AEMC

REVIEW

Australian Energy Market Commission

FINAL REPORT

UPDATING THE REGULATORY FRAMEWORKS FOR EMBEDDED NETWORKS

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INQUIRIES

Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

E aemc@aemc.gov.au
T (02) 8296 7800
F (02) 8296 7899

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ABOUT THE AEMC

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

SUMMARY

1 The Australian Energy Market Commission (AEMC or the Commission), in consultation with a wide range of stakeholders, has developed a new regulatory framework for embedded electricity networks.

2 The Commission has previously found that the current regulatory arrangements for embedded electricity networks are no longer fit for purpose, resulting in some customers not being able to access competitive prices or important consumer protections. There are also insufficient monitoring and enforcement powers, leading to a lack of clarity that embedded network operators are meeting their obligations as suppliers of an essential service. While some embedded networks are providing benefits to energy consumers that they may not receive in a standard supply arrangement, often they do not.

3 In this report, the Commission presents a package of law and rule changes that will apply to new embedded networks to address these issues. The new framework will elevate new embedded electricity networks into the national regulatory regime under the National Electricity Law (NEL), National Energy Retail Law (NERL), National Electricity Rules (NER) and National Energy Retail Rules (NERR). Proposed drafting amendments for the NER and NERR, and drafting instructions for the NEL and NERL, have been published to accompany this report.

4 The new regime will improve consumer protections and access to retail market competition for embedded network customers by extending many of the arrangements for grid-supplied customers to embedded networks. The Commission's view is that consumer protections should be driven by the needs of customers and not the business model of suppliers. Careful consideration has been given to whether, and if so how, these arrangements should apply in existing embedded networks.

5 Ombudsmen, consumer groups, retailers and the Australian Energy Regulator (AER) expressed overall support for the new framework. These stakeholders considered the elevation of embedded networks in the national regime would assist in providing consistent treatment for most small customers, including through greater access to retail competition and the extension of consumer protections.

6 The proposed framework will not be implemented until the COAG Energy Council has redrafted electricity and energy retail laws based on the AEMC's proposed law change descriptions, and these have been made by the South Australian Parliament. The proposed changes to electricity and energy retail rules will then be able to be made. Following the enactment of this package of law and rule changes, jurisdictions may also need to make amendments to jurisdictional instruments and the Australian Energy Market Operator (AEMO) and the AER will require a transitional period to consult on and update relevant procedures and guidelines.

Background

7 The National Electricity Law requires that an entity which owns, controls or operates a

transmission or distribution system register with AEMO unless exempted by the AER from doing so. Similarly, the NERL requires that a person must be authorised to sell energy to a person for premises unless exempted by the AER from obtaining an authorisation.

8 Embedded networks are private electricity networks – that is, they are owned and operated by parties that have been exempted from the requirement to register with AEMO – which serve multiple customers and are connected to another distribution or transmission system through a parent connection point.

9 Generally, the exempt network service provider also purchases electricity at the parent connection point and on-sells it to customers at child connection points within the embedded network. Such sales are referred to as being 'off-market', in that they are not conducted through the National Electricity Market (NEM). On-selling entities must hold a retailer authorisation from the AER or be exempted by the AER from having to hold a retailer authorisation.

10 Common examples of embedded networks include shopping centres, retirement villages, apartment complexes and caravan parks. Embedded networks may occur as new developments or as retrofits of existing buildings. In addition, they may – but at present usually do not – include distributed energy resources such as solar photovoltaic (PV) panels, battery storage, or diesel generators within them.

11 In recent years, there has been a significant increase in the number and scale of embedded networks, with the residential apartment market being the primary driver of this growth.

12 This reflects a shift towards higher-density living, together with the evolution of a 'business model' associated with installing and operating embedded networks. While there continue to be large numbers of 'traditional' embedded network operators such as caravan parks and retirement villages, in recent years new types of businesses have emerged that fund and supply the metering and other electrical infrastructure in apartment complexes. In return, these businesses may receive lengthy contracts to provide power to the whole building and effectively become a monopoly retailer to occupants. Many such businesses also provide other bundled services, including hot water, chilled water for air conditioning, gas for cooking and telecommunications.

13 Across the NEM, the number of residential network exemption registrations increased from around 500 in 2014 to around 2,500 in 2018. In total, there are currently almost 4,500 embedded electricity networks that have been registered as being exempt from registering as a Network Service Provider. There are also a number of networks that are deemed to be exempt from registering as a network service provider, data for which are unavailable given they are not required to register with the AER. There is limited data available on the number of embedded network customers. However, stakeholders have suggested that the current amount could exceed half a million customers. The Commission understands that in Victoria alone there are approximately 117,000 residential customers connected to registered exempt networks.

14 The regulatory frameworks for exempting networks from registration and retailers from authorisation were developed to address limited risks associated with a limited set of

activities where the sale and supply of electricity was not an entity's core business in developments such as caravan parks, shopping centres, office buildings and apartments. Thousands of embedded networks have now been exempted, even where these are being run as a core business by specialised operators, leading to concerns regarding the appropriateness of the exemption frameworks.

Problems with the current regulation of embedded networks

15 In December 2016, the Commission was requested by the COAG Energy Council to undertake a review of the regulatory arrangements for embedded networks. In doing so, we were asked to determine whether the current arrangements remain appropriate, to identify and assess any issues arising and to outline potential solutions to any identified problems.

16 The final report for the review was published in December 2017. In it the Commission set out its finding that the exemption framework is no longer fit for purpose in the face of the growth in the number and scope of embedded networks. The current framework does not strike an appropriate balance between innovation, consumer protection and facilitating consumer access to retail market competition.

