electricity legislation in the relevant participating jurisdiction. Under the current regulatory frameworks for electricity, DNSPs can generally only supply customers via the interconnected grid (standard supply) and are currently unable to supply customers' electricity via a SAPS (unless granted a waiver in accordance with the AER's ring-fencing guideline).

DNSP-led SAPS

A DNSP-led SAPS is a stand-alone power system operated by a DNSP. These types of SAPS are the primary focus for priority 1 of the review, and this report.

Third party-led SAPS

These are SAPS that are managed by a party other than a DNSP. These types of SAPS will be considered under priority 2 of the review. However, national framework requirements to support the transition of customers from standard supply via the interconnected grid to a SAPS that is facilitated by a party other than a DNSP and regulated under jurisdictional frameworks are considered in Chapter 6 of this report.

Embedded networks

An embedded network is a privately owned, operated or controlled electricity network, often within the bounds of a commercial or residential building complex or other premises, which is connected to the national electricity grid. Embedded networks are interposed between the network of the local network service provider (typically a DNSP) and the customer's installation.

In an embedded network, a party other than a local network service provider owns and operates the private network that customers connect to. The embedded network operator pays the distributor for network services and charges end use customers for network services. In many instances, the embedded network operator or a related party also sells energy to consumers within the embedded network.

Network service provider

A person who engages in the activity of owning, controlling or operating a transmission or distribution system and who is registered by the Australian Energy Market Operator (AEMO) as a network service provider.

Standard supply

Supply from the interconnected grid is the standard supply model for the vast majority of

electricity consumers in national energy market (NEM) jurisdictions. In this model, a combination of large and small generators supply energy which is transported through interconnected transmission and distribution networks to consumers across the eastern seaboard. Competitive wholesale and retail markets allow for competition between providers and consumer choice. Regulated network businesses own and operate the monopoly network infrastructure for transmission and distribution of electricity.

1.1.2

National regulatory arrangements

National energy markets in Australia are governed by a combination of national and jurisdictional legislation and other regulatory frameworks. The Australian Energy Market Agreement (AEMA) is an agreement between the Australian government and the governments of all states and territories,³ and sets out the legislative, institutional and governance frameworks for energy regulation. The AEMA specifies the distribution and retail activities that are to be covered by national regulatory frameworks in NEM jurisdictions,⁴ and those that are regulated under state and territory arrangements.

National functions include the economic regulation of distribution networks, arrangements for distribution network expansion and the authorisation of retailers.⁵ The regulation of transmission networks and arrangements for the wholesale electricity market are also activities governed by national frameworks in NEM jurisdictions.

In general, national functions for electricity are governed through the National Electricity Law (NEL)⁶ and the National Energy Retail Law (NERL),⁷ together with the associated regulations, rules, guidelines, procedures, standards and settings.

The NEL establishes, among other things, obligations on network service providers in the NEM. The National Electricity Rules (NER) support the NEL, and govern the operation of the wholesale electricity market, the economic regulation of services provided by monopoly transmission and distribution networks, the way in which AEMO manages power system security, and electricity connections for retail customers.⁸

The NERL regulates the supply and sale of energy to retail customers in the jurisdictions that have adopted it.⁹ The National Energy Retail Rules (NERR) support the NERL, and govern the sale and supply of electricity and natural gas to residential and other small customers. They include key electricity consumer protection measures and contract terms and conditions.

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

4 The NEM interconnects five regional market jurisdictions: Queensland, New South Wales (including the Australian Capital Territory), Victoria, South Australia and Tasmania. Western Australia and the Northern Territory are not connected to the NEM.

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

6 Schedule to the *National Electricity (South Australia) Act 1996*.

7 Schedule to the *National Energy Retail Law (South Australia) Act 2011*.

8 AEMC website <https://www.aemc.gov.au/regulation/energy-rules/national-electricity-rules>

9 It should be noted that Victoria has not adopted the NERL, and state-specific retail frameworks continue to apply in that state.

Customer connections, retail competition, energy-specific consumer protections and basic standard and market agreement terms and conditions are included in the rules.¹⁰

As the NEL and the NER are currently only applicable to interconnected systems, they do not apply to SAPS.¹¹ However, where a DNSP is nominated in the regulations of the relevant jurisdiction as the operator of a microgrid, certain provisions of the NER may apply to that DNSP.¹²

In respect of the NERL and NERR, these instruments do not currently apply to SAPS established in New South Wales, South Australia or Tasmania. Certain provisions may apply to microgrids in Queensland and the ACT (unless the seller has an exemption).¹³ In Victoria, the Energy Retail Code includes provisions which are equivalent to the NERL and NERR and so may also be applicable to SAPS (if the SAPS customers are supplied by a licensed retailer).

1.1.3 Jurisdictional regulatory arrangements

Currently, as SAPS are not (in general) captured under the national regulatory framework, they are subject to jurisdictional frameworks. These jurisdictional frameworks vary in their comprehensiveness, with state and territory regimes differing quite widely. Some states with significant numbers of stand-alone power systems have relatively well-developed regulatory frameworks, but other jurisdictions with no, or relatively few, such systems often do not.

If there are changes to the NEL and NER, NERL and NERR and associated regulations that elevate SAPS to a national framework, there will remain functions for which jurisdictions have responsibility under the AEMA. These functions will need to be reviewed by jurisdictions to provide a complete framework for consumers under the SAPS model of supply. These state and territory functions include DNSP technical and safety requirements, small customer dispute resolution, service reliability standards and the determination of distribution and retail service areas.

In the course of the review, where the Commission identifies that changes to the jurisdictional functions will be required to allow customers receiving electricity under a SAPS model of supply equivalent coverage to that of grid-connected customers, we are highlighting those areas that may require change.

Legacy SAPS which are currently operating under jurisdictional frameworks are not a focus of this review.

10 AEMC website <https://www.aemc.gov.au/regulation/energy-rules/national-energy-retail-rules>

11 Key terms that are used throughout the NEL and NER, including “network service provider” in the NEL and “distribution system” in the NER, are defined with reference to interconnected systems.

12 The Queensland Government has nominated Ergon Energy under s. 6A of the NEL such that Chapter 5A of the NER (on electricity connection for retail customers) applies to the SAPS operated by Ergon. The *Electricity - National Scheme (Queensland) Regulation 2014* s. 4 excludes the Mount Isa-Cloncurry network, which is economically regulated by the AER under Chapters 6 and 11 of the NER pursuant to the *Electricity - National Scheme (Queensland) Act 1997* s. 10.

13 The Acts adopting the NERL in Queensland and the ACT do not limit the application of the NERL to the sale of electricity to customers connected to the national electricity system. Therefore in those jurisdictions, suppliers of electricity in a microgrid who are authorised retailers must comply with the NERL.

1.1.4 Development of a framework for stand-alone power systems

SAPS are currently not generally captured under the national regulatory framework and are subject to jurisdictional legislative frameworks that vary in their completeness. Given changing technologies, it is important that changes to the national framework are considered to allow the uptake of SAPS where this is efficient.

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.
- SAPS may be a more efficient alternative to maintaining a traditional regulated DNSP connection in some areas, but customers will not voluntarily install them in rural locations where non-locational network pricing means the costs faced by the customer would increase.
- Regulatory barriers may inhibit new entrant products and services that have potential to benefit consumers and increase energy productivity.

Amendments to the NEL and NER, and the NERL and NERR, could allow DNSPs to provide off-grid supply via SAPS as a distribution service, with conditions to protect customers and enable (as much as feasible) competition for off-grid supply services.¹⁴ Additionally, the development of a national framework for SAPS, including amendments to the NEL and NER and the NERL and NERR, could enable SAPS to be facilitated by parties other than DNSPs, whilst maintaining relevant consumer protections and supply provisions.

As discussed in section 1.1.3, under the arrangements underpinning national energy markets, many aspects of regulation, such as safety and network reliability, are governed primarily by jurisdictional frameworks. Consequently, SAPS can only be effectively regulated if there are complementary changes to both the national and jurisdictional regulatory frameworks.

1.2 Background to this review

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.

1.2.1 Energy Market Transformation Project Team 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.¹⁵ 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

¹⁴ AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, p. iii.

¹⁵ COAG Energy Council, *Stand-alone power systems in the electricity market, Consultation on regulatory implications*, 19 August 2016.

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.¹⁶

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

1.2.2

Western Power rule change

In September 2016, Western Power, an electricity distributor in Western Australia, submitted a rule change request to the Commission which sought to remove certain barriers to distributors deploying alternative technologies and methods of providing distribution services, such as transitioning customers to off-grid supply.¹⁷

In its final determination, the Commission decided not to make a rule. The Commission considered that the rule change request identified a real issue that should be addressed. However, without changes to the NEL, the change to the definition of “distribution service” in the NER proposed in the rule change request would likely result in inconsistencies between the NEL and the NER, making the proposed rule invalid.¹⁸

The Commission also noted that there are currently substantial differences between the energy-specific consumer protections available to grid-connected customers and those available to off-grid customers. In several jurisdictions the full suite of protections under the NERL and NERR cease to apply when a customer moves off-grid.¹⁹ Consequently, the Commission recommended that a co-ordinated package of changes to national laws and rules, together with relevant jurisdictional instruments, should be developed and implemented to allow off-grid supply to be used where efficient, while maintaining appropriate protections for consumers. Specifically, the Commission recommended that the COAG Energy Council ask it to provide advice on the law and rule changes that would be required.

BOX 3: WESTERN POWER STAND-ALONE POWER SYSTEM TRIALS, WA

Western Power’s decision to submit a rule change request to the AEMC was made following a successful trial of SAPS in Western Australia. In July 2016 it installed six individual power systems on a number of rural farms in the Ravensthorpe area as part of a 12-month pilot to test the suitability of the technology. In determining the sites to select for the trials, Western Power used the following criteria:

16 COAG Energy Council, *Energy Market Transformation Bulletin Number 5 – Work Program Update*.

17 AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, p. i.

18 *ibid*, p. ii.

19 *ibid*, p. iii.

- SAPS had to be 50 per cent cheaper to install and operate compared with the costs of building or replacing a grid-connection
- the bushfire risk had to be medium to high
- they had to be on short spurs on the same feeder
- the customers had to consume less than 40kWh/day
- there needed to be heightened reliability issues.

The systems installed are independent energy-generating units with solar photovoltaic (PV) panels, lithium batteries, an inverter and backup diesel generator. The units were sized to each customer's needs with a greater capacity than a typical IPS to maintain levels of supply consistent with the grid, allowing for increases in demand. Customers pay the same rates they would have if they were grid-connected.

The results of the trial have been positive, and have led to it being extended. Customers experienced significantly fewer power interruptions than customers on the network in the same area (approximately 5 hours of power outages in a year as compared to 70 on the network), the individual power systems proved robust in extreme weather events, and more than 90 per cent of electricity has been generated from solar PV. In discussions with the Commission, the customers involved reported general satisfaction with the new supply arrangements, in particular the markedly improved reliability.

Source: Western Power, Stand-alone Power System Pilot, One Year On, pp. 2-6; AEMC site visit, 10 October 2018.

1.2.3

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 (6.9) was that:²⁰

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.

1.2.4

ACCC Retail Electricity 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*. The report contained a recommendation (recommendation 23) on SAPS. The recommendation was that the package of law amendments recommended by the AEMC in

²⁰ Commonwealth of Australia, *Independent Review into the Future Security of the National Electricity Market, Blueprint for the Future*, June 2017, p. 154.

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.²¹

The ACCC 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. Further, the ACCC recommended that protections for customers being supplied by a distributor via a SAPS should be equivalent to those of customers connected to the grid, including obligation to supply, reliability and security of supply.²²

1.3 Terms of reference and scope

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 is to focus on the regulation of new SAPS, and to consider the national electricity regulatory framework set out in the NEL and NER, the NERL and NERR, and associated regulations and other subordinate instruments including guidelines issued by AEMO and AER.²³ Legacy SAPS operating under jurisdictional legislation are not a focus of the review.

The terms of reference split the review into two priority areas:

- The focus of priority 1 is 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 then focus on development of additional arrangements within the national framework to support a SAPS model of supply facilitated by a party other than a DNSP.²⁴

For priority 1, the COAG Energy Council requires the Commission to identify the key issues, risks and solutions to enable grid-connected customers to transition to a DNSP-led SAPS. The terms of reference set out a comprehensive list of key issues and options that the review should consider. The issues are grouped broadly as follows and include:

- Planning and economic regulation:
 - Decision making mechanism to trigger transition to SAPS, including suitability of the regulatory investment test for distribution (RIT-D), the need for a regulatory approval role and the need for a customer consent process
 - Treatment of SAPS assets, including requirements for DNSPs to test for competitive provision of SAPS

21 ACCC, *Restoring electricity affordability and Australia's competitive advantage, Retail Electricity Pricing Inquiry - Final Report*, June 2018, p. 221.

22 *ibid.*

23 Terms of reference, p. 2.

24 *ibid.*, p. 7.

- Arrangements for generation within the SAPS framework (new and existing)
- Consumer protections:
 - Costs and benefits of retaining/providing access to retail competition and alternative ways of protecting customers from monopoly pricing
 - Merits or otherwise of retaining a separate retailer function
 - Options for simulating competitive market outcomes (including in relation to the wholesale market exchange)
- Reliability, security and service quality:
 - Which regulatory framework should apply
- Other matters:
 - Possible changes to the network connections framework and market registration and participation requirements etc.²⁵

Consumer protection issues once customers have transitioned to a SAPS must also be considered, and advice (including on regulatory changes) provided on:²⁶

- which elements of the NERL/NERR consumer protections framework should apply or be adapted to SAPS customers
- which elements of the NEL/NER should apply or be adapted to ensure SAPS customers continue to receive a reliable, secure and efficient electricity service
- any need for, and issues with, inclusion of a “return to grid” process for SAPS customers where they wish to reconnect to the grid (including consideration of the connection process and capital contribution arrangements).

In carrying out the review, the Commission is to give consideration to the risks and benefits of regulating SAPS under a jurisdictional versus national framework, and the risks and benefits associated with different SAPS in the same jurisdiction being subject to different regulatory arrangements (i.e. jurisdictional or national frameworks).²⁷

The Commission is to publish a final report on priority 1 by 31 May 2019.

1.4 Related work

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.²⁸

Additionally, the Western Australian Government has commenced a Parliamentary Inquiry into Microgrids and Associated Technologies in WA. The Commission is looking at the progress and outcomes of this inquiry closely as it progresses the SAPS review.

²⁵ *ibid*, pp.10-13.

²⁶ *ibid*, p. 6.

²⁷ *ibid*, p. 7.

²⁸ *ibid*.

1.4.1 **Embedded networks implementation workstream**

Embedded networks rule change 2015

On 17 December 2015, the Commission made a final rule to reduce the barriers to embedded network customers accessing retail market offers.²⁹ The rule commenced on 1 December 2017, and established an accredited provider role in the NER — the embedded network manager — to be responsible for performing market interface services for embedded network customers.³⁰ This enables embedded network customers to access retail market offers.

In the final determination, the Commission also recommended separate but supporting changes to state and territory legislation, the AER's network exemption guideline and a review of the NERR for embedded network customers.³¹

Embedded networks review 2017

On 28 November 2017, the Commission completed its *Review of regulatory arrangements for embedded networks* (embedded networks review). The review found that embedded network customers receive a lesser level of consumer protections and faced significant practical barriers to accessing retail market competition, and that the current regulatory framework for embedded networks was no longer fit for purpose.³²

The Commission recommended changes to the regulatory framework and a new regulatory approach to elevate embedded networks into the national framework, improve access to competition, and better regulate new and legacy embedded networks. A recommendation was also made for state and territory governments to improve access to ombudsman schemes and concessions, information is provided to customers at the time of purchase or lease of a property and that jurisdictional safety and reliability regimes to be reviewed.³³

Embedded networks review 2018

The Commission self-initiated the *Updating the regulatory frameworks for embedded networks* review on 30 August 2018, to advise on the detailed amendments to the regulatory framework that are required to implement the recommendations from the embedded networks review (2017). Through the 2018 review, the Commission will develop a package of changes to the NEL and NER, NERL and NERR and any other relevant regulatory instruments to implement the new regulatory approach for embedded networks previously recommended by the Commission.

The key deliverables will align with those for the SAPS review and will include a draft report ahead of a final report to be published by 31 May 2019.

²⁹ AEMC, *Embedded Networks*, rule determination, 17 December 2015.

³⁰ *ibid*, p. ii.

³¹ *ibid*, p. v.

³² AEMC, *Review of regulatory arrangements for embedded networks*, final report, 28 November 2017.

³³ *ibid*, p. ii; pp. 49-50.

1.4.2 Parliamentary Inquiry into Microgrids and Associated Technologies in WA

In Western Australia, a Parliamentary Inquiry into microgrids and associated technologies commenced on 21 February 2018. Under the terms of reference for the inquiry, the Economics and Industry Standing Committee will investigate and report on the emergence and impact of electricity microgrids and associated technologies in Western Australia. The report will consider the potential for microgrids and associated technologies to contribute to the provision of affordable, secure, reliable and sustainable energy supply, in both metropolitan and regional WA.³⁴

The inquiry will also look at:

- economic and employment opportunities which could be supported by the development of microgrids and associated technologies
- enablers, barriers and other factors affecting microgrid development and electricity network operations, and
- initiatives in other jurisdictions relating to microgrids and associated technologies.³⁵

The Commission made a submission to the inquiry highlighting the common issues with this review on 31 October 2018, and participated in a hearing on 23 November 2018.

1.5 Stakeholder consultation

Under this review, the COAG Energy Council has requested the Commission to consult with the EMTPT, the AER, the Economic Regulation Authority of Western Australia and AEMO, as well as undertaking public consultation.

The key deliverables and timeframes for the consultation process are detailed below.

Table 1.1: Key deliverables and timeframes

REPORT	DATE
For Priority 1	
Issues paper	11 September 2018
Draft report	18 December 2018
Final report	31 May 2019
For Priority 2	
Issues paper	Early 2019
Draft report	30 June 2019
Final report	31 October 2019

³⁴ Terms of reference, *Inquiry into Microgrids and Associated Technologies in WA*, Economics and Industry Standing Committee, accessed on 24 August 2018 at [http://www.parliament.wa.gov.au/parliament/commit.nsf/\(\\$all\)/8C9FB0B8AA10E88D4825823B0019BAA3?opendocument](http://www.parliament.wa.gov.au/parliament/commit.nsf/($all)/8C9FB0B8AA10E88D4825823B0019BAA3?opendocument)

³⁵ *ibid.*

The Commission received 24 submissions to issues paper published on 11 September 2018. In the course of the review to date, the Commission has also carried out bilateral meetings with a large number of national regulators, jurisdictional regulators, DNSPs, technology companies, jurisdictional ombudsmen, retailers and consumer groups.

In addition, Commissioners and Commission staff have participated in two field visits in Western Australia and Queensland to see IPSs and microgrids, and to speak to customers who are being supplied via those SAPS about their experiences. The Commission thanks Western Power and Energy Queensland for their assistance in facilitating these visits.

The breadth of issues to be considered in the review, and the depth in which they need to be considered, necessitates this draft report focusing primarily on the transition of customers to a stand-alone power system provided by a DNSP (priority 1).

An issues paper focusing on a national framework for customers transitioning to a stand-alone power system facilitated by parties other than DNSPs, priority 2 of the review, will be released in early 2019.

The following chapter provides more context for the review and explains the Commission's approach to priority 1 of the review, before setting out the contents of the remaining chapters in this report.

2 CONTEXT AND APPROACH

This chapter discusses the drivers for the review and sets out the Commission’s approach to undertaking it. In particular, it provides an overview of the Commission’s findings in the Western Power rule change, and updates and expands some of the analysis undertaken by the Commission at that time. The chapter covers:

- the increasing viability of stand-alone power systems
- cost and reliability outcomes in areas of low customer density
- the potential for SAPS deployment in remote areas, and other factors that might drive uptake
- further detail on the Commission’s findings in the Western Power rule change
- the Commission’s assessment framework for this review, and
- the Commission’s approach to this review, including the structure of the remainder of the report.

2.1 Increasing viability of stand-alone power systems

Technological developments, in particular the falling costs of renewable generation and batteries, are making stand-alone power systems an increasingly viable way of supplying power. The economics of SAPS is becoming more favourable, especially for providing electricity services to customers for whom the costs of providing grid-connected electricity services may be high. There may also be additional benefits, such as improved reliability for remote customers and reduced bushfire risks.

These developments have prompted distributors to consider the case for using SAPS solutions in suitable circumstances, in particular, the use of Individual Power Systems (IPSS). In trials to date, and currently planned deployments, these systems generally comprise solar photovoltaic (PV) panels, lithium-ion batteries, an inverter and backup diesel generator.

Due to the limited experience to date — and the significant number of variables involved, including the size of the system, solar resources availability, accessibility of the location and level or variability of energy demand — it is difficult to estimate the costs of using individual power systems generally. In particular, the desired level of reliability can have a significant impact on costs. Horizon Power suggested in its submission to the issues paper that it had found creating a “utility-grade SAPS solution to be far more complex than simply purchasing and deploying individual retail SAPS units”.³⁶

Western Power has reported that the individual power systems procured in 2016 for its Ravensthorpe trial cost in the order of the \$150,000 - \$200,000 per unit.³⁷ The Commission understands that the cost of the batteries accounted for a substantial proportion of the overall cost, and that falling battery costs in the time since these units were procured would already have had a material effect on the cost of a comparable system today.

³⁶ Submission to the issues paper: Horizon Power, p. 2.

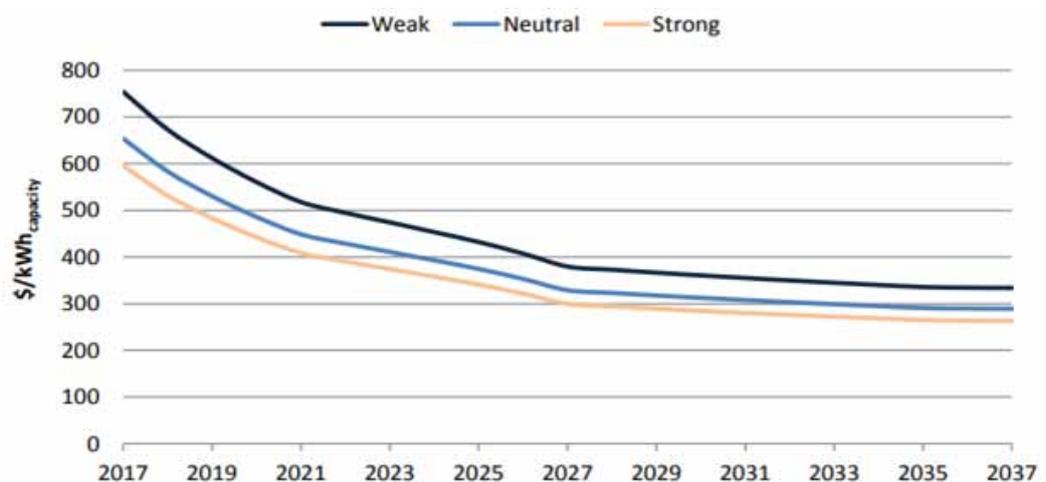
³⁷ Western Power, submission to the consultation paper for the Alternatives to grid-supplied network services rule change, p. 2.

2.1.1 Falling battery costs and likely uptake

The increasing viability of stand-alone systems, particularly individual systems, is, in large part, being driven by reducing battery costs. Between 2010 and 2017, battery costs fell globally by 40 per cent.³⁸ Over the same period in Australia, the price of lithium ion battery batteries fell 73 per cent.³⁹ Capital costs for a fully installed residential storage system are expected to fall by 58 per cent by 2030.⁴⁰

Figure 2.1 illustrates the expected trend in the capital cost of lithium ion batteries over the next twenty years.

Figure 2.1: Capital cost of lithium ion batteries



Source: Jacobs' analysis based on CSIRO's "Future energy storage trends"

As can be seen, further steep falls in battery costs are forecast over the next ten years, with a slower rate of decrease after that.

These falling capital costs, combined with efficiencies gained from learning and economies of scale, will drive deployment, to the extent that the regulatory frameworks allow. Western Power recently identified more than 15,000 candidate sites on its network where customers could benefit from stand-alone power systems over the next ten years.⁴¹ Similarly, Essential Energy's initial internal modelling suggests that over the next ten years, SAPS could represent the lowest cost to serve technology for over 2,000 of its customers.⁴²

However, it should be noted that these numbers are relatively modest in the context of ten million grid connected customers (approximately nine million in the NEM and one million in the Western Australian Wholesale Energy Market).

³⁸ International Energy Agency, *World Energy Outlook 2017 - Executive Summary*.

³⁹ Bloomberg New Energy Finance, *Australia behind-the-meter PV and storage forecast*, 22 February 2017.

⁴⁰ Bloomberg New Energy Finance, *2018 Long-term Energy Storage Outlook*.

⁴¹ See: <https://westernpower.com.au/energy-solutions/projects-and-trials/stand-alone-power-systems-stage-1/>.

⁴² Issues paper submission: Essential Energy, p. 2.

2.2 Cost and reliability outcomes in low-density areas

The falling cost of SAPS may drive their adoption in areas of low customer density, which exhibit higher than average costs to serve and lower than average service reliability.

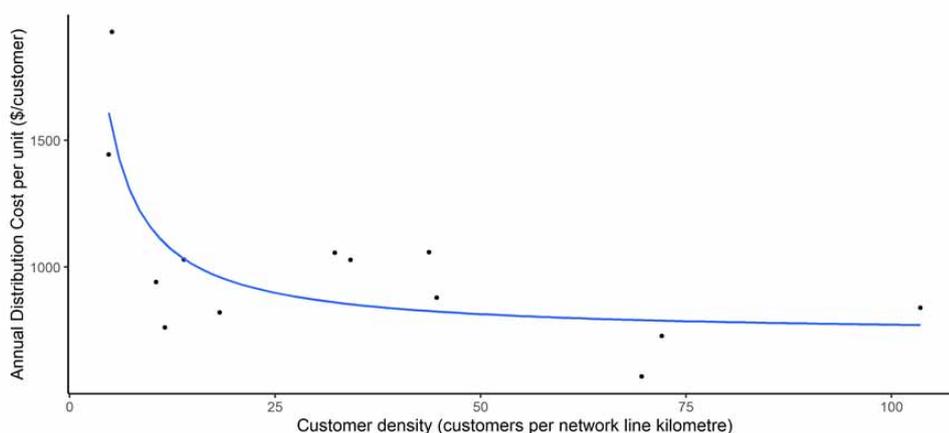
DNSPs report data on their costs and operations to the AER in regulatory information notices, including information on the costs to supply electricity through the grid and on the reliability of the supply. The Commission presented a number of charts derived from this data in the final determination for the Alternatives to grid-supplied network services rule change using data for the period 2011-15,⁴³ and has now updated these using data up to 2017.

2.2.1 Grid supply to low-density areas can be more costly than for higher-density areas

The data shows that, across the 13 distributors in the NEM, as customer density (measured as the number of customers per kilometre of line) falls, annual costs per customer connection increase. Distributors with a lower average number of customers per kilometre of network exhibit a higher average annual cost per connection.

Figure 2.2 highlights that the highest cost distributor has an average annual service cost of approaching \$2,000 per customer and has a customer density of below 10 customers per network line kilometre. This is in contrast to the lowest average cost distributor which exhibits an average service cost of around \$500 per customer and has a customer density of around 70 customers per network line per customer.

Figure 2.2: Annual distribution costs and customer density (2011-2017)



Source: DNSP data reported in AER regulatory information notices (2011-2017)

There can also be significant differences within distributors' networks. In south-western Western Australia, over fifty per cent of Western Power's high voltage overhead distribution network services around three per cent of its customers.⁴⁴

⁴³ AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, pp. 15-18.

⁴⁴ Western Power, *Creating the rural network of the future*, Stand-alone Power Systems Demonstration Project.

BOX 4: ECONOMIES OF DENSITY

Economies of density occur when the costs to serve customers are negatively related to the population density of the area in which the customers are principally located. They can pose challenges to policy makers in that locational differences in costs to serve can be substantial and a cost-reflective pricing structure would exhibit substantial locational differences in prices charged to customers.

Historically, political preferences for 'flat' or near-flat price structures, and universal or near-universal service availability, have led to one of two outcomes:^a

- publicly owned monopoly provision
- regulated private monopoly provision.

In both cases, the monopoly provider is a single supplier that is invulnerable to competitive pressures. Economic rents created from the provision of services to customers in high-density areas are used to support service provision in lower density areas.

This has generally been consistent with stable outcomes in respect of electricity distribution, which has historically exhibited natural monopoly characteristics — that is, marginal costs are low compared to fixed costs, and multi-firm production is therefore more costly than production by a monopoly.^b

However, there is evidence that, although a natural monopoly activity, electricity distribution does not benefit significantly from economies of scale. While a single distributor is the efficient outcome in a given area, cost per unit does not decrease materially if multiple areas are serviced by the same distributor. One study of municipal electricity distributors in Ontario, Canada suggests little reduction in unit costs beyond around 4,000 customers.^c

This analysis suggests that the rationale for electricity distributors serving relatively large areas of Australia may be driven more by economies of density than economies of scale. Even those distributors viewed as having predominately low-density customer bases generally cover a relatively wide range of densities. For example, while large portions of Essential Energy's service area have fewer than one customer per square kilometre, some smaller areas have over 100 customers per square kilometre.^d

Note: a Yarrow, George., *ACCC Domestic mobile roaming inquiry 2016*, Report of Professor George Yarrow for Telstra Corporation Limited, 1 December 2016, p. 9.

b Baumol, William J., "On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry", *American Economic Review*, 67, 1977, p. 810.

c Yatchew, A., "Scale Economies in Electricity Distribution: a semiparametric analysis", *Journal of Applied Econometrics*, 15, 2000.

d Essential Energy, Submission to the draft determination, *Alternatives to grid-supplied network services*, 8 November 2017, p. 7.

2.2.2

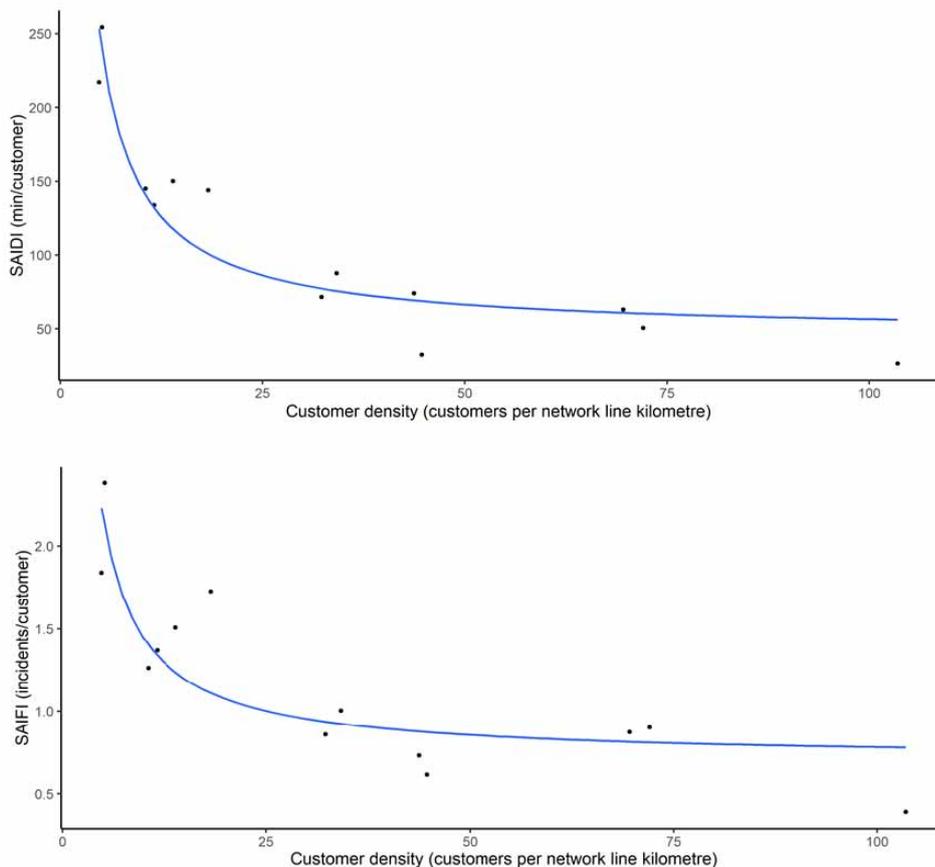
Low-density areas may receive less reliable grid supply than high-density areas

For grid-connected customers, there is also a clear relationship between customer density and reliability of electricity supply. Distributors with a lower average number of customers per kilometre of network tend to exhibit lower performance on standard measures of reliability (as well as higher average costs).

The standard measures of service quality or reliability are the system average interruption duration index (SAIDI) measured in average minutes of service interruption, and system average interruption frequency index (SAIFI) measured as the average number of interruptions experienced by customers per annum. High SAIFI and SAIDI results mean there are more frequent and longer interruptions, and thus lower service quality (or reliability).

Figure 2.3 plots both the System Average Interruption Duration Index and the System Average Interruption Frequency Index against customer density for each of the 13 distributors in the NEM between 2011 and 2017.

Figure 2.3: SAIDI, SAIFI and customer density (2011-2017)



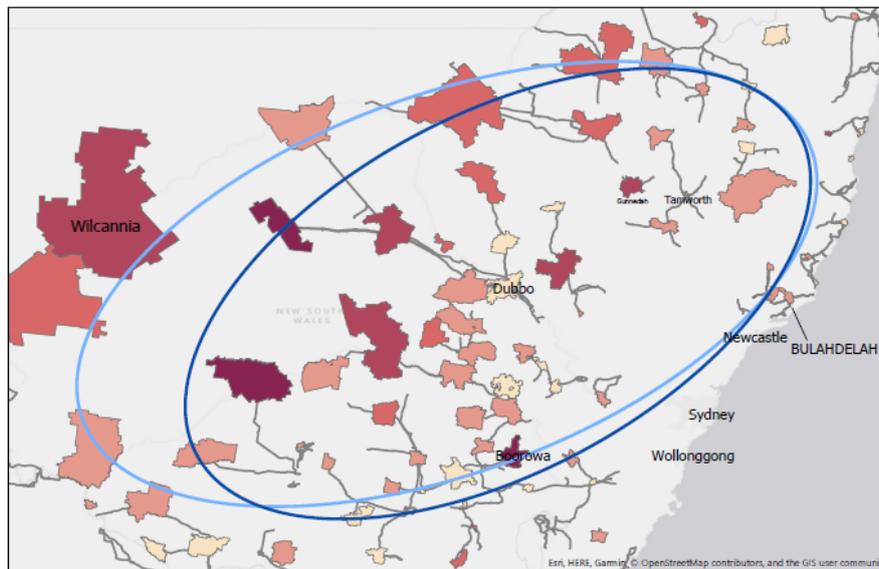
Source: DNSP data reported in AER regulatory information notices (2011-2017)

The first chart shows that lower customer density tends to be associated with longer average system interruptions. Specifically, the lower customer density distributors have a SAIDI over five times higher than the highest density distributors.

Similarly, lower customer density also tends to be associated with more frequent service interruptions. The second chart shows that the lower customer density distributors also have a SAIFI four to five times higher than the highest density distributors.

As with cost to serve, Figure 2.3 does not indicate the variations in reliability that may occur within DNSPs' service areas. Figure 2.4 below takes 2017 data for reliability by feeder on Essential Energy's network, and divides this by an approximation of the number of customers on each feeder. The resulting MWh lost per customer is multiplied by a value of customer reliability to provide estimates of cost impacts on customers of reliability outcomes.

Figure 2.4: Locational variations in cost impacts on customers of reliability outcomes



Source: AER RIN Data, Openstreet Map

- ▭ 2017 - 1 Standard Deviation
- ▭ 2013 - 1 Standard Deviation
- Distribution Lines

Total Mwh Lost per Customer (planned and unplanned)	Total Value of Customer Reliability per Customer (\$/Mwh)
<= 0.012025	\$316
<= 0.021996	\$578
<= 0.036731	\$966
<= 0.078826	\$2,073
<= 0.125662	\$3,305

Source: Essential Energy

Note: Value of lost electricity is based on a Value of Customer Reliability of \$26,300/MWh, and represents maintenance and reliability costs as it covers planned and unplanned interruptions.

Having regard to Figures 2.2 and 2.3, the map in Figure 2.4 shows that there are (as would be expected) locational variations in reliability outcomes within distributors' areas. It also highlights the direct relationship between the economic costs associated with reliability outcomes and, importantly, customer density. It follows that, although remote areas are likely to be associated with lower reliability performance and high costs to serve, it may be that more densely populated areas (with better, but still below average, reliability and lower costs

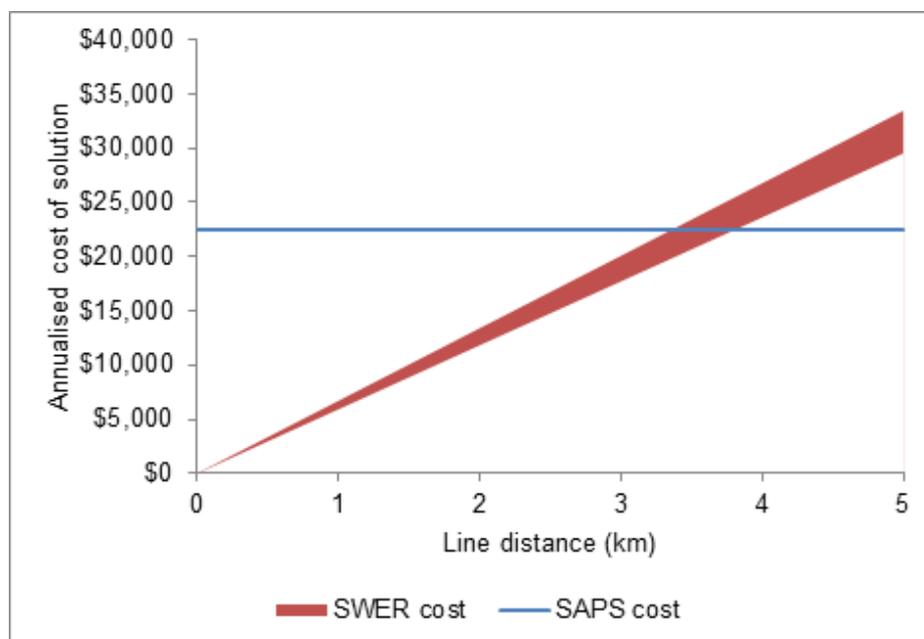
to serve) have a higher total economic cost associated with poor reliability outcomes in these locations. In this context, the economic case for SAPS may not necessarily be limited to more remote areas.

2.3 Potential for SAPS deployment in remote areas

The previous section demonstrated that there are significant variations in costs to serve and reliability outcomes based on customer density. As such, very remote areas are likely to be particularly suitable for the use of SAPS solutions by DNSPs. For example, in New South Wales, Essential Energy’s longest power line is 1,905km, serving just 335 customers.⁴⁵

Figure 2.5 below illustrates the efficiency case for grid line replacement with SAPS in a remote area. Based on the data analysis in the figure, SAPS is more efficient than a connection to the interconnected grid for grid connections longer than 4km/customer. (The large number of assumptions involved, and the sensitivity of the analysis to these assumptions, should be noted.)