17 In particular, the Commission found significant practical barriers to customers in embedded networks accessing retail market competition, despite earlier regulatory reforms that sought to put in place arrangements to allow for this. Currently, customers of exempt on-sellers in embedded networks are not included in AEMO's retail market systems, and so competing NEM retailers are unable to quote, transfer and bill customers using standard market processes. Bespoke embedded network tariffs and billing arrangements also require NEM retailers to adapt product offerings and operate manual processes to manage transactions with embedded network customers. These issues mean that, in practice, embedded network customers have limited ability to change supplier if they are unhappy with the price they are paying or the level of service they are receiving.

18 While embedded network customers do benefit from some consumer protections imposed by the AER as conditions of exempting embedded network operators from registering as a network service provider and being authorised as a retailer, these consumer protections are more limited than those applicable for standard supply arrangement customers. Consumer protection gaps exist in areas such as de-energisation and re-energisation obligations, obligations to provide connection services, life support arrangements, information provision and retailer of last resort arrangements. There are no reliability standards or guaranteed service level payments for outages that apply to customers in embedded networks, as well as gaps in safety obligations in some jurisdictions. It is also more difficult for embedded network customers in some jurisdictions to access concessions and ombudsmen schemes.

19 Finally, the current exemption frameworks suffer from an inadequate compliance and monitoring regime, in that the AER does not place reporting requirements on exempt parties and therefore has no visibility over their compliance with exemption conditions. There are also limited enforcement options available to the AER.

20 These issues can further be exacerbated by the complexity of some business models, which can involve owners corporations, embedded network operators, billing agents, exempt sellers

and authorised retailers. There are instances, for example, where authorised retailers undertake selling activities in embedded networks where a retail exemption is in place, and this makes it difficult for the AER and ombudsmen to determine which parties are responsible for the supply and sale of energy, and which obligations apply to them.

21 These findings have been confirmed through the course of this review. Examples of the types of problems that embedded network customers have faced are described in the box below.

22 Fundamentally, the Commission concluded that consumer protections should be driven by the needs of consumers, rather than the business model of the supplier. In any event, the provision of embedded network and retail services is increasingly being performed by entities for which this is their core business.

BOX 1: CHALLENGES FACED BY EMBEDDED NETWORK CUSTOMERS

Throughout our discussions with stakeholders, the Commission has been informed of numerous examples where embedded network customers have faced significant challenges in relation to their electricity supply and related customer service. Many of these issues would either not arise for standard supply customers, or else other customers would have a clearer path for resolution.

Pricing. Anecdotal evidence and some submissions presented to the Commission suggest many customers in embedded networks appear to be paying the standing offer price or very close to it. They are not sharing in the lower prices paid by the on-seller. While some jurisdictions do not permit certain embedded networks to profit from the sale of energy, we have heard examples where the on-seller has no incentive to obtain the best market offer so customers end up paying more than they would on a competitive market offer.

Access to competition. We have heard many examples of customers being unable in practice to access retail competition and move on-market. This can be because of an inability to obtain a National Meter Identifier (NMI), delays by embedded network operators, lack of retailers willing to make an energy-only offer, costs, and other barriers.

Access to rebates and concessions. Despite improvements, there are still difficulties for some embedded network customers in accessing concessions and rebates. The reasons for this vary between jurisdictions, but can be due to gaps in jurisdictional legislation or a refusal by embedded network operators or billing companies to administer applications.

Customer protections. Some of the customer protections in the NERL and the NERR, such as those relating to life support arrangements and notification of outages, do not apply to customers in embedded networks because the tripartite relationship between retailer, customer and network operator does not translate in the context of embedded networks. An example was given to the Commission where a life support customer in an embedded network was not given any notification of a supply interruption.

Billing. We have heard many complaints about the accuracy of bills and the information provided on bills. We were informed of instances where customers were billed charges that

were in addition to the permitted electricity charges.

Compliance. Consumer groups, ombudsmen and individual consumers have given us numerous examples of conduct that appears to be in breach of current exemption conditions. The AER has limited ability to investigate and take enforcement action in relation to these.

Access to ombudsmen. Jurisdictions are extending access to energy ombudsmen but it does not exist yet in all jurisdictions. State ombudsmen have told us that they have received a significant number of complaints that they have been unable to act upon.

Reliability. Reliability standards and Guaranteed Service Levels (GSL) do not apply to outages in the embedded network. Further, for outages on the main distribution network, an embedded network is generally treated as a single customer. This means, for example, that embedded network customers are not individually eligible for GSL payments.

Connections. There are no clear connection obligations or connection standards under the current framework. We have heard a number of stories of customers who are unable to connect appliances such as air conditioners due to capacity limitations that are far below those of standard grid connected customers. In some instances, the appliances were needed for health reasons.

Safety. The application of safety rules to embedded networks in some jurisdictions is unclear.

Consumers also have difficulty relying on other existing regimes such as tenancy laws. Consumers' rights are not as comprehensive under these regimes. Consumer groups have also given us case studies of how customers are often reluctant to bring a dispute against their embedded network operator where that person is also their landlord, particularly for vulnerable customers. In one extreme example a customer raised an issue and was subsequently locked out of their accommodation as retaliation.

These issues are not limited to residential customers. The Commission has been given a number of examples of these issues experienced in commercial embedded networks such as shopping centres. These include bills set at or very close to the standing offer, poor quality and inaccurate bills and significant barriers to accessing competition.

Source: AEMC's informal consultation with, and submissions from, consumer groups, ombudsmen and individual customers.

Recommendations made in the 2017 *Review of regulatory arrangements for embedded networks*

23 Given the above findings, in the 2017 Review the Commission recommended changes to the regulatory framework for embedded networks to address the identified issues. The proposed package of changes included:

- improving consumer access to retail market competition in legacy and new embedded networks, by capturing all embedded network customers in AEMO's market systems and by standardising network billing arrangements between embedded networks and NEM retailers

- elevating new embedded networks into the national regulatory frameworks, including through the registration of embedded network service providers (ENSPs), the authorisation of on-selling retailers and the extension of standard NEM metering arrangements to embedded networks
- narrowing the network service provider and selling exemption frameworks for new embedded networks to apply only to circumstances where the costs of registration as an ENSP and retail authorisation would outweigh the benefits to consumers and where the need for regulatory oversight is low
- enhancing consumer protections in legacy and new embedded networks through improving the AER's ability to monitor and enforce exemption conditions, addressing gaps in the NERL and NERR for embedded network customers supplied by an authorised retailer and improving the information provided to consumers entering embedded networks or involved in the conversion of a property to an embedded network.

24 In the 2017 review's final report, the Commission noted that it intended to commence work on developing detailed advice on implementing the proposed recommendations set out in that report, unless advised otherwise by the COAG Energy Council by July 2018. The COAG Energy Council subsequently noted its support for the Commission undertaking this work.[1]

Approach

25 On 30 August 2018, the Commission published terms of reference for providing detailed advice on updating the regulatory frameworks for embedded networks.

26 The purpose of this review was to provide advice to the COAG Energy Council on the detailed amendments to the regulatory framework that are required to implement the recommendations made by the Commission in the 2017 *Review of regulatory arrangements for embedded networks*.

27 The recommendations collectively establish a new regulatory framework for embedded networks and, through the review, the Commission has developed a package of changes to the NEL, NERL, NER, NERR and any other relevant regulatory instruments required to give effect to this new framework.

28 In addition to developing the package of framework changes, the Commission has provided advice to the COAG Energy Council on the appropriate pathway for implementation of the changes.

29 The Commission has closely coordinated the review with its work on stand-alone power systems. On 23 August 2018, the COAG Energy Council requested that the AEMC undertake a review of the regulatory arrangements for stand-alone power systems. Stand-alone power systems are electricity arrangements that are not physically connected to the national grid. The two reviews considered similar policy and legal issues, particularly in relation to consumer protections. Both reviews have resulted in recommendations for changes to national energy laws, and the COAG Energy Council may subsequently decide to progress

1 COAG Energy Council, *Terms of Reference - Review of changes required to the national electricity framework for stand-alone power systems*, July 2018, p. 5.

these as a single legislative package.

30 In developing the final package of changes, the Commission has undertaken informal consultation with a wide range of stakeholders, including AEMO, the AER, consumer groups and ombudsmen, embedded network operators and state, territory and commonwealth officials.

31 The Commission also held a number of stakeholder workshops and webinars to obtain feedback on its proposed framework.

32 This report forms the final report for the review. It presents and explains the Commission's final package of changes to give effect to the recommendations of the 2017 Review.

33 Alongside the report, the Commission has published:

- rules drafting for recommended changes to the NER and NERR
- drafting instructions for the recommended changes to the NEL and NERL.

Overview of the new framework

34 Electricity is an essential service and, as set out above, the Commission recommended in its 2017 review that customers in embedded network should have the equivalent consumer protections as standard supply customers. As suppliers of an essential service, the Commission recommended the registration of ENSPs and the authorisation of on-selling retailers so that customers could be provided the same protections, access to retail market competition and regulatory oversight as standard supply customers.

35 The package of proposed changes which are necessary to achieve this is inevitably detailed given the complex nature of embedded network arrangements. The proposed changes impose additional regulatory obligations on embedded network businesses which may increase the costs of operating for some of these businesses. The Commission has given careful consideration to the trade-offs between the benefits of providing customers with improved protections and access to retail competition and the costs to embedded network owners and operators, and has sought to design the new arrangements in a way that minimises costs while still delivering benefits for consumers. We are satisfied that the final proposed framework achieves an appropriate balance, particularly in respect of legacy networks. Furthermore, while the costs to embedded network businesses may increase, prices for embedded network customers may come down due to these embedded networks businesses having to compete with other retailers to keep their customers.

36 The proposed framework facilitates the establishment of embedded networks where it is efficient to do so without compromising consumer protections or access to retail market competition. Implementing the proposed framework may therefore alter the incentives for establishing an embedded network depending on the nature of the entity wishing to provide the service, the type of development and the number and types of customers.

37 It is likely that small entities, such as a single owners' corporation, will find it costly to become registered and authorised and to comply with the proposed framework. The Commission anticipates that the developers and owners of embedded networks will instead

appoint a third party service provider that has the necessary registration and authorisation. This is similar to what already happens now in many smaller embedded networks where many activities are performed by third party billing agents and other service providers, except that those service providers are currently unregulated. Smaller developments, such as a set of townhouses, may also find the cost of connecting premises directly to the LNSP's network may be more cost effective than establishing embedded network arrangements.

38 As is the case now, authorisation as a retailer will only be required where there is a 'sale of energy'. As such, the proposed framework does not capture a number of other arrangements such as where the rent that is charged for a premises includes the provision of electricity. This means that smaller businesses which continue to provide electricity incidentally to another service may continue to do so unaffected.

39 The proposed framework is designed to strike a balance between providing important consumer protections and not placing undue costs on owners and operators of embedded networks. Larger operators are of a scale similar to retailers in the NEM, and it is appropriate that they bear costs in the same way. Some smaller operators, for instance caravan parks, may still be exempt if they are only supplying temporary customers or are not considered to be undertaking the sale of energy. Where smaller entities would be selling energy to permanent customers, they may be able to minimise the costs associated with operating an embedded network by outsourcing this or avoid these costs entirely by not establishing an embedded network in the first place.

40 This report presents and explains the Commission's final proposed package of changes to implement the new regulatory framework for embedded networks. The proposed changes are discussed in the following themes:

- registration and exemption
- consumer protections in the NERL and NERR
- market and system integration
- network billing
- connection of retail customers
- connection of registered participants
- arrangements for existing embedded networks
- implementation of the new framework
- embedded gas networks.