Figure 2.5: Estimated costs of SWER and SAPS solution in remote Queensland



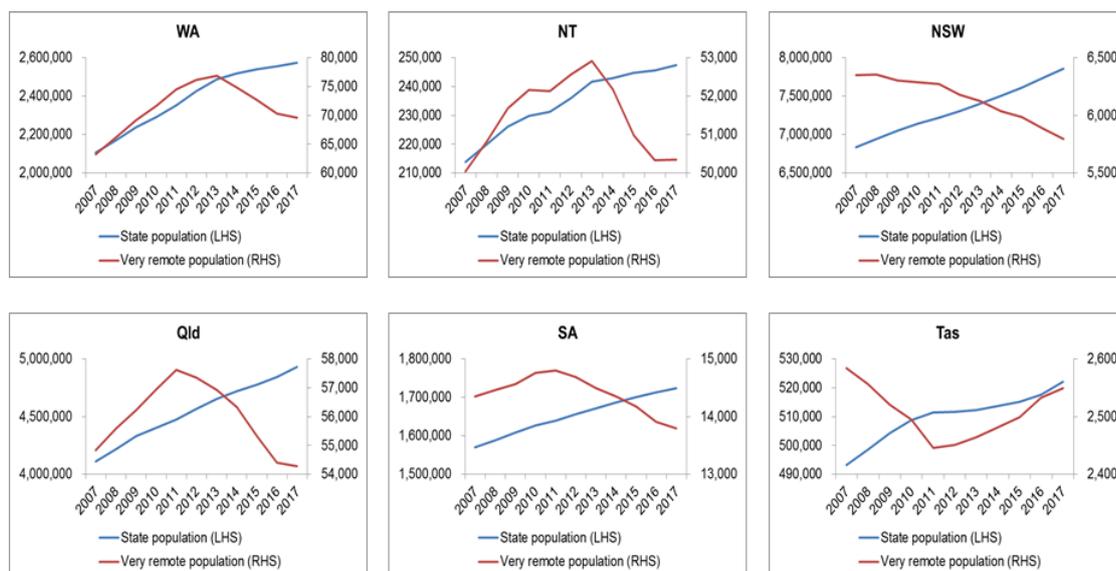
Source: Rawlinsons Construction Cost Guide 2018 and Parsons Brinckerhoff, Indicative costs for replacing SWER lines. SAPS cost sourced from Western Power, using lowest value from the range \$150,000-\$200,000 to reflect declining battery costs.
Note: Cost of SWER (wooden poles) \$29,892/km in Victoria (2009), Unit costs (1.5-1.7x Brisbane), State costs Qld = 1.32x Vic, CPI 2009-17 = 1.19

In addition to grid connections being less dense, and therefore more expensive on a per unit basis, the population in many remote areas is decreasing and, as such, long term network investments may not be cost efficient.

⁴⁵ Submission to the issues paper: Essential Energy, p. 1.

Figure 2.6 illustrates trends in remote population growth. It is important to note that some short term movements may be linked to changes in employment in the mining sector.

Figure 2.6: Remote population trends in Australia (2007-2017)



Source: 3218.0, Regional population growth - ABS

2.3.1 Other drivers for SAPS deployment

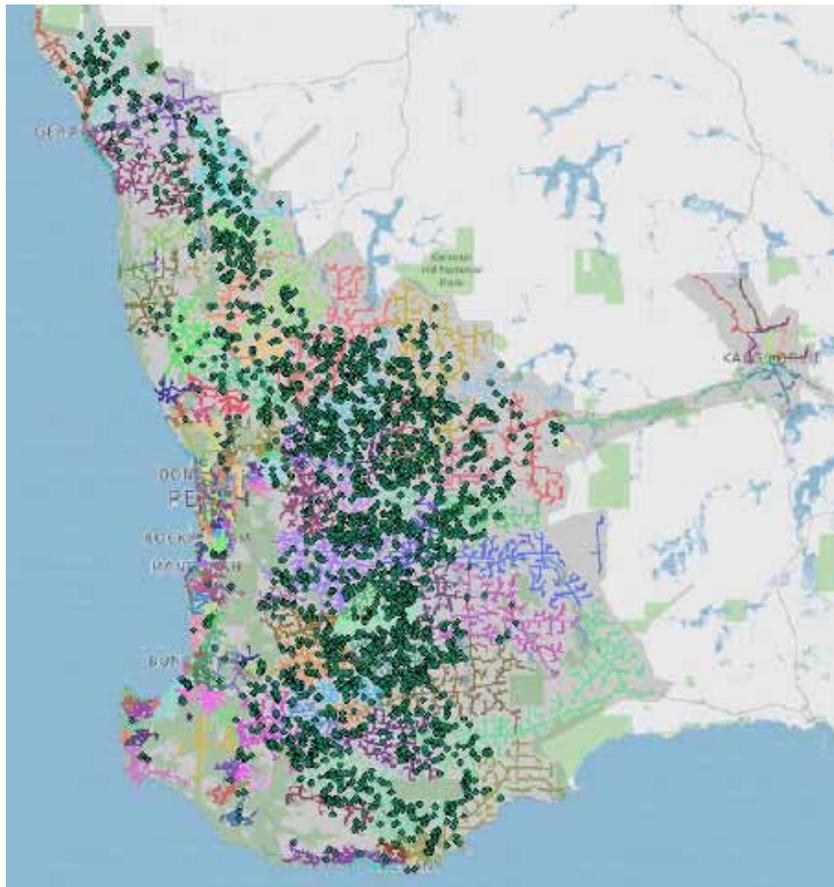
While, for the reasons given above, it appears likely that SAPS solutions would be most heavily used in remote areas, there are a significant number of factors that could potentially drive SAPS deployment, including asset age and other cost pressures, including vegetation management and those associated with mitigating bushfire risks.

At the time of making its rule change request, Western Power undertook modelling to identify candidate SAPS customers — those where the cost of providing SAPS would be lower than renewing the existing network. Western Power then filtered these results to show those meeting two criteria of a SAPS cost of less than 80 per cent of the network rebuild cost and an average conductor age of 40+ years to identify 2,702 candidate meter points.⁴⁶

Figure 2.7 shows the location of the identified candidate sites as green dots. As can be seen, the sites are not on the most remote fringes of Western Power’s network, but rather are in the middle of the network, closer to the Perth metro area. The Commission understands that this is primarily due to the network assets in those areas being older than those on the fringe of the grid.

⁴⁶ Western Power, *Removing barriers to efficient network investment*, rule change proposal, 8 September 2016, p. 1. Note that Western Power has recently revised this estimate up to more than 15,000 sites in its network where customers could benefit from stand-alone power systems over the next decade.

Figure 2.7: Candidate SAPS sites identified by Western Power



Source: Western Power, Rule change proposal - Removing barriers to efficient network investment, 8 September 2016, p. 37.

Box 5 illustrates the efficiency case for standalone power systems in areas with high bushfire risks or heavy vegetation.

BOX 5: BUSHFIRE RISKS AND VEGETATION COSTS

In areas prone to bushfire risk, DNSPs can face high costs if required to mitigate this risk. Such areas may form a significant portion of a DNSP's network — for example, eighty per cent of AusNet Services' network is located in areas with high bushfire risk.

Under the Victorian Powerline Bushfire Safety Program, AusNet and other Victorian DNSPs are replacing Single Wire Earth Return (SWER) powerlines and 22kV powerlines with insulated or covered conductors and underground cabling. AusNet has noted that the average cost to build replacement powerlines under this program to date has been \$400,000/km — or approaching ten times the cost of a SWER line. Clearly, this would dramatically affect the

economics of using SAPS over powerline renewal, and AusNet has suggested to the Commission that its initial, high-level assessment is that it may be economic to deploy SAPS solutions for between 300 and 400 of its customers in bushfire prone areas.

Vegetation management is a significant cost for DNSPs and this can be exacerbated in rural areas. The average clearing cost for light bush in Victoria was estimated at \$8,000/km in 2009.

In its submission to the issues paper, Essential Energy gave the example of a feeder in a national park costing over \$25,000 per customer annually in vegetation management. Depending on the size of the customers, it is possible that the vegetation management costs alone would exceed the annualised cost of SAPS provision.

Source: AusNet, submission to the consultation paper for the Alternatives to grid-supplied network services rule change, pp. 3-4; Essential Energy, submission to the issues paper, p. 16; Parsons Brinckerhoff, *Indicative costs for replacing SWER lines*, 2009.

2.4 Overview of the Commission's findings in the Alternatives to grid-supplied network services rule change

2.4.1 The use of stand-alone power systems could enhance efficiency

As noted, the analysis in the preceding sections updates and expands analysis previously undertaken by the Commission. This suggests that, by not adequately supporting the use of stand-alone power systems and the transition of grid connected customers to such systems, current regulatory frameworks may be inhibiting the use of the most efficient solutions to supply electricity to some customers.

The Alternatives to grid-supplied network services rule change request was submitted by Western Power to the Commission in September 2016, with the principal objective of facilitating the use of SAPS solutions by DNSPs.⁴⁷

In the final determination for the rule change, the Commission presented an earlier version of the analysis contained in the preceding sections of this chapter, and concluded that making a rule to allow the use of SAPS solutions by DNSPs could have positive effects on the efficient provision of electricity services:⁴⁸

A rule could enable the more efficient provision of electricity services, reducing overall network costs. Currently distributors are not able to make optimum choices between grid and off-grid supply, and a rule would help to address this issue. This would result in lower prices for consumers in the long term.

2.4.2 Financial incentives provide a barrier to off-grid supply

The Commission further found that high-cost grid connected customers have no incentive to move to off-grid supply, despite being free to do so. Despite the high costs of serving remote

⁴⁷ AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017.

⁴⁸ *ibid*, p. 12.

grid-connected customers, and the recent declines in the costs of off-grid systems, the costs of off-grid supply are likely to be higher than the costs remote customers are paying for supply via the grid.

Electricity tariffs for customers in remote areas are often significantly less than the cost to supply those customers. In part, this difference is due to jurisdictional requirements or policies to charge all grid-connected residential customers in the jurisdiction or distribution service area the same rates for electricity supply (known as postage-stamp pricing). Some jurisdictions also have subsidies for remote customers.

Even in jurisdictions without explicit subsidies or postage-stamp pricing requirements, for historical and other reasons, distributors do not tend to have granular location-specific pricing for standard distribution services; instead, all customers of the same type (e.g. residential) in a distributor's area are charged the same price for these services. Therefore, prices charged to customers in high-supply-cost areas (e.g. remote areas) are often considerably lower than the cost of supplying those customers, and vice versa for customers in areas where the cost to supply is low.

Where a grid connected customer would have to pay more for off-grid supply than the subsidised amount they pay for grid supply, the customer has no financial incentive to go off-grid.

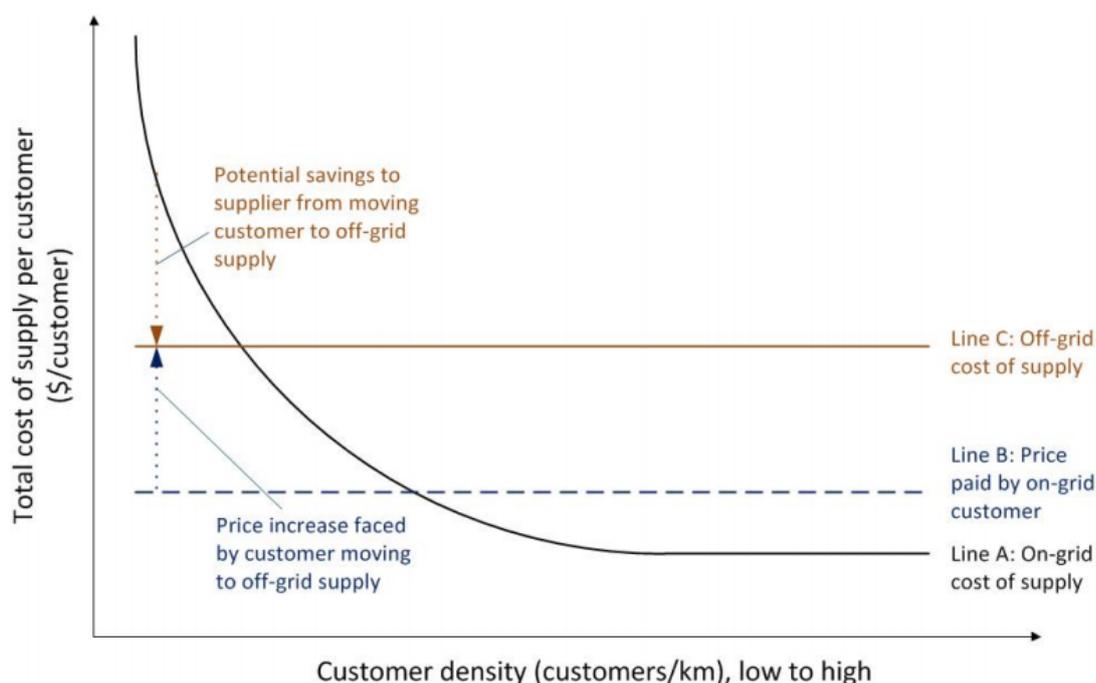
This incentive issue is illustrated in Figure 2.8 below.⁴⁹ Line A indicates the per-customer cost to provide electricity via the national grid; it varies with customer density. The dashed line, Line B, indicates the prices paid by grid-connected customers, on the basis that electricity costs are averaged across all customers in the distributor's area and location-specific cost differences are not passed through. Line C indicates the per-customer cost to provide electricity via off-grid supply; for this illustration we assume this does not change with customer density (unlike grid supply costs).

In the low customer density area on the left of the graph, the gap between Line A and Line C indicates the potential savings from moving these high-cost customers from grid supply to off-grid supply (and, if these savings were achieved, Line B — prices paid by all customers — may decrease marginally). However, Line C is higher than Line B, so these customers would pay more if they chose to move from grid supply to off-grid supply, and would have no incentive to do so if they were paying for an off-grid system themselves.

Over time, Line C is expected to fall (as off-grid supply components continue to get cheaper) so the potential savings from moving high-cost customers to off-grid supply will increase. However, as long as Line C remains higher than Line B, customers have no financial incentive to move off-grid.

⁴⁹ Note that this graph is for illustrative purposes only and is not based on actual data.

Figure 2.8: Illustration of incentive issue



Source: AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, p. 27.

In the final determination, the Commission noted that, in light of the pricing and incentive issues currently restricting the use of off-grid supply, it would be economically efficient to incorporate locational signals into cost-reflective tariffs so that customers have improved incentives to choose off-grid supply if it is cheaper than grid supply. However, the Commission acknowledged that jurisdictional policies and consumer preferences mean it is unlikely that network tariffs will include strong locational signals in the foreseeable future.⁵⁰

In the absence of improved incentives, the Commission concluded that changes to the regulatory framework were warranted to facilitate to allow distributors to provide off-grid supply where this was the most efficient outcome. However, the Commission also concluded that it was unable to address the regulatory barriers present solely through a proposed change to the NER, and therefore determined not to make rule at that time.

2.4.3 Regulatory barriers to DNSP provision of off-grid supply

The provision of distribution services by DNSPs in the NEM is regulated by the NEL and NER. A “distribution service” is defined as a service provided by means of, or in connection with a distribution system. A “distribution system” is defined as a distribution network, together with

⁵⁰ AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, p. iii.

the connection assets associated with the distribution network, *which is connected to another transmission or distribution system*.

As discussed in more detail in section 4.1.3 of this report, Western Power proposed in the rule change request to amend the definition of distribution service in the NER by expanding the definition to capture non-network options that replace or substitute for part of a distribution system in order to enable the use of SAPS by DNSPs. However, the proposed changes would lead to inconsistencies between the NER and the NEL, between the term "distribution service" in the NER and the term "electricity network service" in the NEL. This would have made the proposed rule invalid.

In making its determination, the Commission was also influenced by the fact that, in several jurisdictions, the full suite of consumer protections provided under the NERL and NERR apply only to customers supplied by the interconnected national electricity system. The Commission was not able to address these issues through changes to the NER under the rule change request.

As such, despite its finding that the use of SAPS solutions by DNSPs could have positive effects on the efficient provision of electricity services, the change to the NER proposed by Western Power would not, on its own, contribute to the achievement of the national electricity objective.

2.4.4 **Commission's recommendations regarding DNSP-led off-grid supply**

In the final determination, the Commission considered how off-grid supply could be provided efficiently to selected edge-of-grid customers, in a way which avoided unnecessary network expenditure while protecting the long-term interests of electricity customers. It concluded that a broader package of framework changes would be required to properly implement the required reforms, and recommended the following:

- that the NERL, NERR and relevant jurisdictional instruments should be amended to implement an appropriate regime of energy-specific consumer protections for off-grid customers, including reliability standards and, if necessary, price controls
- that the NEL and NER should be amended to allow DNSPs to provide off-grid supply as a distribution service that is subject to economic regulation by the AER, including incentives for efficiency
- that the national frameworks should include a number of conditions to protect customers and avoid distorting the evolution of competition for off-grid supply services.

The Commission recommended to the COAG Energy Council that it ask the Commission to further develop the package of law and rule changes that would be required to implement this recommended approach. It was this recommendation that, in part, led to this review.

2.5 **Assessment framework**

The objective for the review is to develop a package of law and rule changes to allow SAPS to be used where it is economically efficient to do so, while maintaining appropriate

consumer protections and service standards. This section sets out the Commission's framework to guide it in developing and assessing the changes to achieve this outcome.

2.5.1 National energy objectives

The review will involve considering potential changes under the NEL and NER for electricity and the NERL and the NERR for energy retail. As such, two of the national energy objectives - the national energy retail objective (NERO) and the national electricity objective (NEO) - are relevant to this review.

The NERO is:⁵¹

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

In addition, under the NERL the Commission must, where relevant:⁵²

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

This is referred to as the consumer protection test.

The NEO is:⁵³

to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

- (a) price, quality, safety, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system.

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

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

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

51 NERL, s. 13.

52 NERL, s. 236(2)(b).

53 NEL, s. 7.

For a detailed discussion on the Commission's approach to applying these overarching objectives to rule making processes and reviews, such as this one, refer to *Applying the energy objectives: A guide for stakeholders*.⁵⁴

2.5.2

Assessment criteria

Consistent with these objectives, the Commission has identified the following more detailed criteria to assess potential regulatory arrangements for stand-alone power systems:

- Do the regulatory arrangements facilitate competition and consumer choice in energy services and products?
- 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, consistent and transparent?
- Are the regulatory arrangements proportional to the risks they seek to mitigate?

Each criterion is discussed further below.

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

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 recognise the relevance of competitive service delivery as a means of driving better price and service outcomes for consumers.⁵⁵

Do the regulatory arrangements promote efficient investment and allocation of risks and costs?

The key driver for the review is to develop regulatory arrangements to allow DNSPs to use new solutions to supply energy to consumers in a more economically efficient way. 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 to the parties best placed to manage them.

Do appropriate consumer protections and compliance mechanisms apply within stand-alone power systems?

In the final determination for the Western Power rule change, the Commission set out its view that customers who move to off-grid supply to reduce distribution costs (thereby

⁵⁴ AEMC, *Applying the energy objectives: A guide for stakeholders*, 1 December 2016, Sydney.

⁵⁵ Terms of Reference, p. 8.

benefiting all electricity customers by reducing overall costs) should continue to receive appropriate energy-specific consumer protections aligned with those of standard supply customers. The Commission considers that, where off-grid supply is provided as a regulated DNSP-led service at the same price as paid by grid-connected customers, protections should be no less stringent than the relevant customers currently receive for their existing grid connection.⁵⁶

Are the regulatory arrangements clear, consistent and transparent?

The regulatory framework for stand-alone power systems 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 market. Consumers and businesses need to understand what their protections and obligations are, and what others' obligations are, with respect to the transactions they undertake.

To the extent they are required to make them, consumers should have access to sufficient information to make informed and efficient decisions, especially as a decision to accept a stand-alone power system solution is likely to have long term implications. As such, clear information around the consumer protections which apply when being supplied by a SAPS would assist consumers in making decisions about transitioning from a standard grid connection to a SAPS model of supply.⁵⁷

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

Are the regulatory arrangements proportional to the risks they seek to mitigate?

Competition and market signals often help protect and provide the best outcome for consumers. However, regulation may be necessary in the case of market failure or to safeguard safe, secure and reliable supply of energy to consumers. 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.

2.5.3

Principles of good market design

The review will also be guided by a number of attributes that the Commission considers represent well-functioning, workably competitive markets. These are:

- demand and supply conditions should be reflected in prices, and market participants should have access to a credible price signal that reflects underlying supply and demand conditions that usefully aids commercial decision-making
- readily available market information, which is clear, timely and accurate information that current and potential market participants have access to
- minimised transaction costs, to support timely and efficient investments in infrastructure and encourage competition.

⁵⁶ AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, p. 36.

⁵⁷ The terms of reference notes as an objective that SAPS customers should only be provided with a lower standard of service if they have expressly accepted it. Terms of Reference, p. 8.

2.5.4 **Best practice regulation**

In designing a regulatory framework for DNSP-led standalone power systems, the Commission will further be guided by the following principles of best practice regulation:

- transparency, such that the framework is clear and its provisions are unambiguous
- proportionality, such that the framework balances the costs of regulatory arrangements with their expected benefits
- consistency and fit for purpose, such that the framework is both certain and accommodating of particular requirements where necessary and appropriate
- adverse consequences, consideration to any unintended consequences particularly on related reviews such as the review into Updating the regulatory frameworks for embedded networks
- robustness, as the framework should be flexible and resilient to future market developments including exponential take-up of DNSP SAPS.

2.5.5 **Additional considerations**

The criteria set out in this section are, consistent with the NERO and NEO, based on the concept of economic efficiency. As discussed later in section 3.4.3, the decision to transition certain customers from grid supply to new stand-alone power systems could have broader social or economic development impacts (including on local regions) which may not necessarily be captured by energy market specific, economic efficiency criteria alone.

In addition, customers may value their connection to the grid for reasons which extend beyond energy costs and reliability considerations. Improved land amenity due to the removal of poles and wires and the ability to produce and export energy back to the grid are two examples.

In circumstances where the implementation of stand-alone power systems are considered to have impacts which extend beyond the national energy market, stakeholders may wish to consider whether there is a need for some mechanism to be able to take account of these broader matters (for example, a jurisdictional oversight role).

2.6 **Approach to the review**

2.6.1 **Structure of the review**

The terms of reference require the Commission to structure the review by 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 DNSPs.
- Priority 2 focuses on the development of a national framework that jurisdictions could opt into to support the supply of electricity from stand-alone power systems by parties other than DNSPs.

Additionally, under priority 1, the Commission is developing a mechanism that will form part of the national regulatory arrangements to facilitate the transition of customers that are

supplied by a DNSP to a stand-alone power system that is provided by a third party that is not the DNSP.

This report sets out the Commission's analysis, including a number of draft recommendations, to develop a national framework aimed at facilitating the provision of stand-alone power systems specifically by distribution businesses, in line with priority 1. However, given that there are similar and closely related policy issues between priority 1 and priority 2, the analysis and recommendations set out in this report may be revisited in light of the Commission's work on priority 2 (due to commence in early 2019) and in addition to stakeholder submissions received to this draft report.

In this draft report we have focussed on SAPS in the jurisdictions that are connected to the interconnected national grid, that is, Queensland, New South Wales, the Australian Capital Territory, Victoria, Tasmania and South Australia. In the final report, we will also consider whether some or all of the changes we recommend in relation to these jurisdictions should apply to the Northern Territory, noting that the Northern Territory currently only applies parts of the NER and has an existing jurisdictional regime for stand-alone systems.⁵⁸ As the national electricity frameworks do not apply in Western Australia, the national arrangements for SAPS developed through this review will not apply in Western Australia.

The Commission is closely coordinating the review with its concurrent review on Updating the regulatory frameworks for embedded networks that commenced on 30 August 2018. The latter will provide advice to governments on the detailed amendments to the regulatory framework that are required to implement the recommendations from the Commission's earlier Review of regulatory frameworks for embedded networks. Both reviews consider similar and interlinked policy and legal issues. The COAG Energy Council may subsequently choose to progress recommended national law change descriptions and draft rules as a single legislative package.

2.6.2

Structure of the report

This report presents the Commission's analysis and draft recommendations under priority 1 of the review.

Consistent with the approach presented in the issues paper, the Commission has divided the key issues associated with the transition of grid-connected customers to DNSP-led SAPS into three discrete areas:

- transition to SAPS supply
- service classification and delivery, and
- consumer protections.

⁵⁸ The three systems in the Northern Territory that are currently covered by parts of the NEL and NER are stand-alone systems, but are brought within the NEL and NER by different definitions that apply in the Northern Territory NEL application Act and regulations.

Figure 2.9: Structure of the draft report

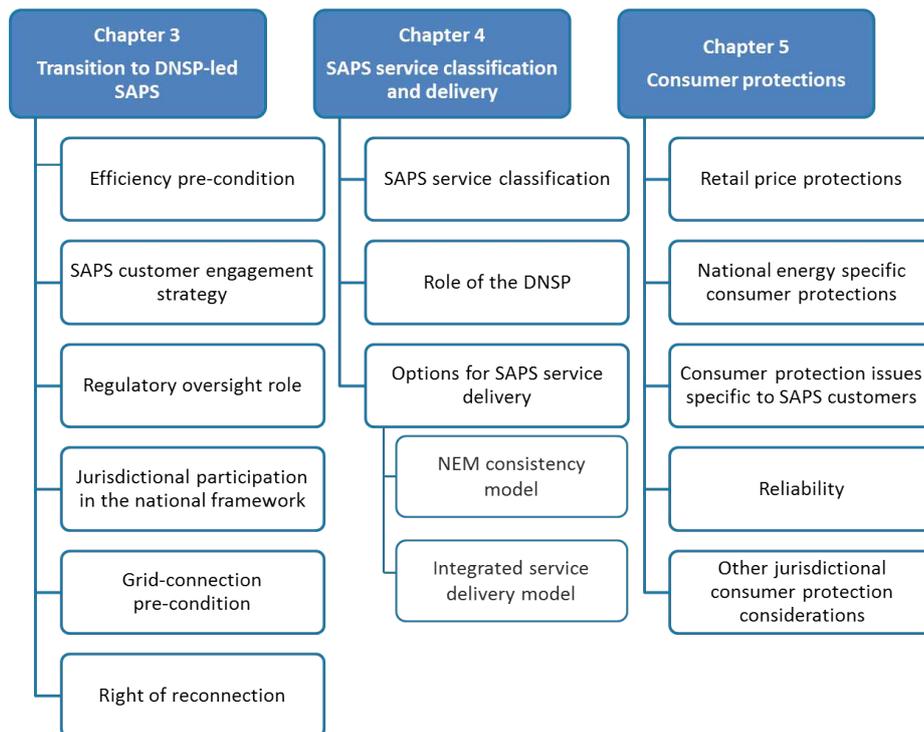


Figure 2.9 illustrates how these issues are covered by the following three chapters, which are structured as follows:

- Chapter 3 discusses the transition of customers from the DNSP interconnected grid to a DNSP provided SAPS, and includes the Commission’s proposed approach to efficiency tests, customer consent and grid connection pre-condition
- Chapter 4 proposes options for the definition and classification of SAPS services that would be offered by a DNSP under a DNSP-led SAPS, and discusses options for a DNSP supply model
- Chapter 5 covers the Commission’s draft position in relation to the consumer protection framework governing DNSP provided SAPS.

Finally, Chapter 6 of the report focuses on the other deliverable for priority 1, the required amendments to the national framework to enable the transition of grid-connected customers to a SAPS facilitated by a party other than DNSP. The chapter sets out the Commission’s current views on the decision-making framework and asset accounting provisions for such transitions.

3 TRANSITION TO DNSP-LED SAPS

The transition of customers from grid supply to SAPS supply by a DNSP needs to be supported by a robust, transparent framework that ensures efficient decisions are made consistent with the long term interests of consumers.

To the extent possible, the transition process and decision making framework should be guided by, and consistent with, existing frameworks in the rules which are designed to (among other things):

- encourage DNSPs to make efficient investment and expenditure decisions
- support engaged and informed consumer choices, and
- deliver successful market and regulatory outcomes through clearly defined roles and responsibilities.

The key elements of the transition process are directly linked to the broader distribution network planning and expansion framework. This framework is set out in Chapter 5 of the NER and is summarised in section 3.1.1 below. Having regard to this framework, this chapter outlines a number of amendments to existing arrangements, including the inclusion of a number of new mechanisms related to distribution planning and reporting. The key features of the proposed transition framework are summarised in section 3.1.2. Further detail on each of these features, as well as the Commission's reasoning, is set out in sections 3.2 to 3.5.

The terms of reference for this review request that the Commission considers the merits and downsides of excluding new customers (as distinct from existing grid-connected customers) from the framework supporting the provision of SAPS by DNSPs. Section 3.6 therefore considers whether an existing connection to the grid ought to be a pre-condition for the transition of a customer (or group of customers) to supply via a SAPS facilitated, specifically, by a DNSP. Section 3.7 then discusses the related matter of reconnection to the grid for customers who have been transitioned to SAPS supply.

3.1 Proposed features of the SAPS transition process

3.1.1 Overview of the current distribution network planning and expansion framework

Chapter 5 of the NER outlines provisions in relation to distribution and transmission network connection, planning and expansions.⁵⁹ The primary objective of the national planning framework is to establish a clearly defined and efficient planning process for network investment. In addition, the framework supports the efficient development of the networks and provides transparency around the network businesses' planning and investment activities.

Collectively, the arrangements enable market participants to make efficient investment decisions, support the network businesses in considering non-network alternatives to network investments and assist the AER in performing its regulatory functions.

⁵⁹ The chapter is in multiple parts: Part B sets out rules on connections to distribution and transmission networks, Part C address issues arising following the negotiation of a connection agreement under Part B, and Part D includes the rules in relation to network planning and expansions.

Figure 3.1 identifies the key features of the distribution network planning and expansion framework.

Figure 3.1: Overview of the distribution network planning and expansion framework

Feature	Frequency	Objective
Distribution annual planning report (DAPR)	DNSPs to publish DAPR annually based on a minimum forward planning period of five years	<ul style="list-style-type: none"> Report on all distribution assets, and activities undertaken by DNSPs, that would be expected to have a material impact on the distribution network over the planning period
Regulatory investment test for distribution (RIT-D)	DNSPs to apply RIT-D and associated processes as required	<ul style="list-style-type: none"> Identify the efficient investment option which best addresses the needs of the distribution network
Demand-side engagement strategy (DSES)	DNSPs to review and publish the demand side engagement strategy at least once every three years	<ul style="list-style-type: none"> Intended to recognise the importance of proactive engagement between DNSPs and non-network providers in developing potential solutions to network constraints

Source: AEMC

3.1.2

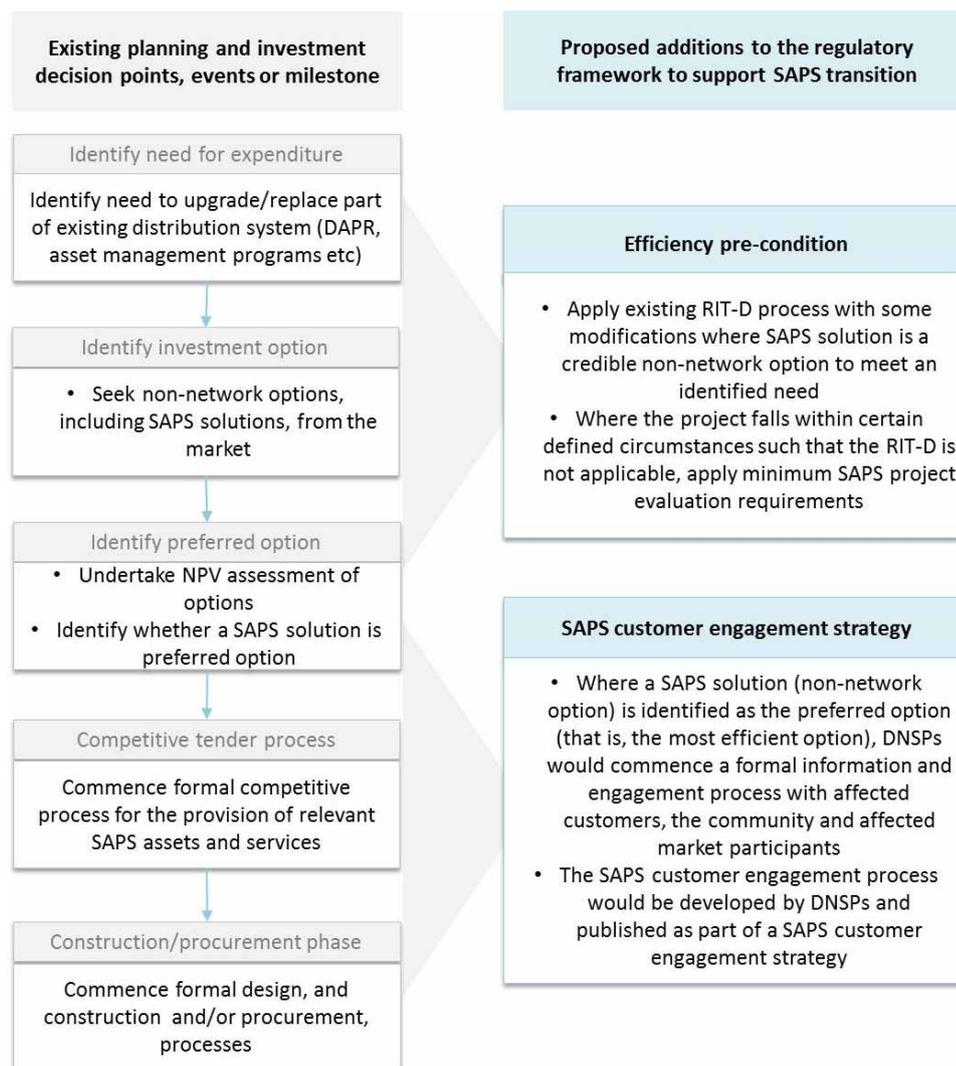
Proposed features of the SAPS transition process

The Commission considers that a number of changes to the existing distribution network planning and expansion arrangements are required to support the transition of existing grid-connected customers to SAPS supply facilitated by DNSPs. Specifically, the Commission is proposing to incorporate a number of new measures in relation to distribution network planning and reporting in order to:

- support DNSPs in the competitive testing of potential SAPS solutions which, once complete, will identify whether a SAPS solution provides the most efficient means of addressing a need to replace or upgrade existing parts of a DNSP's distribution system, and
- promote the long term interests of consumers by strengthening the engagement between DNSPs and parties (including customers) who may be affected by the decision to transition customers from grid supply to SAPS supply.

The proposed new features of the distribution network planning and expansion framework are outlined in Figure 3.2.

Figure 3.2: Proposed new measures to support the SAPS transition process



Source: AEMC

An explanation of each proposed new feature, including the rationale behind its proposed inclusion in the distribution network planning and expansion framework, is provided in the following sections.

3.2 Efficiency pre-condition

3.2.1 Background

The current framework for the regulation of DNSPs in the NER is designed to encourage these businesses to make efficient investment and expenditure decisions. It uses incentives and obligations to encourage DNSPs to generate outcomes that consumers need, want and

are willing to pay for, and to do so efficiently and in line with jurisdictional reliability standards.⁶⁰

With respect to DNSP-led SAPS, an important objective of the regulatory framework should be to achieve an outcome where DNSPs pursue SAPS where these provide a more efficient model of supply for a customer (or group of customers) than continuing to provide them with standard supply via the interconnected grid (which requires maintaining, and at some point upgrading, the distribution network).⁶¹

The terms of reference for this review have asked the Commission to consider the need for a fit-for-purpose economic test to establish whether a SAPS model of supply provides an economically efficient alternative to standard supply for some customers, and the need for such a test to adequately consider the impacts of SAPS on the market as a whole, including customers that will remain on the grid.

There are several options for an economic test, most notably the existing RIT-D established under the NER. If SAPS were included within the scope of the NEL and NER as a distribution service, a SAPS would essentially be treated as any other non-network option within the distribution planning and expansion (and incentive regulation) framework. The RIT-D and associated process would therefore apply. An overview of the current RIT-D and associated process is provided below.

Regulatory investment test for distribution

The RIT-D aims to promote efficient investment in distribution networks by supporting DNSPs to make consistent, transparent and predictable decisions in respect of distribution investment.⁶² DNSPs must apply the RIT-D, subject to certain criteria and processes, before investment decisions are made. In applying the test, DNSPs must consider all credible options (which may include both network and non-network options) when choosing how to address an identified need for investment in the network. The preferred option is the one which maximises the economic benefit to all those who produce, consume and transport electricity in the NEM.

A key benefit of the RIT-D process is that it can result in a DNSP procuring non-network services (where a non-network option has the highest net benefit) which it may not have otherwise considered. Requiring DNSPs to consider non-network options when applying the RIT-D therefore encourages the further development and effective operation of the contestable non-network services market.

60 Broadly, the promotion of efficient investment and expenditure relate to two areas of the regulatory framework for DNSPs: the planning and investment framework; and the incentive regulation framework. Together, these frameworks encourage consideration of non-network options, provide information to businesses that may offer non-network solutions, and provide distribution businesses with incentives to invest in least-cost options. The relevant aspects of the broader incentive frameworks and obligations in the NER are set out in the AEMC's Issues Paper for the SAPS Review. See AEMC, Stand-alone power systems review, Issues paper, 11 September 2018, Box 4, pp. 21-22.

61 Terms of reference, pp. 10-11.

62 The rules governing the RIT-D are set out in Chapter 5 Part D of the NER.

The RIT-D arrangements incorporate a number of distinct components and features, consistent with the requirements set out under clause 5.17 of the NER. These are summarised below.

RIT-D principles

The NER specify a number of RIT-D principles which, among other things, allocate responsibility for development of the RIT-D to the AER, clarify the purpose of the RIT-D and set out the specific requirements of the RIT-D, including the classes or market benefits and costs which must be considered and in what circumstances.⁶³ A summary of the RIT-D principles is provided in Box 6.

BOX 6: THE RIT-D PRINCIPLES

- The AER must develop and publish the RIT-D in accordance with the distribution consultation procedures (NER cl. 5.17.1(a))
- The purpose of the RIT-D is to identify the credible option that maximises the present value of the net economic benefit to all those who produce, consume and transport electricity in the NEM (the preferred option). For the avoidance of doubt, a preferred option may, in the relevant circumstances, have a negative net economic benefit (that is, a net economic cost) where the identified need is for reliability corrective action⁶⁴ (NER cl. 5.17.1(b))
- The RIT-D must: (NER cl. 5.17.1(c)(1)-(9))
 - be based on a cost-benefit analysis that must include an assessment of reasonable scenarios of future supply and demand
 - not require a level of analysis that is disproportionate to the scale and likely impact of each of the credible options being considered
 - be capable of being applied in a predictable, transparent and consistent manner
 - require the DNSP to consider whether each credible option could deliver the specified classes of market benefits which include:
 - changes in: voluntary load curtailment; involuntary load shedding and customer interruptions caused by network outages; costs for non-DNSP parties resulting from differences in the timing of new plant, capital costs and operating and maintenance costs; load transfer capacity and the capacity of embedded generators to take up load; and electrical energy losses
 - differences in the timing of expenditure

⁶³ NER cl. 5.17.1.

- any additional option value (not already considered) gained or foregone from implementing the credible option with respect to the likely future investment needs of the NEM
- any other class of market benefit determined to be relevant by the AER.
- with respect to the classes of market benefits, ensure that, if a credible option is for reliability corrective action, the consideration and any quantification assessment of these classes of market benefits will only apply insofar as the market benefit delivered by that credible option exceeds the minimum standard required for reliability corrective action
- require the DNSP to consider whether the specified classes of costs would be associated with each credible option and, if so, quantify the associated costs including:
 - financial costs incurred in constructing or providing the credible option
 - operating and maintenance costs over the operating life of the credible option
 - cost of complying with laws, regulations and applicable administrative requirements in relation to the construction and operation of the credible option, and
 - any other financial costs determined to be relevant by the AER.
- require a DNSP, in exercising judgement as to whether a particular class of market benefit or cost applies to each credible option, to have regard to any submissions received on the non-network options report and/or draft project assessment report where relevant
- provide that any market benefit or cost which cannot be measured as a market benefit or cost to persons in their capacity as generators, DNSPs, TNSPs or consumers of electricity must not be included in any analysis under the RIT-D, and
- specify, among other things, the method(s) for estimating the magnitude of the different classes of market benefits and costs
- A DNSP *may* quantify each class of market benefits where the RIT-D proponent considers that: (NER cl. 5.17.1(d))
 - any applicable market benefits may be material, or
 - the quantification of market benefits may alter the selection of the preferred option
- The RIT-D permits a single assessment of an integrated set of related and similar investments (NER cl. 5.17.1(e)).