41 The report also highlights areas of jurisdictional regulation that jurisdictional governments and regulators may need to give consideration to as part of the implementation of the new framework.

Registration and exemption

42 The proposed framework would significantly reduce the number of parties eligible for network service provider and retail exemptions as compared to today. Instead, two new roles would be created:

- Embedded Network Service Providers (ENSPs), which will be required to register with AEMO and will be subject to many of the existing regulatory requirements placed on Distribution Network Service Providers (DNSPs), and
- Off-market retailers, which will be required to obtain an authorisation from the AER, and will be subject to most requirements that existing authorised retailers are subject to.

43 The number of exemptions will be further reduced by clarifying the definition of the term 'distribution system' such that a number of network activities currently subject to deemed exemptions under AER guidelines would no longer be considered to be a network activity for the purpose of the NER.

44 The registration of ENSPs and authorisation of off-market retailers will result in benefits to consumers by allowing obligations relating to consumer protections and retail market competition to be placed directly on these parties, and for improved enforcement of these obligations by the AER. For those exemptions that are retained, transparency will be enhanced by requiring all exempt parties to register with the AER. The following table illustrates the proposed treatment of a number of common types of embedded network.

Table 1: Proposed treatment of common embedded network types under the proposed framework

ACTIVITY	CURRENT	PROPOSED
Short term holiday accommodation	Deemed exempt	Registered exempt
Small commercial and residential complexes	Deemed exempt	Registered network service provider and retailer
Large commercial and residential complexes	Registered exempt	Registered network service provider and retailer
Retirement villages	Registered exempt	Registered network service provider and retailer
Long term holiday accommodation	Registered exempt	Registered network service provider and retailer
Shopping malls	Registered exempt	Registered network service provider and retailer

Note: The listed activities refer to both energy supply and sale activities and are derived from current AER exemption classes.

45 In relation to monitoring and compliance, the new framework will increase regulatory oversight of parties providing services in embedded networks.

46 ENSPs will be treated as a type of registered participant under the NEL and the NERL, and required to comply with applicable provisions in the rules. This includes being subject to the AER's monitoring, investigation, and conduct powers, general information gathering powers and AER reporting requirements.

47 The new framework will require the majority of entities that would previously have been

eligible for a retail exemption to register under the NERL and NEL as off-market retailers, and generally become subject to the provisions applicable to NEM retailers. This includes being subject to the NERL compliance framework applicable to NEM retailers.

48 The Commission has also proposed measures to strengthen the compliance framework for existing and future exempt network service providers and exempt sellers, which will be important to improving outcomes for customers in legacy embedded networks. Exempt sellers will become subject to compliance audit provisions whilst exempt network service providers will be subject to general information gathering powers. Any breaches of exemption conditions will be enforceable by the AER as part of its monitoring, investigation and enforcement procedures with breaches of those exemption conditions or network exemptions enforceable under the law.

Consumer protections in the NERL and NERR

49 Under the framework, customers in new embedded networks which are registered with AEMO will be retail customers, supplied by either an authorised on-market NEM retailer or an authorised off-market retailer. This will enable consumer protections for embedded network customers to be closely aligned with those of standard supply customers under the NERL and NERR. While the creation of the separate class of authorised off-market retailer would allow the application of a reduced set of consumer protections, the Commission has concluded that almost all the existing consumer protections under the NERL and NERR should apply.

50 However, a number of minor amendments are required to the NERL and NERR to accommodate the broader relationships present in embedded networks. These include retailer and distributor interruptions and life support arrangements, which will require the involvement and coordination of multiple network service providers and retailers.

51 The Commission also proposes the establishment of a modified set of Retailer of Last Resort (RoLR) arrangements for embedded networks, where the retailer at the parent connection point would become the RoLR in the event of the failure of an off-market retailer. As well as providing continuity of supply to embedded network customers, this will provide some measure of protection to parent retailers in that they would then be able to recover costs from customers at child connection points directly.

Market and system integration

52 Integrating embedded networks into the NEM by extending the application of the NER metering framework is key to providing customers in embedded networks improved access to retail market competition and important consumer protections relating to metering data.

53 Under the new framework:

- Off-market retailers will be responsible for appointing a metering coordinator at their off-market child connection points, in the same way that retailers in the rest of the NEM appoint metering coordinators following the introduction of new metering arrangements in December 2017.

- ENSPs will be responsible for registering all child connection points with AEMO and maintaining information in AEMO's systems.

54 These arrangements will mean that metering in embedded networks is consistent with that in the rest of the NEM and will also allow off-market child connection points to be 'discoverable', removing a key barrier to retail competition for embedded network customers.

Network billing

55 Another important change to support retail competition is the introduction of standardised billing arrangements for the recovery of external network charges from embedded network customers who choose to go 'on-market' with an alternative retailer. These retailers purchase electricity directly from the NEM and sell this to the embedded network customer, rather than on-sell electricity bought at the connection point of the embedded network to the LNSP's distribution network. Where embedded network customers go 'on-market' like this, the external network charges are still paid by the exempt embedded network service provider at the connection point to the Local Network Service Provider's (LNSP's) distribution network.

56 At the moment, bespoke embedded network tariffs and embedded network billing arrangements require retailers to operate manual processes to manage transactions with large numbers of exempt network service providers. This represents a major practical impediment to consumers accessing retail market competition and being able to choose a market offer with an alternative retailer outside the embedded network.

57 To resolve these issues, the new framework provides for ENSPs registered under the new framework and existing exempt network service providers to:

- set network charges at a level no greater than the amount that the customer would have paid had it been directly connected to the LNSP's distribution network to which the embedded network is connected (the 'shadow price')
- use standardised processes and data formats to bill retailers these charges for on-market customers.

58 The proposed network billing arrangements do not apply to the arrangements between ENSPs and off-market retailers in embedded networks.

59 ENSPs will not be permitted to charge residential customers for any infrastructure costs associated with their internal embedded network. If mutually agreed, an ENSP may levy charges from large customers and/or large corporate entities for the internal network.

Connection of retail customers

60 As suppliers of an essential service, the Commission considers it appropriate for ENSPs to have obligations to connect new customers and to make requested alterations to existing connections within the embedded network. While the connection of new customers in an area served by an embedded network might be a relatively rare occurrence, in many cases it would likely be impractical for such customers to instead seek connection to the local DNSP's network, making the ENSP a monopoly provider. In addition, customers in some existing embedded networks report problems with the standard of their connections and difficulties in

agreeing alterations.

61 Consequently, the new framework places obligations on ENSPs to provide customer connection services under the NERL and Chapter 5A of the NER in a similar manner to DNSPs. However, unlike for DNSPs, it is proposed that a single connection policy covering all ENSPs will be established by the AER.

62 While it is not proposed that the connection charges levied by ENSPs be directly regulated by the AER (as would be the case for DNSPs), there will be obligations in place that require such charges to be reasonable and provisions that allow any disputes raised in this regard to be resolved by the AER.

Connection of registered participants

63 The Commission considers it important that where a large load or embedded generator connects to an embedded network, the relevant DNSP and AEMO have access to the information and tools they need to maintain network and system reliability and security. An important part of providing a secure and reliable power system is specifying technical requirements for the connection of load and generation to a network, including negotiating performance standards. The new framework provides a mechanism to determine (under Chapter 5 of the NER) and enforce (under Chapter 4 of the NER) compliance with performance standards.

64 Under the framework, embedded networks that connect a registered embedded generator will not be eligible for a network exemption. ENSPs will be required to negotiate performance standards as part of establishing a connection agreement with a registered participant. AEMO will have an advisory role on the acceptability of some negotiated access standards. The ENSP will also have an obligation under Chapter 5 of the NER to consult the relevant DNSP prior to entering into or modifying a connection agreement with a registered participant. The ENSP and relevant DNSP will both be included in the information flow under the compliance framework for performance standards under Chapter 4 of the NER.

65 While the ENSP will be required to meet certain obligations in establishing a connection agreement, the ENSP is not under any obligation to agree to connect a registered participant. The Commission considers there may be valid reasons why an ENSP may not wish to connect a registered participant, such as lack of network capacity or site characteristics. Unlike the connection process for retail customers under Chapter 5A of the NER which is important for preserving customer protections, the Commission does not consider this is necessary under Chapter 5. Rather, in imposing obligations associated with connecting registered participants, the Commission is concerned with preserving power system security.

Arrangements for existing embedded networks

66 In developing arrangements for legacy embedded networks the Commission has sought to balance the costs for existing embedded networks associated with the new framework with the benefits to their customers. There is a wide range of different types of existing embedded networks, and there are circumstances that mean a transition may be difficult or costly to implement. The Commission has sought to recognise this by tailoring the coverage of the

new framework to existing embedded networks and providing extended timeframes for their transition. Where embedded networks are not transitioned to the new framework, their customers will still be covered by other obligations relating to retail price setting and compliance.

67 Legacy embedded networks that are currently subject to deemed and individual exemptions will not be required to transition to the new framework. There is no means to identify existing deemed networks and achieving transition of these would be difficult. The Commission is also concerned there could be unintended consequences of transitioning embedded networks with individual exemptions without assessing each individual exemption on a case by case basis. This would be a complex and costly exercise.

68 For legacy embedded networks with registrable exemptions, there are two possible pathways depending on the age of the network:

- **full transition** to the new framework, whereby legacy embedded networks established on or after 1 December 2017 will be required to fully comply with the new requirements
- **partial transition**, whereby the legacy embedded networks established prior to 1 December 2017 will:
  - be required to comply with the arrangements for off-market retailers under the NERR, but will be exempt from the metering provisions in Chapter 7 of the NER
  - have network exemptions grandfathered into the new arrangements.

69 Legacy embedded networks may **seek an individual exemption** from having to register as an ENSP and seek authorisation by the AER as an off-market retailer. If granted, the legacy embedded network will therefore not need to transition.

70 The Commission has concluded that the age of the embedded network will be the key factor on which to base the transition, as this will determine the existing regulatory obligations applicable and so is an indicator of the potential costs involved in transitioning. The transition timeframe will also depend on the age of the network.

Implementation of the new framework

71 The proposed framework will not be implemented until the COAG Energy Council has redrafted electricity and energy retail laws based on the AEMC's proposed law change descriptions, and submitted these to the South Australian Parliament to make, and the South Australian Minister for Energy has made the proposed rule changes. As it is not certain when this will occur, the Commission has not been able to identify specific dates for implementing the new framework. Nevertheless, the Commission has provided for transitional rules that will relate to the commencement day of the new legislation.

72 Following the commencement day, the following steps will need to occur to implement the new framework:

- The AER will be required to make the initial AER Exempt Network Guidelines which prescribe the classes of persons who are eligible to register a network exemption under

the revised Chapter 2 of the NER, to come into effect one year after the commencement day

- The AER will be required to make the initial guidelines for the approval of brownfield conversions, to come into effect one year after the commencement date
- As part of the Exempt Network Guidelines, the AER will be required to make Legacy Exempt Network Guidelines that will take effect one year after the commencement date. These will apply to grandfathered exemptions and to existing registrable exemptions while they transition to the new framework.
- Legacy exempt networks must transition, as required, to the new framework
- By one year after the commencement date, AEMO must:
  - make the shadow network charges procedure, which will come into effect one year after the commencement date
  - establish the shadow network charges database
  - prescribe a form of application for ENSPs seeking registration.