Source: Chapter 5 of the NER

64 Reliability corrective action is a local term defined in NER cl. 5.10.2. It refers to DNSP investment in respect of its distribution network for the purpose of meeting the service standards linked to the technical requirements of NER schedule 5.1 or in applicable regulatory instruments and which may consist of network options or non-network options.

Currently, while the NER requires that a DNSP “consider” whether a credible option could deliver the specified market benefits,⁶⁵ DNSPs are provided with the discretion to “quantify” market benefits where these are material or likely to alter the selection of the preferred option.⁶⁶ For projects which are not for reliability corrective action, although the NER states that DNSPs “may” quantify market benefits, in effect such an assessment will be necessary in order for a DNSP to be able to identify a preferred option with a net economic benefit. This is not the case for projects related to reliability correction action where the preferred option may have a negative net economic benefit (that is, a net economic cost)⁶⁷ — in this case, there is no incentive for a DNSP to assess market benefits even where these may be material.⁶⁸

Projects subject to the RIT-D

The NER clarifies the distribution projects for which a RIT-D must be undertaken, by specifying the circumstances in which a DNSP⁶⁹ *would not* be required to apply the RIT-D to a distribution project. These circumstances include where:⁷⁰

- the project is required to address an urgent and unforeseen network issue
- the estimated capital cost of the most expensive potential credible option to address an identified need for investment on the distribution network is less than \$6 million
- the cost of addressing the identified need for investment on the distribution network is to be fully recovered through charges other than charges in respect of standard control services (that is, where the costs are not to be recovered through a DNSP’s regulated revenue)
- the identified need can only be addressed by expenditure on a connection asset which provides services other than standard control services
- the RIT-D project is related to the maintenance of existing assets.

The Commission recently made a rule extending the application of the RIT-D to network replacement and refurbishment expenditure decisions.⁷¹ Prior to this rule being made, projects related to the replacement and refurbishment of network assets were excluded from assessment under the RIT-D on the basis that, among other things, alternatives to replacement investments were considered limited.⁷²

65 NER cl. 5.17.1(c)(4).

66 NER cl. 5.17.1(d).

67 NER cl. 5.17.1(a).

68 While DNSPs are required to consider market benefits, they are not required to quantify them. As it discussed in Table 3.1, it may be appropriate to amend this for SAPS.

69 NER cl. 5.17.3. In this section we refer to DNSPs as the party applying the RIT-D. However, it is possible that a TNSP may apply the RIT-D in circumstances where an identified need for investment is identified during joint planning under NER cl. 5.14.1(d)(3). To recognise this, the RIT-D rules refer to a ‘RIT-D proponent’ as the party applying the RIT-D. This term is defined in NER cl. 5.10.2.

70 The list below refers specifically to the circumstances outlined in NER cl. 5.17.3(a)(1)-(5). The exhaustive list of circumstances is set in NER cl. 5.17.3(a)(1)-(7).

71 AEMC, *Replacement expenditure planning arrangements*, rule determination, 18 July 2017, Sydney.

72 The AER (in its rule change request) and the Commission (in its final determination) generally agreed that inclusion of replacement and refurbishment expenditure within the scope of the RIT-D was appropriate in light of: (1) recent changes in network planning and investment patterns, which has seen replacement expenditure becoming of greater relative importance than augmentation expenditure, and (2) emerging technology changes, which has seen non-network solutions becoming more viable alternatives to replacement network investment. See AEMC rule change project webpage for further information on the

The NER also provide some clarification around what is required in respect of the economic assessment of projects which are not subject to the RIT-D. Specifically, for each RIT-D project to which the RIT-D does not apply (with the exception of negotiated distribution services), DNSPs must ensure, acting reasonably, that the investment required to address the identified need is planned and developed at least cost over the life of the investment.⁷³

RIT-D procedures

The RIT-D procedures set out the consultation and reporting process that DNSPs must follow when assessing projects subject to the RIT-D.⁷⁴ The RIT-D procedures support four key activities which DNSPs must complete (subject to certain exemptions) in preparing for, and applying, the RIT-D. These activities involve screening for non-network options and preparing a non-network options report, a draft project assessment report and a final project assessment report.

The non-network options report sets out key information to assist non-network proponents in considering, developing and proposing non-network options. Submissions to the report allow DNSPs to collect relevant information on all credible non-network options, including the materially relevant costs and market benefits associated with a particular non-network option, to be used in the RIT-D assessment.⁷⁵

The draft and final project assessment reports set out information in relation to, and the results of, the RIT-D assessment.

Figure 3.3 sets out the current RIT-D process, including the key activities and associated timeframes.

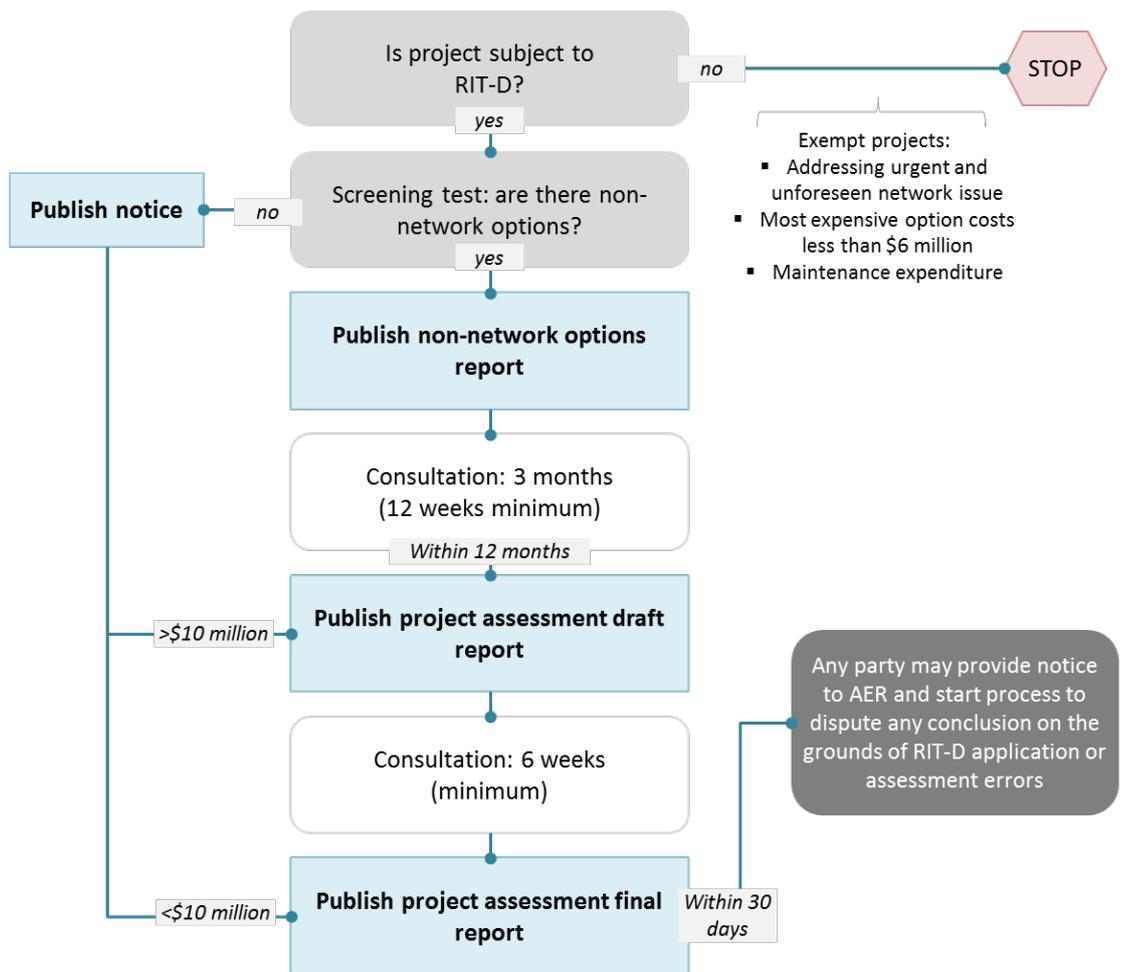
Replacement expenditure planning arrangements rule change request: www.aemc.gov.au.

73 NER cl. 5.17.3(d).

74 NER cl. 5.17.4.

75 Importantly, if a DNSP does not receive a response from potential non-network proponents regarding alternative solutions to address an identified need, the RIT-D process does not prevent a DNSP considering and including credible non-network options without a proponent as part of its RIT-D assessment.

Figure 3.3: RIT-D process



Source: Chapter 5 of the NER

Unless otherwise determined by the AER, DNSPs are required to reapply the RIT-D where there is a material change in circumstances which means the preferred option identified in the original RIT-D assessment is no longer a preferred option.⁷⁶ A material change in circumstances may include a change to the key assumptions used in identifying the identified need or the credible options assessed. In determining whether a DNSP does not need to reapply the RIT-D, the AER must have regard to (among other things) whether the project is required to address a network issue that, if not addressed, is likely to materially adversely affect the reliability and secure operating state of the network.

⁷⁶ NER cl. 5.17.4(t)-(v).

RIT-D application guidelines

Finally, the NER also require the AER to develop and publish RIT-D application guidelines.⁷⁷ These guidelines are intended to provide guidance to DNSPs on the operation and application of the RIT-D, the process to be followed by DNSPs in applying the RIT-D and how the AER proposes to address and resolve disputes regarding the RIT-D.⁷⁸ The matters to be included within the RIT-D application guidelines are set out in Box 7.

BOX 7: MATTERS TO BE INCLUDED IN THE RIT-D APPLICATION GUIDELINES

Clause 5.17.2(a) of the NER requires the AER to develop and publish, in accordance with the distribution consultation procedures, guidelines for the operation and application of the RIT-D. The application guidelines must:

- give effect to and be consistent with the relevant provisions of the NER⁷⁹
- provide guidance on:
 - the operation and application of the RIT-D
 - the process to be followed in applying the RIT-D
 - what will be considered to be a material and adverse impact on the NEM for the purpose of the definition of interested parties
 - how disputes raised in relation to the RIT-D and its application will be addressed and resolved.⁸⁰
- provide guidance and worked examples as to:
 - how to make a determination when a RIT-D proponent is not required to prepare and publish a non-network options report⁸¹
 - what constitutes a credible option
 - the suitable modelling periods and approaches to scenario development
 - the classes of market benefits to be considered
 - the acceptable methodologies for valuing the market benefits of a credible option
 - acceptable methodologies for valuing the costs of a credible option
 - the appropriate approach to undertaking a sensitivity analysis
 - the appropriate approaches to assessing uncertainty and risks
 - what may constitute an externality under the RIT-D.⁸²

Source: Chapter 5 of the NER

77 NER cl. 5.17.2. See also: AER, *Regulatory investment test for distribution application guidelines*, 18 September 2017.

78 The RIT-D dispute resolution process is the final key component of the RIT-D rules set out under NER cl. 5.17. A number of parties, including registered participants, the AEMC, AEMO and connection applicants, are able to raise a dispute in regard to the conclusions set out in the final project assessment report published at the conclusion of a RIT-D.

79 NER cl. 5.15.2; cl. 5.17.2–5.

80 NER cl. 5.17.2(b)(2).

81 NER cl. 5.17.2(c); cl. 5.17.4(c).

82 NER cl. 5.17.2(c).

3.2.2 Stakeholder submissions

In submissions to the issues paper, the majority of stakeholders considered the RIT-D and supporting consultation process would be appropriate to test the efficiency of a SAPS solution relative to network investment.⁸³ However, a number of stakeholders considered the details of the test and application guidelines may need to be revisited to ensure they are fit for purpose in the context of SAPS.⁸⁴

The majority of DNSPs did not consider that there was any requirement for a test to apply to projects for which the RIT-D is either not applicable or proportionate. These stakeholders were generally of the view that the existing planning and investment frameworks in the NER are sufficient to ensure DNSPs pursue the most efficient investment options.⁸⁵

In contrast, PIAC, CEC, TEC, Horizon Power and Energy Queensland all supported the development of a light-handed, targeted test to apply in certain circumstances.⁸⁶ The AER also supported the development of an alternative test and suggested that the minimum project evaluation requirements applicable to DNSPs under the Demand Management Incentive Scheme (DMIS) may be a reasonable basis for such a test.⁸⁷

More broadly, AGL considered that the AER should have oversight of the SAPS planning and investment process to enable the appropriate scrutiny of DNSPs in respect of the efficiency test and their consumer engagement programs.⁸⁸

3.2.3 Commission's analysis

Having considered submissions to the issues paper, the Commission proposes to establish arrangements whereby a DNSP may only provide a SAPS solution if it identifies that a SAPS solution is the most efficient means of addressing a need to replace or upgrade parts of a distribution system. A DNSP must make this assessment by completing at least one of the following processes:

- The existing RIT-D
- A new set of minimum SAPS evaluation requirements.

This approach would utilise the existing RIT-D and associated consultation process to test the efficiency of non-network SAPS solutions proposed for projects which meet the RIT-D cost threshold (and are not otherwise exempt projects).

To capture projects where a SAPS solution is a credible option but for which the RIT-D is not applicable, we propose to establish a set of minimum SAPS project evaluation requirements which DNSPs must satisfy in order to be able to identify SAPS as the most efficient non-network option.

83 Submissions to the issues paper: AGL, pp. 3-4; Ausgrid, pp. 4-9; ENA, p. 1; Endeavour Energy, p. 4; Essential Energy, p. 4; PIAC, pp. 1-2; Horizon Energy, p. 3; S&C Electric, p. 6; SAPN, p. 1; Western Power, p. 2; AER, pp. 3-4.

84 Submissions to the issues paper: AGL, pp. 3-4; SA PowerNetworks p. 3; Endeavour Energy, p. 4.

85 Submissions to the issues paper: ENA, p. 2; TasNetworks, pp. 2-3; Western Power, p. 2; Endeavour Energy, pp. 4-5; Essential Energy, pp. 5-6; AusNet Services, p. 4.

86 Submissions to the issues paper: PIAC, p. 2; Clean Energy Council, p. 3; Horizon Power, p. 3; TEC, p. 4; Energy Queensland, p. 4.

87 Submissions to the issues paper: AER, pp. 3-4.

88 Submissions to the issues paper: AGL, p. 3.

Importantly, inclusion of new set of minimum SAPS evaluation requirements will provide transparency around the assessment of smaller SAPS projects and ensure that, before a DNSP can begin the process of transitioning customers to SAPS supply, it has satisfied a requirement to engage with all potential SAPS proponents to seek out the most efficient SAPS solution.

Application of the RIT-D to SAPS

The RIT-D requires DNSPs to identify and assess non-network options, in addition to network options, when considering how to address an identified need for investment in respect of the distribution network. In the context of the RIT-D and associated processes, a SAPS solution would be treated the same as any other non-network option. For example, DNSPs would be required to screen for potential SAPS solutions to meet an identified need, and to seek further information from potential SAPS proponents where a SAPS solution provides a credible alternative to maintaining or upgrading the existing network. In addition, a DNSP would be required to consider and quantify relevant classes of market benefits (where applicable) and costs in its assessment of credible options and its identification of the preferred option.

While SAPS would be treated the same as non-network solutions within the context of the RIT-D arrangements, a number of amendments to the NER (and consequently to the RIT-D and RIT-D application guidelines developed and published by the AER) will be required to recognise that SAPS are not connected to the interconnected grid and largely operate independent of the NEM. This is likely to have a number of implications for the effective operation of the existing RIT-D, including in respect of the following:

- The parties who fall within the scope of the RIT-D: Where a credible option involves SAPS supply, the parties affected by that credible option will be broader than those envisaged by the current RIT-D (that is, currently only those who produce, consume or transport energy in the NEM).
- The classes of market benefits and costs to be considered and quantified: Provision of generation and retail services to customers under a SAPS model of supply will differ (potentially significantly) from the provision of these services in the competitive generation and retail markets, thereby requiring careful consideration in the context of the RIT-D.⁸⁹

The tables below set out some of the Commission's initial observations on areas of the RIT-D framework which may require amendment to ensure that the RIT-D is appropriate and fit-for-purpose for assessing the efficiency of SAPS solutions included within the scope of projects to which the RIT-D is applicable.

⁸⁹ This is particularly true given that market benefits (and costs) associated with the generation and retail aspects of SAPS will need to be compared and assessed against the current competitive generation and retail supply arrangements.

Table 3.1: Observations on RIT-D principles

NER CLAUSE 5.17.1 - RIT-D PRINCIPLES

Purpose of RIT-D

NER cl. 5.17.1(b) states: "The purpose of the regulatory investment test for distribution is to identify the credible option that maximises the present value of the net economic benefit to all those who produce, consume and transport electricity in the National Electricity Market (the preferred option)..."

Given that SAPS are not connected to the interconnected grid and are, for all intents and purposes, isolated from the NEM, the RIT-D would not currently capture the impacts that implementation of a SAPS solution may have on those who produce, consume and transport electricity in the context of that SAPS.

Amendments may therefore be required to ensure that the RIT-D is broad enough to assess potential impacts (that is, costs and market benefits) to affected parties in both the NEM and in respect of the SAPS solution being considered. This may be possible by amending the definition of "National Electricity Market" such that SAPS would still be considered to be part of the NEM for the purposes of this provision.

Reliability corrective action

NER cl. 5.17.1(b) also states: "...For the avoidance of doubt, a preferred option may, in the relevant circumstances, have a negative net economic benefit (that is, a net economic cost) where the identified need is for reliability corrective action."

Reliability corrective action is a local term defined in clause 5.10.2. It refers to DNSP investment in respect of its distribution network for the purpose of meeting the service standards linked to the technical requirements of schedule 5.1 or in applicable regulatory instruments and which may consist of network options or non-network options.

If the objective of investing in either replacement assets or SAPS is to meet relevant service standards (that is, for reliability corrective action), the preferred option (which may be a SAPS solution) may have a net economic cost. In this case, there is no incentive for DNSPs to quantify market benefits, even where these may be material or may alter the selection of the preferred option.

Consideration will be given to whether this outcome is appropriate where a SAPS solution is being considered for reliability driven projects.

Assessment of market benefits

NER cl. 5.17.1(d) states: "A RIT-D proponent may, under the regulatory investment test for distribution, quantify each class of market benefits under paragraph (c)(4) where the RIT-D proponent considers that: (1) any applicable market benefits may be material; or (2) the quantification of market benefits may alter the selection of the preferred option."

Importantly, under the current RIT-D, DNSPs are not required to quantify market benefits considered to be immaterial or that will not alter the selection of the preferred option. They are also not required to quantify market benefits for projects which relate to reliability corrective action.

NER CLAUSE 5.17.1 - RIT-D PRINCIPLES

However, where a project is not for reliability corrective action, a credible option must have a positive net economic benefit in order to satisfy the RIT-D. The implication of the above is that the quantification of market benefits will effectively be required where a project is not for reliability corrective action.^a

The Commission will consider the implication of these requirements in the context of SAPS, including the potential ambiguity in respect of the obligation on DNSPs to only quantify market benefits in certain circumstances.

Classes of market benefits

The classes of market benefits that a DNSP is required to consider for each credible option are set out in NER cl. 5.17.1(c)(4).

In addition to those specified in the NER, DNSPs must also consider any other class of market benefit determined to be relevant by the AER and included in the RIT-D application guidelines.^b In the current guidelines, the AER states that: "We consider this list of market benefits to be sufficiently extensive. It would be difficult to propose any additional class of market benefit that would have a material impact and/or be *specific to the NEM*."

There are likely to be additional classes of market benefits which may have a material impact and/or be specific to SAPS. For example, a review of the existing classes of market benefits (and costs) will be needed to understand whether they are likely to take into account the market benefits associated with the generation and retail aspects of SAPS, as compared with the current competitive generation and retail supply arrangements.^c

In addition, potentially removing the ability of a customer (or group of customers) to access the benefits of the competitive retail market both now and the future may have some financial implications for affected customers which may need to be considered in the RIT-D assessment of a SAPS solution (where relevant, having regard to the SAPS supply model and other matters such as the possible need for price regulation).

Further, whether new classes of market benefits should be prescribed in the NER, or whether the AER is the appropriate body to consider possible new classes of market benefits relevant to SAPS in the context of the RIT-D application guidelines, will be considered further in the next stage of the review.

Classes of costs

The classes of costs that a DNSP is required to consider for each credible option are set out in NER cl. 4.17.1(c)(6). DNSPs must also consider any other class of cost determined to be relevant by the AER.^d

While there will likely to be specific financial costs associated with the provision of a SAPS solution, it is less clear whether these would require additional classes of costs to be established, or whether they would fall within the existing classes of costs identified in the context of the NEM. That said, costs associated with potentially stranded assets, or asset transfers, directly related to a SAPS solution may warrant a new cost category.

NER CLAUSE 5.17.1 - RIT-D PRINCIPLES

As noted above, the identification of potential new classes of costs, by who and where they are specified will be considered in more detail in the next stage of the review.

Note: a Clarified in the AER's RIT-D application guidelines, p. 32.

b NER cl. 5.17.1(c)(4)(viii) and NER cl. 5.17.2(c)(4).

c In its submission to the issues paper, AGL noted that while the current RIT-D application guidelines consider modelling of network and demand side options, assumptions on generation costs are generally built into the mix of credible options. It considered that, in the context of SAPS, the application guidelines may need to give more specific direction on the modelling of the generation market benefits and costs, as well as the potential market impacts of this arrangement as compared with access to retail market competition. AGL's view was that, apart from remote locations, there are likely to be few circumstances where transitioning customers to a SAPS system (and thereby severing customers' connection to the NEM) would demonstrate an overall market benefit. Submission to the issues paper: AGL, pp .3-4.

d NER cl. 5.17.1(c)(6)(iv).

Table 3.2: Observations on RIT-D application guidelines

NER CLAUSE 5.17.2 - RIT-D APPLICATION GUIDELINES

Content

The RIT-D application guidelines must provide guidance on (among other things) the operation and application of the RIT-D.^a The guidelines must also provide guidance and worked examples as to (among other things) the classes of market benefits to be considered and the acceptable methodologies for valuing the market benefits and costs of a credible option.^b

The matters on which the AER is required to provide guidance and worked examples are broad and would likely incorporate SAPS without need for amendment. Nevertheless, the Commission will consider whether it is necessary and appropriate to require the AER to provide specific guidance and worked examples on the application of the RIT-D for projects where a SAPS is presented as a credible non-network option.

Review of the application guidelines

NER cl. 5.17.2(e) states that: "The AER may, from time to time, amend or replace the regulatory investment test for distribution and regulatory investment test for distribution application guidelines in accordance with the distribution consultation procedures..." Amendments to the test and application guidelines must be published at the same time.

Where changes to the RIT-D are made following the outcomes of this review (for example, to the RIT-D principles or procedures) the AER will need to review the RIT-D application guidelines to take into account those changes and ensure the guidance and worked examples remain appropriate and fit-for-purpose.

The Commission will consider whether the AER's existing obligations in respect of amending the RIT-D and application guidelines are sufficient to trigger such a review, or whether a specific obligation requiring such a review is necessary.

Note: a NER cl. 5.17.2(b)(2).

b NER cl. 5.17.2(c).

Table 3.3: Observations on RIT-D projects

NER CLAUSE 5.17.3 - RIT-D PROJECTS
<p>Applicable projects</p> <p>NER cl. 5.17.3(a)(1)-(7) sets out the circumstances where a distribution project would not be subject to the RIT-D. These circumstances include where a project is less than the RIT-D cost threshold (currently set at \$6 million for the estimated capital cost of the most expensive potential credible option to address an identified need for investment on the distribution network).</p> <p>The Commission considers the current circumstances under which the RIT-D would not apply to projects is likely to be broadly appropriate in the context SAPS. A number of observations are as follows.</p> <p>Projects which fall below the \$6 million cost threshold must be planned and developed at least cost over the life of the investment^a and this would be no different for projects where a SAPS solution was identified as the most efficient option. To apply to these projects, the Commission is proposing to establish minimum SAPS project evaluation requirements to provide transparency around, and support the competitive tender of, efficient SAPS solutions.</p> <p>The RIT-D also provides exemptions for projects whereby the identified need can only be addressed by expenditure on a connection asset which would provide services other than standard control services. Having regard to the discussion in section 3.6 in respect of the grid-connection pre-condition, it may be necessary to review this exemption in the instance it is appropriate to enable DNSPs to provide a SAPS solution as an efficient alternative to expenditure on a connection asset.</p>

Note: a NER cl. 5.17.4(d).

Table 3.4: Observations on RIT-D procedures

NER CLAUSE 5.17.4 - RIT-D PROCEDURES
<p>Screening test and non-network options report</p> <p>NER cl. 5.17.4 sets out the obligations on DNSPs in respect of screening for non-network options and preparing and publishing a non-network options report (where there a non-network option is a potential credible alternative to network investment). If SAPS solutions are non-network options, DNSPs will be required to prepare and publish a non-network options report in accordance with NER cl. 5.17.4(e)-(h).</p> <p>NER cl. 5.17.4(e) sets out the information which must be included in a non-network options report. The Commission intends to review the specific information requirements, including in relation to the materially relevant market benefits and costs, to ensure they are fit-for-purpose and relevant in the context of SAPS solutions.</p>
<p>Draft and final project assessment report</p> <p>NER cl. 5.17.4(i)-(s) detail the requirements of the draft and final project assessment reports for the RIT-D. This includes information to be included in these reports and consultation</p>

NER CLAUSE 5.17.4 - RIT-D PROCEDURES

procedures, including timeframes and possible exemptions to the requirements.

The Commission intends to consider whether any amendments are required to these rules to ensure they are fit-for-purpose in the context of SAPS. For example, NER cl. 5.17.4(l) (in respect of a draft project assessment report) states that if the proposed preferred option has the potential to, or is likely to, have an adverse impact on the quality of service experienced by consumers of electricity, then a DNSP must consult directly with those affected customers. In the context of SAPS, it may be appropriate to include a similar clause stating that, if the proposed preferred option is a SAPS solution, then a DNSP must consult directly with affected customers in accordance with the proposed SAPS customer engagement strategy (this strategy is discussed in the next section).

Re-application of the RIT-D

NER cl. 5.17.4(t)-(v) set out the requirements on DNSPs in respect of reapplying the RIT-D in certain circumstances. These include where the preferred option identified in the original RIT-D assessment is no longer a preferred option. The Commission's initial view is that these requirements are likely to be broadly appropriate and fit-for purpose in the context of SAPS. However, the Commission will consider whether it may be appropriate for the AER to include additional guidance in the RIT-D application guidelines as to when the reapplication of the RIT-D may be appropriate in the context of the assessment of SAPS solutions.^a

Note: a In the event that some form of customer consent is considered necessary and/or appropriate in order for a DNSP to be able to transition a customer (or group of customers) to SAPS supply, this clause will need specific review to ensure it is workable in circumstances where a DNSP is unable to gain explicit consent and so cannot proceed with the implementation of a SAPS solution (where identified as the preferred option).

Development of minimum SAPS project evaluation requirements

The purpose of developing a set of minimum SAPS project evaluation requirements is to support DNSPs in the competitive testing of potential SAPS solutions for smaller projects which, once met, would provide assurance that all credible network and non-network options — including SAPS options — have been considered as part of the economic assessment to identify the most efficient solution to the network replacement need.

In its submission to the issues paper, the AER suggested that the minimum project evaluation requirements included within the current DMIS could form a reasonable basis for a lighter, targeted test to apply where the RIT-D is not applicable.⁹⁰ These requirements are intended to identify whether a non-network option relating to demand management is efficient and therefore eligible for the DMIS.⁹¹

Similar to the DMIS, the intention of the minimum SAPS evaluation requirements would be to set out the competitive testing that DNSPs must undertake before a DNSP can transition customers from grid-supply to supply via a SAPS, and where the SAPS solution is not eligible for assessment under the RIT-D. Once a DNSP completes this competitive testing, it will be

⁹⁰ Submission to the issues paper: AER, p. 4.

⁹¹ AER, *Demand Management Incentive Scheme, Electricity distribution network service providers*, December 2017.

in a position to identify whether a SAPS solution has the highest net benefit relative to other credible options. If it does, the DNSP will be able to continue with the process of transitioning affected customers to a SAPS model of supply. For clarity, a DNSP would only be obliged to comply with the minimum SAPS project evaluation requirements if it is seeking to transition customers from supply via the interconnected grid.

The requirements would essentially form an assessment process which DNSPs would be required to follow in determining an estimate of the NPV of the net economic benefit of the SAPS. An example of a set of minimum SAPS project evaluation requirements is set out in Box 8.

BOX 8: EXAMPLE OF MINIMUM SAPS PROJECT EVALUATION REQUIREMENTS

The minimum SAPS project evaluation requirements could be designed as follows:

- Where an identified need could be addressed by a SAPS option, a DNSP must issue a request for SAPS solutions⁹² from:
 - parties on its demand side engagement register,⁹³ and
 - any other parties the DNSP has identified as potentially having the capabilities to provide part or all of the relevant SAPS solution, product or service.
- As part of the request for SAPS solutions, the DNSP must provide specified information including, for example:
 - a description of, and technical information about, the identified need, including location, and
 - other credible network and non-network options being considered by the DNSP.
- Also as part of the request for SAPS solutions, the DNSP must require the provision of certain information from SAPS proponents including, for example:
 - a description of the SAPS solution, product or service
 - the expected output of the proposed solution, product or service, and
 - the expected costs of the solution, product or service including the expected payments the DNSP would be required to make.

At this stage, the Commission is not proposing to develop a specific new test to apply to SAPS projects which are not subject to the RIT-D. Consistent with existing arrangements, for SAPS projects for which the application of the RIT-D is not applicable, DNSPs would be

⁹² Precisely which services and activities (including those associated with generation and potentially retail) would be required to be provided as part of a SAPS solution will depend on which model(s) of SAPS service delivery is implemented. Options for possible models are discussed in Chapter 4.

⁹³ DNSPs are required to establish a demand side engagement register as part of their demand side engagement strategy. The register enables DNSPs to notify interested parties (that is, those who have registered their interest with a DNSP) of developments relating to distribution network planning and expansion.

required to ensure, acting reasonably, that the investment required to address the identified need is planned and developed at least cost over the life of the investment.

The minimum SAPS project evaluation requirements would largely focus on the process of ensuring that all SAPS solutions which are 'credible options' and available in the competitive market are identified and considered by DNSPs for those projects which are not subject to the RIT-D.

The requirements would seek to achieve an equivalent outcome to the requirements on DNSPs in respect of screening for non-network options (and publishing a non-network options report) as part of the RIT-D process. That is, they will support DNSPs in taking a more informed view on the material potential for competitive SAPS solutions to provide a credible alternative to upgrading or replacing existing network and/or connection assets. In addition, they should encourage DNSPs to engage with potential SAPS providers early in the process, and on an ongoing basis.

The Commission considers that the development of a specific set of arrangements to apply to SAPS projects is appropriate for the following reasons:

- SAPS solutions may be included in the definition of non-network options and therefore DNSPs should be encouraged to engage with, and supported in their engagement with, potential non-network proponents. In addition, potential SAPS proponents should be provided with the formal opportunity to plan and offer efficient and cost effective SAPS solutions as alternatives to traditional network investment.
- Requiring DNSPs to follow a transparent process when assessing whether a SAPS solution provides the most efficient means of addressing an investment need on the network would provide assurance to affected customers that all credible network and non-network options — including SAPS options — have been considered. This is particularly important given that a customer (or group of customers) may be directly affected by the outcomes of the assessment process (that is, where a SAPS solution is identified as the preferred option).

Importantly, the transition of customers from the grid to supply via a SAPS would not be able to commence until such time as all the minimum SAPS project requirements are met by a DNSP and a SAPS solution is determined to be the preferred investment option.

There are a number of ways in which the minimum SAPS project evaluation requirements could be designed. Similarly, there are a number of ways the requirements could be implemented. A key consideration is whether it is appropriate for the specific requirements to be included directly in the NER, or whether it may be more appropriate for the AER to develop and publish the minimum SAPS project evaluation requirements having regard to a set of guiding principles in the NER. The latter approach would be consistent with the AER's obligations in respect of developing and publishing the RIT-D (and, indeed, the DMIS). These matters will be explored further in the next stage of this review.

Other changes to the distribution network planning and expansion framework

As outlined in section 3.1, the distribution network planning and expansion framework incorporates a number of key features, one of which is the RIT-D and associated consultation process. In addition to the RIT-D, DNSPs are subject to a number of other obligations, including in respect of planning and reporting on activities relevant to their distribution networks over the forward planning period (for DNSPs, the forward planning period is five years).

Where changes are made to enable the services provided by means of SAPS to be distribution services and so subject to provision by DNSPs (where efficient), the obligations on DNSPs in respect of planning and reporting will require consideration. It will be important to understand whether the activities associated with the provision of SAPS by DNSPs are captured sufficiently under existing arrangements, or whether amendments may be needed to assist in the efficient implementation of SAPS, and to facilitate transparency around these new assets, services and related activities.

For example, there may be benefit in requiring DNSPs to publish certain information relevant to SAPS in their annual planning reports (this may include information on efficient SAPS options that have been identified through the RIT-D or new minimum SAPS project evaluation requirements).

There may also be benefit in reviewing the existing demand side engagement obligations on DNSPs (including in respect of their demand side engagement documents), to ensure they also capture matters relevant to SAPS solutions, products and services, and potential SAPS proponents.

The Commission intends to consider whether any additional amendments may be needed to the distribution network planning and expansion framework to support the provision of SAPS by DNSPs in the next stage of this review.

3.2.4

Commission's draft position

The Commission proposes to establish arrangements whereby a DNSP may only provide a SAPS solution if it has identified that a SAPS solution is the most efficient means of addressing a need to replace or upgrading parts of a distribution system, which it may do by completing at least one of the following processes:

- The existing RIT-D
- A new set of minimum SAPS evaluation requirements.

This approach would utilise the existing RIT-D and associated consultation process to test the efficiency of SAPS solutions proposed for projects which meet the RIT-D cost threshold (and are not otherwise exempt projects).

To capture projects where a SAPS solution is a credible option but for which the RIT-D is not applicable, a set of minimum SAPS project evaluation requirements will be established. The inclusion of new set of minimum SAPS evaluation requirements will provide transparency around the assessment of smaller SAPS projects and ensure that, before a DNSP can begin

the process of transitioning customers to SAPS supply, it has satisfied a requirement to engage with all potential SAPS proponents to seek out the most efficient SAPS solution.

The Commission also intends to consider whether any additional amendments may be needed to the distribution network planning and expansion framework to support the provision of SAPS by DNSPs in the next stage of this review.

3.3 SAPS customer engagement strategy

3.3.1 Background

A key point to consider in this review is the role of customer choice in the decision to move to a SAPS model of supply. Customers being considered for transition to a SAPS model of supply by a DNSP have not chosen to move off-grid for their own reasons. Rather, they are customers identified by a DNSP as those who could be more efficiently supplied via a SAPS model of supply, for the benefit of all customers. However, while transition to a SAPS model of supply may make sense from a market-wide economic perspective, customers may value their connection to the grid for other reasons.⁹⁴

Further, customers' access to their existing retail offer (and other retail offers in the future) may be affected by a transition to a SAPS model of supply (see section 4.4). Therefore, some customers who are candidates for DNSP SAPS may not wish to move off grid, even if it would be in the long-term interests of all customers that they do so.

There are several approaches to protecting the long-term interests of customers identified by a DNSP for transition to a SAPS model of supply. These options include:

- requiring customer consent to transition to a SAPS, and
- prescribing minimum customer outcomes in lieu of consent provisions.⁹⁵

A key question for this review is therefore whether the long-term interests of consumers would best be approached by providing affected customers with a choice to move off-grid (that is, gaining their consent), or by implementing a set of protections against potential adverse impacts on those customers (for example, mandating minimum customer outcomes).

Another key question for the review is whether it is appropriate for matters associated with customer consent to be addressed within the framework established by the NER, or whether there are mechanisms outside of the national energy frameworks which may be better suited to addressing matters related to the rights and protections of individuals.

⁹⁴ In this context, 'other reasons' may include economic reasons that do not relate to energy costs, for example, concern regarding the resale value of a property. In addition, it is important to note that there are non-economic reasons why customers may prefer supply via a SAPS relative to grid supply, for example, improved land amenity due to removal of poles and wires or reduced bush fire risk.

⁹⁵ Terms of reference, p. 12.

3.3.2 Stakeholder submissions

In submissions to the issues paper, a significant number of stakeholders were of the view that if existing consumer protections were maintained for SAPS customers, a requirement for DNSPs to obtain consent would not be necessary.⁹⁶

Most stakeholders (including DNSPs) considered that an extensive program of information provision and consumer engagement would be a necessity if the benefits of SAPS are to be achieved. A number of stakeholders expressed support for the New Zealand model of SAPS provision which does not require distribution business to gain formal consent from affected customers, but which does set require an explicit information and engagement process to be carried out.⁹⁷

In contrast, Red and Lumo considered that explicit informed consent should be obtained from potential SAPS customers to ensure they are provided with adequate information on the risks and benefits of transitioning from grid supply to supply via a SAPS.⁹⁸

PIAC considered that if DNSPs provide SAPS supply as a regulated service, the DNSP would take responsibility for maintaining comparable levels of supply to the customer's connection point and therefore explicit informed consent would not be required. However, where a customer is expected to take responsibility for the SAPS system and forgo retail competition, obtaining explicit informed consent would be essential.⁹⁹

The AER was of the view that it should be customers' decision to go off-grid, with explicit informed consent required after the customer has been provided with adequate and clear information on the risks/benefits of SAPS. For larger groups, the AER considered unanimous consent may not always be possible, and suggested a higher threshold than the 85% required for embedded network conversions may be appropriate.¹⁰⁰

EWON suggested the development of an appropriate consent threshold model whereby the proportion of customers required to provide consent would be lowered in line with the level of benefits provided by a SAPS solution.¹⁰¹

3.3.3 Commission's analysis

Having considered submissions to the issues paper, the Commission proposes to establish arrangements whereby a DNSP must undertake a comprehensive program of information provision and consumer engagement where SAPS supply is identified by a DNSP as an efficient non-network option – that is, triggered by the outcome of the RIT-D and minimum SAPS project evaluation requirements.

96 Submissions to the issues paper: AEC, p. 2; Clean Energy Council, p. 4; ENA, pp. 2-3; Energy Queensland, p. 4; SA Power Networks, p. 3; TasNetworks, p. 4; Western Power, p. 2; PIAC, pp. 2-3; Ausgrid, pp. 10-11; Endeavour Energy, p. 5; Essential Energy, pp. 6-7; Horizon Power, p. 4.

97 Submissions to the issues paper: Ausgrid, pp. 10-11; Endeavour Energy, p. 5; Essential Energy, p. 9; SA Power Networks, p. 3, AGL, p. 4.

98 Submission to the issues paper: Red Energy and Lumo Energy, p. 1.

99 Submission to the issues paper: PIAC, pp. 2-3.

100 Submission to the issues paper: AER, pp. 2-3.

101 Submission to the issues paper: Energy and Water Ombudsman NSW, pp. 1-2.

The proposed approach recognises the inherent importance of a constructive DNSP-customer relationship. Whether or not explicit consent is required, the successful implementation of a SAPS solution will require:

- implicit consent being provided by the customer (ie to enable data collection, system design, installation by the DNSP or third party) which in turn, will require
- proactive and constructive engagement by the DNSP to present the value of the SAPS solution to the customer.

The information and engagement program would have regard to the approach taken in New Zealand, triggered where there is a proposal to supply electricity from an alternative source. In New Zealand, DNSPs are required to give a period of notice to affected customers, property owners, relevant market participants and the public, provide an opportunity for comments to be submitted, and have regard to any comments received.

Similar to the NZ approach, the proposed arrangements would require (within specified timeframes):

- DNSPs to give formal notice to affected parties (customers, community, market participants) that the distribution service currently received by the affected customer(s) will soon be provided by means of a SAPS rather than the grid, with a description of the SAPS (ie microgrid/IPS, features, etc)
- DNSPs to request comments/submissions, and
- DNSPs to have regard to the comments/submissions received.

In addition, the proposed arrangements would require DNSPs to prepare and publish a "SAPS customer engagement strategy" (similar to the requirement for DNSPs to develop and publish a demand side engagement strategy). The NER could include a set of principles to guide the development of the strategy or alternatively could include detailed content requirements. DNSPs would be required to publish the SAPS customer engagement strategy on their websites and, potentially, also have the AER review and approve the strategy.

The inclusion of information and engagement requirements should not be considered as an alternative to the inclusion of customer consent provisions — the former would be required irrespective of the latter.

Excluding explicit customer consent provisions from the transition framework would remove the ability of a customer (or group of customers) to veto the progression of an efficient supply solution which would benefit all customers. It also recognises that customers would only be considered for transition to SAPS supply where it is economically efficient and in the long term interests of all customers.

Importantly, this approach is premised on the Commission designing and implementing a regulatory framework for DNSP-led SAPS which seeks to maintain SAPS customers' existing price, reliability and access to consumer protections. As discussed in Chapter 5, a SAPS supply model which enables customers to retain access to the benefits of the competitive retail market (termed the 'NEM consistency model') would meet this objective with relatively little change. However, a SAPS supply model which removes customers' ability to access the retail market (termed the 'integrated service delivery model') would require careful design to

ensure that the prices currently paid by affected customers would not change. To the extent this is not possible, the impacts on customer consent may require further consideration.

3.3.4 Commission's draft position

The Commission's draft position is not to require DNSPs to obtain explicit consent from customers identified for transition from grid-supply to SAPS-supply, where customers are able to maintain the benefits of their existing retail offers.

The Commission recommends implementation of a new obligation on DNSPs to develop and publish on their websites, and comply with, a SAPS customer information and engagement strategy. As part of the strategy, DNSPs would be required to provide formal, public notification of the intent to proceed with a SAPS supply option. The public notification, which would include a request for submissions, would be triggered by the outcome of a RIT-D assessment or minimum SAPS project evaluation requirements where a SAPS solution is identified as the most efficient means of addressing a need for investment on the network (that is, the preferred option).

3.4 Regulatory oversight role

3.4.1 Background

Transition of grid-connected customers to a SAPS model of supply comes with a number of issues to consider, including the possibility that customers' access to retail competition may be removed (however, if this is the case, price protections would be provided; see Chapter 5).

Decisions to discontinue network service to specific areas, which would instead be served by new stand-alone systems, could also have broader social or economic development impacts.

This review is therefore considering whether it is necessary to establish a specific oversight or approval role for the AER in respect of a DNSP's activities regarding consideration of, and transition of customers to, a SAPS model of supply (the role of jurisdictional authorities is considered in section 3.5 below.)

Precisely what an oversight/approval role would entail depends on several factors, including the design of the arrangements supporting the transition of grid-connected customers to a SAPS model of supply by DNSPs. Further, whether an oversight role potentially focussed on compliance with the rules is appropriate, or whether an approval role potentially focussed on specific aspects of the transition framework is appropriate, will require consideration.

In relation to a more specific approval role, the Commission will consider whether it may be appropriate to establish arrangements whereby the AER would need to confirm that a DNSP has met the pre-conditions required before customers are transitioned to a SAPS model of supply. For example, whether there should be a role for the AER in reviewing the application of the relevant economic test to confirm it was applied in a manner consistent with the rules. In addition, the Commission will consider whether there may be benefit in the AER having oversight of the SAPS customer engagement strategy, potentially approving a DNSP's conduct in engaging with affected parties in line with its obligations.

Consideration should also be given to potential overlap with any existing jurisdictional approval roles that may exist or are developed in future (see section 3.5).

3.4.2 Stakeholder submissions

In submissions to the issues paper, stakeholders were divided on whether there was a need for a formal oversight or approval role for transition arrangements for DNSP-led SAPS.¹⁰²

Generally, DNSPs were of the view that a formal oversight or approval role was not required.¹⁰³ Energy Queensland stated if there is an oversight role, it should be jurisdictional and light handed.¹⁰⁴

PIAC was of the view that there is a role for the AER in providing oversight including monitoring and reporting outcomes, not just on transition.¹⁰⁵ AEC considered view there is a role for the AER, however, that would be monitoring, investigating and enforcing compliance with energy laws and rule.¹⁰⁶

S&C Electric suggested that any oversight would be via the current AER approach – that is, through distribution determinations, RIT-Ds etc.¹⁰⁷

3.4.3 Commission's analysis

In most circumstances, the Commission would not be supportive of specific changes being made to the energy laws or rules to mandate and prioritise the AER's compliance and enforcement activities. As discussed above, the AER already has a number of functions and powers set out in legislation in relation to monitoring, investigating and enforcing compliance with various aspects of the national energy framework, including with the NER. The AER's approach to compliance is flexible and variable over time, with priorities shifting as needed and in light of changes in the market and other matters.

However, in the case of SAPS, there are a number of implications of the decision made by DNSPs to transition a customer (or group of customers) to a SAPS model of supply that warrant specific consideration.

- First, following the transition of a customer (or group of customers) from grid-supply to SAPS supply, there will no longer be a need to retain the line connecting that customer(s) to the interconnected grid — in most cases, the line would be decommissioned. Given the expectation that SAPS will predominately be implemented in areas with a high cost to serve, the costs associated with DNSPs getting the transition decision wrong could be significant. Further, these costs (which relate to the costs of rebuilding or replacing the

102 Submissions to the issues paper: Ausgrid, p. 12; Essential Energy, pp. 9-10; Endeavour Energy, p. 6; TasNetworks, pp. 4-5; Western Power, p. 3.

103 Submissions to the issues paper: Ausgrid, p. 12; Essential Energy, pp. 9-10; AusNet Services, pp. 4-5; ENA, p. 3; Endeavour Energy, p. 6; TasNetworks, pp. 4-5.

104 Submission to the issues paper: Energy Queensland, p. 6.

105 Submission to the issues paper: PIAC, pp. 4-5.

106 Submission to the issues paper: AEC, p. 3.

107 Submission to the issues paper: S&C Electric, pp. 7-8.

network and/or connection assets which have been decommissioned) would be borne by consumers.¹⁰⁸

- Second, as noted above, the expectation is that SAPS will be rolled out predominately in areas with a high cost to serve, and to a relatively small number of customers — perhaps less than 10,000 over the next ten years. However, as the economics of SAPS become more favourable, the instances where SAPS provide a more efficient alternative to continued grid supply may become more prevalent. If more and more customers are transitioned from the grid to SAPS supply in the future, this may have impacts on the density of distribution networks in more populated areas and may even, at an extreme, start to cause the NEM to fragment, potentially undermining the competitive generation market.
- Further, if more and more customers are transitioned from the grid to SAPS supply in the future, the potential implications for the operation of the NEM may become more serious.

In light of these issues, the Commission has considered whether a specific oversight role for the AER may be warranted. Having regard to existing frameworks in relation to DNSP planning and investment, and to the AER's functions and powers in relation to monitoring, investigating and enforcing compliance, the Commission's initial view is that inclusion of a specific oversight role for the AER in relation to SAPS is unlikely to be needed.

In respect of the costs and risks associated with DNSPs getting the decision to transition customers to a SAPS wrong, the Commission notes that the NER includes a RIT-D dispute resolution process which enables relevant parties (which would include prospective SAPS customers) to raise disputes with the AER in respect of a DNSP's application of the RIT-D. Specifically, the arrangements enable the AER to direct a DNSP to amend its RIT-D assessment in circumstances where a DNSP has not applied the RIT-D in accordance with the rules, or has made a manifest error in its calculations. In the context of SAPS, this process should provide regulatory discipline on DNSPs behaviour in respect of their application of the RIT-D and help to ensure that DNSPs make efficient investment decisions in respect of SAPS.

In respect of potential future impacts, the Commission considers that any material impacts in more populated areas of the NEM or on the efficient functioning of the competitive market are unlikely to eventuate in the foreseeable future. As such, it is not clear that there is any need, at this stage, for DNSPs' assessments of the costs and market benefits associated with SAPS solutions undertaken as part of the RIT-D assessment process to take account of these types of issues.

Notwithstanding the discussion above, the Commission appreciates that decisions to discontinue network service to specific areas, which would instead be served by new stand-alone systems, could also have broader social or economic development impacts which may not necessarily be captured by the RIT-D, or be within the AER's remit to monitor. In these circumstances, there may be merit in jurisdictions considering whether a jurisdictional oversight role is appropriate. For instance, in South Australia, the Electricity Distribution Code requires that SAPN may not "discontinue or cease to operate, maintain or service those parts

¹⁰⁸ The cost of rebuilding connection assets would be borne by the customer being connected to the grid, while the cost of rebuilding network assets would be borne by all of the relevant DNSP's customers.

of its distribution network which are in country areas” without the approval of the Essential Services Commission of South Australia (ESCOSA).¹⁰⁹ Country areas are not defined and the test that ESCOSA would apply is not specified, but it is possible that the original rationale for the inclusion of the test in the Code was to reflect wider criteria than just economic efficiency.

3.4.4 Commission’s draft position

The Commission’s initial view is that inclusion of a specific review obligation on the AER is not likely to be necessary on the basis that existing frameworks in relation to DNSP planning and investment, and the AER’s functions and powers in relation to monitoring, investigating and enforcing compliance, are appropriate and provide sufficient regulatory discipline on DNSP behaviour in respect of their identification and assessment of SAPS as an efficient alternative to network investment.

3.5 Jurisdictional participation in the national framework

3.5.1 Background

The terms of reference for this review note that the potential for, and the development of, SAPS is unlikely to be consistent across all jurisdictions in the NEM. The speed at which SAPS may emerge in a jurisdiction is likely to be influenced by jurisdiction-specific factors such as bushfire risk, the age and nature of existing network infrastructure and the prevalence of remote customers and communities. In addition, the existing regimes and regulation of SAPS across jurisdictions differ significantly in terms of their completeness.

Given these differences, the terms of reference have asked the Commission to consider arrangements which would allow jurisdictions to choose how SAPS will be regulated within their jurisdiction. Specifically, the Commission has been asked to consider how to provide for jurisdictions to opt-in to one (or more) of the following:¹¹⁰

- a national framework for the regulation of SAPS led by a DNSP
- the relevant jurisdictional framework for the regulation of SAPS led by a party other than a DNSP, and/or
- a national framework for the regulation of some or all SAPS.

The Issues Paper for this review stated that this could be achieved by incorporating a jurisdictional opt-in trigger into the national regulatory framework applicable to DNSP-led SAPS.¹¹¹ The ‘trigger’ would effectively be a requirement on jurisdictions to make an initial, once-off decision to opt-in to the national framework and thereby allow a DNSP to participate in the national process for the provision of SAPS.

¹⁰⁹ ECOSA, Electricity Distribution Code, January 2018, clause 2.7.

¹¹⁰ Terms of reference, pp. 5-6, 16.

¹¹¹ AEMC, *Review of the regulatory frameworks for stand-alone power systems*, issues paper p. 20. Note that the consideration of a national framework applicable to SAPS which are led by a party other than a DNSP will be considered as part of priority 2 of this review. Subject to the inclusion (or otherwise) of an opt-in trigger for jurisdictions to choose to participate in national framework for DNSP-led SAPS, this requirement could be extended to enable jurisdictions to opt-in to a national framework for the regulation of DNSP and/or non-DNSP led SAPS.

Requiring an explicit decision to opt-in to the national framework would encourage jurisdictions to review and, where appropriate, amend relevant jurisdictional instruments to ensure sufficient consumer protections and reliability standards are in place for customers who have been transitioned from standard supply via the grid to a SAPS model of supply.

In addition, the inclusion of an opt-in decision would allow jurisdictions to adopt the national framework as soon as they consider that their own jurisdictional arrangements are appropriate, rather than waiting for all jurisdictions to amend their arrangements before the relevant NEL and NER changes are made.

3.5.2 Stakeholder submissions

The majority of DNSPs and a number of other stakeholders supported an approach whereby jurisdictions would have the ability to opt-in to the national framework for SAPS.¹¹²

Specifically, Essential Energy considered that an opt-in framework would have some advantages given that jurisdictions are starting from very different places in terms of how SAPS are treated.¹¹³

Endeavour Energy considered that allowing jurisdictions discretion over when to adopt the national framework could deny customers of potential benefits where a decision is delayed. However, requiring jurisdictions to opt-in before a specified date would limit inconsistency across jurisdictions and provide DNSPs, non-network service providers and customers with certainty over when the new regulatory framework will apply.¹¹⁴

In contrast, PIAC and Ausgrid expressed support for a nationally consistent framework for the provision of SAPS.¹¹⁵ Ausgrid explained that, in NSW, there is a need to ensure that jurisdictional arrangements for issues such as safety and reliability are in place for SAPS. As a result, it expects there will be a requirement for states to formally adopt the national framework in order for it to come into effect.¹¹⁶

The Department of State Growth Tasmania considered each jurisdiction should be allowed to adopt the national SAPS framework at an appropriate time on a regional or distribution area basis.¹¹⁷ TasNetworks also supported a bespoke mechanism for allowing jurisdictions to decide when, and on what basis, a national SAPS framework would come into effect for DNSPs in their region.¹¹⁸

In contrast, S&C Electric did not support the establishment of bespoke arrangements and considered that if a State opts-in to the national approach, then it should apply state-wide (after a suitable period of consultation in each jurisdiction).¹¹⁹

112 Submissions to the issues paper: ENA, p. 1; Endeavour Energy, p. 4; TasNetworks, p. 3; Energy Queensland, p. 1; Western Power, p. 2; Essential Energy, p. 4; Clean Energy Council, p. 3; AGL, p. 3; Department of State Growth Tasmania, p. 1.

113 Submission to the issues paper: Essential Energy, p. 4

114 Submission to the issues paper: Endeavour Energy p. 4

115 Submissions to the issues paper: PIAC, p. 1; Ausgrid, p. 9.

116 Submission to the issues paper: Ausgrid, p. 9.

117 Submission to the issues paper: Department of State Growth Tasmania, p. 1.

118 Submission to the issues paper: TasNetworks, p. 3.

119 Submission to the issues paper: S&C Electric, p. 6.

AusNet Services considered that the different drivers for SAPS in each state and territory, and their importance, may reflect in a different sense of urgency for adoption amongst the jurisdictions, and hence for aligning their related instruments necessary to adopt a national framework for SAPS. However, AusNet Services was of the view that if its model of SAPS supply was viable, there should be very few material issues to be resolved through jurisdictional instruments and thus there should be no need for a jurisdictional opt-in.¹²⁰

3.5.3 Commission's analysis

Before allowing a DNSP to transition customers from standard supply to a SAPS model of supply (where efficient), jurisdictions need to be comfortable that jurisdictional instruments dealing with (among other things) energy-specific consumer protections, including reliability and safety, are appropriate and able to provide sufficient protections for affected customers.

Ideally, each jurisdiction would undertake the necessary processes to amend relevant jurisdictional instruments at the same time amendments are being made to the NEL and NERL, NER and NERR to implement the national framework for SAPS. Note that following the completion of this review in 2019, it will take some time to determine the precise changes that need to be made to the national energy laws and rules,¹²¹ and to make those changes, and then a further period of time to carry out implementation activities (such as revising systems, procedures and guidelines), before the first customers could be transferred to SAPS under the new framework. If jurisdictional changes were made during this period, it would enable all DNSPs to start participating in the national framework for SAPS at the same time. However, if some jurisdictions are not able to make the necessary changes in this period, the Commission considers there may be a benefit in providing for jurisdictions to choose when the national arrangements will apply to DNSPs in their jurisdiction.

The Commission has considered the various ways this option could be provided for in the rules and other relevant legislation. Its preference is to implement an approach which is simple, transparent and unlikely to create unnecessary complexity for users of the national energy laws and rules – that is, in terms of understanding how the national framework for SAPS would apply to them, if at all.

The Commission considers that the benefits of an opt-in provision could be achieved by:

- establishing a single go-live date for commencement of the national arrangements for DNSP SAPS, and
- restricting DNSPs ability to participate in the provision of SAPS under the national arrangements until such time as the Minister in each relevant jurisdiction provides notice that the national arrangements for SAPS (set out in the national laws and rules) are applicable in that jurisdiction.

This approach would ensure that the national framework in respect of SAPS would apply in all jurisdictions following the go-live date for commencement of the national framework. The

¹²⁰ Submission to the issues paper: AusNet Services, p. 3.

¹²¹ For example, through a process similar to the one the Commission is currently conducting in relation to embedded networks. See project code EMO0036, *Updating the regulatory framework for embedded networks* at: www.aemc.gov.au.

inclusion in the rules of a restriction on DNSP participation in the national arrangements subject to Ministerial approval would then enable each jurisdiction to determine when DNSP's in their jurisdiction may participate. This decision would be based on whether the relevant jurisdictional instruments supporting the national framework (including in relation to energy-specific consumer protections) have been reviewed and amended (where necessary) to support DNSP-led SAPS.

3.5.4 **Commission's draft position**

The Commission's initial position is that the national framework for DNSP-led SAPS should take effect consistently across all relevant jurisdictions at the same time. To that end, jurisdictions will be encouraged to review their laws and regulations that apply to SAPS customers and to make the necessary changes to ensure customer protections relating to state and territory functions equivalent to those for interconnected grid customers are in place for the commencement of the national framework for SAPS.

The Commission considers this is appropriate given the desire expressed in the Australian Energy Market Agreement for consistent regulation, and that there will be a reasonable period after the conclusion of this review before a national framework for SAPS will take effect (the Commission's initial view is that this would not be less than 18 months).¹²²

However, recognising that jurisdictions may need to follow different timeframes in adopting the national SAPS framework, the Commission is considering further the inclusion in the rules of a restriction of DNSP participation in the national arrangements until such time as the Minister in the relevant jurisdiction gives notice (to the public and the AEMC) that the national arrangements for SAPS are applicable in that jurisdiction.

3.6 **Grid connection pre-condition**

3.6.1 **Background**

Customers are currently able to establish their own individual power systems at a new property as an alternative to paying for a connection to the grid. They are also able to disconnect from the interconnected grid and to arrange their own power supply (with some restrictions).

Not all customers face price incentives to move to off-grid supply where it would be efficient for the grid as a whole for them to do so. The tariffs paid by most grid-connected remote customers do not reflect the high costs of supplying those specific customers. Instead, tariffs tend to reflect the average cost of supplying power to all customers in the DNSP's area.

Current grid-connected customers in remote areas are only likely to move to off-grid supply if it is no more expensive than their current tariff. Given existing tariff structures and cross-subsidies, remote grid-connected customers are unlikely to choose to move to off-grid supply provided by a competitive provider, even when there would be economic benefits for consumers overall. For this reason, it is likely to be efficient to allow DNSPs to facilitate the

¹²² COAG, Australian Energy Market Agreement, 30 June 2004.

provision of SAPS as a regulated service where competition is not practicable and off-grid supply would be cheaper than maintaining a grid connection.

New customers can request a DNSP to provide an offer to connect the customer to the DNSP's local network.¹²³ Although the DNSP is required to provide an offer to connect, the customer is required to pay the full costs of extending the network to connect to their premises, and some portion of any costs required to augment the shared network, if applicable. If a customer connection contract (including connection costs) is agreed, under the NERL the DNSP is then required to provide connection services in accordance with the relevant contract.¹²⁴

Consequently, new customers without a grid connection are likely to have a financial incentive to obtain off-grid supply from the competitive market where the cost of establishing a grid connection (which could be quite costly for remote customers) is more expensive than obtaining off-grid supply.

In the final determination for the Western Power rule change the Commission recommended that new connections should be supplied with SAPS by the competitive market, rather than by a DNSP. Only customers with no incentive to go off-grid, that is currently connected customers receiving cross-subsidies, should be eligible to be supplied by a DNSP-led SAPS.¹²⁵

The terms of reference for this review request that the Commission considers the merits and downsides of excluding new customers from the framework supporting the provision of SAPS by DNSPs. Additionally, the ACCC Retail Electricity Pricing Inquiry final report recommended changes to allow DNSPs to develop off-grid supply arrangements for existing customers or new connections where efficient.¹²⁶

The Commission is therefore considering in this review whether there are circumstances where it may be appropriate for a DNSP to consider, and potentially implement, SAPS use as an alternative to a new grid connection for new, never connected, customers.

3.6.2

Stakeholder submissions

In response to questions raised on this issues in the issues paper, stakeholder views on whether new customers should be eligible for DNSP-led SAPS were divided. Views ranged from all SAPS for new customers being required to be procured from the competitive market, SAPS being able to be provided by DNSPs for new customers in specific circumstances only, through to DNSPs being able to provide SAPS to new customers whenever it is more efficient than connecting the customer to the grid.

The AEC considered that allowing DNSPs to procure SAPS for new customers would lead to a restriction in competition in the market, while PIAC did not consider there would be situations where SAPS could not be procured from the competitive market.¹²⁷ Other stakeholders

123 NER Chapter 5A.

124 NERL s. 66.

125 AEMC, *Alternatives to grid-connected network services*, rule determination, 19 December 2017, p. 49.

126 Terms of Reference, p. 10; ACCC, *Retail Electricity Pricing Inquiry*, final report, June 2018, p. 221.

127 Submissions to the issues paper: Energy Queensland, p. 7; AEC, p. 4; PIAC, p. 6.

generally considered that new customers should procure SAPS from the competitive market, however, there may be some (limited) circumstances in which the provision of a SAPS to a new customer by a DNSP may be appropriate.

Energy Networks Australia, SA Power Networks and PIAC noted in their submissions that customers already face price signals to provide their own SAPS where the SAPS would be cheaper than a new connection to the national electricity grid. AusNet Services, Ausgrid, Horizon Power and Endeavour Energy raised concerns that allowing new customers to be provided with SAPS by a DNSP could increase cross subsidisation and network costs, especially when connecting very remote customers.¹²⁸

Nevertheless, ENA, Ausgrid, Endeavour Energy, Horizon Power and Energy Queensland considered that there may be circumstances where DNSPs should be allowed to provide new customers with a connection via a SAPS, where this is more efficient than a grid-connection. Stakeholders noted there may be areas where competition for the provision of SAPS is limited or immature, and where provision of a DNSP-led SAPS for a new connection may be appropriate.¹²⁹

Ausgrid and Endeavour considered that, in circumstances where provision of SAPS by the DNSP may be appropriate, the SAPS could be procured via an open market (as under the current contestability framework for new connections in NSW) with the customer paying (in full or part) for the SAPS, and the DNSP then becoming responsible for the operation and maintenance of the asset.¹³⁰

A further area of consideration raised by SA Power Networks and AusNet Services in their submissions is the connection of new customers to pre-existing SAPS. SA Power Networks and AusNet Services considered there may be circumstances where communities are being supplied by a SAPS (generally a microgrid), and the new customer in that community could be offered a connection to the existing SAPS where this is a feasible option.¹³¹

3.6.3

Commission's analysis

The Commission remains concerned about the potential impacts of new connections on the development of the competitive market as well as new connections by DNSPs exacerbating cross-subsidies paid by other electricity consumers or subsidies paid by some jurisdictional governments. However, the development of a national framework for the provision of DNSP-led SAPS raises a number of questions in respect of the connection obligations on DNSPs.

Under section 66 of the NERL, DNSPs have an obligation to provide connection services in accordance with the relevant customer connection contract. Under customer connection contracts, customers generally pay the full cost of the network extension to connect the

¹²⁸ Submissions to the issues paper: ENA, pp. 3-4; SA Power Networks, p. 3; PIAC, p. 6; AusNet Services, p. 5; Ausgrid, p. 14; Horizon Power, p. 5; Endeavour Energy, p. 6.

¹²⁹ Submissions to the issues paper: ENA, pp. 3-4; Endeavour Energy, p. 6; Ausgrid, p. 14; Horizon Power, p. 5; Energy Queensland, p. 7.

¹³⁰ Submissions to the issues paper: Ausgrid, pp. 12-13, Endeavour Energy, pp. 6-7.

¹³¹ Submissions to the issues paper: SA Power Networks, p. 3, AusNet Services, p. 5.

premises to the electricity network, and a portion of any network augmentation costs of the shared network required to enable the customer's connection.¹³² In its analysis to determine the eligibility of new connections for provision of the DNSP-led SAPS there are a number of scenarios that the Commission is considering. These scenarios are explored in Box 9.

BOX 9: GRID-CONNECTION SCENARIOS

Scenario 1: New customer (with no existing grid connection or DNSP SAPS) where provision of a new DNSP-led SAPS is more efficient than grid connection.

Example A: New remote customer requesting connection.

A new customer makes a request to a DNSP to be connected to the grid but the provision of connection services by the DNSP would not provide the most efficient outcome relative to the establishment of a SAPS for that customer. The customer is unable or unwilling to procure a SAPS from the competitive market and requests the DNSP to proceed with the connection to the grid at the customer's cost.

In this scenario, the question that arises is whether the DNSP should have the ability to facilitate the provision of a DNSP-led SAPS for that customer as a regulated service, or only the less economically efficient grid connection? It is assumed that the customer would pay the full capital costs of the SAPS.

Is the DNSP required to make an offer to connect to the grid (and then make the connection, if the customer agrees to the offer) in all circumstances, including when it would be less efficient than providing a SAPS?

Example B: A new remote customer requesting connection where grid augmentation will be required.

Current connection policies generally do not require the customer to pay the full cost of augmentation (excepting real estate developers and non-registered embedded generators). If the costs of augmentation (which will increase costs to all customers) will be so expensive that it would be more efficient to allow a DNSP to provide a DNSP-led SAPS to a customer, despite this increasing the cost of subsidies paid by all consumers (i.e. the costs smeared across all customers for the augmentation would be greater than the sum of the cross-subsidies paid to the customer over time), should the DNSP have the ability to facilitate the provision of a DNSP-led SAPS for that customer as a regulated service?

Scenario 1 analysis:

The Commission's initial view for both Example A and Example B is that the DNSP should be required to provide the customer with an offer to connect to the grid in accordance with the current arrangements, including those requiring customers to pay connection costs. In situations where the most efficient outcome would be connection via a SAPS, the DNSP

¹³² Chapter 5A of the NER.

should be required to inform the customer that it would be more efficient for the customer to procure a SAPS from the competitive market. If the DNSP has a ring-fenced affiliate, that ring-fenced affiliate would be able to tender for provision of the SAPS.

The Commission continues to hold concerns concerning the use by DNSPs of SAPS for new connections, given their potential impact on the development of the competitive market and the likelihood of this exacerbating transfers between customers as cross-subsidies. However, the Commission also recognises the likelihood that SAPS will be deployed predominately in remote areas where the competitive market may be unlikely to develop. As such, the Commission intends to give further consideration to this matter over the remainder of the review, including the potential for the AER to grant waivers from any restrictions, for instance in remote areas.

Scenario 2: New customer where connection to existing DNSP SAPS is more efficient than grid connection.

Example: new remote customer that is close to an existing DNSP-led microgrid.

A new customer makes a request to a DNSP to be connected but a pre-existing DNSP-led microgrid is closer to the customer's premises than the interconnected grid, and it is therefore more efficient to connect the customer to the DNSP-led microgrid. Should the DNSP be able to offer to connect the customer to the DNSP-led microgrid instead of the grid?

Scenario 2 analysis:

In this scenario, the DNSP has previously transitioned a number of customers to a microgrid from a grid connection. If the DNSP had not been allowed to transition these other customers to a microgrid the closest grid connection for the customer would have been where the current DNSP-led microgrid is located.

Additionally, it is likely that the DNSP-led SAPS will be classified as a distribution service, for the reasons discussed in Chapter 4. Therefore, it may be appropriate that DNSP-led SAPS are treated, at least in some respects, as if they were part of the DNSP's distribution network. Changes to the NEL and NER would be required to enable DNSP-led SAPS to be treated as if they were part of the network. See section 4.1 for further discussion on changing the definitions of distribution systems and distribution services.

If DNSP-led SAPS are classified as part of the DNSP's network, then the DNSP would be able to offer to connect customers to its pre-existing DNSP-led SAPS, in the same manner as it would for its main distribution network. This will most likely be in the form of connections to existing DNSP-led microgrids, but could also include connecting to pre-existing DNSP individual power systems, which could be developed into microgrids to supply additional customers.

Source: Chapter 5A of the NER

Note: Although customers pay the cost of any network extensions to connect to the grid, customers (excluding real estate developers and non-registered embedded generators) only pay a portion of any costs to augment the shared network to facilitate the customer's connection. The additional augmentation costs are largely smeared across consumers.

3.6.4 Commission's draft position

The Commission continues to hold the concerns it outlined in the Western Power final determination regarding the use of SAPS by DNSPs to facilitate new connections. Restricting DNSP-led SAPS to current grid-connected customers would limit any impacts on the development of a competitive SAPS market, as DNSPs would not be able to leverage cross subsidies to provide a more attractive offer to customers. It would also limit any increases in subsidies paid by other energy consumers or jurisdictional governments, and network costs of maintaining new remote SAPS.

However, if customers are not able to connect to existing DNSP-led SAPS, overall efficiencies may be lost by requiring the DNSP to offer an inefficient grid connection. The Commission also recognises the likelihood that SAPS will be deployed predominately in remote areas where the competitive market may be unlikely to develop. As such, the Commission intends to give further consideration to this matter over the remainder of the review.

To the extent that there are scenarios in which DNSP-led SAPS should be allowed for new connections, for example where there is no competitive provision of SAPS in very remote areas, these cases could be determined by the AER. One approach could be for the provision of new SAPS systems to be a ring-fenced activity, in which case the AER would have the ability to waive ring-fencing restrictions in certain circumstances. Ring fencing is discussed in more detail in section 4.3.1.

The Commission is of the view that new connections should be able to be made to pre-existing DNSP-led SAPS. DNSPs would therefore be able to fulfil their connection obligations by providing a connection offer to a pre-existing DNSP-led SAPS where it is more efficient to do so. The approach the Commission is considering to achieve this is to redefine the DNSP's network to include pre-existing stand-alone systems.

3.7 Reconnection

3.7.1 Background

The purpose of developing a national framework for SAPS facilitated by DNSPs is to capture the efficiency benefits associated with supplying a customer, or group of customers, via a SAPS rather than continuing to supply those customers via the interconnected grid. The establishment of a SAPS is therefore based on an assumption that the existing assets connecting those customers to the grid will be either taken out of service or removed completely.

This presents challenges in the event that a customer, or group of customers, transitioned to a SAPS wishes to reconnect to the interconnected grid at a later date.

Currently, customers choosing to reconnect to the grid would have the same rights as any other customer wishing to connect to the grid. These rights are set out in the NERL and NER and are supported by DNSP connection policies, including arrangements that allow the DNSP to require a capital contribution from the customer, approved as part of AER revenue determinations. Application of current standard connection arrangements for reconnection

might make this option prohibitively expensive, particularly for remote SAPS customers wishing to re-establish connection to the grid.

Whether there is any need for, and the issues associated with, a 'return to the grid' process for SAPS customers in the event they wish to reconnect to the grid is an issue that is being considered by the Commission in the review. Further, the suitability of applying the current standard arrangements for network connection, including current arrangements that allow the DNSP to require a capital contribution from the customer, is also being considered.

The issue of reconnection to the grid for SAPS customers is closely linked to the discussion in respect of customer consent provisions. Where it is considered appropriate to require DNSPs to obtain customers' consent to move off-grid, there is a question around whether consenting customers (and indeed dissenting customers, or customers who move into the relevant area after the decision to move off-grid has been made) should have the right to request reconnection at a later date. Further, it may also be necessary to consider issues associated with the costs of reconnection, including who should face those costs and the need for a mechanism to avoid potentially burdening other customers with the cost of reconnection.

3.7.2

Stakeholder submissions

Most stakeholders considered that allowing reconnection to the national grid would result in disincentives for the provision of DNSP-led SAPS, and would potentially negate the efficiency benefits of supplying customers via a SAPS. Stakeholders generally considered that where the customer experience is the same, and satisfactory levels of service are being met, customers should not be able to request reconnection (particularly if this would be at the expense of the DNSP or other consumers).¹³³

Some stakeholders considered there may be limited exceptions where it could be appropriate to allow a customer to reconnect to the grid, for example if environmental circumstances meant that a SAPS is unable to deliver the level of reliability required, or where standards are consistently below the level expected. AGL considered that a prudential fund could be established, or insurance underwritten for customers to accesses if there were failure of the off-grid system against service levels set by an independent body. However, PIAC considered that DNSPs would retain an obligation to maintain appropriate levels of supply to the customer, and it is likely that a SAPS can be fixed or upgraded if quality of a supply is a problem.¹³⁴

If reconnection was allowed, most stakeholders considered that the customer should bear the full cost of reconnection to the national grid (in situations where there is not a failure to meet service levels). In addition, some stakeholders considered customers who choose to reconnect should also be required to pay full cost reflective tariffs.¹³⁵

¹³³ Submissions to the issue paper: AEC, p. 8; AusNet Services, p. 5; Department of State Growth Tasmania, p. 2; S & C Electric, p. 5; TasNetworks, p. 5; Energy Queensland p. 8.

¹³⁴ Submissions to the issues paper: Ausgrid, p. 15, Endeavour Energy, p. 7; AGL, p. 5; PIAC, p. 7.

¹³⁵ Submissions to the issue paper: Endeavour Energy, p. 7; Essential Energy, pp. 12-13; Energy Queensland p. 9; Horizon Power, p. 5; Ausgrid, p. 15; S & C Electric, p. 10; TasNetworks, p. 5.

In relation to customer consent and linkages to the right of reconnection, AGL noted it is important that customers are fully informed of their rights relating to reconnection prior to the provision of a SAPS service. While most stakeholders that commented on the issue of customer consent in relation to reconnection did not believe that customer consent should be required to transition to a SAPS, the provision of guaranteed minimum standards in the absence of consent was noted as a protection of customers.¹³⁶

3.7.3

Commission's analysis

Equivalent consumer protections, including service quality and reliability standards, that apply for grid-connected customers should apply to DNSP-led SAPS, as discussed in Chapter 5. Consequently, the customer should be largely indifferent between grid supply and SAPS supply, receiving at least as good a service from the SAPS. If the SAPS is not meeting quality of service levels, then the customer could reasonably expect the DNSP to address the underlying issues leading to the quality of service levels not being met. This would likely mean rectifying any issues with the SAPS, or upgrading the SAPS, as opposed to reconnecting the customer to the interconnected grid.

If, for any reason, it was more efficient to reconnect the customer to the interconnected grid than to continue providing supply to the SAPS, the DNSP could explore this option. The customer should not be able to choose grid-reconnection if this is a more expensive option.

The definition of the grid and the DNSP's network is key to the discussion on right of reconnection. If the DNSP-led SAPS is defined as part of the DNSP's network, as proposed for new connections in section 3.6, then the customer would, by definition, still be connected to the DNSP's network, and consequently there would be no right of reconnection to the interconnected grid.

If the DNSP-led SAPS were not defined as part of the DNSP's network, and the customer decides to request reconnection to the interconnected grid, it is likely reasonable that the customer be required to pay the full cost of reconnection to the grid.

Regardless of whether the customer is required to consent to supply via a SAPS, if the DNSP-led SAPS is defined as part of the DNSP's network, and the customer is either not able to connect to the interconnected grid, or if the customer would be required to pay the costs of reconnecting to the grid, it seems reasonable that the customer is explicitly informed of this prior to being supplied via a SAPS.

3.7.4

Commission's draft position

The approach the Commission is considering is to redefine the DNSP's network to include the DNSP's SAPS. This will negate the need for revised reconnection policies as a customer who is supplied electricity from a DNSP-led SAPS would not be classified as disconnected whilst being supplied via a DNSP-led SAPS. Disconnection would only occur if the customer is disconnected from the DNSP-led SAPS, and the customer's right of reconnection would be

¹³⁶ Submissions to the issues paper: AGL, p. 5; Endeavour Energy, p. 7; Ausgrid, p. 15; Energy Queensland, p. 8, Essential Energy, p. 13; TasNetworks, p. 5.

determined by the most efficient reconnection to the DNSP's network, which would likely be to the DNSP-led SAPS.

If the SAPS is not meeting quality of supply standards, then the DNSP would be required to repair or upgrade the SAPS in the same manner it would be required to repair or upgrade their local network supply area. The Commission considers it is appropriate that the same service standards and consumer protections should apply to DNSP-led SAPS as the interconnected grid. It is unlikely that the SAPS could not be repaired or upgraded to achieve satisfactory standards. If for any reason it was more efficient to reconnect the customer to the interconnected grid than to continue providing supply to the SAPS, the DNSP could reconnect the customer to its interconnected network.

The Commission considers that the DNSP should be required to communicate extensively with the customer prior to transitioning the customer to a SAPS, regardless of whether explicit consent is required to transition to a SAPS or not. Certain information would be required to be provided to the customer prior to the transition, including that the SAPS is considered part of the DNSP's network with the same service standards and consumer protections, and importantly, that the customer has no right of reconnection back to the interconnected grid.

4 SAPS SERVICE CLASSIFICATION AND DELIVERY

This chapter discusses a number of matters related to the potential regulatory treatment of stand-alone power systems and, in particular, how the various services and activities associated with SAPS provision would need to be classified in order to facilitate the efficient provision of SAPS solutions¹³⁷ by DNSPs.

Service classification is the first step in the distribution network regulation process because it determines which services will be economically regulated and in what form. It is a key input into DNSPs' regulatory proposals and the AER's distribution determinations. Importantly, services considered to be 'distribution services' may be assigned a specific service classification in the NEL, or may otherwise be classified by the AER.¹³⁸

Section 4.1 discusses the current ability of DNSPs to use SAPS solutions to provide distribution services and reiterates the Commission's view that changes are required to the NEL and NER to enable the provision of SAPS solutions by DNSPs.

Section 4.2 then discusses the current process for distribution service classification, including the distinction between services that can be classified by the AER and the inputs used to provide those services. It also considers whether additional direction or guidance to the AER in respect of classifying the services associated with SAPS may be useful to ensure that the outcome desired by this review – that is, the provision of SAPS by DNSPs as a regulated service – will be achieved.

Given that service classification is the basis for the application of ring-fencing, section 4.3 then considers the potential implications of the classification of SAPS services on DNSPs' ability to provide these services themselves. It also considers current prohibitions on DNSPs from owning SAPS assets located behind the meter and whether this is appropriate in the context of SAPS, in all circumstances.

Finally, section 4.4 outlines a possible framework for developing and comparing different SAPS delivery models, and then presents two illustrative options. The first option is based on a set of arrangements proposed by AusNet Services which would allow customers to preserve the same supply service arrangements as those that are conventionally associated with a grid connection, including access to retail competition (referred to as the NEM consistency model).¹³⁹ The second model is based on straw-man arrangements developed by Houston Kemp for EMTPT which provides a conceptually simplified approach and which diverges from existing NEM arrangements to a greater extent (referred to as the integrated service delivery model). The Commission would welcome stakeholder views on these two models, and any others models that stakeholders identify.

137 A 'SAPS solution' includes the assets and associated services required to supply electricity using a stand-alone power system.

138 NER cl. 6.2.1(a) and cl. 6.2.1(e). Typically, the NER have not classified distribution services and, therefore, the AER has had to consider which distribution services provided by DNSPs should be classified.

139 Submission to the issues paper: AusNet services, Attachment.

The matters discussed in this chapter again build on the analysis and consultation already undertaken by the EMTPT in 2016, by the Commission in the context of the Western Power rule change and by the AEMC in its issues paper for this review.

4.1 Current ability of DNSPs to use SAPS solutions to provide distribution services

4.1.1 Background

Supplying electricity to customers via poles and wires connected to the national grid is a core distribution service that is currently classified as a standard control service.¹⁴⁰ DNSPs earn regulated returns for these services and typically charge customers receiving a standard control service the same network prices based on fixed charges and the volume of electricity consumed (rather than charging different customers different prices depending on the cost to provide that service to the customer).