73 In addition, the following will need to occur:

- AEMO to make guidelines for registration as an ENSP under Chapter 2 of the NER
- AEMO to update its systems and procedures e.g. MSATS
- AER to update its retailer authorisation guidelines
- AER to make its network connection policy
- AER to update its compliance procedures and guidelines
- Information Exchange Committee to consider whether to amend its B2B procedures
- Off-market retailers to publish standard offers.

74 The implementation arrangements also specify how the AER will address network exemptions during the transition period.

75 The Commission has also recommended that, as part of implementing the new framework, jurisdictions consider aspects of their own jurisdictional legislation. These are discussed in Box 2.

BOX 2: JURISDICTIONAL REGULATIONS

To provide a complete set of consumer protection and safety regulations to consumers in embedded networks, there are state and territory functions that need to be considered. These include:

- access to state and territory concessions and rebates
- access to independent dispute resolution for both distribution and retail services
- retail price controls
- network reliability protections, including guaranteed service level (GSL) schemes

- other GSL payments
- safety requirements and monitoring regimes
- technical regulation, such as equipment and performance standards.

The Commission's analysis suggests that many of these types of jurisdictional regulations will apply automatically for retail activities under the new regulatory framework, given that off-market retailers will be subject to authorisation under the new framework. However, the situation is more complex for network activities, as jurisdictional obligations on networks are usually put in place through jurisdictional licensing schemes rather than as a consequence of network service provider registration with AEMO. This is something that jurisdictional governments and regulators may need to give consideration to as part of the implementation of the new framework.

Given the importance of network reliability in particular, the Commission has given consideration as to how jurisdictional frameworks might be amended to extend protections for existing DNSP customers to those of ENSPs. This would involve amending existing jurisdictional regulations for DNSPs in order to capture customers at child connection points, as opposed to treating parent connection points as only being single customers, and extending GSL schemes to cover ENSPs.

Embedded gas networks

76 Under the new framework, gas on-sellers will be captured by the requirement to obtain an authorisation from the AER to become an off-market retailer, and will also be subject to most requirements that existing authorised retailers are subject to. However, parties that were previously eligible for a deemed exemption specific to gas will be eligible for a registrable exemption. This includes, for example, persons selling unmetered gas to individual premises where gas is used for limited purposes.

77 In respect of embedded gas networks, the Commission has found that the current regulatory framework, both nationally and jurisdictionally, lacks clarity. It appears that little or no consideration has been given to arrangements for embedded gas networks in developing regulatory frameworks for gas pipelines. Advice obtained by the Commission suggests many embedded gas networks are likely to be outside the scope of the national regime. Further, there is no consistency in how embedded gas networks are treated between jurisdictions, and most jurisdictional regimes have a number of gaps in terms of customer protections.

78 There are a number of challenges in developing a regulatory framework for embedded gas networks consistent with that developed for electricity. Consequently, the Commission has recommended that at this stage embedded gas networks continue to be dealt with at a jurisdictional level. To address the gaps in the current jurisdictional frameworks, the Commission recommends that jurisdictions review whether their frameworks provide a minimum level of protection to customers of embedded networks.

79 The Commission also recommends that, in implementing any changes to improve customer

protections, jurisdictions should aim to provide embedded gas network owners and operators greater certainty as to whether, and if so how, they fit into the regulatory framework.

80 The Commission has provided jurisdictions with more detailed advice and would be happy to provide further assistance as jurisdictions conduct their reviews.

Changes between the draft and final reports

81 The broad framework remains unchanged between the draft and final reports. In response to stakeholder submissions, the Commission has made a number of changes to the detailed implementation of the framework in the proposed Rules and Law. At a high level, these include:

- introducing a framework for the connection of registered participants (for example, large generators) connecting to an embedded network, including how performance standards will be applied and enforced
- clarifying the application of the new framework to existing embedded networks
- reintroducing the ability for the AER to grant individual network exemptions
- no longer requiring the registration of off-market retailers by AEMO and instead requiring ENSPs to provide them with access to any necessary systems.

CONTENTS

TABLES

FIGURES

1 INTRODUCTION

This chapter outlines the following:

- the purpose of the review
- related work being undertaken by the AEMC
- stakeholder consultation activities throughout the review
- terminology used in this report
- the structure of this report.

1.1 Purpose of the review

The Australian Energy Market Commission (AEMC or Commission) published terms of reference for a review into *Updating the regulatory frameworks for embedded networks* on 30 August 2018. This review follows on from an earlier *Review of regulatory arrangements for embedded networks* completed in November 2017 (2017 Review) that recommended a package of changes to the regulatory frameworks that apply to embedded networks. The purpose of this current review is to advise on the detailed amendments to the regulatory framework that are required to implement the recommendations made by the Commission in the 2017 Review.

The 2017 Review was prompted by the significant uptake of embedded networks in recent years, the broadening scope and size of embedded networks and concerns in relation to varying consumer experiences. In this context, the Commission assessed the current regulatory arrangements that apply to embedded networks and found that they are no longer fit for purpose. To address the identified issues, the Commission recommended a new regulatory approach for embedded networks.[2]

The scope of the recommended package of changes included:

- improving consumer access to retail market competition in legacy and new embedded networks
- elevating new embedded networks into the national regulatory frameworks, including through the registration of most embedded network service providers (ENSPs) and the authorisation of off-market retailers
- improving consumer protections in legacy and new embedded networks by addressing regulatory gaps for customers in embedded networks and improved information provision, and better monitoring and enforcement.

In the final report for the 2017 Review, the Commission noted that it would commence work on developing detailed advice on implementing the proposed framework set out in that report, unless advised otherwise by the COAG Energy Council by July 2018. The Council advised that it supported the Commission commencing this work in mid-2018.[3]

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

3 COAG Energy Council, *Terms of Reference – Review of changes required to the national electricity framework for stand-alone power systems*, July 2018, p. 5.