Currently, DNSPs are unable to recover expenditure on SAPS from regulated revenue on the basis that SAPS assets (and associated services) do not provide distribution services (this matter is discussed in Chapter 2). This restriction means that DNSPs are unlikely to install SAPS assets themselves, or to purchase SAPS services from the competitive market, in order to supply electricity to customers, even where SAPS would provide an efficient alternative to grid-supply.

Unregulated third parties, including ring-fenced subsidiaries of DNSPs, can currently provide SAPS services to customers. However, because they are unable to do so on the same terms as a DNSP provides its standard distribution services — that is, with the cross-subsidy — customers would be required to pay more than they do now, and thus would not choose this service.

The Western Power rule change request sought to allow SAPS supply to be treated in the same way as supply provided by means of traditional poles and wires — that is, by allowing the service provided by means of a SAPS solution (that is, by means of a non-network option¹⁴¹ which replaces, or substitutes, all of a distribution system for a given customer) to be treated as a distribution service. Under the current rules, this would allow the AER to determine how that service should be classified and regulated.

As discussed in Chapter 2, a SAPS supply is unlikely to be a distribution service under the current definition of the NER on the basis that assets which are not physically connected to the distribution system cannot provide distribution services. This means that expenditure on SAPS assets (or associated services) cannot be recovered from a DNSP's regulated revenue.

4.1.2 Stakeholder submissions

Stakeholders did not specifically comment on this matter in submissions to the issues paper.

¹⁴⁰ The different categories of distribution services and approaches to the economic regulation of those services, are explained further in section 4.2.

¹⁴¹ 'Non-network option' is defined in Chapter 10 of the NER as: "A means by which an identified need can be fully or partly addressed other than by a network option". An 'identified need' is the objective a DNSP seeks to achieve by investing in the network. A 'network option' involves expenditure on a distribution or transmission asset.

4.1.3

Commission's analysis

Consistent with its view put forward in the final determination for the Western Power rule change,¹⁴² the Commission considers it is necessary and appropriate to amend the NEL and NER (and other relevant legislation) to enable services provided by means of SAPS assets to be distribution services. This would allow DNSPs to recover revenue for these services via their regulated revenue where:

- DNSPs must undertake expenditure in order to provide services in order to meet their regulatory obligations or licence requirements, and
- it is potentially more efficient for DNSPs to provide those services via a SAPS solution rather than by replacing or upgrading existing parts of the distribution system.¹⁴³

The intent of making this change would be to enable DNSPs to transition a customer (or group of customers) from supply via the interconnected grid to supply via a SAPS, where a SAPS solution provides an efficient alternative to replacing or upgrading existing network and/or connection assets.

There are a number of possible ways that the NER and NEL could be amended in order to realise this change. The proposed amendments to the NER put forward by Western Power in its 2016 rule change request to the AEMC provided one possible approach.

Specifically, Western Power proposed to amend the definition of "distribution service" in the NER in order to address what it considered to be ambiguity with the term.¹⁴⁴ The purpose of the amendment, replicated in Box 10 below, was to broaden the scope of the term distribution service to encompass a non-network option of the kind described in the proposed definition.

BOX 10: WESTERN POWER PROPOSED RULE CHANGE

Distribution service. A service provided by means of, or in connection with, a *distribution system*. Without limiting the phrase 'in connection with', a service provided by means of a non-network option is a service provided in connection with a *distribution system* if the non-network option:

1. replaces or is a substitute for part of a *distribution system*;
2. could potentially be a more efficient method of addressing the *identified need* to which the *non-network option* responds; and
3. is owned, controlled or operated by a *Distribution Network Service Provider*.

For the purpose of this definition, *identified need*, when used in the definition of *non-network option*, is to be read as if the reference to *network* in that definition is a reference to *distribution system*.

Note: Western Power, *Alternatives to grid-supplied network services*, rule change request, p.15.

142 AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017.

143 That is, existing network and/or connection assets.

144 Western Power, *Alternatives to grid-supplied network services*, rule change request, p. 15.-

In the final determination for the Western Power rule change request, the Commission considered that the proposed changes to the definition of “distribution service” in the NER would disrupt the mirroring between that term and the term “electricity network service” in the NEL. This may have rendered the proposed rule invalid.

Among other alternatives, the Commission therefore considered whether amendments to the definition of “distribution system” under the NER would have the same intended effect as the proposed rule, without giving rise to inconsistencies between the NER and the NEL. The definitions of a distribution system in the NEL and in the NER are as follows:¹⁴⁵

- **Distribution system definition in NEL:** The apparatus, electric lines, equipment, plant and buildings used to convey or control the conveyance of electricity that the Rules specify as, or as forming part of, a distribution system.
- **Distribution system definition in NER:** *A distribution network, together with the connection assets associated with the distribution network, which is connected to another transmission or distribution system. Connection assets on their own do not constitute a distribution system.*

Having considered the implications of changing the definition of distribution system (as opposed to distribution service) in the NER, the Commission also came to the view that any amendments to the definition of “distribution system” would likely result in potential inconsistencies in how the NEL would apply to off-grid supply and more traditional distribution services. Without concurrent changes to the NEL, the alternative change to the NER would also likely be unworkable.

This review is considering whether, and how to enable SAPS to be provided by DNSPs (where efficient), including initial consideration of potential changes to the NEL and NER (in addition to the NERL and NERR and other relevant jurisdictional legislation). The Commission considers that there may be some advantages to an approach which defines the scope of distribution systems as including SAPS assets, as this may help clarify rights of connection and reconnection. However, both of the options considered in the Western Power rule change and any additional options and approaches which may be available, will be explored in more detail in the next stage of this review.

4.1.4

Commission’s draft position

The Commission recommends that the NEL and NER should be amended to enable DNSPs to utilise non-network SAPS assets to provide distribution services. This would allow DNSPs to recover revenue for these services via regulated revenue where:

- DNSPs must undertake expenditure in order to provide services in order to meet their regulatory obligations or licence requirements, and
- it is potentially more efficient for DNSPs to provide those services via a SAPS solution rather than by replacing or upgrading existing parts of the distribution system.

¹⁴⁵ NEL s. 2 and NER Chapter 10.

The intent of making this change would be to enable DNSPs to transition a customer (or group of customers) from supply via the interconnected grid to supply via a SAPS, where a SAPS solution provides an efficient alternative to replacing or upgrading existing network and/or connection assets. There are a number of possible ways that the NER and NEL could be amended in order to realise this change. The Commission intends to explore the various options and approaches available to implement this change in more detail in the next stage of this review.

4.2 SAPS service classification

A key matter for this review will be recommending the appropriate regulatory treatment of SAPS and, in particular, how the various services and activities associated with the provision of SAPS should be treated. This section discusses the current process for distribution service classification, including the distinction between services that can be classified by the AER and the inputs used to provide those services. It then considers whether additional direction or guidance to the AER in respect of classifying the services associated with SAPS may be useful to ensure that the outcome desired by this review – that is, the provision of SAPS by DNSPs as a regulated service – will be achieved.

4.2.1 Background

Defining the SAPS service

Expenditure on SAPS solutions, like expenditure to replace or upgrade existing parts of a distribution system, would be undertaken by a DNSP for the purpose of continuing to meet its regulatory obligations and licence requirements to facilitate the safe and reliable supply of electricity to customers. While the end-service¹⁴⁶ received by customers should remain the same irrespective of how a DNSP chooses to meet its obligations, precisely which services and activities a DNSP would be required to provide in order to deliver that end-service may vary, depending on the investment and expenditure choices it makes.

For example, in meeting its obligations to supply customers through investment in traditional poles and wires, a DNSP would provide a suite of activities in order to deliver that service relating specifically to the network.¹⁴⁷ In contrast, where a DNSP determines that a SAPS solution will provide a more efficient means of meeting those obligations, the suite of activities it would be required to provide (or at least to coordinate) to deliver the service would include activities associated with the generation of electricity and (depending on the approach taken to the provision of retail services which is discussed in the next chapter) possibly also activities related to the sale of electricity to customers (for example, billing and customer management activities).

¹⁴⁶ That is, the reliable and safe supply of electricity.

¹⁴⁷ For grid-connected customers, activities associated with the generation and sale of electricity are carried out separately by other parties as clearly distinct electricity services associated with electricity generation and the sale of electricity.

The inclusion of activities related to the generation (and possibly also sale) of electricity within the scope of a network service represents a blurring of the lines between traditionally discrete and separable electricity services. This change is explored further in Box 11.

BOX 11: DISRUPTIONS TO THE PROVISION OF TRADITIONAL ELECTRICITY SERVICES

The emergence of new products and services in the electricity market are challenging the traditional, centralised, unidirectional electricity supply model. Traditional electricity services considered necessary or incidental to the supply of electricity to consumers – that is, the generation of electricity, electricity network services and the sale of electricity – have largely been considered as discrete services, with the activities associated with the generation and sale of electricity provided by large entities (either corporate or government owned), and the activities associated with traditional poles and wires provided by regulated network businesses. Large generators focussed on the provision of competitive generation services, while traditional network businesses focussed on the provision of network services (that is, the transport and conveyance of electricity from generators through traditional poles and wires to customers) as a regulated monopoly.

However, technological advances and cost reductions associated with distributed generation technologies (for example, solar PV and batteries) are providing opportunities for the generation and supply of electricity to occur on, or close to, customers' premises rather than from centralised sources located within the interconnected system. Stand-alone power systems represent one such opportunity.

The electricity supply service provided to customers by DNSPs by means of SAPS challenges the boundaries between the activities and services associated with the generation and sale of electricity, and those associated with electricity network services (that is, distribution services). Specifying the activities associated with the generation and sale of electricity via SAPS as *inputs into* (rather than as *separate services along-side*) electricity network services, presents a different proposition in respect of the supply of electricity to customers.

This difference is particularly important in the context of the classification and economic regulation of electricity network services.

The AER, through its approach to distribution service classification, will need to take into account the changes underway in the markets within which DNSPs operate when considering the regulation of the service(s) provided by SAPS solutions. Direction or guidance on this issue may also be provided in the NER. This is discussed further in section 4.2.

Precisely which services and activities are required in order to provide customers with an electricity supply by means of a SAPS could depend on a number of factors, including the location, scale and complexity of the SAPS, and the feasibility of retaining retail competition (this specific matter is considered in section 4.4).

In addition, the activities that will be provided by DNSPs as distribution services (and therefore subject to economic regulation under the NER) would, in the absence of specific direction or guidance in the NER in respect of how SAPS services should be classified, depend on the approach taken by the AER to the classification of the distribution services associated with SAPS.

The next section provides a brief overview of the current distribution service classification framework. Section 4.2 then discusses the application of this framework to stand-alone power systems.

The service classification framework

Service classification is the foundation of the economic regulatory framework. The economic regulatory framework provides a structure for determining which services will be economically regulated, which services will be subject to a negotiate/arbitrate framework and which services will remain unregulated. This occurs through the distribution service classification process led by the AER and set out in Chapter 6 of the NER.

Currently, the AER can only classify those services provided by DNSPs which meet the definition of distribution service as set out in the NER.¹⁵¹ In doing so, the AER may:

- classify distribution services as direct control services — these services will be subject to economic regulation
- classify distribution services as negotiated distribution services — these services will be subject to a negotiate/arbitrate framework, or
- determine not to classify a distribution service at all — these services will be unregulated distribution services.

Services that are classified as direct control services are economically regulated under the incentive based framework, also set out in Chapter 6 of the NER. This framework provides DNSPs with the opportunity to recover the efficient costs of providing these services through regulated revenues.

Importantly, the regulatory framework incentivises DNSPs to provide direct control services efficiently. It does so by locking in DNSPs' total revenue requirement prior to each regulatory control period.¹⁵² DNSPs' returns are then determined by their actual costs of providing services. This high level incentive regulatory framework is then enhanced through specific incentive schemes for capital expenditure, operating expenditure, service standards and demand management.¹⁵³

On the basis that DNSPs are incentivised through the regulatory framework to provide services efficiently, they are provided with discretion to choose how they provide

151 That is, "a service provided by means of, or in connection with, a distribution system". NER Chapter 10. Services which do not meet the definition of 'distribution service' are termed 'non-distribution services'.

152 Where the AER selects a control mechanism that is not a revenue cap, a DNSPs' actual revenue may vary from its total revenue requirement. The requirement may also be adjusted for cost-pass through events within the period.

153 See Box 4 in Chapter 3 of the AEMC issues paper for the SAPS review for an overview of the incentive regulation framework in the NER: AEMC, *Stand-alone power systems review*, issues paper, 11 September 2018, pp. 21-22.

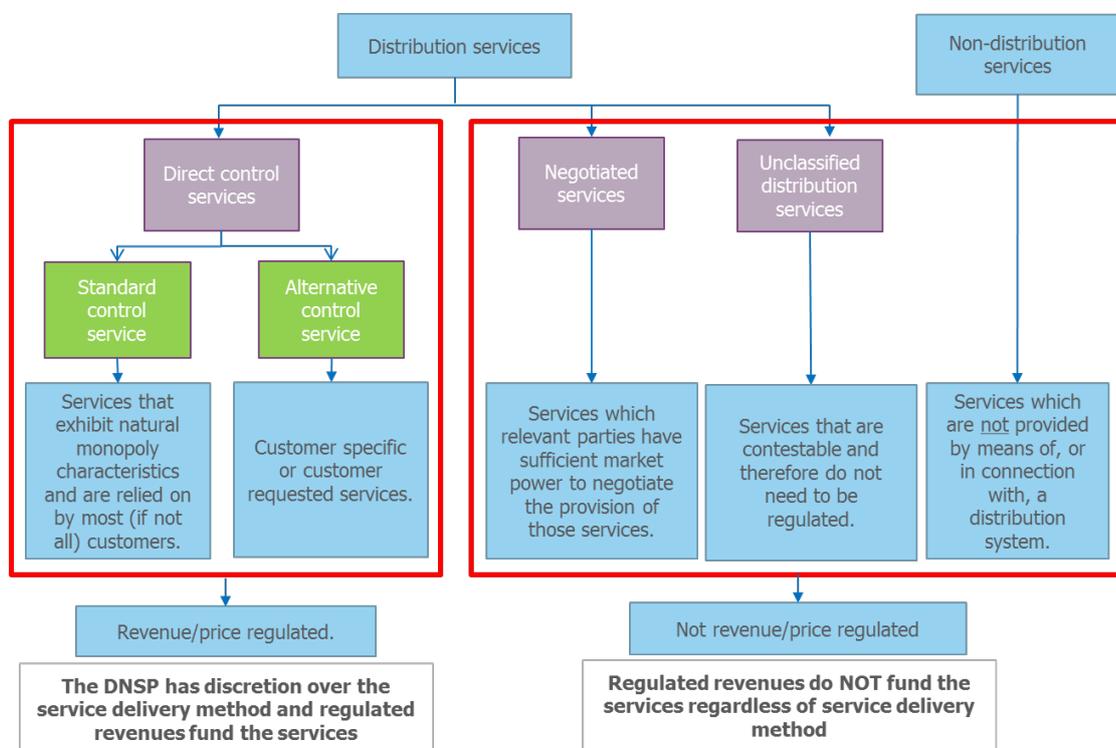
economically regulated services. Specifically, the framework provides DNSPs with discretion to provide direct control services by using any combination of:¹⁵⁴

- network or non-network options¹⁵⁵
- operating or capital expenditure
- a variety of technologies, and/or
- providing the services 'in-house' or procuring the services from third parties or appropriately ring-fenced related entities.

In contrast, the costs of services provided by DNSPs which are not classified as direct control services cannot be recovered through regulated revenues, regardless of the means of service delivery. In other words, if a service is not classified as a direct control service, DNSPs cannot use regulated revenues to recover the costs of investing in assets that provide that service, or recover the costs of procuring such a service from the contestable market.

The service classification process and associated regulatory implications are illustrated in Figure 4.1.

Figure 4.1: AER service classification process



¹⁵⁴ As a partial restriction on the delivery methods listed below, the AEMC's final rule for the contestability of energy services rule change strictly prohibited DNSPs from providing direct control services through direct ownership of assets positioned behind (as distinct from in-front) of the meter, subject to exemptions. See: National Electricity Amendment (Contestability of energy services) Rule 2017 No. 16.

¹⁵⁵ Note that DNSPs' discretion in using non-network options is limited to those non-network options contribute to the provision of a distribution service.

There are significant regulatory implications of the AER's decisions in respect of service classification – that is, in respect of whether:

- a service is a distribution service (as opposed to a non-distribution service)¹⁵⁶
- a distribution service is classified as a direct control service (as opposed to a negotiated distribution service or unclassified distribution service), and
- a direct control service is classified as a standard or alternative control service.

For example, the requirements in the AER's distribution ring-fencing guideline,¹⁵⁷ shared asset guideline¹⁵⁸ and cost allocation guideline¹⁵⁹ apply differently depending on whether a service is a distribution service and how (if at all) that distribution service is classified.

AER approach to distribution service classification

The service classification process occurs over a number of stages. A service must first be a distribution service within the meaning contained in the NER in order for it to be subject to economic regulation.

If it is a distribution service, the AER must have regard to the factors set out in NER cl. 6.2.1(c) in classifying the service as a direct control service or a negotiated distribution service. The factors set out in NER cl. 6.2.1(c) are:

- the form of regulation factors
- the form of regulation (if any) previously applicable to the relevant service or services and, in particular, any previous classification under the present system of classification or under the previous regulatory system
- the desirability of consistency in the form of regulation for similar services, and
- any other relevant factor.

The form of regulation factors are set out in NEL s. 2F and include the consideration of the presence and extent of barriers to entry, network externalities and availability of substitutes.

The AER must then have regard to the factors set out in NER cl. 6.2.2(c) in further classifying a direct control service as either a standard control service or an alternative control service. These factors include the potential for development of competition in the market for provision of that service and the extent to which the costs of providing the service are directly attributable to the person to whom the service is provided.

156 Note that the term 'non-distribution services' and 'other services' are used interchangeably in the rest of the chapter.

157 The AER's ring-fencing guideline is discussed in section 4.3.

158 The AER's shared asset guideline adjusts the level of revenue a DNSP can recover from its standard control services. It modifies a DNSP's cost allocation where its cost allocation methodology no longer accurately reflects how its assets are used. Further information is available on the AER website: www.aer.gov.au

159 The AER's cost allocation guideline and a DNSP's cost allocation methodology form the basis for the allocation and attribution of its costs between its distribution services. Further information is available on the AER website: www.aer.gov.au

Services vs inputs

Before a service offered by a DNSP to a customer can be classified by the AER, it must be clearly identified (that is, named and described) by the DNSP, having regard to the approach outlined by the AER in its distribution service classification guideline.¹⁶⁰

Importantly, the NER only permits distribution services to be classified. Inputs — that is, the various components or activities which a DNSP uses to provide a distribution service to a customer (including assets used to provide the service) — cannot be classified. The AER's approach to distinguishing between services and inputs is outlined in its distribution service classification guideline and replicated in Box 12.

BOX 12: AER'S APPROACH TO DISTINGUISHING BETWEEN 'SERVICES' AND 'INPUTS'

- A service is the action of helping or doing work for someone. Typically, distribution services are provided by DNSPs to customers for payment. For example, DNSPs publish price lists for the services they offer.
- An input can be distinguished from a service in that it is not offered to customers on a stand-alone basis. For example, DNSPs manage vegetation to ensure proper clearances from distribution assets, but do not offer vegetation management services to their customers.
- A service may involve using one or more inputs in providing that service to a customer. For example, a connection service may involve pole installation and vegetation pruning that are not offered on a standalone basis as two separate services.
- While a DNSP may incur costs in utilising an input, costs can only be recovered by offering services. Distribution services have prices, paid by distribution customers. Inputs usually do not. (However, in some cases, the prices of inputs may be identified as a means of calculating a final price for a service—these types of services are sometimes referred to as 'quoted services'.)
- A bundled service is often made up of several individual inputs that could be regarded as services. However, if a customer cannot purchase the individual services separately, then they are regarded as a single bundled service.
- If an activity was initially supplied as an input to a service, but then is unbundled from a service and subsequently offered to customers on a stand-alone basis, in return for payment, then the activity is a service. For example, metering was previously bundled into common distribution services with costs recovered through all customers' network charges. However, following the introduction of metering contestability in many jurisdictions, metering charges were separated from network charges.

In some cases, the distinction between a service and an input is relatively clear. The following examples illustrate this distinction:

¹⁶⁰ AER, *Electricity Distribution Service Classification Guidelines*, September 2018, pp. 7-8.

- To provide network services, a DNSP will usually need to trim trees surrounding its network. The DNSP may procure a third party or related entity to trim the trees, or use its own staff and assets to trim the trees. Regardless of which approach is taken, tree trimming for the purpose of maintaining the network is not a separate service that can be classified. This is because it is not a service being provided to a customer, it is an input to providing network services to customers.
- If a customer owns a storage device and uses it to provide a DNSP with network support, this cannot be classified because the customer is providing the DNSP with a service, not the other way around. Similarly, if a DNSP invests in storage assets and uses them to provide network support, this is not a service that can be classified, because it is an input to network services and not a separate service provided to a customer.

However, in some circumstances, the distinction between a service and an input can be less clear. This primarily arises where something is supplied by a DNSP to a customer, but it would be possible to classify that thing as a separate service or as part of the distribution service.

In the AEMC's final determination for the Contestability of energy services rule change,¹⁶¹ the Commission considered that a key determinant of whether an activity is a service relates to the concept of 'distinctness' — that is, whether the activity in question could provide value to specific customers if supplied separately from the core service. In order for an activity to be considered a service, it must be possible to demonstrate that a customer would receive a benefit in return for procuring that activity on a stand-alone basis. For example, if voltage support is to be considered as a separate service from the core service of providing common distribution services, the first consideration is whether voltage support, provided as a stand-alone activity, would provide value to network users.

In these more difficult cases, the AER has discretion as to what it considers to be a separate service as opposed to an input into another service.

4.2.2

Stakeholder submissions

In submissions to the issues paper, stakeholders were generally supportive of the AEMC establishing a national framework which would support a variety of approaches to SAPS service provision. Several DNSPs, the CEC, PIAC and the AER considered that different service provision models would likely be appropriate in different circumstances.¹⁶² Further, PIAC considered that the regulatory framework should not unduly restrict the provision of SAPS where efficient and in the best interests of consumers.¹⁶³

A number of stakeholders also considered there were circumstances where it may be appropriate for DNSPs to provide SAPS as an integrated solution – for example:

¹⁶¹ AEMC, *Contestability of energy services*, rule determination, 12 December 2017.

¹⁶² Submissions to the issues paper: Ausgrid, p. 16; ENA, p. 6; Essential Energy, pp. 13-15; Western Power, p. 4; CEC, p. 7; PIAC, p. 7; AER, p. 2.

¹⁶³ Submission to the issues paper: PIAC, p. 7.

- where DNSP provision of integrated service provides a more efficient and cost-effective alternative relative to the provision of individual SAPS activities and services by the competitive market¹⁶⁴
- where the activities within a SAPS cannot be provided on a competitive basis,¹⁶⁵ or
- in remote or heavily vegetated areas where logistics are challenging and third parties unlikely to be able to provide effective support.¹⁶⁶

In contrast to these views, AGL considered that the framework should preclude DNSPs owning/operating SAPS in all instances.¹⁶⁷

4.2.3

Commission's analysis

Driver behind facilitating DNSP-led SAPS

The driver behind allowing DNSPs to use SAPS assets (and associated services) to provide distribution services to existing grid-connected customers is the fact that DNSPs would be able to do so at a cross-subsidised price for customers.¹⁶⁸ Without the cross-subsidy, customers would be unlikely to choose to leave the grid and the potential reductions in distribution costs for all customers from moving certain customers to SAPS supply would not be captured.¹⁶⁹

Therefore, in order for DNSPs to continue to cross-subsidise the provision of distribution services to SAPS customers, the activities provided by means of SAPS assets (including generation and distribution, but not necessarily retail, of electricity) must include a distribution service which has or will be classified by the AER as a standard control service. Without this classification, the cross-subsidy would be lost and SAPS customers would be subject to the full costs of the SAPS service.

Based on the existing service classification framework, if the generation and/or distribution activities provided by SAPS were classified as a standard control service:

- the costs of supplying the service would be recovered from regulated revenues (subject to any adjustments), and
- DNSPs' would have significant discretion over the service delivery method.¹⁷⁰

164 Submissions to the issues paper: CEC, p. 7; Western Power, p. 4.

165 Submission to the issues paper: Endeavour Energy, p. 8.

166 Submissions to the issues paper: Essential Energy, pp. 16-18; ARENA, p. 6; Energy QLD, p. 10.

167 Submission to the issues paper: AGL, p. 5.

168 This is the case for jurisdictions in which there is no direct subsidy for rural customers through retailers, such as Queensland. In general, the driver behind facilitating SAPS as an alternative to maintaining existing network assets to continue to supply certain customers is the productive efficiency gain from implementing the least cost solution. The driver behind facilitating *DNSP*-led SAPS is that, in the absence of cost-reflective network tariffs, existing grid-connected customers have no incentive to transition to SAPS provided by a third-party on the basis that they would lose any existing cross-subsidy and are likely face a higher price.

169 Further to this, it could be argued that remote customers who have previously paid potentially significant cost-reflective connection charges to connect to the grid in order to receive supply at a cross-subsidised price are entitled to continue to receive grid supply or equivalent into the future (given that they have paid for it).

170 This means that the service could be provided through network or non-network options, opex or capex based service delivery, a wide variety of technologies, or through providing the service 'in-house' or procuring through a third party. See section 4.2.

In respect of the last point, the discretion of the DNSP over the service delivery method may be limited if the assets providing the distribution service were also considered by the AER to be providing other services.¹⁷¹ This issue is explored further below.

Application of the service classification framework to SAPS

The discussion in section 4.2.1 establishes the framework that will, subject to any additional guidance or direction being recommended by this review, guide the AER's approach to SAPS service classification. In particular, the framework provides a means for considering whether the activities and services associated with the generation, distribution and possibly also the sale of electricity within a SAPS:

- are distribution services, and so fall within the NER service classification framework,
- constitute 'other services' (non-distribution services) and so cannot be classified and are therefore unregulated, or
- are inputs to a distribution service and so also cannot be classified and are therefore unregulated.

The approach taken to the classification of activities and services associated with the generation and sale of electricity associated with SAPS will depend (among other things) on the SAPS delivery model(s) implemented as an outcome of this review. Two possible models are described and considered in detail in section 4.4. The models differ in a number of respects including in how the proponents of the different activities would be remunerated.

A number of observations on the various approaches available to the AER in respect of the classification of the generation and retail functions associated with SAPS are made below.

SAPS generation activities

The distinguishing feature of stand-alone power systems is that they are capable of supplying a customer (or group of customers) with energy that is generated and controlled at the local level, operates autonomously and are not connected to the interconnected grid. The generation of electricity is therefore a key feature of the service provided by means of SAPS assets (and associated services).

In a model where the electricity produced by SAPS assets is clearly subject to remuneration that is separate from or additional to remuneration for the distribution of the electricity,¹⁷² absent any direction in the NER the AER may decide that the generation activities are separate, non-distribution services and so would not be classified under the NER. In this case, ring-fencing restrictions would apply to the provision of the generation service.¹⁷³

171 The NER strictly prohibit a DNSP from including in its regulatory proposal and regulatory asset base, capital expenditure for assets that are located behind a retail customer's connection point (a "restricted asset"), except in certain limited circumstances (for example, where the expenditure is for the refurbishment of such an asset or where the AER has provided an exemption from the prohibition).

172 For example, the 'NEM consistency model' described in section 4.4 and illustrated in Figure 4.3.

173 As discussed in section 4.3, in this case the current ring-fencing guideline would imply that the assets providing these services could not be owned and operated by the DNSP (without a waiver).

However, in a model where the generation activities do not provide a separate stream of revenue to a DNSP for the electricity produced,¹⁷⁴ the AER may decide that such activities are inputs into the distribution service meaning that the assets and services used to generate electricity would be funded through DNSP charges for a standard control service. The Commission understands that, in practice, the AER considers the activities associated with assets such as batteries (which generate electricity but which do not provide revenue to a DNSP for the electricity produced), as inputs to DNSPs' standard control service rather than as separate "other services". As such, there are no restrictions, as a result of the service classification process, on DNSPs owning or operating these assets, provided they are not located behind the connection point.¹⁷⁵

It is also possible that the AER may determine that the activities and services associated with SAPS generation are distribution services, but are not standard control services — for example, are an alternative control service.¹⁷⁶ While alternative control services would be economically regulated, they would be subject to price (rather than revenue) regulation and therefore would not provide for the continuation of the existing cross-subsidy.

SAPS retail activities

The provision of retail services, including billing and customer management services, to customers who have been transitioned to SAPS supply could be facilitated in several ways. The various models available for the provision of retail services to SAPS customers are discussed in detail in the next chapter.¹⁷⁷

Where it is not possible and/or appropriate to provide customers transitioned to SAPS supply with the necessary retail services via the competitive retail market, it may be necessary to allow the integration of the full suite of activities and services necessary to deliver supply via SAPS, including those related to the sale of electricity. The integrated service solution would then be presented by a SAPS proponent as a complete non-network solution.¹⁷⁸

In this scenario, the AER would need to determine whether the relevant retail services and activities forming part of the integrated solution:

- are distribution services, and so fall within the NER service classification framework,
- constitute 'other services' (non-distribution services) and so cannot be classified, or
- are inputs to the core distribution service and so also cannot be classified.

¹⁷⁴ For example, the 'integrated service delivery model' described in section 4.4 and illustrated in Figure 4.5.

¹⁷⁵ See AEMC, *Contestability of energy services*, rule determination, 12 December 2017.

¹⁷⁶ Alternative control services are only used or requested by certain customers, such as a customer requested electricity pole relocation. In its service classification guideline, the AER states that: "...when classifying a service as alternative control, we are likely to give primacy to the level of or potential for competition in the market, as well as to whether the costs of providing the service can be attributable to the person to whom the service is provided". AER Electricity distribution service classification guideline, September 2018, p. 13.

¹⁷⁷ Note that the cross-subsidisation of retail services is not necessary for SAPS to be delivered provided there is either retail competition or retail price control.

¹⁷⁸ The presentation of a complete SAPS solution to a DNSP by a single SAPS proponent does not mean that the single proponent would be required or expected to provide the full suite of SAPS services and activities itself. Rather, the SAPS proponent would be responsible for coordinating the complete non-network SAPS solution.

If the relevant retail activities are considered to be distribution services, the AER would then need to determine whether the economic regulation of these services is appropriate and, if so, what form that regulation should take. Importantly, and as discussed in section 4.4.1, the Commission is of the view that the entity responsible for providing retail services should be an authorised retailer in all circumstances, in order for customers to retain existing consumer protections.¹⁷⁹

4.2.4 Commission's draft position

The current framework for distribution service classification provides the AER with discretion in respect of how it classifies (and therefore economically regulates) the activities and services provided by DNSPs. This level of discretion enables the regulator to make decisions appropriate to the circumstances of each DNSP in a changing environment.

The adopted SAPS delivery model will help to provide clarity around a number of matters relevant to the classification of the services provided by SAPS. In light of this, and having regard to the AER's current approach to service classification (including to distinguishing between inputs and services), the Commission considers that the outcomes desired by this review — that is, the provision of SAPS by DNSPs as a regulated service — can be achieved under the current framework.

Nevertheless, given the need for the generation and/or distribution service provided by means of a SAPS to be classified as a standard control service (that is, to ensure DNSPs can continue to cross-subsidise the provision of this service through regulated revenue earned from the provision of distribution services), the Commission is considering whether there may be any benefit in providing additional direction or guidance to the AER in the NER in respect of how the activities and services associated with SAPS should be classified. This matter will be considered further in the next stage of this review.

4.3 Role of DNSPs

Given that service classification is the basis for the application of ring-fencing, this section considers the potential implications of the classification of SAPS services on DNSPs' ability to provide these services themselves. It also considers current prohibitions on DNSPs from owning assets located behind the meter assets and whether this is appropriate in the context of SAPS, in all circumstances.

4.3.1 Background

AER Ring-fencing guideline

Ring-fencing involves the identification and separation of business activities, costs, revenues and decision-making for direct control services from those that are associated with providing services in a competitive market.

¹⁷⁹ As discussed in section 4.4.1, under an integrated service delivery model, a DNSP could apply to be an authorised retailer if the AER has granted it an exemption from the restriction in the ring-fencing guideline on DNSPs providing retail services. This may be appropriate in limited circumstances where, for example, there is no third-party authorised retailer available to provide retail services as part of the integrated SAPS solution.

The AER's electricity distribution ring-fencing guideline¹⁸⁰ imposes obligations on DNSPs to separate the legal, accounting and functional aspects of regulated distribution services from other services provided by a DNSP or an affiliated entity.

The objective of ring-fencing obligations that apply to DNSPs is to provide a level playing field for third party providers in new and existing markets for contestable services, such as those for metering and energy storage services, in order to promote competition in the provision of electricity services. Without effective ring-fencing, DNSPs could hold significant advantages in such markets.

The AER's ring-fencing guideline addresses two potential harms with two separate sets of obligations for DNSPs.

- First, the Guideline addresses the risk of a DNSP cross-subsidising other services with revenue earned from provision of distribution (and transmission) services. It does this through legal separation of the DNSP, which may only provide distribution services¹⁸¹ from affiliated entities that may provide other electricity services. The legal separation obligation is supported by other obligations for the DNSP to maintain separate accounts, follow defined cost allocation methods and be able to report on transactions between itself and its affiliates.
- Second, the Guideline addresses the risk of a DNSP favouring its own negotiated services or other distribution services, or an affiliated entity's other electricity services, in contestable markets. The Guideline does this by imposing behavioural obligations on DNSPs, including restrictions on sharing and co-locating staff, information and on co-branding of advertising materials.

The AER may grant a waiver (on application) from the prohibition on DNSPs providing non-distribution services, for instance where a DNSP is required by law to provide the non-distribution service. One example given by the AER of services where a waiver may be granted is "isolated network services in remote areas".¹⁸²

In addition, the ring-fencing guideline includes a number of exemptions to specific obligations in certain circumstances. For example, in respect of regional and remote areas, the guideline includes an automatic exemption from the physical separation requirements for regional offices that have less than 25,000 customer connection points within a 100 kilometre radius of the office. This exemption recognises that the requirement for physical separation may impose unnecessary additional costs on a DNSP. It also recognises that, in these areas, the potential for development of competition may be limited.¹⁸³

180 The AER is required to establish the Guideline under NER cl. 6.17.2(a).

181 DNSPs may (and some do) provide transmission services in addition to distribution services.

182 In this case, the AER would consider granting a waiver from the guidelines' legal separation obligation. AER, *Electricity Distribution Ring-fencing Guideline - Explanatory Statement*, November 2016, pp. 42-43.

183 The AER considers that a current or potential competitor of the DNSP would contact it if the particular regional office was supplying to a contestable, or potentially contestable, market. AER, *Electricity Distribution Ring-fencing Guideline - Explanatory Statement*, November 2016, pp. 42-43.

In summary, the ring-fencing guideline requires non-distribution services ('other services') to be provided by a third party, a subsidiary or other affiliate of a DNSP, or by a DNSP if the circumstances are such that the prohibition is waived.

Restrictions on DNSPs ability to earn regulated returns on 'behind the meter' assets

In the final determination for the Western Power rule change, the Commission recommended that DNSPs be prohibited from investing in individual power system assets, meaning that DNSPs would need to obtain the services provided by IPS assets on the contestable market (unless an exemption is granted).¹⁸⁴ The Commission argued that, since individual power systems do not have natural monopoly characteristics in relation to fixed and marginal costs (that is, the cost of serving one additional customer), there is no basis for these systems to be owned by regulated providers.¹⁸⁵

The Commission suggested that a DNSP's ring-fenced affiliate would be able to own and operate an individual power system and provide services in respect of that system under contract with the DNSP. In addition, the AEMC considered that the AER may be able to grant an exemption where it considered DNSP ownership of an individual power system would not affect the development of competition in markets for energy related services.¹⁸⁶

The Commission's views on DNSP ownership of IPS assets was informed by its consideration of the Contestability of energy services rule changes which were submitted by the AEC and COAG Energy Council in 2016, and considered by the AEMC at the same time as the Western Power rule change. The final rule for this rule change request limits DNSPs' discretion in respect of the delivery method for standard control services. It does so by restricting DNSPs' ability to own or control assets located behind the connection point to deliver standard control services.¹⁸⁷

An overview of the Commission's final rule for the Contestability of energy services rule change¹⁸⁸ is set out in Box 13.

BOX 13: CONTESTABILITY OF ENERGY SERVICES RULE CHANGE

The final rule for the Contestability of energy services rule change aims to facilitate competition in the emerging contestable energy services market by introducing restrictions on DNSPs' ability to earn regulated returns on 'behind the meter' assets.

This means that to access the functions that assets located behind the meter can provide (such as demand response), DNSPs need to pay customers or third parties for such functions

184 AEMC, Alternatives to grid-supplied network services, rule determination, 19 December 2017, p. 53.

185 *ibid.*

186 *ibid.*

187 The restriction recommended in the Western Power determination was intended to function as a simplified application of the contestability rule specifically to IPS assets. It was based on an assumption that IPS assets may be located behind a customer's connection point. As discussed below, it is the Commission's view that SAPS assets should be generally be considered in-front of the meter assets.

188 AEMC, Contestability of energy services, rule determination, 12 December 2017.

rather than investing in the assets themselves.

The Commission considered that the final rule would safeguard competition in the emerging energy services market by addressing two key concerns about DNSPs' actions:

- Favouring network benefits at the expense of maximising value across the electricity system.
- Foreclosing competition in the emerging energy services sector system.

DNSPs, with their incumbent status as monopoly operators of distribution networks, may be able to adversely affect the level of competition in the energy services market through the ability to install (and operate) these assets and recover the costs through regulated revenues.

The final rule does not restrict DNSPs' ability to use behind the meter technologies to deliver network services. It simply requires DNSPs to procure those services from third-parties or from their own ring-fenced affiliates rather than owning and controlling the assets.

In addition, the final rule provides the AER with the ability (and flexibility) to grant exemptions in relation to DNSPs' investments for a range of scenarios. For example, DNSPs that supply rural areas may need exemptions for some assets to supply extremely remote customers, or some exemptions may be needed for safety equipment for very large customers.

The circumstances under which such exemptions are provided are determined by the AER, having regard to certain considerations, rather than being specifically set out in the NER.

4.3.2

Stakeholder submissions

Stakeholder views were divided on whether it is necessary and appropriate to restrict the ability of DNSPs to own and earn a regulated rate-of-return on SAPS assets.

Generally, DNSPs did not support restrictions on the ownership of SAPS assets (whether behind- or in-front of the meter). Several DNSPs considered that, where DNSP ownership/operation of SAPS assets provides the efficient, least cost solution, the assets should be included in the RAB.¹⁸⁹ Ausgrid considered that DNSP ownership of SAPS assets would not distort competition in other market on the basis that SAPS assets cannot provide value across other parts of the supply chain.¹⁹⁰ Several other DNSPs considered that imposing ownership restrictions on DNSPs would limit the range of options available to DNSPs in providing SAPS as a distribution service.¹⁹¹

Horizon Power was of the view that the existing supply chain for traditional SAPS lacks significant depth and maturity, noting that no single entity yet offers a solution that can

189 Submissions to the issues paper: ENA, p. 7; Endeavour Energy, pp. 8-9; Western Power, p. 5.

190 Submission to the issues paper: Ausgrid, p. 6; p. 17.

191 Submissions to the issues paper: ENA, p. 7; Endeavour Energy, pp. 8-9; Essential Energy, pp. 18-19.

provide a full utility-grade SAPS offering. It also considered that DNSP provision of SAPS would likely stimulate rather than damage the market, and drive greater maturity.¹⁹²

In contrast to these views, the AEC considered that, while allowing DNSPs to own SAPS assets may seem like a positive outcome in the short-term, over time this could enable DNSPs to dominate the market for behind the meter services in their own service area, which would deny customers the dynamic benefits of effective competition and compromise competitive neutrality in provision of SAPS services.¹⁹³ The CEC was of the view that DNSPs should procure SAPS assets through an open and transparent competitive tender process, subject to ring-fencing restrictions.¹⁹⁴ Finally, the AER generally supported the promotion of competition in SAPS delivery models but suggested that exemptions could be made through the AER's ring-fencing guideline to allow DNSPs to provide ordinarily contestable services where appropriate.¹⁹⁵

4.3.3

Commission's analysis

Restrictions on the provision of SAPS services by DNSPs

If the AER determines that an activity associated with the provision of SAPS supply is not a direct control service (that is, is either a negotiated or unclassified distribution service, or is a non-distribution service), DNSP's will be subject to certain obligations under the ring-fencing guideline for the provision of the separate services. Specifically, a DNSP would only be able to provide those services through:

- a separate legal entity, where those services are determined to be 'non-distribution services' or
- with restrictions on sharing and co-locating staff, and information, and on co-branding of advertising materials where those services are determined to be 'other distribution services'.