Additional context for this review is set out in chapter 2.

Purpose of this final report

This report presents and explains the Commission's final proposed package of changes to the national regulatory frameworks to implement the new approach for embedded networks previously recommended by the Commission. It includes a pathway for legacy embedded networks to transition to the new framework where the benefits of doing so outweigh the costs, as well as a description of how the new framework will be implemented.

Alongside the report, the Commission has published:

- rules drafting for recommended changes to the National Electricity Rules (NER) and National Energy Retail Rules (NERR)
- drafting instructions for recommended changes to the National Electricity Law (NEL) and National Energy Retail Law (NERL).

1.2 Related work

The Commission undertook this review alongside a number of related projects, including a review of stand-alone power systems (SAPS) and its 2019 Retail Energy Competition Review.

Review of the regulatory frameworks for stand-alone power systems

The COAG Energy Council directed the AEMC to provide advice on required changes to the electricity regulatory framework, as set out in the NEL and NERL and associated rules and subordinate instruments, to allow for the use of SAPS where this would be economically efficient, while maintaining appropriate consumer protections and service standards.

The Commission has closely coordinated and considered linked policy and legal issues between the SAPS and the embedded networks work streams. The COAG Energy Council recommended the two work streams are coordinated to ensure strategic overview, efficiency and consistency, as the regulatory issues are similar for both reviews.

There are a number of synergies between the issues for customers in embedded networks and customers of SAPS, particularly with regard to consumer protections. The Commission has therefore progressed the development of these two frameworks concurrently.

The terms of reference for the *Review of the regulatory framework for stand-alone power systems* set out two priority areas of work. Priority 1 was to develop a national framework to facilitate the transition of grid-connected customers to SAPS supply provided by the current distribution network service provider, as well as a mechanism for the transition of grid-connected customers to third party SAPS supply. The final report for Priority 1 was published on 30 May 2019.

Priority 2 is to develop a national framework for SAPS that are provided by parties other than DNSPs. A draft report for Priority 2 will be published on 27 June 2019.

2019 Retail Energy Competition Review

In its *2018 Retail Energy Competition Review*, the Commission made a recommendation that, taking into account any voluntary codes developed, the AEMC should assess whether

changes to the National Energy Consumer Framework (NECF) are required to protect consumers receiving services and products from new energy service providers.[4]

The NECF was originally developed with the view that all consumers would be supplied through the interconnected electricity system, supported by a retail contract. Many products and services, such as solar and battery systems, are now provided by different entities, leading to an increasingly complex set of consumer relationships.

Moreover, some energy sales are not being defined and treated as such. For example, the cooling or heating of water using electricity or gas is being sold as 'bulk hot water' and often measured in units of water volume without standardised conversion in most jurisdictions.[5] This has caused uncertainty as to which regulatory frameworks to apply, in addition to difficulties for vulnerable customers in accessing energy rebates.

Consumer protection mechanisms that exist under the NECF and Australian Competition Law (ACL) apply in different ways for consumers who invest in solar and battery products. This can lead to some confusion for consumers when trying to resolve complaints relating to these products.

The *2019 Retail Energy Competition Review's* assessment as to whether changes to the NECF are required has taken into account the findings of the *Review of the regulatory framework for stand-alone power systems* and this review into *Updating the regulatory framework for embedded networks*. The report will be published on 28 June 2019.

1.3 Stakeholder consultation

In developing the final proposed package of law change descriptions and rule changes, the Commission has undertaken informal consultation with a wide a range of stakeholders, including:

- collaboration with the Australian Energy Regulator (AER) and the Australian Energy Market Operator (AEMO) on the most appropriate means of implementing the recommendations
- consultation with Energy Consumers Australia, other consumer groups and ombudsmen seeking feedback and input
- consultation with state, territory and commonwealth officials, including jurisdictional ombudsmen
- consultation with other stakeholders, including embedded network operators, caravan parks associations, shopping centre representatives, property developers, universities, retailers, distribution network service providers and consumer groups.

The Commission also held a series of workshops and public forums:

- On 23 October 2018, Commission staff gave a summary of the findings of the 2017 Review and the new regulatory framework under development. Engagement with

4 AEMC, *2018 Retail Energy Competition Review*, final report, 15 June 2018, p. 134.

5 Bulk hot water service generally refers to the individual distribution of water that is centrally heated or cooled in common systems.

participants at the workshop included roundtable discussions on a selection of issues with all stakeholder representatives.[6]

- On 22 February 2019, we gave an overview of a package of draft legislative changes to implement the recommendations made in the 2017 Review. At that stage, the focus was on the arrangements that would apply to new embedded networks. The workshop provided an opportunity for stakeholders to ask questions. Stakeholders were also asked to respond to specific questions posed by Commission staff.[7]
- On 8 May 2019, a workshop was held to discuss issues relating to legacy networks. A proposed framework for the transition of legacy embedded networks was presented, and stakeholders had an opportunity to provide input. A summary of proposed changes to the draft framework to reflect stakeholder views was also presented.[8]

Draft report

The key consultation document was a draft report published on 31 January 2019. The draft report set out a draft package of law change descriptions and rule changes. Alongside the draft report, the Commission published:

- rules drafting for recommended changes to the NER and NERR
- drafting instructions for recommended changes to the NEL and NERL.

The Commission received 49 submissions in response to the draft report.[9] While views on the specifics of the draft framework were varied, most Ombudsmen, consumer groups, private individuals and retailers, as well as the AER, expressed overall support for the new framework. These stakeholders considered the elevation of embedded networks into the national regulatory regime would assist in providing consistent treatment for most small customers, including through greater access to retail competition and the extension of consumer protections.

The views of embedded network operators and businesses were more mixed. While many supported the intention of the draft to improve protections for embedded network customers, some businesses were concerned that the regulatory costs associated with the draft framework would outweigh the benefits. There was also some concern that advantages of embedded networks could be eliminated, and that innovation could be stifled.