Conversely, if the AER determines that an activity associated with the provision of SAPS supply is solely an input used to provide the core distribution service (that is, the standard control service), then this activity cannot be classified by the AER. In this case, the AER's ring-fencing guideline would not impose any restrictions on a DNSP's provision of the service and DNSP would continue to have discretion over the method of delivery of the standard control service (subject to any restrictions applying in respect of the ownership of SAPS assets located behind the meter, discussed below).

Having regard to stakeholder views and its own analysis, the Commission has considered the implications of the current ring-fencing restrictions applicable to the provision of non-distribution services (and to distribution services which are not classified as direct control

192 Submission to the issues paper: Horizon Power, p. 2.

193 Submission to the issues paper: AEC, p .6.

194 Submission to the issues paper: Clean Energy Council, p. 2.

195 Submission to the issues paper: AER, p. 2.

service) in the context of SAPS. To the extent that the service(s) associated with the provision of SAPS would be subject to existing ring-fencing restrictions,¹⁹⁶ these services would be provided by a third party, a subsidiary or other affiliate of a DNSP, or by a DNSP if the circumstances are such that the prohibition is waived.

The objective of ring-fencing is to promote competition in the provision of electricity services. Without effective ring-fencing, DNSPs would hold significant advantages in such markets. However, in a market where SAPS supply is only just emerging as a feasible alternative to network investment, it is unclear the extent of contestability in the provision of SAPS activities and services (including in respect of the generation and retail). In addition, while SAPS may not have natural monopoly characteristics in relation to fixed and marginal costs, it is possible that SAPS support services (particularly in relation to generation maintenance and support), may continue to exhibit natural monopoly characteristics in remote areas, even over the long term.

On this basis, the Commission intends to consider the factors which the AER will have regard to when considering whether to provide an automatic exemption, or to grant a waiver, from ring-fencing obligations and, in particular, whether these would facilitate the removal of the prohibition on DNSPs providing non-distribution services in the context of SAPS, where this is appropriate.¹⁹⁷

In addition, the Commission intends to consider the automatic exemptions contained within the current ring-fencing guideline and whether and how these may apply specifically in the context of SAPS (for example, the guideline contains an automatic exemption from the physical separation requirements for regional offices in regional and remote areas).¹⁹⁸

Restrictions on the ownership and control of SAPS assets by DNSPs

Where the service(s) associated with SAPS are classified as a standard control service (either by the AER or through some other mechanism in the NER), DNSPs would be restricted from owning or controlling SAPS assets where these are located 'behind the meter' (that is, behind the connection point). In this instance, a DNSP would be required to procure the services provided by means of these assets from third parties via contract.

Understanding whether the assets associated with SAPS are likely to be considered 'behind the meter' assets or 'in-front of the meter' assets is key in considering the implications of the current restrictions on DNSPs owning or controlling SAPS assets. There was no consensus view provided by stakeholders in submissions to the issues paper in respect of whether SAPS would be, or may include, assets located behind or in-front of a customer's meter. A number of specific views are outlined below:

196 As discussed in section 4.2, this could be the case where generation activities are found to be "other services" on the basis that they would be subject to separate or additional remuneration.

197 The intention would be to allow DNSPs to provide generation (and possibly retail) services in the context of SAPS in instances where, for example, there are unlikely to be contestable providers of these services (which may or may not be linked to remote locations).

198 This exemption recognises that the requirement for physical separation may impose unnecessary additional costs on a DNSP. It also recognises that, in these areas, the potential for development of competition may be limited. AER, *Electricity Distribution Ring-fencing Guideline - Explanatory Statement*, November 2016, pp. 42-43.

- Horizon Energy was of the view that SAPS should be considered a distribution service, and the assets associated with SAPS considered front-of-the-meter network assets. Whilst restrictions on procurement may be applied, the assets should be treated the same as distribution assets to prevent any undesirable outcomes.¹⁹⁹
- PIAC was of the view that issues associated with possible restrictions on DNSPs owning and controlling SAPS assets could be avoided by ensuring SAPS remain an 'in-front of the meter service' and the DNSP doesn't charge for energy or the energy charge is regulated.²⁰⁰
- TasNetworks was of the view that, where possible, the frameworks for grid-connected customers and SAPS customers should be similar. However, one possible exception relates to the treatment of behind the meter and in-front of meter assets. Given, the technological differences between SAPS and grid connections, there may well be instances where DNSP ownership and operation of behind the meter SAPS assets makes economic sense.²⁰¹
- S&C Electric was of the view that ownership restrictions may complicate the operation of a SAPS, specifically where behind-the-meter assets need to be coordinated with front-of-the-meter assets to ensure a secure supply.²⁰²

The Commission has considered these views and others put forward by stakeholders in submissions to the issues paper. Consistent with the view put forward by Horizon Power, the Commission agrees that SAPS assets should be considered as in-front of the meter assets. This is appropriate given that the service being provided by SAPS assets will be the same services being provided by the DNSP to grid-connected customers — that is, a supply of electricity to the customer's meter. As noted by PIAC, possible restrictions on DNSPs owning and controlling SAPS assets could be avoided by ensuring SAPS remain an in-front of the meter service.

The implication of SAPS assets being located in-front of a customer's meter is that DNSPs would not, under the current rules, be restricted from owning or controlling these assets where they are used to provide a standard control service. The Commission considers that this outcome is broadly appropriate on the basis that the regulatory framework is designed to incentivise DNSPs to provide services efficiently. In this context, DNSPs are provided with discretion to choose how they deliver distribution services, including through direct ownership of assets where this is efficient.

In addition, the Commission intends to consider further the interaction between SAPS assets (located in-front of the meter) with assets that are (or could be) located behind a customer's meter. Consistent with the view put forward by S&C Electric, there may be circumstances where the close coordination of both sets of assets is required, and where DNSP ownership or control of the assets located behind-the-meter may be appropriate. While the ability of

199 Submission to the issues paper: Horizon Energy, p. 6.

200 Submission to the issues paper, p. 8.

201 Submission to the issues paper: TasNetworks, p. 6.

202 S&C Electric provided an example whereby DNSPs have the "balancing" role in a SAPS or microgrid, which may mean controlling a suite of mixed-ownership generation assets. Submission to the issues paper: S&C Electric, p. 11.

the AER to grant exemptions from the ownership restrictions in certain circumstances is likely to be appropriate in this context, the Commission will consider whether any additional guidance or direction to the AER in considering exemptions in SAPS specific circumstances would be beneficial.²⁰³

4.3.4 **Commission's draft position**

The Commission considers that the existing economic regulation, planning and incentive frameworks in the NER — which encompass the service classification process, ring-fencing guidelines and rules in respect of restricted assets — are appropriate and well suited to supporting the development of competitive markets where competition is feasible, and supporting efficient, incentive-based regulation of monopoly networks where competition is not feasible.

In this context, the Commission is not minded, at this stage, to develop any additional mechanisms which would allow the AER to consider the case for further restrictions on DNSP provision of certain services and ownership of certain assets in the context of SAPS.

However, in the next stage of this review, the Commission will consider whether there may be benefit in outlining the factors that the AER may wish to consider when classifying services, considering waiver applications, or developing any deemed exemptions, to the ring-fencing obligations specifically in respect of any SAPS services subject to those restrictions.

The Commission will also consider further whether there is any additional benefit to be gained by including additional guidance or direction to the AER when considering exemptions to the restrictions on ownership and control of behind the meter assets, in SAPS specific circumstances.

4.4 **Options for SAPS service delivery**

The last section of this chapter outlines the Commission's considerations in developing and comparing different SAPS delivery models, and then presents two illustrative options. The term "delivery model" is used to refer to the way in which the various direct and indirect services associated with SAPS supply are configured, and to the parties involved in their provision. These arrangements govern the relationship between the distribution service provided by the DNSP and all the other activities required to provide a service to end consumers.

The two illustrative models presented for discussion are based around an approach that seeks to keep existing arrangements as little changed as possible (referred to as the NEM consistency model), and a conceptually simplified approach (referred to as the integrated service delivery model) which diverges from existing NEM arrangements to a greater extent. The Commission would welcome stakeholder input to refine these models or to identify further options. As such, the model ultimately recommended by the Commission could be one of the two models, both, a hybrid, or a third option.

²⁰³ The circumstances under which such exemptions are provided are determined by the AER, having regard to the likely impacts on the development of competition in markets for energy related services. NER cl. 6.4B.1(b).

4.4.1

Background

The SAPS service provided to a customer (or group of customers) will incorporate a suite of services including local generation services, network services and retail services, as well as supporting services such as metering. This raises questions of how to define and allocate responsibility for these services, and whether this should be different to existing NEM arrangements.

In particular, for an individual power system, there may be no readily identifiable network element. Rather, the IPS can be thought of as providing both a generation service and a network (or network substitution) service, in a similar way to a generator providing a non-network solution to a DNSP currently does. The difference for an IPS is that it is providing a total, as opposed to a partial, substitute for the network activity.

As such, it may be possible for the suite of services required to supply a customer via a SAPS to all be provided by a DNSP or, on the DNSP's behalf, as a single service by a single proponent or as separate services by a number of proponents. Alternatively, a number of separately identifiable services may be provided to end consumers through the nexus of an authorised retailer, in a way more similar to existing NEM arrangements.

Precisely what services are required to supply customers via a SAPS, and in particular which services would be provided by DNSPs as distribution services, could depend on a number of factors, including the location, scale and complexity of the SAPS, the feasibility of retail competition and restrictions on DNSP ownership and/or operation of certain assets.

There are a myriad of possible models for SAPS service provision, and a key question for the review is whether a national framework should be designed around one model of SAPS service provision (which could accommodate various circumstances) or whether it is appropriate to focus on establishing a framework that allows DNSPs to pursue a variety of approaches to SAPS service provision, depending on the circumstances at hand.

In developing and assessing the various possible models of SAPS service provision, the Commission is giving consideration to the potentially complex flow of payments between the customer and the DNSP, and any other parties responsible for providing the different services within a SAPS. As discussed later in this chapter, relevant parties may include the DNSP, a TNSP, a local generation provider(s), a retailer, metering providers and (depending on the model of SAPS provision) potentially also AEMO.

In all cases, it will be important to ensure that the arrangements enable customers transitioned to a SAPS by a DNSP to continue to receive distribution charges equivalent to the cross-subsidised price they currently pay.

Provision of retail services

While connected to the national grid, customers are able to switch retailers at any time, including when another retailer provides a more attractive offer.²⁰⁴ Retail competition can play

²⁰⁴ The exceptions being regional Queensland and Tasmania: retail competition in regional Queensland is not permitted while retail competition in Tasmania, although permitted, has not emerged.

a valuable role in keeping prices down and in providing innovative services tailored to customer preferences.

A key issue for this review is, therefore, whether it is possible, practical and efficient to retain retail competition for SAPS customers in a way that is similar to grid supply.

If there is no ability for SAPS customers to change retailer or retail offer, appropriate regulatory oversight would be needed to ensure these customers are paying an efficient price. This may take the form of price regulation for the entire off-grid supply to the customer. Issues associated with price regulation are discussed in the following chapter.

Where access to retail competition is found to be feasible for SAPS customers, there is unlikely to be a need for a new retailer role within a SAPS. Conversely, if the Commission concludes it is impractical or inefficient to retain effective retail competition in practice, another model of retail service provision will be necessary.

As discussed further in the next chapter, the Commission is of the view, to retain existing consumer protections, it would be appropriate for retail services to be managed by an authorised retailer. However, a requirement for the entity providing retail services to be authorised does not necessarily mean that that entity must be separate from the party or parties performing other SAPS services. For instance, a DNSP might contract with one party (which may be a ring-fenced affiliate of the DNSP) to provide the full suite of SAPS services, including installation and maintenance of the SAPS and retail billing. This party may then be required to meet the criteria to be an authorised retailer.

Alternatively, a DNSP may apply to be an authorised retailer if the AER has granted it an exemption from the restriction in the ring-fencing guideline on DNSPs providing retail services. This restriction and exemption regime may continue to be appropriate in the context of SAPS supply.

4.4.2 Stakeholder submissions

The vast majority of stakeholders were supportive of the SAPS retail functions being provided by an authorised retailer, irrespective of the SAPS supply model in place.

However, submissions were divided as to whether it was feasible to design arrangements that would allow SAPS customers to access retail competition. PIAC and AusNet put forward models that would retain retailer competition for consideration.²⁰⁵

Horizon Power recognised that clarification of the retailer role is a key issue. It suggested that SAPS retailers would no longer be required to provide many of the retail functions required for grid-connected customers and that a wider review of the cost stack would also be required (for example, to avoid to a windfall gain to retailers who are no longer required to procure generation from the market to serve the SAPS customers). However, Horizon considered that requiring a SAPS customer to transition to a new tariff structure, while efficient from a price signal perspective, may have implications for any consent provisions.²⁰⁶

²⁰⁵ Submissions to the issues paper: PIAC, pp. 6-8; AusNet Services, attachment pp. 1-7.

²⁰⁶ Submission to the issues paper: Horizon Power, p. 7.

ENA, PIAC, AusNet, Western Power and TasNetworks supported utilising the existing NEM retail market arrangements, with AEMO commenting that it considered it possible and desirable for customers connected via SAPS to access retail competition, subject to appropriate rules and procedures being developed. Ausgrid and Essential Energy supported the principle of retaining access to retail competition, noting that this would preserve the NECF consumer protection framework and would help with the transition to SAPS. Essential Energy considered that further examination would need to be given to the appropriateness of using the spot price as the reference price for energy in SAPS as an enduring model.²⁰⁷

Clean Energy Council and S&C Electric suggested that retail competition could be provided in the form of a competitive tender for the provision of monopoly retail services for a period of time. S&C Electric also suggested the AEMC explore existing jurisdictional arrangements for the approach that best serves the customer. Energy Queensland considered that jurisdictions should determine the appropriate level of competition based on a range of criteria, noting that competition is currently restricted in regional Queensland.²⁰⁸

Considering the parties potentially involved in SAPS supply more broadly, the ENA suggested that there may be situations in which a TNSP would seek to implement a SAPS solution as an alternative to replacing a transmission line.²⁰⁹

4.4.3

Approach to development of SAPS service delivery models

As noted in Chapter 2, the Commission's assessment framework for the review is centred around the NEO. The focus of the NEO on efficiency is intended to promote the provision of electricity in the most cost effective manner possible and therefore that consumers face the lowest price consistent with the required standard of service.

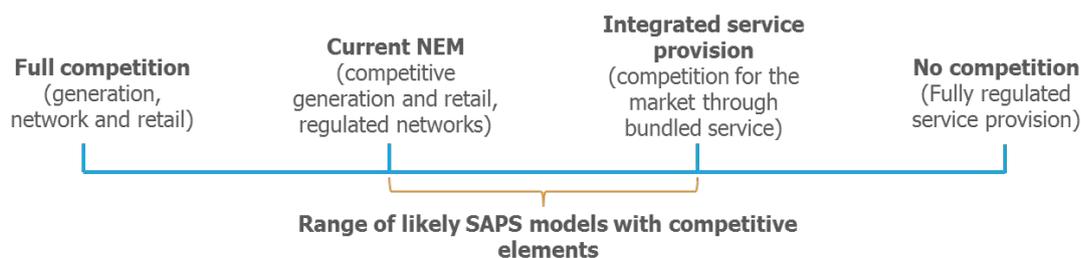
The Commission is of the view that, in general, incorporating effective competition (where possible) is the preferred means of achieving efficient (lowest cost) service provision. As such, the Commission's approach to developing and assessing alternative SAPS service delivery models is based on the level of competition associated with different SAPS models. A graphical representation of this concept is provided in Figure 4.2, where different options are located along a competition continuum.

207 Submissions to the issues paper: ENA, p. 7; AusNet Services, p. 7; Western Power, response to question 9; TasNetworks, p. 6; AEMO, p. 2, Ausgrid, p. 18; Essential Energy, p. 19.

208 Submissions to the issues paper: Clean Energy Council, p. 8; S&C Electric, p. 11; Energy Queensland, pp. 11-12.

209 Submission to the issues paper: ENA, p. 8.

Figure 4.2: SAPS service delivery options competition continuum



A critical consideration with any assessment of the potential level of competition within different SAPS models is that such competition needs to be at least workable — if not it serves no purpose. That is, in the absence of at least workable competition, efficient service delivery may require provision through a regulated model. This is the model that is currently used for the provision of network services which are considered to have strong monopoly characteristics.

Illustrative service delivery model options

Based on the above competition continuum, two candidate SAPS delivery models have been developed to illustrate how arrangements might work. It is noted that other options along the competition continuum are possible and may ultimately be preferred. These two broad options have been termed the NEM consistency model and the integrated service delivery model.

The NEM consistency model is broadly similar to the potential arrangements put forward by AusNet Services.²¹⁰ This model primarily seeks to preserve customers' access to the competitive retail market, allowing SAPS customers to retain their current retail offer and relationship with their existing retailers in order to make the transition to SAPS service delivery as seamless as possible. This option also utilises the current wholesale energy market arrangements, including the settlement system, in order to minimise the need for, and cost of, new systems.

In contrast, the integrated service delivery model assumes that existing NEM arrangements are not optimal for SAPS supply and that the arrangements for SAPS providers should reflect any efficiency benefits available through services being provided by specialised, integrated service providers. However, as such, the arrangements under this model necessarily diverge from current NEM retail and wholesale settlement arrangements with the implication that SAPS customers would no longer be able to access the benefits of the competitive retail market.

²¹⁰ Submission to the issues paper: AusNet, attachment.

The following sections set out the two potential options in more detail, before a final section provides a comparative assessment between them. Worked examples of the two models including example costs are provided in Appendix A.

A number of assumptions are implicit in the following sections:

- Transition arrangements are in place that have determined that the SAPS solution is lower cost than grid connection.
- The SAPS customer(s) benefit(s) from reliability protections equivalent to those for grid-connected customers.
- The SAPS customer(s) face(s) the same cost of electricity supply as if they are still grid connected.
- Other DNSP customers receive a share of cost savings through lower network charges consistent with the existing efficiency benefit sharing scheme (EBSS) and capital expenditure sharing scheme (CESS) i.e. 70% of savings returned to customers.
- The DNSP retains a share of reduced costs under the EBSS and CESS (i.e. 30% of savings retained by DNSP).

4.4.4

NEM consistency model

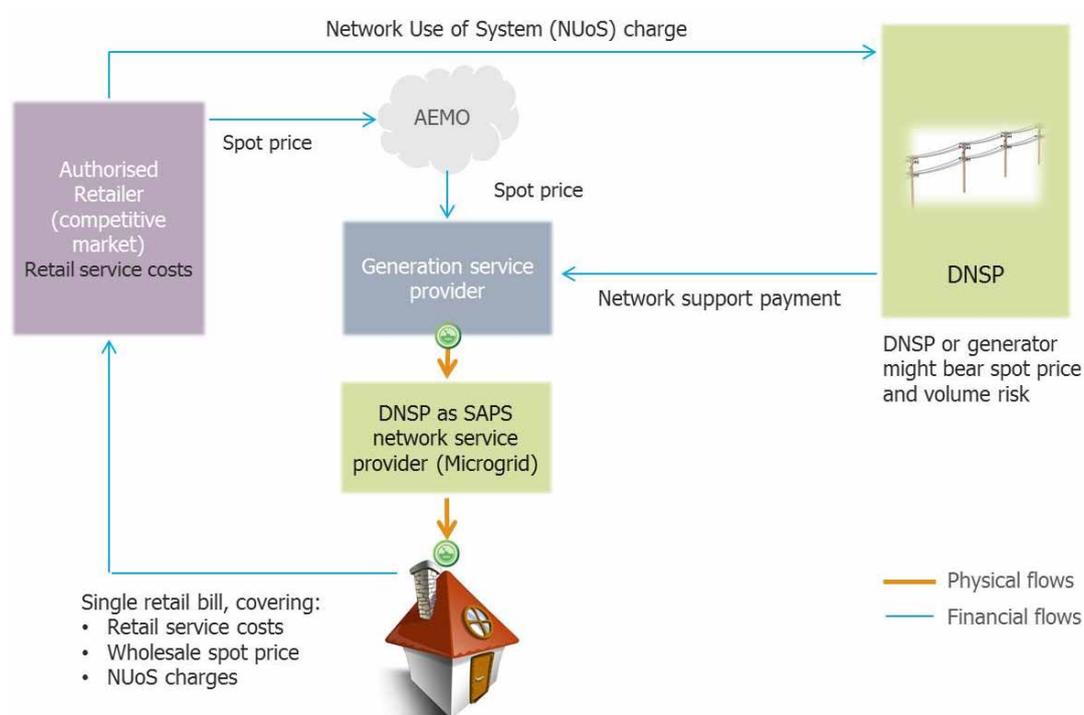
Consistent with the arrangements proposed by AusNet Services, under the NEM consistency model retailer-customer arrangements would not change between grid-connected and off-grid SAPS service provision. This provides a straightforward method to ensure that all existing customer protections can be preserved (noting that some states' NERL application Acts will need to change to enable NECF consumer protections to be applied to customers with off-grid systems). In effect, this model seeks to preserve all existing roles and responsibilities. For example:

- Existing retailers would continue to provide retail services based on current service offerings.
- Retailers would continue to be exposed to the wholesale spot price and may, therefore, continue to hedge market risk with NEM-based generators.
- DNSPs would continue to provide network services over the SAPS grid (which would be present as part of a microgrid, but potentially not in an individual power system), with network assets included in the RAB.
- Existing ring-fencing requirements would apply (noting that the AER may, and does, grant exemptions for reasons such as geographic remoteness). Under the ring-fencing guidelines, the activities and services associated with the generation of electricity are "other services" (that is, non-distribution services) and therefore, in the absence of an exemption, would be provided by competitive independent service providers.
- Generators would receive the relevant spot price plus a network support payment consistent with the agreed competitive tender price for providing network support services to the relevant DNSP.
- DNSPs would receive funding for the network support payment and any expenditure required for the SAPS network service through existing regulatory mechanisms.

- Savings would be socialised over all customers, consistent with the EBSS and CESS. In order to implement this model, framework changes would be required including:
 - Changes to NEL and NER definitions to allow DNSPs to provide a distribution service using a SAPS solution.
 - Jurisdictional reliability standards will need to recognise off-grid supply (as discussed in Chapter 5).
 - As noted above, some states' NERL application Acts will need to change to enable NECF consumer protections to be applied to customers supplied via off-grid systems.

System changes would be required for AEMO to settle retail for SAPS connected customers and for generation at SAPS through market settlement systems. In particular, changes may be required to the market settlement and transfer solutions (MSATS) IT system to specifically identify off-grid national metering identifiers (NMIs) in order to reflect different network loss factors.²¹¹

Figure 4.3: Illustration of SAPS NEM consistency model



Source: AEMC

The above figure highlights the conventional financial flows of the NEM consistency model, with the customer continuing to pay its existing retailer who, in turn, forwards network charges to the DNSP and settles with AEMO for all electricity. The SAPS generator will receive

²¹¹ Submissions to the issues paper: AEMO, p. 2; AusNet Services, Attachment, p. 5.

an energy payment from AEMO, together with a make-whole payment from the DNSP consistent with the contractual arrangements for SAPS generation services between the DNSP and the SAPS generator.

The above figure also includes a separate element highlighting the potential role of the DNSP as the SAPS network service provider. This service is unlikely to be required for individual power systems, but is likely to be required for microgrids (i.e. multiple customers sharing a local grid)

A potential complexity with this model is that any individual customer (and SAPS customers in general) will be likely to have a significantly different load profile to that seen across the local NEM region, and this may make hedging more difficult. This would initially be no more problematic for retailers than for those who have grid-connected remote customers. However, an issue might arise if SAPS generation becomes a much more material part of the market than current forecasts suggest, and did not participate in the contract market, leaving a potential mis-match between the retailer exposure and NEM (and SAPS) generator exposure. However, if this became the case, retailers with SAPS load and the SAPS generators would become natural counter-parties, assuming they can identify each other as SAPS load and generation.

NEM consistency model impact on the NEM spot price

The NEM consistency model would involve the SAPS generator participating in the settlement process, whereby it receives the relevant settlement price for metered generation. This raises the question of whether this could potentially distort the NEM spot price.

Firstly, in order to participate in the NEM settlement process, a SAPS generator would need to be registered by a registered market participant. For individual power systems and most microgrids the size of the generating units involved would likely be significantly below the threshold of 5 MW where registration as a generator is required by AEMO.²¹² As such, the SAPS generator could instead be registered by a retailer or a small generator aggregator.²¹³

However, even where SAPS generator would be of sufficient size to warrant registration, they would operate in a load following manner, would not export power to the NEM and would not participate in the central dispatch process. As such, they would logically be non-scheduled generating units.

The impact of such registration would be that the forecast output of non-scheduled generation would not be included in AEMO's dispatch run, but rather included as an adjustment in calculation of overall demand (which would include demand from the SAPS customers). In practice, there would be no need for AEMO to forecast output for SAPS as

212 An individual power system might be as small as 10-20 kW. For a microgrid supplying a town of a few hundred inhabitants, the need to have multiple generating units to meet differing levels of demand and to provide redundancy mean that each generating unit might still be less than 1 MW.

213 The Commission understands that the role of "competitive market participant" identified by AusNet in its proposed model would correspond to a retailer or small generator aggregator and is designed to obviate the need for DNSPs to register any DNSP-owned generators themselves and, consequently, participate in the competitive market. See: AusNet, submission to the issues paper, attachment, p. 3.

they would be load following isolated generators and by definition SAPS generation would exactly offset local demand.

The effect of this is that no distortion to spot prices would be expected from allowing SAPS generators to participate in the settlement process.

However, where SAPS generation becomes a material share of NEM generation, there may be a need to review the appropriateness of generation registration and the treatment of SAPS generation and demand in AEMO forecasting.

Variations to the NEM consistency model

Based on the arrangements originally proposed by AusNet Services, the Commission has presented the NEM consistency model as an example of an approach to deliver stand-alone power system supply which retains, in full, the ability of customers to access the benefits of the competitive retail market.

However, a model which provides for fully effective retail competition (to the extent that this currently exists) relies on the retention of certain NEM functions which are not strictly necessary where services are provided on a stand-alone basis. This could also have unintended consequences, particularly where uptake of SAPS is considerably greater than currently forecast. These issues are discussed further in section 4.4.6.

In this context, the Commission has included the NEM consistency model in this report to stimulate discussion around the trade-offs involved in implementing a SAPS service delivery model which enables customers to retain their existing retail offers, and the relationship with their existing retailers, throughout and following a transition to SAPS supply. The implications of relaxing some of the key elements of this approach (for example, replacing the use of the spot price with a deemed wholesale energy cost) on SAPS customers' ability to exercise choice and control in the competitive retail market (among other things) will be considered further in the next stage of the review.

4.4.5

Integrated service delivery model

The integrated service delivery model is based around the concept of a single proponent providing a delivered energy solution. Under the integrated service delivery model, customers would not have access to retail competition and, in moving to SAPS service delivery, would either need to enter into — or be deemed to have entered into — new contractual arrangements. That is, while the price control arrangements might provide for the customer to have a similar annual cost for electricity under SAPS service provision as under grid connected service delivery, the customer's supply contract would be likely to be with a different legal entity, and may have a different tariff structure reflecting SAPS specific operating characteristics.

The integrated service would include generation, network and retail services. Each service could be provided by the SAPS proponent itself, or through contracts with other parties.²¹⁴

²¹⁴ Where there is a material pre-existing network service carried over, for instance into a microgrid, the Commission expects that this would continue to be provided by the DNSP.

The aim is to achieve efficiency benefits by “competition for the market” for integrated SAPS services.

Under this model, the retail functions required would be considerably different to those under the NEM consistency model, as the retail element would no longer include costs associated with managing wholesale market risk exposure or customer acquisition and retention costs. The retailer’s costs would still include those associated with consumer protections and billing and credit management, but might be materially lower than under the NEM consistency model.

However, it is equally possible that such costs could be significantly higher than this where there is limited scale for the billing and credit management function and, under such circumstances, might be as high, or higher, than under the NEM consistency model.

The integrated service delivery model would require similar enabling framework changes including:

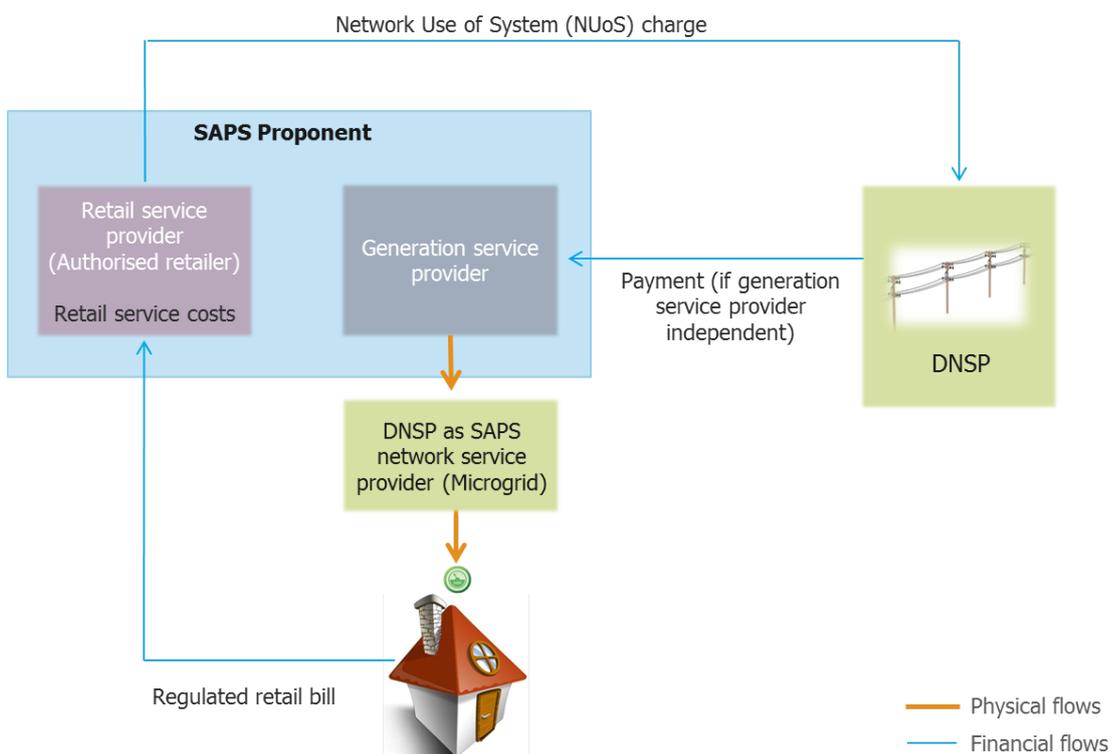
- Changes to NEL and NER definitions to allow DNSPs to provide a distribution service using a SAPS solution.
- Jurisdictional reliability standards will need to recognise off-grid supply (as discussed in Chapter 5).
- As noted above, some states’ NERL application Acts will need to change to enable NECF consumer protections to be applied to customers supplied via off-grid systems.

In addition, there would be a number of other issues arising from the change in the allocation of roles and responsibilities that might require changes:

- Price regulation. The cost of providing services via a SAPS solution would generally be expected to be significantly higher than the subsidised price that customers in areas with high costs to serve pay for grid delivered services. As such, in order to leave SAPS customers no worse off than if they had remained grid connected, it would be necessary to develop and implement a new process for the determination of a regulated price (or setting of retail and generation cost components) by the AER or a jurisdictional regulator to approximate the price paid by grid connected customers (and this may not be simple given the need to reflect the nature of the supply contract each SAPS customer had prior to moving to off grid supply.).
- It would be necessary to develop and implement a new process for switching customers from their existing retailer to a new SAPS specific retailer without their explicit informed consent. The process for appointing a retailer would need to be restricted to authorised retailers in order to preserve energy specific consumer protections (if state application Acts are changed).
- Service classification and ring-fencing might be treated differently, as there would not be clearly separate distribution and generation services as under current NEM arrangements (and in the NEM consistency model). The AER may need to also consider any other implications for revenue controls and distribution tariffs.

- Metering and settlement arrangements would require amendment. It may be possible to use existing metering roles, responsibilities and processes with only minor changes, but settlement arrangements would be quite different.

Figure 4.4: Integrated service delivery model



Source: AEMC

The above figure illustrates the financial flows under the integrated service delivery model. Under this model, the customer would pay a regulated amount to the retailer. The retailer would, in turn, pay the DNSP's usual NUoS charges. If part of an integrated SAPS provider, the retailer would retain the remainder of the bill paid by the customer as a contribution towards its retail and generation costs.²¹⁵ The SAPS proponent would also receive a make-whole payment from the DNSP consistent with the contractual arrangements entered into. In practice, NUoS charges might be netted off this payment (noting that the make-whole payment would be expected to considerably exceed the NUoS charges paid to the DNSP in a high cost to serve area). Unlike the NEM consistency model, there would be no involvement with AEMO or interaction with the NEM either physically or financially.

²¹⁵ If the retailer and generator are separate parties, the retailer would pass an agreed amount to the generator.

4.4.6 Comparison of illustrative supply models

Two illustrative supply models have been discussed above, the NEM consistency model and the integrated service delivery model. Broadly, the NEM consistency model seeks to make the customer transition from grid connected supply to SAPS supply as seamless and painless as possible. This is particularly true for maintaining consumers' existing relationships with their retailer and specific market offer.

However, in doing so, it continues to rely on NEM functions that are not strictly necessary where services are provided on a standalone basis. In particular, retailer costs for wholesale price risk management could be incurred unnecessarily.

Similarly, reliance on NEM retail service offers could create unintended consequences such as SAPS customers facing retail tariffs (e.g. time of use charging) that provide incentives to alter consumption patterns to respond to NEM congestion or energy supply factors that are irrelevant for the SAPS or may even encourage behaviour that is counter to the efficient operation of the SAPS.

In the longer term, if the uptake of SAPS is considerably greater than currently forecast, it is possible that SAPS demand could impact on hedging arrangements in the NEM (perhaps reducing the ability of retailers to purchase hedges to cover the desired proportion of their retail book).²¹⁶

Conversely, adoption of an integrated service delivery model raises concerns over how SAPS customer retail prices would be set so as to ensure customers continue to pay an equivalent amount to what they would pay were they still grid connected. This may require new regulated prices to be established.²¹⁷

While an integrated service delivery model could arguably be more optimised to SAPS service provision, the creation of parallel regulatory arrangements would be costly and, for low levels of SAPS uptake, potentially uneconomic.

Given that the suitability of the models are somewhat dependent on the level of uptake, and that both have material advantages and disadvantages, the Commission does not, at this stage, have a position regarding a preferred model. Over the next phase of the review, the Commission intends to further consider and develop the models, and potentially identify improvements. The Commission may also consider different models or a hybrid of the two. As such, the Commission would welcome stakeholder views and input in this regard.

The principal advantages and disadvantages of each model are summarised in Table 4.1.

²¹⁶ The current forecast for likely uptake of SAPS is discussed in Chapter 2.

²¹⁷ Discussion of retail price regulation is provided in Chapter 5.

Table 4.1: Principal advantages and disadvantages of illustrative supply models

ADVANTAGES OF NEM CONSISTENCY	DISADVANTAGES OF NEM CONSISTENCY
DISADVANTAGES OF INTEGRATED MODEL	ADVANTAGES OF INTEGRATED MODEL
<p>The NEM Consistency model requires less change to implement as existing roles and responsibilities are maintained.</p> <p>In contrast, the Integrated model requires more changes to maintain similar consumer protections and pricing outcomes.</p> <p>NEM consistency enables the use of existing NEM processes (e.g. ring-fencing; competitive metering arrangements) while the Integrated model may require amended processes.</p> <p>Retail competition is retained under NEM consistency; price regulation is required in the Integrated model.</p> <p>Transitioning into – and potentially out of – SAPS supply is easier under NEM Consistency: customers retain existing retail offers.</p> <p>Bespoke retail arrangements under the Integrated model may be costly if only a small number of customers are involved.</p> <p>NEM consistency may be more appropriate in larger systems where competing generation may be possible or which include transmission services.</p> <p>NEM consistency may provide a simpler mechanism to ensure any broader market design changes introduced in the NEM to facilitate DER integration are also integrated into SAPS.</p>	<p>Under the Integrated model there would be no customer acquisition and retention costs and no need for retailers to hedge against whole spot price movements.</p> <p>If SAPS uptake was significantly greater than currently forecast (e.g. hundreds of thousands of customers, as opposed to perhaps five to ten thousand), the impact of the NEM consistency model on the supply of hedges would need to be considered.</p> <p>To the extent that they are exposed to changes in the wholesale spot price, under the NEM consistency model customers may be given price incentives unrelated to supply-demand conditions in the stand-alone system. It may be easier to implement customer-facing tariffs that send cost-reflective price signals in the Integrated model.</p>

Source: AEMC analysis.

5 APPLICATION OF CONSUMER PROTECTIONS

This chapter discusses the application of consumer protections for DNSP-led SAPS. Both national and jurisdictional consumer protections are considered, with a more detailed examination of retail price controls and reliability, and consideration of the application of current consumer protections as well as any additional consumer protections which may be specific to the SAPS model of supply.

As noted in the issues paper, the Commission considers that the national consumer protection regulatory framework for electricity should allow for 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.²¹⁸

Under the current regulatory frameworks, customers in New South Wales, Tasmania and South Australia who move off-grid lose their energy-specific consumer protections under the NERL and the NERR — together the National Energy Customer Framework (NECF).²¹⁹ The loss of these energy-specific consumer protections was a key reason the Commission made a final determination not to make a rule in the Western Power rule change.²²⁰

In this review, the Commission is following a general principle that energy-specific consumer protections for customers being supplied via a DNSP-led SAPS should be equivalent to those for grid-connected customers.

5.1 Retail price protections

5.1.1 Background

Section 4.4 of this paper considers the provision of retail services under two different supply models for DNSP-led SAPS. Whether DNSP-led SAPS services are provided under the NEM consistency model, or integrated service delivery model, will determine whether additional retail price protections may be required to ensure that customers in a DNSP-led SAPS are paying an efficient price, and will not be disadvantaged by moving off-grid.

Customers who are transitioned to SAPS supply should not be any worse off than if they were supplied by the interconnected grid and, importantly, their current retailer on their current offer. If there is no access to retail competition under the SAPS model of supply, alternatives in the form of retail price controls will be required.

218 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.

219 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.

220 AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, p. 36.

Current retail price regulations

Under the AEMA, jurisdictions may utilise retail energy price controls where competition is “not yet effective for a market, group of users or a region”.²²¹ Retail energy price controls can be transferred to the AER and the AEMC at the discretion of each jurisdiction.²²²

In Tasmania, the ACT, the Northern Territory and for Ergon Energy’s distribution network area in Queensland, the jurisdictional regulators have set regulated retail prices for grid-connected customers.²²³

The AER additionally sets controls on retail energy prices in some circumstances. For example, the AER’s retail exempt selling guideline, applicable to retailers with a licence exemption such as exempt sellers in embedded networks, contains a pricing condition. This pricing condition currently states that customers cannot be charged tariffs higher than the standing offer price that would be charged by the local area retailer for new connections.²²⁴

Price controls based on standing offers have been found to be ineffective in recent years. The Commission’s 2018 Retail Energy Competition Review found the average standing offer to be as much as \$832 more annually than the best market offer.²²⁵ Additionally, the ACCC’s Retail Electricity Pricing Inquiry (REPI) final report released in July 2018 recommended that “In non-price regulated jurisdictions, the standing offer and standard retail contract should be abolished and replaced with a default market offer at or below the price set by the AER”.²²⁶

In addition, the Victorian Government is intending to replace the standing offer framework for its customers with a Victorian Default Offer. The intent of the Victorian Default Offer is to provide a ‘fair price’ for energy, and the Victorian Government is planning to introduce legislation to implement the Victorian Default Offer by 1 July 2019.²²⁷

There are also alternative approaches to retail price protections that could be examined if specific price protections were required for DNSP-led SAPS supply. For example, the Victorian Essential Services Commission (ESC) publishes an annual schedule which prescribes the maximum charges that an embedded network operator may charge its customers in caravan parks and site tenants in similar properties.²²⁸ In addition, the terms of reference for this review note that other mechanisms for protecting consumers could include long-term

221 COAG, Australian Energy Market Agreement, s. 14.15.

222 COAG, Australian Energy Market Agreement, s. 14.15(b).

223 In the ACT, the Independent Competition and Regulatory Commission sets regulated prices for ActewAGL’s retail regulated tariffs. In Tasmania, the Economic Regulator approves the regulated offer prices offered by Aurora Energy. In the Northern Territory, the Utilities Commission sets the maximum retail prices for small customers through an Electricity Pricing Order. In Queensland, the Queensland Competition Authority determines the regulated retail electricity price for Ergon Energy’s standard contract.

224 AER, *(Retail) Exempt Selling Guideline*, version 5, March 2018, condition 7.

225 AEMC, *Retail energy competition review*, final report, 2018, p. viii.

226 AER, *Retail Electricity Pricing Inquiry*, final report, July 2018, p. xxii. Following the recommendations in the ACCC’s REPI final report, the Australian Government has requested that the AER commence work on developing a mechanism for determining the price of the default market offer. A position paper was released by the AER on 9 November 2018.

227 Department of Environment, Land, Water and Planning, *Victorian Government Final Response to the Independent Review of the Electricity & Gas Retail Markets in Victoria*, 2018, p. 5.

228 ESC, schedule of the maximum tariffs that can be charged to residents of caravan parks and site tenants in similar properties, available at: <https://www.esc.vic.gov.au/electricity-and-gas/tariffs-benchmarks-inquiries-and-reviews/electricity-tariffs/caravan-park-and-similar-tariffs#tabs-container2>.

contracts with minimum contract terms and regulated retail price setting methodologies and price monitoring.²²⁹

5.1.2 Stakeholder submissions

In submissions to the issues paper stakeholders agreed that some form of retail price control would be required if retail competition is not possible under the DNSP-led SAPS model of supply.²³⁰

The form of retail price control that would be appropriate for DNSP-led SAPS was addressed by a number of stakeholders. Most stakeholders thought that the standing offer price was not an appropriate price control for a DNSP-led SAPS. For example, EWON commented that the application of the price protection in embedded networks restricting exempt embedded network suppliers charging more than the local retailer's standing offer price has left many customers paying the maximum price available in the energy market.²³¹

In their submissions, Ausgrid and Endeavour Energy considered that the customer should not be made worse off when moving to a DNSP-led SAPS. Therefore, they considered that customers should not experience higher charges than they would if connected to the grid, with Ausgrid noting the customers may previously have been on market offers.²³²

EWON and PIAC recommended an effective 'default market offer' or 'basic services offer' as an alternative price control to the standing offer.²³³

When considering the extension of price regulation to customers in DNSP-led SAPS in areas that currently already have price regulation, most stakeholders agreed that the existing price regulations should be extended to customers being supplied via DNSP-led SAPS.²³⁴

5.1.3 Commission's analysis

Are retail price protections required under the proposed DNSP-led SAPS models of supply?

The NEM consistency model, based on the arrangements proposed by AusNet Services and detailed in section 4.4.4, emulates the conditions under which a customer would be supplied if they were connected to the national electricity grid — that is, with access to retail competition maintained. Therefore, in areas with market competition, customers would be able to choose their retailer and access available market offers in the same manner as if they were grid-connected. Similarly, in areas where there is jurisdictional price regulation, for example in Tasmania and regional Queensland, customers would continue to pay the regulated price. Under this model of supply, the Commission considers that additional retail price protections would not be required.

229 Terms of reference, p. 11.

230 Submissions to the issues paper: AER, p. 3; Ausgrid, p. 6; CEC, p. 10; Essential Energy, p. 23; PIAC, p. 12; S&C Electric, p. 13; AGL, p. 6; Endeavour Energy, p. 10; EWON, p. 2; TasNetwork, p. 7.

231 Submissions to the issues paper: CEC, p. 10; Ausgrid, p. 6; Essential Energy, p. 23; PIAC, p. 17; EWON, p. 2.

232 Submissions to the issues paper: Ausgrid, p. 21; Endeavour Energy, p. 10.

233 Submissions to the issues paper: PIAC, p. 12; EWON, p. 2.

234 Submissions to the issues paper: Energy Queensland, p. 14; CEC, p. 10; PIAC, p. 12; S&C Electric, p. 14; AusNet Service, p. 8; TasNetworks, p. 7; Red and Lumo, p. 1.

Under the integrated service delivery model detailed in section 4.4.5, customers would be unable to access retail competition. Retail services would be required to be provided by an authorised retailer, however the customer would no longer be able to access market offers from a variety of retailers. Although competitive pressure would be provided through competition for the market for integrated SAPS services, a tendering process for retail services would not be a sufficient retail price control if the objective is to charge the customers what they would have otherwise paid if they were grid connected. Some form of retail price control would be required under this model of supply for customers in regions where competition is effective and price regulation does not apply — specifically, New South Wales, Victoria, South Australia and south-east Queensland.

If retail competition is not possible in a DNSP-led SAPS, what alternative protections may be appropriate?

Considering the objective that customers transitioned to SAPS supply should be no worse off than if they remained connected to the interconnected grid, it is clear that some form of price protection is required if access to retail competition is not possible. There are a number of situations that customers may have been in prior to transitioning to a DNSP-led SAPS:

1. The customer was in a region with regulated retail prices
2. The customer was on a retailer's standing offer, but had access to retail competition
3. The customer was on a market offer from the retailer of their choice, and was receiving discounts or other benefits.

In the first situation where the customer is in a region where retail price regulation already applies, customers in DNSP-led SAPS should continue to have access to the regulated price, with no additional price protections required. (However, changes to jurisdictional instruments may be required in order to extend the regulated price to off-grid customers.)

In the second and third situations the customer is able to access market offers, and can choose their retailer without restrictions. The customer in the second situation has not exercised their rights to take up a market offer, but if they remain grid-connected they can choose to take up a market offer at a later time. The customer in the third situation has actively participated in the market and exercised their choice.

For customers in areas where retail competition is effective and price regulation does not apply, if customers are to be no worse off than if they were supplied by the interconnected grid, and importantly, with their current retailer on their current offer, the key issues is how equivalent protections can be provided by a retail price control.

A number of reviews have found that the standing offer price is no longer an appropriate protection for consumers. The AER's work to determine a DMO price, if the COAG Energy Council chooses to implement a DMO price, and the Victorian Government's work to determine a Victorian Default Offer, may provide a basis for a price control for customers transitioning to a DNSP-led SAPS. However, the ACCC and AER have been clear that the DMO price will be somewhere between the current standing offer price and market offer prices. As customers in areas with retail competition could access more advantageous market offers, it

may be appropriate for additional price protections to be extended to customers in these regions transitioning to a DNSP-led SAPS.

Some possible alternatives being considered by the Commission include:

- SAPS customers pay a regulated price set in line with the lowest offer (market or regulated) in their jurisdiction and designed to change with movements in offers over time (ie reviewed each year and aligned with the lowest offer).
- SAPS customers pay a regulated price linked to the DMO or Victorian Default Offer, but receive an immediate, one-off “switching bonus” for moving to the SAPS retailer permanently, intended as a form of compensation for the difference between the regulated price and the price they were paying when connected to the grid.
- SAPS customers pay a regulated price linked to the DMO or Victorian Default Offer with an additional prescribed discount to reflect the customer’s inability to access market offers and discounts.

Although, these alternatives provide greater alignment to the ability to access market offers under retail competition, the Commission does not consider that any of these arrangements are ideal. Consequently, the Commission has designed the NEM consistency model for consultation. That model has some features that are relatively complex, but avoids the need to determine a regulated price as customers retain access to retail competition.

The legislative arrangements for retail price protections for DNSP-led SAPS may be dependent on the outcomes of the AER’s DMO determination, and any legislative arrangements that are agreed to implement the DMO. Presently, retail price regulation generally remains a jurisdictional function, and jurisdictions would determine the price regulations to apply in their own jurisdiction.

5.1.4 Commission’s draft position

The Commission considers that if the SAPS model of supply chosen for DNSP-led SAPS does not enable customer to access retail competition then some form of retail price control will be required.

For regions that currently have retail price regulation, i.e. in Tasmania, the ACT, the Northern Territory and for Ergon Energy’s distribution area in Queensland, customers who transition to a DNSP-led SAPS should continue to have access to the regulated rate in line with the jurisdiction’s price regulation. This is applicable regardless of whether the SAPS model of supply enables retail competition or not.

For customers transitioning to a DNSP-led SAPS under a model of supply without access to retail competition the Commission considers that additional price protections will be required. The retail price protections should aim to provide a price that is as close to possible to what the customer would have been able to access under retail competition.

In light of the AER’s current analysis to determine an appropriate DMO (a final position paper on this is due on 30 April 2019) and the current uncertainty surrounding the legislative support that would be required to underpin the DMO and also whether the DMO will function like a regulated price cap or only be a reference price for discounts, the Commission will

continue to consider retail price controls and will provide further recommendations on retail price controls in the final report. It should be noted that even where some form of price regulation will be required, there is an argument that it may need to be a stronger control for customers transitioning to a DNSP-led SAPS who were previously able to access retail competition.

5.2 National energy-specific consumer protections

5.2.1 Background

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:²³⁵

- 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 Australian Consumer Law and state and territory safety and concession regimes.

Currently consumer protections under the NECF do not generally apply to customers receiving supply from a SAPS, except for microgrids in Queensland and, potentially, the ACT.²³⁶ Consumers in NSW, Tasmania and South Australia who move off-grid would lose their energy-specific consumer protections under the NECF. Consumers in Victoria would likely be covered by protections under the Victorian Energy Retail Code, as they will be supplied by a licensed retailer. The Energy Retail Code applies protections to Victorian consumers similar to many of those in the NECF.

As discussed at the beginning of this chapter, many of the energy-specific consumer protections under NECF are likely to remain valuable for customers receiving supply via a SAPS. For DNSP-led SAPS, it is reasonable for a consumer to expect energy-specific consumer protections equivalent to those they would have received under grid supply. For example, customers receiving supply via a SAPS should be entitled to requirements regarding accurate metering and regular billing that are equivalent to the requirements for grid-supplied customers. Further, it may be necessary to provide additional consumer protections for consumers being supplied via DNSP-led SAPS. Additional consumer protections are discussed in section 5.3.

²³⁵ 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.

²³⁶ 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.

5.2.2 Stakeholder submissions

In their submissions to the issues paper, stakeholders, including most DNSPs, retailers, PIAC, EWON, the AER and Tesla, overwhelmingly agreed with the general principle that energy-specific consumer protections for customers being supplied via a DNSP-led SAPS should be equivalent to those for grid-connected customers.²³⁷

Energy Queensland, while supporting the general principle that consumer protections should be equivalent to those of grid-connected customers, considered that the Commission should develop high level national principles, with the regulatory frameworks for SAPS developed by jurisdictions.²³⁸

PIAC considered that consumers should see as little change in their energy experience as possible if they are transitioned to a DNSP-led SAPS, including in their consumer protections and quality of supply.²³⁹

5.2.3 Commission's analysis

The Commission considers that the consumer protections provided under the NECF should be extended to apply to customers receiving electricity from a DNSP-led SAPS. Some of the NECF consumer protections it is important to maintain include:

- rights to access energy services
- informed consent requirements
- dispute resolution procedures
- minimum contractual standards
- billing, tariff and payment minimum requirements
- disconnection requirements, and
- protections for vulnerable customers.

Although many (if not most) consumer protections under NECF would remain valuable for customers in DNSP-led SAPS, some amendments to the consumer protections in the NERL and NERR (or alternatively jurisdictional regulations) will need to be made depending on the SAPS model of supply. If the SAPS model of supply necessitates changes to the consumer protections that the customer would have received under grid-connection, an equivalent consumer protection should be incorporated for DNSP-led SAPS to the extent practicable.

Consumer protections under the NEM consistency model

Under the NEM consistency model detailed in section 4.4.4, the Commission's current view is that there should be no difference in customers' consumer protections than if they were connected to the national electricity grid.²⁴⁰ Therefore, all of the consumer protections under

²³⁷ Submissions to the issues paper: AER, p. 3; AGL, p. 6; PIAC, p. 12; Red /Lumo p. 1; ENA, p. 8; Endeavour Energy, p. 10; PIAC, p. 12; EWON, pp. 2-3; TasNetworks, pp. 7-8; Department of State Growth, Tasmania, pp. 1-2; Tesla, p. 5; AusNet Services, p. 8.

²³⁸ Submission to the issues paper: Energy Queensland, p. 14.

²³⁹ Submission to the issues paper: PIAC, pp. 8-9.

²⁴⁰ Some additional SAPS specific information provision consumer protections will be required in addition to the current consumer protections, however, it is unlikely that changes will need to be made to the existing consumer protections.

the NECF would remain valuable for customers in DNSP-led SAPS under this model of supply, including retail competition, marketing, and standard and market contract provisions.

Consumer protections under the integrated service delivery model

Under the integrated service delivery model detailed in section 4.4.5, customers will not be able to access retail competition, therefore some of the provisions in the NECF that are predicated on the existence of competition may require amendments, or may not apply to a DNSP led SAPS.

Under the NERR, some of the protections that may require amendments under the integrated service delivery model include:

- model terms and conditions for standard retail contracts (NERR Part 2, Division 1 and Schedule 1)
- market retail contracts terms and conditions (NERR Part 2, Division 2)
- customer retail contracts - pre-contractual procedures (NERR Part 2, Division 3)
- customer requests for change of tariff (NERR rule 37)
- market retail contract - particular requirements (NERR Part 2, Division 7)
- energy marketing restrictions (NERR Part 2, Division 10).

Further analysis of potential amendments to the NERL and the NERR will be carried out in the next stage of this review, once the SAPS model of supply has been determined.

Application of NECF to SAPS customers in each jurisdiction

Analysis carried out by the Commission suggests that under current arrangements consumer protections under the NECF do not generally apply to customers receiving supply from a SAPS, except for microgrids in Queensland. In order to apply the NECF to customers in SAPS in these jurisdictions, amendments to the legislation applying the NERL in their jurisdictions will be required.

In Victoria, if SAPS customers are supplied by a licensed retailer, the Commission's analysis suggests that they would be covered by protections under the Victorian Energy Retail Code. The application of consumer protections to SAPS customers in Victoria remains a matter for that jurisdiction, however, if Victoria decides to implement the national arrangements for DNSP-led SAPS a consistent approach to consumer protections would be required.

5.2.4

Commission's draft position

The Commission considers that, for DNSP-led SAPS, consumer protections should be equivalent to those under standard supply arrangements. For existing customers transitioning to a DNSP-led SAPS we have not seen any compelling arguments for an alternative approach.

The majority of consumer protections under NECF should be applied to DNSP-led SAPS models of supply without change, however, depending on the SAPS model of supply, there may be some amendments that are required. The Commission intends to explore any changes required to the NECF in more detail in the next stage of this review, once the SAPS model of supply has been determined.

To enable the Commission's recommendations that the existing national consumer protections are largely applied to customers under a DNSP-led SAPS, some jurisdictions will need to amend their NERL application legislation to remove the restriction to grid-connected customers. In Victoria, the jurisdictional regulator may wish to review the application of the consumer protections under the Energy Retail Code to SAPS customers.

5.3 SAPS specific consumer protections

5.3.1 Background

In its analysis of consumer protections for customers in DNSP-led SAPS the Commission is considering the need for energy-specific consumer protections specific to customers receiving supply via a SAPS.

In the Western Power rule change the Commission agreed with stakeholders that certain off-grid-specific consumer protections may be necessary in addition to energy-specific consumer protections equivalent to those provided to grid-connected customers under the NECF (where applicable).²⁴¹

Submissions to the Western Power rule change suggested it may be necessary to include additional information provisions obliging the DNSP to provide potential SAPS customers with information that is specific to the consumer's supply via a SAPS. For example, provision of detailed product information on the SAPS assets to help them understand the reality of supply via a SAPS. This could include information on the components that comprise the SAPS, and information on how to refuel diesel generators, if required.

Further, it is likely there will be additional consumer consultation requirements at a minimum for DNSPs seeking to transition customers to a SAPS, and potentially obligations relating to retail price controls, depending on the final SAPS model of supply. These are further discussed in sections 3.3 and 5.1. This section considers other SAPS-specific protections.

5.3.2 Stakeholder submissions

Only a small number of submissions to the issues paper provided suggestions for additional SAPS-specific consumer protections. Energy Queensland considered there were a number of additional consumer protections required that are specific to the SAPS model of supply, both when the DNSP is considering transitioning a customer to a SAPS, and once a customer has transitioned to a SAPS model of supply.

Adequate and transparent consultation was considered key in transitioning customers to a SAPS solution by Energy Queensland, with information requirements viewed as changing depending on the geographic location and the specific SAPS set-up. The information Energy Queensland recommended be provided to customers when consulting on transition to a SAPS included:

- quality of supply and performance standards
- safety issues

²⁴¹ AEMC, *Alternatives to grid-supplied network service*, rule determination, 19 December 2017, p. 45.

- remote communication functions
- interactions with the customers assets e.g. solar PV
- any other considerations for customers such as potential impacts on land valuations.²⁴²

Information specific to the SAPS that should be provided to the customer on transition to the SAPS (and potentially prior to transition) included:

- level of redundancy based on customer usage
- guaranteed performance under different conditions
- operational support models for failure
- outages and questions
- things the customer themselves may be able to do, for example, if there is some equipment failure.²⁴³

EWON also considered that there would be specific consumer protections for customers receiving electricity under a SAPS model of supply. EWON considered that the provision of information on the SAPS and any differences with living under a SAPS should be provided to customers prior to them moving into a premises or community supplied by SAPS. This provision of information should be regulated, with EWON suggesting the extension of the current information disclosure protections under the AER exemption guidelines to SAPS.²⁴⁴

5.3.3

Commission's analysis

The difference in the access to retail competition under the SAPS models of supply under consideration, and the model chosen, will determine some of the additional SAPS specific consumer protections which may be required, particularly in regard to retail price controls and consultation requirements, addressed elsewhere in this report.

Nevertheless, regardless of the SAPS model of supply, it is likely that there are some additional consumer protection obligations which will be required in all cases. These relate to information provision both when the DNSP is considering transitioning the customer to SAPS supply, and when the customer has been transitioned to SAPS supply, to help them understand the realities of supply under a SAPS.

Submissions to both the issues paper and the Western Power rule change suggest it may be necessary to include additional information provisions in the framework. The information provision obligations would require the DNSP to provide information specific to the SAPS to the consumer. Although, as Energy Queensland noted, the specific information to be provided may change depending on the geographic location and the individual SAPS set-up, the recommended list of information they provided is a sound basis for developing SAPS specific information provision obligations. This also aligns with the recommendation to provide detailed product information on the SAPS assets to help customers understand the reality of supply via a SAPS from the Western Power final determination.²⁴⁵ It should be noted

242 Submission to the issues paper: Energy Queensland, p. 15.

243 Submission to the issues paper: Energy Queensland, p. 15.

244 Submission to the issues paper: EWON, p. 3.

245 AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, p. 44.

that the Commission considers that the customer should not generally be required to maintain the SAPS (for example, refill the SAPS backup generator with diesel) and that the customer would call the DNSP if there are any outages or maintenance issues, so detailed maintenance information should not be required.

EOWN's suggestion that the current information disclosure protections under the AER's (Retail) Exempt Selling Guideline exemption guidelines be extended to SAPS is an idea the Commission has considered in more detail. The information disclosure requirements in the exemption guidelines are designed to provide customers moving into an exempt network with information on the key differences between supply in an embedded network and standard supply via the interconnected grid. Some of the information required under the information disclosure protections which may be relevant, with amendments, for DNSP-led SAPS include:

- any right of the customer to purchase energy from a retailer of their choice (or in the case of the integrated service delivery model, the restrictions on access to retail competition and the operation of the price control)
- the energy tariffs and all associated fees and charges that will apply in relation to the sale of energy
- the conditions that the exempt supplier is operating under.

Many of the information provisions in the AER's exemption guideline (for example the legal name, trading name and contact details of the exempt seller, complaints and disputes procedures and payment options) may be more relevant for priority 2 of this review, which investigates a national framework for third-party SAPS. Under the DNSP-led SAPS national framework the customer will be supplied by an authorised retailer, with equivalent consumer protections to the NECF (however, there may be slight differences in consumer protections depending on the model of supply). Nevertheless, the Commission agrees with the principle of providing customers transitioning to DNSP-led SAPS with information on the differences between SAPS supply and supply via the interconnected prior to transition.

5.3.4

Commission's draft position

The Commission proposes to amend the NERR to include SAPS specific consumer protections for customers being supplied via a DNSP-led SAPS. What SAPS specific consumer protections are required to be included in the NERR is dependent on the SAPS model of supply, however at a minimum the Commission considers it is reasonable that the following SAPS specific consumer protections are added to the NERR:

- information provision obligations incorporated in consultation requirements where the DNSP is considering transitioning the customer to a SAPS, covering issues such as quality of supply and performance standards, safety issues, communication functions and interactions with other assets, among other issues.²⁴⁶
- information provision obligations when a customer transitions to a SAPS, or moves into a premises supplied by a DNSP-led SAPS, covering issues such as system redundancy,

²⁴⁶ The Commission's proposal to develop SAPS customer information and engagement requirements on DNSPs is discussed in Chapter 3.

performance under different conditions, outages and customer interactions with the SAPS, among other issues.

Other protections that may be required include information provision requirements on any difference in retail services compared to standard supply; this may include retail price controls and details on the authorised retailer for the SAPS.

The Commission intends to explore SAPS specific consumer protections in more detail in the next stage of this review, once the appropriate SAPS model of supply is determined.

5.4 Reliability

5.4.1 Background

Reliability of electricity supply is a key factor considered in the national energy objective. In the Western Power rule change, the Commission considered that having appropriate reliability standards for off-grid supply should be a prerequisite for rules allowing DNSP-led SAPS, and to enable the provision of SAPS by DNSPs to meet the NEO.²⁴⁷

Reliability refers to the extent to which customers have a continuous supply of electricity. A reliable supply of electricity requires generators to produce electricity and the transmission and distribution networks to transport the electricity to customers in real time.

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. The Reliability Panel sets the reliability standard for generation in the NEM, which currently requires there to be sufficient generation to meet 99.998% of annual demand. Each state and territory government retains control over how transmission and distribution reliability is regulated, which has resulted in different regulations in each jurisdiction.²⁴⁸

In general, each state and territory 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. Most states and territories also have a number of other measures to regulate distribution reliability.

In the context of stand-alone power systems, the reliability of supply of electricity will be determined by the service provided by the stand-alone power system. For individual power systems, any outages experienced by the customer will primarily relate to issues associated with the generation of electricity; for microgrids, outages experienced by customers may be caused by a combination of issues relating to generation and network. However, irrespective of the source of an interruption to customer supply, the reliability associated with a SAPS system should be considered '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.

²⁴⁷ AEMC, *Alternatives to grid-supplied network services*, rule determination, 19 December 2017, p. 40.

²⁴⁸ COAG, Australian Energy Market Agreement, Annexure 2.

The levels of reliability that must be provided by distribution (and transmission) networks are contained in jurisdictional licence conditions or in state codes or regulations, and for distribution are generally measured by the System Average Interruption Duration Index (SAIDI) and the System Average Interruption Frequency Index (SAIFI). As reliability at the distribution level (and to a lesser extent transmission level) is a key customer concern, and reliability of SAPS will help determine whether allowing DNSP-led SAPS will help meet the NEO, it is important it is explored in detail in this review.

Under traditional supply arrangements in the national interconnected system, each individual customer has a meter and a connection point that connects them directly to a DNSP's network. Customers (small customers only, in some jurisdictions) who are connected directly to the DNSP's network²⁴⁹ are subject to, by way of local legislation or codes, Guaranteed Service Levels (GSLs) covering areas such as reliability, customer service and connection and disconnection. Each jurisdiction prescribes GSLs, generally for each distribution business. These GSLs are usually included in a Code or licence condition administered by the jurisdictional regulator.²⁵⁰

In addition to the jurisdictionally set service reliability standards, there are reliability performance standards for DNSPs set by the AER. These are the performance targets set under the service target performance incentive scheme (STPIS).²⁵¹ This scheme would apply to SAPS if the supply of electricity via SAPS is classified as a standard control service.²⁵²

Guaranteed service levels

For reliability, there are generally GSLs for unplanned supply interruptions covering both duration and frequency of interruption. If the distributor does not achieve a minimum service level, it is required to pay the customer a nominal amount (ranging from \$20 to \$360 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).

To access a GSL payment, customers must be connected directly to the DNSP's distribution network through a metered connection point. The reliability thresholds that trigger a GSL payment vary between jurisdictions. Further, in the ACT the same threshold is used across the jurisdiction, whereas in other jurisdictions thresholds can differ depending on the classification of the feeder the customer is supplied from (i.e. whether they are supplied by a CBD feeder, urban feeder, short rural feeder, long rural feeder or isolated feeder) and/or by distributor, or geographic region.

249 Note that this excludes customers in embedded networks. This issue is being addressed in the Commission's current review Updating the regulatory frameworks for embedded networks.

250 Chapter 5 in the NER details some power system performance and supply standards (technical requirements), as well as conditions for connection, but do not cover reliability.

251 Section 2.1(a) of the AER's Electricity distribution network service providers - Service target performance incentive scheme, version 2.0 (November 2018).

252 See section 4.2.

Jurisdictional reliability standards - SAIDI and SAIFI

Jurisdictional reliability standards are generally included within distribution network licence conditions or authorisations. The two main jurisdictional reliability standards are SAIDI and SAIFI. Both SAIDI and SAIFI measure unplanned interruptions of supply.

Although requirements for determining SAIDI and SAIFI targets, and the entity that determines the SAIDI and SAIFI targets, differ by jurisdiction, each jurisdiction generally requires reporting on overall SAIDI and SAIFI as a minimum.

Overall SAIDI is determined by the average minutes of supply interruption per customer. Overall SAIFI is determined by the average number of interruptions per customer. These measures are usually calculated by categories of feeder type. However, Tasmania does not categorise customers by feeder type, instead using geographical regions (which may make it easier to apply this measure to SAPS).

National reliability standards within economic regulation - STPIS

The AER is responsible for designing the service target performance incentive scheme (STPIS) under Chapter 6 of the NER. The primary purpose of STPIS is to encourage distributors to maintain existing levels of reliability and make improvements where customers are willing to pay for that improvement. STPIS is applied in the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria.

Under the STPIS, DNSPs receive revenue increments (or decrements) for given levels of performance. The reliability supply parameters under STPIS are unplanned SAIDI, unplanned SAIFI and MAIFI (Momentary Average Interruption Frequency Index).

5.4.2 Stakeholder submissions

In their submissions to the issues paper, the majority of stakeholders agreed that the reliability standards and service levels that apply for DNSP-led SAPS should be the same as for grid-connected customers, with some stakeholders considering that reliability of a SAPS may, in practice, be better than the customer's current grid connection.²⁵³

Most DNSPs considered it would be reasonable to expect customers to receive equal or improved reliability of supply under a DNSP-led SAPS, and that the reliability standards that apply to grid-connected customers should apply to customers being supplied by a DNSP via a SAPS. Most DNSPs and EWON also considered that the existing reliability standards that applied to the customer prior to transitioning to off-grid supply should be maintained where possible. Some of the reasons for applying the current standards included that it would enhance customer confidence in transitioning to a DNSP-led SAPS, and that additional regulatory and administrative burdens would be reduced.²⁵⁴

²⁵³ Submissions to the issues paper: Ausgrid, pp. 22-23; ENA, p. 9; Endeavour Energy, p. 11; Essential Energy, pp. 24-25; PIAC, p. 15; S&C Electric, p. 14; Western Power, question 17 (a) and (b); AusNet Services, p. 9; CEC, pp. 11-12; EWON, pp. 3-4; TasNetworks, p. 8.

²⁵⁴ Submissions to the issues paper: Ausgrid, pp. 22-23; ENA, p. 9; Endeavour Energy, p. 11; Essential Energy, p. 24-25; Western Power, p. 6; AusNet Services, p. 9; TasNetworks, p. 8; EWON, pp. 3-4.

Although Essential Energy supported customers who are transitioned to DNSP-led SAPS from a grid connection receiving the same reliability standards that would apply as if they had remained grid connected, Essential Energy considered that should DNSPs be allowed to provide SAPS to new customers, new customers should be able to negotiate a lower level of reliability and service quality in return for a lower price.²⁵⁵

In contrast to the views of the other DNSPs, Energy Queensland although supporting the introduction of a GSL framework for DNSP-led SAPS and reliability standards in principle noted that reliability levels should reflect the technical or service delivery challenges involved in supplying customers via a SAPS model of supply. Energy Queensland considered that SAPS technologies are still immature and subject to technology change. Energy Queensland also considered that some customers may not need reliability standards on parity with the grid, for example where the SAPS is supplying a bore pump.²⁵⁶

In its submission ARENA was of the view that jurisdictional reliability standards may not reflect the outcomes experienced by fringe-of-grid customers, with the reliability of supply of the individual SAPS important. However, ARENA also noted that the reliability standards that apply to SAPS cannot be so onerous as to make the SAPS uneconomic.²⁵⁷

Finally, PIAC noted that in order to provide information on which to assess the SAPS performance, the SAPS will be required to have in-built monitoring. Given in-built monitoring at the point of supply is standard for smart meters and inverters PIAC did not consider this would impose a material new burden on the DNSP.²⁵⁸

5.4.3

Commission's analysis

Although early indications from some SAPS trials in remote areas have shown greatly improved reliability (compared to grid supply),²⁵⁹ the technology used in SAPS is relatively recent and it is uncertain how reliability levels may change as the systems age. The stakeholder consultation that the Commission has undertaken as part of this review, including bilateral meetings and site visits to remote IPS and microgrids, has underscored the key importance of reliability to customers.

For DNSP-led SAPS, that is, where the DNSP is choosing to transition the customer to a SAPS, the Commission considers it reasonable that reliability, security and quality standards with equivalent principles to those for grid-connected customers should apply. Although the standards and measures do not necessarily need to be exactly the same as those that apply to grid-connected customers, from the Commission's analysis it appears that reliability standards, GSL payments and STPIS could be extended to DNSP-led SAPS. In some jurisdictions, changes to the reliability standards and GSL schemes will be required to broaden their application to cover DNSP-led customers. The extension of the GSL schemes,

255 Submission to the issues paper: Essential Energy, pp. 24-25.

256 Submission to the issues paper: Energy Queensland, pp. 16-17.

257 Submission to the issues paper: ARENA, p. 6.

258 Submission to the issues paper: PIAC, p. 15.

259 Western Power, *Stand-alone Power System Pilot One Year On*, September 2017, p. 6.

jurisdictional reliability standards and STPIS to DNSP-led SAPS is analysed in more detail below.

Guaranteed Service Levels

Currently, in most jurisdictions, GSLs for unplanned supply interruptions apply to customers connected to DNSP's distribution network through a metered connection point. Generally, thresholds for GSL payments differ depending on the classification of the feeder the customer is supplied from (i.e. whether they are supplied by a CBD feeder, urban feeder, short rural feeder, long rural feeder or isolated feeder) by distributor, or whether the customers are in an area considered to be metropolitan or non-metropolitan/ rural.

If GSL thresholds are set by feeder category, some jurisdictions will need to provide an additional feeder category to accommodate off-grid supply. Queensland has an isolated feeder category which may already apply to off-grid supply.

GSL schemes generally apply to the DNSP's "distribution network" (as defined in jurisdictional instruments), and to customers at metered connection points. DNSP-led SAPS will be required to have a metered connection point between the SAPS and the customer's premises, however, jurisdictions will need to confirm if the definitions of distribution network used in each GSL scheme will encompass DNSP-led SAPS.

Jurisdictional reliability standards - SAIDI and SAIFI

The Commission considers that SAIDI and SAIFI and other jurisdictional reliability standards should be extended to apply to customers receiving supply via a DNSP-led SAPS. The requirements for determining SAIDI and SAIFI targets differ by jurisdiction. These measures are calculated by categories of feeder type in New South Wales, Queensland, Victoria and South Australia, with different measures applying for each distributor. There are currently no feeder categories identified for SAIDI and SAIFI that would be applicable for off-grid supply in these jurisdictions.

Tasmania does not categorise customers by feeder type for reliability standards and instead uses geographical regions. There are five supply reliability categories, under which 101 geographical communities are grouped. The Essential Services Commission of South Australia (ESCOSA) has also been considering a region based approach for GSLs in its draft decision on the SA Power Networks reliability standards review, in part as a way to more easily accommodate off-grid supply.²⁶⁰

National reliability standards within economic regulation - STPIS

STPIS provides networks with incentives to maintain existing levels of reliability and make improvements where customers are willing to pay for that improvement. The Commission considers that STPIS should encompass DNSPs' SAPS as well as their main distribution network.

²⁶⁰ Essential Services Commission of South Australia, *SA Power Networks reliability standards review*, draft decision, August 2018.

Other considerations

In their submissions to the issues paper, some stakeholders considered that reliability standards applying to DNSP-led SAPS should reflect the reliability experienced by customers in each SAPS. The Commission considers that applying reliability standards to individual customers is not in line with the treatment of customers in the rest of the NEM, and the principle should remain to provide customers in DNSP-led SAPS with equivalent protections to grid-connected customers.

In order to determine the number of unplanned interruptions experienced by customers in a DNSP-led SAPS so GSL payments and reliability standards can be applied, it is clear that monitoring and communications functions will be required within the SAPS.

Treatment of exclusions and major event days

When distribution reliability is reported solely from the perspective of the service experienced by customers, it is appropriate that all interruptions to a customer's supply be included, irrespective of the cause. However, when considering the performance of a distribution network (or when applying an incentive scheme), it is common to remove events that are beyond the control of a distribution business from the calculation of distribution reliability standards (for example, an interruption caused by load shedding due to a generation shortfall).²⁶¹ Currently, the decision on whether to remove any events from a distribution business's data-set of interruptions depends on the relevant regulatory body or distributor using the measures.

When considering the reliability standards applicable to stand-alone power systems, there are unlikely to be many (if any) interruptions to supply caused by the generation and network elements of a SAPS which would be considered outside the control of the distribution business and therefore which would need to be considered for exclusion from the reliability standards. However, in the context of other interruptions outside the control of the DNSP (for example, a major natural disaster), the relevant regulatory body would be best placed to make a decision on whether or not to adjust the data on interruptions to take account of these events, consistent with current jurisdictional arrangements.

This issue, and others relevant to the detailed setting of jurisdictional reliability standards, will be considered further in the next stage of this review.

5.4.4

Commission's draft position

The Commission draft position is to recommend that jurisdictional GSLs for unplanned outages, and jurisdictional reliability standards including SAIDI and SAIFI, are extended to cover DNSP-led SAPS. In addition, the national STPIS should also be extended to include DNSP-led SAPS in the calculation of DNSPs' targets.

²⁶¹ The removal of some types of interruptions from a data set being considered when calculating distribution reliability standards could occur for "exclusions" (that is, where an interruption, or the impact of the interruption, is outside the control of the distributor) or "major event days" (where the interruptions on that day are not regarded as representative of daily operation, usually due to the weather conditions on the day). While there is broad agreement between stakeholders on the definitions and treatment of exclusions and on the definitions and treatment of major event days in the calculation of jurisdictional reliability standards, these are not prescribed in the national frameworks.

To achieve this recommendation, jurisdictions will need to review the legislative instruments for GSL schemes and reliability standards and make any changes to apply the scheme and standards to DNSP-led SAPS.

The Commission will, in the next stage of the review, further examine the STPIS rules and guidelines to confirm that DNSP STPIS targets will incorporate DNSP-led SAPS. This may depend on how the DNSP's network is defined.

DNSPs will be required to provide monitoring and communications functionality within the SAPS, so unplanned outage information can be recorded and utilised to determine any applicable GSL payments, as well as jurisdictional and national reliability standards.

The Commission's draft position is to not recommend additional reliability standards or targets for individual SAPS, rather customers in DNSP-led SAPS will receive protections equivalent to grid-connected customers.

5.5

Other jurisdictional consumer protection considerations

5.5.1

Background

To provide a complete set of consumer protection and safety regulations to consumers receiving electricity under a SAPS model of supply, there are other state and territory energy functions that need to be considered.

Under the AEMA, state and territory functions include distributor technical and safety requirements, small customer dispute resolution, service reliability standards and the determination of distribution and retail service areas.²⁶² In addition to retail price controls and reliability, other jurisdictional consumer protections and safety regulations that should be analysed to determine if they should be applied to DNSP-led SAPS include:

- access to state and territory concessions and rebates
- access to independent dispute resolution for both distribution and retail services
- safety requirements and monitoring regimes
- technical regulation such as equipment and performance standards
- other GSL payments.

Each of these consumer protections are discussed in more detail below.

The initial view presented in the issues paper was that many of these jurisdictional protections would automatically apply to SAPS customers where the SAPS is provided by a DNSP (subject to the wording of the relevant jurisdictional instrument), as the customers will be supplied by an authorised retailer and a licensed DNSP.

Access to state-based energy concessions and rebates

Standard supply residential customers who meet certain conditions may be eligible for state-based electricity concessions and other payment assistance schemes. All residential standard customers are informed of the availability of energy rebates and payment assistance by their

²⁶² COAG, Australian Energy Market Agreement, Annexure 2.

NERL authorised retailer, and can contact their retailer to determine if they meet the requirements to receive a concession.

Access to independent dispute resolution

Distributors and retailers are required to be members of any jurisdictional ombudsman schemes. Energy ombudsmen provide independent dispute resolution services for disputes relating to energy. Small customers can access jurisdictional energy ombudsmen to resolve disputes and complaints with their retailer and/or DNSP, with the retailer or DNSP bound by the ombudsman's decision.

Safety of electricity supply

When designing their grid connected networks, DNSPs are 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.

Technical regulation such as equipment and performance standards

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.

Other GSL categories

Under jurisdictional GSL schemes, each jurisdiction has GSLs for different services, with some jurisdictions having many GSLs, and some only a few. In addition to reliability GSLs discussed in section 5.4, some other jurisdictional GSLs include:

- notice of planned interruption
- timeliness of new connections
- missed scheduled appointments
- timely repair of faulty streetlights
- wrongful disconnection
- time to respond to complaints
- time to respond to notification of a problem
- hot water complaints.

Ability to access land required for the supply of electricity

Although not a consumer protection, under jurisdictional regulations DNSPs have specific land access rights in order to install and maintain systems to supply grid-connected customers. For example, DNSPs may have rights to occupy public or private land, cross land, or resume land, undertake works, vegetation management and bushfire prevention measures. It is an area that also needs to be considered by jurisdictions in the context of SAPS supply.

5.5.2 Stakeholder submissions

A small number of stakeholders commented on other jurisdictional consumer protections.

PIAC considered that consumers transitioning to a DSNP-led SAPS should experience as little change as possible, with jurisdictional protections extended to customers in DNSP-led SAPS. PIAC considered that most of these jurisdictional protections would apply in DNSP-led SAPS automatically.²⁶³

Specific jurisdictional protections which were considered key by stakeholders were:

- EWON highlighted the importance of vulnerable customers continuing to be able to access jurisdictional concessions and rebates under the SAPS models of supply
- Energy Queensland highlighted DNSP access rights and community service obligation payments in support of the Queensland Government's Uniform Tariff Policy
- Essential Energy highlighted safety standards as an important issue.²⁶⁴

5.5.3 Commission's analysis

Considering that customers in a DNSP-led SAPS will continue to be supplied by their DNSP and an authorised retailer, the Commission's analysis has suggested that many (but not all) of the existing jurisdictional consumer protections will automatically extend to customers in DNSP-led SAPS. However, the Commission has not undertaken detailed analysis of all jurisdictional regulatory instruments.

The Commission's high level analysis on each of the jurisdictional consumer protections considered in this section is detailed below.

Access to energy concessions and rebates

Vulnerable customers may be eligible for jurisdictional concessions or rebates. 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.

A prerequisite for many of these rebates or concessions is that the applicant must be a customer of a retailer (or exempt seller in some cases) and be listed as the account holder. As the models proposed for DNSP-led SAPS both include retail services being provided by an authorised retailer, the Commission considers that customers in DNSP-led SAPS should be

²⁶³ Submission to the issues paper: PIAC, pp. 16-17.

²⁶⁴ Submissions to the issues paper: EWON, p. 4; Energy Queensland, p. 18; Essential Energy, p. 25.

eligible for these rebates if they were eligible and met the other prerequisites as a grid-connected customer.

Access to energy ombudsman schemes for independent dispute resolution

As the customer will be supplied by a licensed DNSP and an authorised retailer who are required to be members of the jurisdictional energy ombudsman schemes, the Commission's initial analysis suggests that customers in a DNSP-led SAPS will be able to access energy ombudsman schemes for independent dispute resolution with either the DNSP or the retailer, and that decisions made by the respective energy ombudsman would be binding in the same way as they would for grid-connected customers.

Safety of electrical supply

Safety obligations are generally placed on DNSPs via jurisdictional safety Acts, Regulations, guidelines and licence conditions. Some jurisdictions have different safety legislation for DNSPs than other for other parties working on electrical infrastructure or 'electrical installations'; other jurisdictions have one set of legislative instruments applying to electricity safety in general. Regardless, if DNSP-led SAPS are considered to be a distribution system (or similar, under jurisdictional definitions), the DNSP's safety obligations may extend to DNSP-led SAPS.

Technical regulation such as equipment and performance standards

Technical regulations and design and performance standards that DNSPs must adhere to when supplying their customers and designing their networks, as well as quality of supply obligations, would likely extend to DNSP-led SAPS, if SAPS are considered to be part of the distribution system under jurisdictional definitions. However, the Commission has not carried out a detailed investigation of the technical regulations applying in each jurisdiction at this stage.

Other GSL categories

The Commission's high level analysis suggests that the other GSL categories apart from interruption of supply that apply in different jurisdictions would be able to be applied to DNSP-led SAPS. There are no feeder categories or other issues that would restrict GSLs in categories such notification of planned interruption, time to respond to complaints, missed scheduled appointments or connection timeframes.

Ability to access land required for the supply of electricity

In consideration of the land access rights conferred on DNSPs to provide electricity services in their distribution areas, if the DNSP-led SAPS is considered to be a distribution system under the relevant jurisdictional definition, then it is likely that the DNSP's land access rights would extend to installing and maintaining DNSP-led SAPS.

5.5.4

Commission's draft position

The Commission considers that current jurisdictional consumer protections that cover grid-connected customers should be extended to customers in DNSP-led SAPS, with DNSP-led

SAPS treated as an extension of the DNSP's distribution area. The Commission has received no compelling arguments against such an approach, with the intent of this approach that customers in DNSP-led SAPS receive consumer protections that are equivalent to what they received prior to transitioning to a SAPS.

Initial analysis suggests that many of these consumer protections may automatically apply to DNSP-led SAPS, as an authorised retailer would be required under all of the SAPS models of supply, and the customer would continue to be supplied by their current DNSP. However, the Commission has not undertaken detailed analysis of all jurisdictional regulatory instruments for each of the jurisdictional protections, and the position may vary depending on the exact wording of the jurisdictional instrument in question.

In this context, jurisdictions will need to review their legislative frameworks to confirm that jurisdictional protections 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.

6 TRANSITION TO THIRD PARTY SAPS

This chapter discusses the Commission's analysis and draft recommendations on a national framework for customer transition from a DNSP interconnected grid or DNSP SAPS²⁶⁵ to a third party SAPS.

The chapter covers the:

- decision-making framework for a customer to transition from a DNSP interconnected grid or SAPS to a third party SAPS
- transfer of assets between a DNSP and the third party when a customer transitions from a DNSP interconnected grid or SAPS to a third party SAPS.

6.1 Approach

The Commission defines third-party stand-alone power systems as stand-alone power systems that a third party owns and operates.

Third-party stand-alone power systems would include third party individual power systems and microgrids that supply:²⁶⁶

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

This chapter discusses the Commission's analysis and draft recommendations in relation to the first two, that is, third party stand-alone power systems that supply customers that transition from a DNSP interconnected grid or SAPS.²⁶⁷

The Commission considers a third party to be any party that is not the customer's DNSP, which may include:²⁶⁸

- the customer (for an individual power system)
- community group (customers of a microgrid)
- local council
- developer
- embedded network operator
- ring-fenced affiliate of an electricity market participant (which may be a retailer or a DNSP that is not the local DNSP).

The Commission does not consider that the framework will need to specify the types of third parties that may offer a SAPS. However, the Commission has considered who the third party

²⁶⁵ This chapter considers a DNSP SAPS to be part of the DNSP grid; the Commission will consider at a later stage the precise definitional changes that will be appropriate.

²⁶⁶ Under priority 2 of the review, the Commission may have different recommendations based on whether the SAPS is a microgrid or individual power system.

²⁶⁷ Chapter 3 discusses the decision-making framework for DNSPs to transition their customers off the grid.

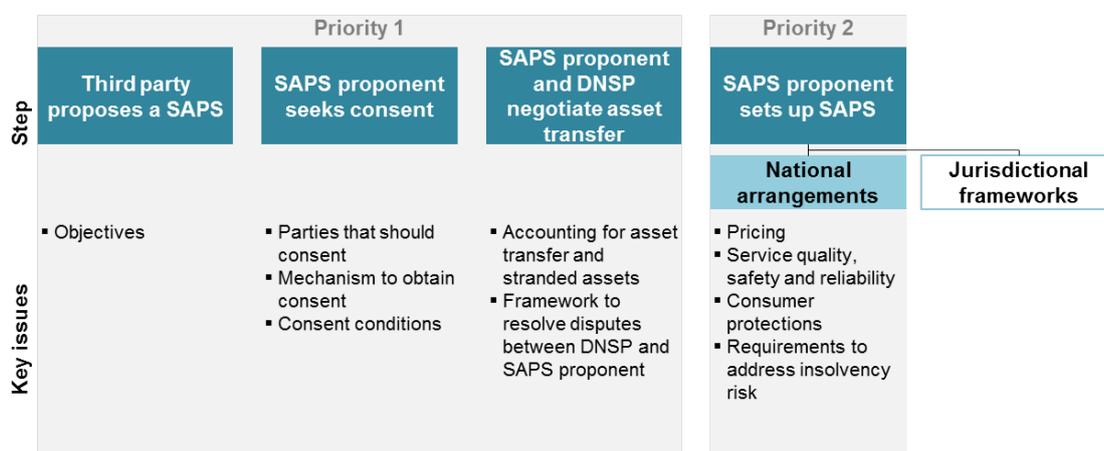
²⁶⁸ Under priority 2 of the review, the Commission may have different recommendations based on who the third party is.

could be in order to understand whether any specific arrangements may need to be developed to make sure that the transition process is appropriate and effective.

Under priority 2 of the review,²⁶⁹ the Commission will review regulatory arrangements for service delivery and consumer protections for third party stand-alone power systems. The Commission’s recommendations under priority 2 will set out a framework for third party SAPS that jurisdictions could opt into.

The below figure summarises the review’s approach to third party SAPS.

Figure 6.1: AEMC approach to review of third party SAPS



6.2 Decision-making framework

In developing a national decision-making framework to support the transition of DNSP customers²⁷⁰ to a SAPS facilitated by a third party, this section considers the following:

- efficiency pre-condition for transitioning DNSP customers to a third party SAPS
- customer consent requirements
- consent mechanism
- consent conditions.

6.2.1 Background

The Commission’s draft recommendation on the decision-making framework for customers to transition from a DNSP interconnected grid or DNSP SAPS to a third party SAPS has considered the drivers behind the decision to transition customers to a third party SAPS.

²⁶⁹ The Commission plans to publish an issues paper that covers Priority 2 of the review in 2019.

²⁷⁰ DNSP customers in this chapter refers to customers connected to a DNSP interconnected grid and/or DNSP SAPS. DNSP grid refers to both the interconnected grid and any DNSP SAPS as well.

The Commission considers that unlike DNSP-led SAPS that will be driven by economic efficiency objectives,²⁷¹ the drivers for the decision by a third party to establish a SAPS may include one or a combination of the following:

- regional development policy
- innovation initiatives
- environmental considerations
- self sufficiency initiatives.

The framework will not specify the drivers for customers to transition to a third party SAPS, but has considered them in the context of an efficiency pre-condition and customer consent.

6.2.2 Stakeholder submissions

AGL, Ausgrid, Endeavour Energy, Energy Queensland, Western Power and ENA considered that the transition to third party SAPS should be subject to an efficiency precondition.²⁷²

AGL and TasNetworks considered that the third party should offer broad consultation.²⁷³ Clean Energy Council, Energy Queensland, S&C Electric, TasNetworks and Horizon Power considered that the DNSP should have a role in approving the transition of its customers to a third party SAPS.²⁷⁴ Ausgrid considered that consent requirements for a transition to a third party SAPS should be detailed and that an independent regulator, such as IPART for New South Wales, should approve the transition.²⁷⁵ Endeavour Energy also considered that the AER or jurisdictional regulator should have a role in approving the transition.²⁷⁶ Energy Queensland agreed that the jurisdictional regulator should approve the transition of DNSP customers to a third party SAPS.²⁷⁷

Endeavour Energy considered that the third party should obtain near unanimous consent of the transitioned customers.²⁷⁸ Clean Energy Council considered that the consent threshold should be unambiguous to cover both customer number and demand majority.²⁷⁹ Energy Queensland noted that unanimous consent would be hard to obtain. S&C Electric considered that the third party should obtain Explicit Informed Consent through a vote.²⁸⁰

AGL considered that transitioned customers should be guaranteed a supply standard.²⁸¹ Energy Queensland considered that consent factors would be different based on the customer.²⁸² TasNetworks considered that if the third party commits to offering lower service

271 Chapter 3 discusses the decision-making framework for transitioning DNSP customers to a DNSP SAPS.

272 Submissions to the issues paper: AGL, p. 6; Ausgrid, p. 7; Endeavour Energy, p. 3; Energy Queensland, pp. 18-19; Western Power, p. 3; ENA, p. 10.

273 Submissions to the issues paper: AGL, p. 6; TasNetworks, pp. 8-9.

274 Submissions to the issues paper: Clean Energy Council, pp. 12-13; Energy Queensland, pp. 18-19; S&C Electric, pp. 4-5 and pp. 15-16; TasNetworks, pp. 8-9; Horizon Power, p. 10.

275 Submission to the issues paper: Ausgrid, p. 7.

276 Submission to the issues paper: Endeavour Energy, p. 3.

277 Submission to the issues paper: Energy Queensland, pp. 18-19.

278 Submission to the issues paper: Endeavour Energy, p. 3.

279 Submission to the issues paper: Clean Energy Council, pp. 12-13.

280 Submission to the issues paper: Energy Queensland, pp. 18-19.

281 Submission to the issues paper: AGL, p. 6.

standards than the DNSP, then the DNSP should be offered the opportunity to provide electricity services at the same lower standards as well.²⁸³

PIAC considered that to transition customers from DNSP supply to SAPS, a third party should:²⁸⁴

- disclose detailed product information
- offer performance guarantees regarding the frequency and duration of system outages
- educate the customer about the differences between living with a grid connection and living with a SAPS
- demonstrate the explicit informed consent of the customer
- provide clear and fair contract terms, including insurance against system failure
- allow a transition period for customers where the premises is electrically isolated but not yet physically disconnected from the grid.

Ausgrid, Energy Queensland, TasNetworks and S&C Electric considered that reconnecting customers that transitioned to a third party SAPS should be treated as new connections.²⁸⁵ Clean Energy Council considered that the framework may allow for customer reconnection within a definite period, potentially under an option charge that would cover reconnection costs.²⁸⁶

6.2.3

Commission's analysis

Efficiency pre-condition

The Commission has considered whether it would be appropriate for a third party to proceed with the transition of DNSP customers to a third party SAPS if there is a risk that the decision will have a negative impact on economic efficiency.

The Commission thus notes the concern of AGL, Ausgrid, Endeavour Energy, Energy Queensland, Western Power and ENA.²⁸⁷ A negative impact on economic efficiency may result in the DNSP's customers that are left behind on the interconnected grid or the third party SAPS transitioned customers paying more than they otherwise would have for their electricity supply.

The Commission considers that any efficiency loss or gain due to the transition of DNSP customers to a third party SAPS would be primarily linked to the allocation of fixed capital expenditure between the two sets of customers. Section 6.3 below discusses this, in addition to the mechanism to compensate the DNSP and customers remaining on the grid for the

282 Submission to the issues paper: Energy Queensland, pp. 18-19

283 Submission to the issues paper: TasNetworks, pp. 8-9.

284 Submission to the issues paper: PIAC, p. 15.

285 Submissions to the issues paper: Ausgrid, p. 7; Energy Queensland, pp. 18-19; TasNetworks, pp. 8-9; S&C Electric, pp. 4-5 and pp. 15-16.

286 Submission to the issues paper: Clean Energy Council, pp. 12-13.

287 Submissions to the issues paper: AGL, p. 6; Ausgrid, p. 7; Endeavour Energy, p. 3; Energy Queensland, pp. 18-19; Western Power, p. 3; ENA, p. 10.

transition. This mechanism would then build the efficiency pre-condition into the considerations of the third party to transition the DNSP customers off the grid.

Customer consent requirement

The Commission has considered the role of customer choice in the decision to move customers to off-grid supply where this is facilitated by a third party. This is relevant to the transition cases in which the third party that facilitates the transition is not the customer(s). For example, in the event that a local council or embedded network operator is considering moving a group of customers to a SAPS model of supply, there is a question around whether that party should be required to obtain consent from some, or all, of the affected customers before proceeding.

Customers transitioning to a third party SAPS are being disconnected from the DNSP grid, are likely to have to give up their electricity retail offer or modify it (depending on the SAPS supply model) and are also likely to experience a different service level (improved or worsened). In cases where these customers have been benefiting from a cross subsidy across the interconnected grid from lower cost to serve customers, these customers will lose access to the cross subsidy and may pay more for their electricity supply. Moreover, these customers may be required to pay compensation to the DNSP for transferred or stranded assets.²⁸⁸ Therefore, the Commission's view is that a third party should obtain the consent of customers to transition to the third party SAPS in order for the DNSP to be authorised to disconnect them and for the third party to connect them.²⁸⁹

The Commission has also considered whether the consent of customers left behind on the grid should also be sought if they were impacted by the transition in any way, for instance through asset costs being spread across a smaller number of customers and thereby increasing tariffs. However, the Commission's view is that as with any instance of customer disconnection, the consent of the customers left behind should not be obtained.²⁹⁰

The Commission has applied the same rationale to determine that consent from the AER to transition DNSP customers to a third party SAPS should not be obtained. However, the Commission considers that the AER's approval of the third party proposing to provide SAPS should be obtained in certain circumstances. The Commission considers that AER's approval would be linked to its role in approving the asset transfer during the transition.²⁹¹

The Commission notes DNSP submissions that DNSP consent should be obtained to transition customers to a third party SAPS.²⁹² The Commission considers that the DNSP role will be addressed through the asset transfer mechanism. The Commission also considers that the

288 This is discussed further in section 6.3.

289 Note that under the current provisions of the NERR, a DNSP may only disconnect its customers in certain circumstances. As long as the customer is in compliance with its contract with the DNSP, the DNSP could only disconnect it if the customer requested the disconnection. NERR Part 6, Division 3. Requiring consent to transition to third party SAPS is consistent with this position.

290 Section 6.3 will discuss the compensation of the remaining customers for asset re-allocation costs.

291 AER's role in the asset transfer between the DNSP and third party is discussed in section 6.3.

292 Submissions to the issues paper: Clean Energy Council, pp. 12-13; Energy Queensland, pp. 18-19; S&C Electric, pp. 4-5 and pp. 15-16; TasNetworks, pp. 8-9; Horizon Power, p. 10.

AER should supervise the asset transfer between the DNSP and the third party when a third party transitions DNSP customers.²⁹³

Consent mechanism

Having established that it is necessary for a third party SAPS provider to obtain customers' consent to being transitioned off the grid to a third party SAPS, the Commission has considered the mechanism to seek consent. This includes how consent should be obtained, and the proportion of relevant customers whose consent the third party is required to obtain.

The Commission considers that customer consent to disconnect from the DNSP grid and transition to a third party SAPS should be obtained in written form. This would clarify the liability of the DNSP in disconnecting the customer from the grid and provide a basis for the third party to enter into a supply contract with the customer. As such, the Commission recommends that the national framework set out Explicit Informed Consent provisions in relation to customers disconnecting from the DNSP grid and transitioning to a third party SAPS.

In the case one customer is transitioning from DNSP supply to an individual power system or a third party microgrid, the proportion of consenting customers is not relevant as the customer will have consented. The relevance of the proportion arises when a group of customers is being transitioned off the DNSP grid by a third party. The Commission agrees with submissions and considers that all customers should consent to the transition, with 100 per cent providing Explicit Informed Consent to the transition.²⁹⁴ The Commission also recommends that jurisdictions have the ability to exempt third party SAPS from the 100 per cent consent requirement based on state policy objectives, for example.

Consent conditions

The Commission agrees with PIAC and considers that a third party wishing to transition a customer or group of customers off the DNSP grid and to a SAPS should provide the customer(s) with relevant information.²⁹⁵ The Commission also considers that the third party should be available to consult with the customer(s) over a specific period between proposing the transition and the date of the transition (if it goes ahead).

The relevant information provided by the third party should constitute a set of consent conditions, and include information about:

- the third party
- the SAPS system
- SAPS supply model, setting out service and maintenance responsibilities²⁹⁶
- expected consumer outcomes such as prices, service standards and consumer protection safeguards.

²⁹³ The role of the regulator in the asset transfer is discussed in section 6.3.

²⁹⁴ Submissions to the issues paper: AGL, p. 6; TasNetworks, pp. 8-9.

²⁹⁵ Submission to the issues paper: PIAC, p. 15.

²⁹⁶ The Commission will review the SAPS supply model and consumer protection framework for customers transitioned to third party SAPS in more detail in priority 2 of the review.

The Commission has considered that these customers should be treated as disconnected customers, and as such, agrees with submissions that reconnection to the DNSP grid would be treated as a new grid connection.²⁹⁷ Moreover, as the Commission has not recommended a direct role for the DNSP in the disconnection decision, the Commission considers that the DNSP's obligation for reconnection would be equivalent to a new connection obligation at cost. However, the third party may offer to cover the costs of DNSP grid reconnection as part of the transition conditions.

6.2.4 Commission's draft position

In summary, the Commission's draft recommendations in relation to the decision-making framework for customer transition to a third party SAPS are as follows:

- an efficiency pre-condition for transitioning DNSP customers to a third party SAPS is not required, and the risk that the transition could impose costs on remaining customers will be addressed through the asset transfer and stranded assets mechanisms in the next section
- 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.

The Commission considers that these recommendations are most likely to enable energy consumers to select the energy supply option that they consider to be in their long term interest.

6.3 Asset transfer and stranded assets

Under NER cl. 6.5.1 (a), the DNSP can only include assets that it uses to provide standard control services in its regulatory asset base. As such, the DNSP cannot include in its regulatory asset base assets that it is no longer using to provide standard control services, such as those used to supply customers that have transitioned to a third party SAPS.

This section discusses the Commission's draft recommendations in relation to the framework for accounting for these assets. These assets may either be transferred from the DNSP to the third party SAPS provider upon commercial agreement of the two parties, or stranded. Stranded assets are those that are not transferred to the third party SAPS provider, but which are no longer required by the DNSP to supply either the transitioned customers or customers left behind on the grid.

This section discusses the following:

²⁹⁷ Submissions to the issues paper: Ausgrid, p. 7; Energy Queensland, pp. 18-19; TasNetworks, pp. 8-9; S&C Electric, pp. 4-5 and pp. 15-16.

- asset transfer between the DNSP and the third party SAPS provider
- stranded assets
- accounting for asset transfer and stranded assets.

6.3.1

Background

Transitioning customers from the interconnected grid to a third party SAPS supply model may involve the removal or decommissioning of the set of assets previously used to supply the transitioned customers from the grid, and may also entail the transfer of other assets between the DNSP and the third party SAPS provider.

As discussed in section 6.2, this section considers the accounting and compensation for the efficiency loss resulting from:

- asset transfers from the DNSP to the third party, which are assets that were previously used by the DNSP and that the third party SAPS provider wishes to use to provide the SAPS service, and the DNSP and third party have agreed to transfer the assets between them
- stranded assets, which are assets that were used by the DNSP and that will no longer be used by either the DNSP or the third party SAPS provider.

For both sets of assets:

- the SAPS provider is required to compensate the DNSP (and therefore the remaining DNSP grid customers) for the value of those assets
- the DNSP is required to write the assets off from its regulatory asset base.

6.3.2

Stakeholder submissions

Ausgrid, Endeavour Energy and Energy Queensland considered that the AER should approve the values of transferred assets, and that they should be treated the same way as asset disposals so that the remaining grid customers should not become worse off as a result of the transfer.²⁹⁸ SAPN considered that there should be no stranded assets as a result of the transfer as only assets at the end of their economic lives should be replaced by third party SAPS.²⁹⁹ ENA and TasNetworks considered the mechanism to compensate the DNSP and the remaining customers for the transferred assets to be an essential part of the framework, and Endeavour Energy considered that the compensation should be based on the residual asset value.³⁰⁰ Essential Energy suggested that the AER should publish a guideline on the asset transfer process.³⁰¹

Ausgrid considered that the dispute resolution framework under Chapter 8 of the NER was sufficient.³⁰² PIAC considered that the national framework should design an independent

²⁹⁸ Submissions to the issues paper: Ausgrid, p. 7; Endeavour Energy, p. 3; Energy Queensland, pp. 18-19.

²⁹⁹ Submission to the issues paper: SAPN, p. 2.

³⁰⁰ Submissions to the issues paper: ENA, p. 10; TasNetworks, pp. 8-9; Endeavour Energy, p. 3.

³⁰¹ Submission to the issues paper: Essential Energy, p. 26.

³⁰² Submission to the issues paper: Ausgrid, p. 7.

dispute resolution process for transfer of assets from the DNSP to a third party, under which disputes are recorded and reported to the AER.³⁰³

6.3.3 Commission analysis

Asset transfer

The Commission considers that the third party may wish to purchase DNSP assets after customers decide to transition from the DNSP grid to a third party SAPS. This would be more relevant where, for example, customers are transitioning from a DNSP SAPS to a third party SAPS, or from a DNSP interconnected grid to a large microgrid (for example a whole town, which would contain existing distribution assets that could be used for the microgrid).

The Commission considers that these transfers would be governed by commercial negotiations between the DNSP and third party. The DNSP may not wish to sell the assets, and the third party SAPS provider may not wish to purchase them.

However, the Commission considers that the compensation for the transferred assets that the DNSP receives from the third party should be included in the DNSP's regulatory accounts. Moreover, the Commission considers that any assets that are no longer used to supply DNSP customers should be removed from the DNSP's regulatory asset base. This is discussed under accounting for asset transfer and stranded assets, below.

Stranded assets

Following the discussion in the previous section about the drivers for a customer transition from the DNSP grid to a third party SAPS, it follows that customers may transition before the DNSP assets serving them reach the end of their economic lives. Such assets would then be stranded if:

- the DNSP and the third party SAPS provider do not agree on an asset transfer, in cases where the assets would have been useful for the third party SAPS
- the assets are not useful for the third party SAPS (for example, interconnected grid assets in case of a transition from DNSP interconnected grid or different SAPS solution assets in case of a transition from a DNSP SAPS).

The Commission agrees with submissions and considers that the third party should compensate the DNSP for the efficiency loss that results from asset stranding.³⁰⁴

As such, the third party may choose to recover this compensation from the transitioned customers through a one-off or ongoing fee. Depending on who the third party is, it may decide to subsidise this compensation itself for the customers (for example, a local council may obtain a direct subsidy for this from the relevant jurisdiction).

In the context of designing the third party SAPS supply model under priority 2 of the review, the Commission will consider in more detail the mechanism to account for the compensation in the prices charged to the transitioned customers.

³⁰³ Submission to the issues paper: PIAC, p. 15.

³⁰⁴ Submissions to the issues paper: Ausgrid, p. 7; Endeavour Energy, p. 3; Energy Queensland, pp. 18-19.

Moreover, the Commission considers that these assets should be written off the DNSP's regulatory accounts. This is discussed under accounting for asset transfer and stranded assets, below.

Accounting for asset transfer and stranded assets

Transitioning customers from a DNSP's interconnected grid or SAPS to a third party SAPS could result in the following:

- assets that are directly linked to the supply of electricity to the transitioned customers could either become stranded or are transferred to the third party
- costs of assets that were previously used to supply electricity to both the transitioned customers and those that are left behind on the DNSP's grid but, going forward, will only be used to supply the customers that continue to be grid connected, will only be recovered from these remaining DNSP grid customers.

The Commission agrees with ENA and TasNetworks that efficient accounting for asset transfer and stranded assets is an essential component of the framework.³⁰⁵

The DNSP should be required to remove from its regulatory asset base any assets that it no longer requires to serve the remaining grid customers, which includes stranded assets and assets transferring to the SAPS (for example, in the case the DNSP agrees to a transfer of assets from a DNSP SAPS to a third party SAPS).

The Commission agrees with submissions³⁰⁶ and considers that the asset disposal methodology in the NER could be used to write off assets from the regulatory asset base:³⁰⁷

The previous value of the regulatory asset base must be reduced by the disposal value of any asset where that asset has been disposed of during the previous regulatory control period.

The AER will have an oversight role on how the DNSP accounts for the asset transfer and stranded assets through the revenue determination process. The AER will write off the assets based on their values and remaining assets lives in the regulatory asset base.

The Commission does not recommend that a DNSP's revenue determination be re-opened during the regulatory control period for this, as that would impose significant costs on both the AER and the DNSP. It is within the AER's discretion to include a trigger to this effect in the DNSP's revenue determination if it considers that the benefit of writing off the asset on the revenue determination outweighs the costs.

6.3.4

Commission's draft position

In summary, the Commission's draft recommendations in relation to the asset transfer and stranded assets due to customer transition from a DNSP to a third party SAPS are as follows:

³⁰⁵ Submissions to the issues paper: ENA, p. 10; TasNetworks, pp. 8-9.

³⁰⁶ Submissions to the issues paper: ENA, p. 10; TasNetworks, pp. 8-9; Endeavour Energy, p. 3.

³⁰⁷ NER schedule 6.2, S6.2.1(6).

- the third party should compensate the DNSP for costs related to stranded assets as a result of the transition under AER guidance, and may choose to levy this compensation on the transitioned customers
- the national framework should also set out provisions for the AER to account for any asset transfer, re-allocation and stranding in the DNSP's regulatory accounts.

The Commission considers that these draft recommendations will allow the efficient allocation of the costs of transitioning customers to a third party SAPS between DNSP grid customers and transitioned customers.

7 LODGING A SUBMISSION

Written submissions on this draft report must be lodged with Commission by 5 February 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
ACT	Australian Capital Territory
AEC	Australian Energy Council
AEMA	Australian Energy Market Agreement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
CEC	Clean Energy Council
CESS	Capital expenditure sharing scheme
COAG	Council of Australian Governments
Commission	See AEMC
CPI	Consumer price index
DAPR	Distribution annual planning report
DMIS	Demand management incentive scheme
DMO	Default market offer
DNSP	Distribution Network Service Provider
DSES	Demand-side engagement strategy
EBSS	Efficiency benefit sharing scheme
EMTPT	Energy Market Transformation Project Team
ENA	Energy Networks Australia
ESC	Essential Services Commission (Victoria)
ESCOSA	Essential Services Commission of South Australia
EWON	Energy and Water Ombudsman NSW
GSL	Guaranteed service level
IPS	Individual power system
MCE	Ministerial Council on Energy
MW	Mega watt
MWh	Mega watt hour
MAIFI	Momentary average interruption frequency index
MSATS	Market settlement and transfer solutions
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
NSW	New South Wales
PIAC	Public Interest Advocacy Centre
PV	photovoltaic
RIT-D	Regulatory investment test for distribution
SAIDI	System average interruption duration index
SAIFI	System average interruption frequency index
SAPN	SA Power Networks
SAPS	Stand-alone power system
SWER	Single wire earth return
TEC	Total Environment Centre
TNSP	Transmission Network Service Provider
QCA	Queensland Competition Authority

A WORKED EXAMPLE FINANCIAL FLOWS FOR ILLUSTRATIVE SAPS MODELS

This appendix provides worked examples of the NEM consistency and integrated service delivery models focused on illustrating the manner in which financial payments would occur.

Consistent with the discussion in section 4.4, these examples are based on the assumption that under the two illustrative options:

- The SAPS solution is lower cost than grid connection. It is assumed that this analysis has already been undertaken with a clear net (financial) benefit identified from the move to services provided by a SAPS.
- The SAPS customer has reliability protections equivalent to those for grid-connected customers.
- The SAPS customer faces the same cost of electricity supply as if they are still grid connected.
- Other DNSP customers receive a share of cost savings through lower network charges consistent with the existing efficiency benefit sharing scheme (EBSS) and capital expenditure sharing scheme (CESS) i.e. 70 per cent of savings returned to customers.
- The DNSP retains a share of reduced costs under the EBSS and CESS (i.e. 30 per cent of savings retained by DNSP).

Further, in order to provide example financial flows, the following common assumption are used:

- SAPS customer annual energy consumption is 10MWh/year.
- A SAPS solution is load following, that is it simply generates to satisfy anytime demand up to the peak design capacity.
- Average NEM wide retailer gross margin (for managing wholesale price risk, customer acquisition and retention, billing and credit management) is 16% of small residential customer bill.³⁰⁸
- The SAPS solution is a total system solution i.e. total system long run incremental cost (TSLRIC), it includes: generation, transmission and distribution together with any necessary retail services.
- The efficient cost of the SAPS solution is \$22,500/yr + \$100/MWh + retail costs where necessary.³⁰⁹
- The customer bill is \$330/yr + \$300/MWh (based on assumed typical small customer price). For 10MWh/yr this is a total of \$3,300 per annum.

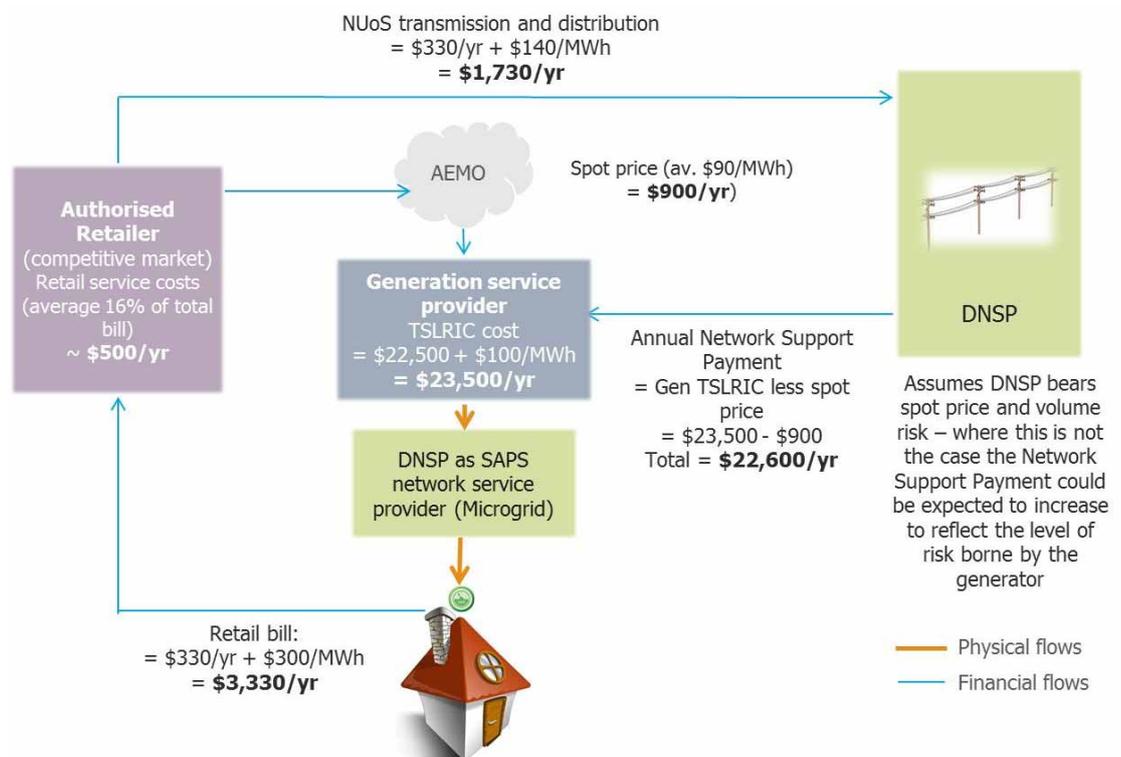
³⁰⁸ ACCC, Retail Electricity Pricing Inquiry, final report, June 2018, p. 8.

³⁰⁹ Efficient SAPS costs used in the examples are assumed to be an upfront capital cost of \$150,000 (converted into a real annuity of \$17,500/yr), fixed O&M costs of \$5,000/yr and variable operating costs of \$100/MWh. For simplicity, the \$100/MWh charge is assumed to reflect the average cost per MWh delivered by a mix of solar PV/battery and diesel generation capacity.

It should be noted, that these assumptions are provided assist in illustrating financial flows and are unlikely to reflect actual SAPS costs which may vary significantly based on locational and other factors.

A.1 NEM consistency model

Figure A.1: illustration of SAPS NEM consistency model



Source: AEMC

Note: Balance of household payments will cover environmental charges

The above figure highlights the conventional financial flows of the NEM consistency model, with the customer continuing to pay the same \$3,300/yr to their existing retailer who in turn forwards network charges of \$1,730/yr to the DNSP and settles with AEMO for all electricity. The SAPS independent generator will in turn receive an energy payment from AEMO (\$900/yr) together with a make whole payment from the DNSP of \$22,600/yr consistent with its contractual arrangements for SAPS generation services with the DNSP.

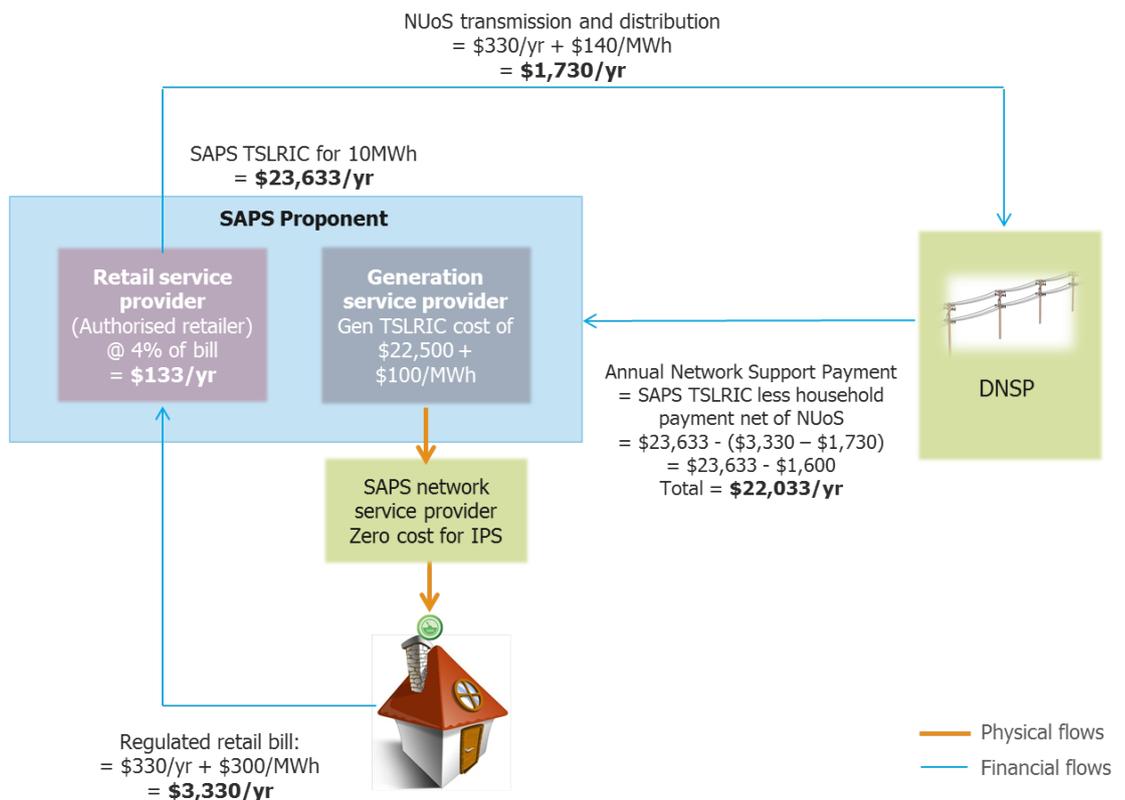
In this NEM consistency model, spot price risk may be held by either the generator or DNSP. Where this risk is held by the DNSP, the SAPS generator receives the spot price from the retailer (via AEMO) and receives a balancing payment to ensure that the SAPS generator exactly receives the efficient contractually agreed payment for providing generation services. The DNSP therefore holds all wholesale market price risk.

In contrast, where the SAPS generator holds this risk, it receives the spot price from the retailer (via AEMO) and receives a balancing payment from the DNSP based on the difference between the (agreed) forecast wholesale spot price and the efficient contractually agreed payment for providing generation services. The basis for setting the agreed forecast wholesale spot price would be part of the initial contractual negotiations, for example, an agreed forecast price could be set for the length of the contract period or updated on an agreed basis annually etc. Different approaches would expose the SAPS generator to different levels of forecasting risk.

In theory, either party could seek to hedge wholesale price risk through the contract market noting that the materiality of the wholesale price risk is likely to be relatively low compared to the costs of the distribution service in remote areas.

A.2 Integrated service delivery model

Figure A.2: illustration of SAPS integrated service delivery model



Source: AEMC

Note: There is an open question of what happens to environmental charges

The above figure illustrates the financial flows under the integrated service delivery model. Under this model, the customer continues to pay the same $\$3,300/\text{yr}$ to their new service provider (in this instance the SAPS proponent) who in turn forwards network charges of

\$1,730/yr to the DNSP and receives a make whole payment of \$22,033/yr from the DNSP consistent with its contractual arrangements for provision of the integrated SAPS services NSP. Unlike the NEM consistency model, there is no involvement with AEMO or interaction with the NEM either physically or financially.