Specific issues raised in submissions to the draft report and the Commission's responses are discussed in more detail throughout the report.

1.4 Terminology used in this report

Box 3 lists the key terms that are used in this report in reference to the current and final proposed embedded network regulatory frameworks.

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6 A recording of the webcast and the slides from the workshop are available on the AEMC's website, see: https://www.aemc.gov.au/market-reviews-advice/updating-regulatory-frameworks-embedded-networks.

7 The slides from the workshop are available on the AEMC's website, see: https://www.aemc.gov.au/sites/default/files/2019-02/Stakeholder%20workshop%20slides.pdf.

8 The slides from the workshop are available on the AEMC's website.

9 Submissions are available on the AEMC website. See https://www.aemc.gov.au/market-reviews-advice/updating-regulatory-frameworks-embedded-networks.

For clarity, the following terminology is used to distinguish between the current embedded networks framework, the frameworks proposed in the draft report and this final report:

- The **current regulatory framework** for embedded networks refers to the current provisions relating to embedded networks as set out in the current NEL, NER, NERL and NERR.
- The **draft proposed framework** refers to the proposed recommendations set out in the draft report for this review and the proposed NER and NERR rules and drafting instructions for NEL and NERL changes that were published with that draft report.
- The **final proposed framework** refers to the recommendations in this final report and the proposed NER and NERR rules and proposed drafting instructions for NEL and NERL changes that have been published with this final report.

Where we refer to recommendations contained in the 2017 Review we make this clear.

BOX 3: KEY TERMS USED IN THIS REPORT

Network related terms

Embedded network (*amended term*): The final proposed framework defines an embedded network as a distribution system classified as an embedded network under chapter 2 of the NER, or owned, controlled or operated under a network exemption.

Legacy embedded networks: Embedded networks established under the existing regulatory framework, which are operated by **exempt network service providers**.

Legacy exempt network: a distribution or transmission network under the existing regulatory framework that is subject to network exemption.

Network service provider: Chapter 2 of the NER defines a network service provider as a person who engages in the activity of owning, controlling or operating a transmission or distribution system and who is registered by AEMO as a network service provider. Under the final proposed framework, network service provider includes **regulated network service providers** and **embedded network service providers**.

Local network service provider: The NER defines a local network service provider (**LNSP**) as a network service provider to which a respective geographical area has been allocated by the authority responsible for administering the jurisdictional electricity legislation in the relevant participating jurisdiction. A LNSP is a **regulated network service provider**, which is a network service provider that is economically regulated by the AER.

Exempt network service provider: A term commonly used to describe the party that owns, controls or operates an exempt network. In the context of this final report this term is generally used in reference to the party that owns, controls or operates a legacy embedded network that is either grandfathered or subject to a transition process into the new proposed framework. That party has the benefit of an exemption from registering as a distribution network service provider (**DNSP**) (under the existing regulatory framework). Generally, the

same party also on-sells electricity to customers within that embedded network under an exemption from the AER from holding a retailer authorisation. The term **embedded network operator** is also commonly used synonymously for exempt network service provider. In the final proposed framework changes to the NEL, this is captured under the definition of an exempt system operator.

Embedded network manager: The *National Electricity Amendment (Embedded Networks) Rule 2015* (*Embedded Networks* Rule) introduced the embedded network manager (**ENM**) as a new accredited provider role into the NER. The ENM is responsible for performing market interface services for embedded network customers. This rule came into effect on 1 December 2017.

Embedded network service provider *(new concept)*: A person who engages in the activity of owning, controlling or operating an embedded network and who is registered by AEMO as an embedded network service provider (**ENSP**).

Embedded network area *(new concept)*: The geographical area, site or premises served by an embedded network. Upon registration with AEMO, the **ENSP** must also register the area of each embedded network it operates.

Exempt network operator *(new concept)*: The exempt network operator (**ENO**) is a person who owns, operates or controls a transmission or distribution system under an exemption granted or deemed to be granted by the AER.[1]

Exempt embedded network service provider *(amended term)*: The exempt embedded network service provider (exempt ENSP) is a person who engages in the activity of owning, controlling or operating a distribution system. This is a category of exempt network service provider.

Retail related terms

Retailer: A retailer authorised by the AER under the NERL to engage in the activity of selling energy (electricity or gas) to a person for premises. Under the proposed framework, a retailer authorised by the AER can be a fully authorised **NEM retailer** or hold a limited authorisation from the AER, denoting the sub-class of **off-market retailer**.

NEM retailer: An authorised retailer that purchases electricity in the NEM and sells it to a customer, including to an embedded network customer.

Off-market retailer *(new concept)*: Under the proposed framework, an off-market retailer has a limited authorisation from the AER to sell in an off-market capacity to customers at **child connection points** in an embedded network. The off-market retailer is not a market participant under the NER (unless also registered in some other category that is a market participant).

Designated retailer *(amended term)***:** For a small customer's premises where there is an existing connection, the designated retailer is the retailer that is the financially responsible retailer for the premises. For a small customer's premises where there is no existing

connection, the designated retailer under the NERL is the local area retailer for the relevant geographical area, premises or customer. In the proposed framework, the designated retailer for an embedded network is the **local embedded network retailer**.

Local embedded network retailer *(new concept)*: The local embedded network retailer is the designated retailer for the embedded network under the proposed framework. The local embedded network retailer is nominated by the **ENSP** for an embedded network to be the designated retailer for small customers seeking connection to that embedded network. In the case where there is an existing connection, the designated retailer is the **financially responsible retailer for the child connection point**. This could be either the **NEM retailer** or the **off-market retailer**.

Exempt seller: The exempt seller is a person who is exempted by the AER from the requirement to hold a retailer authorisation.[2]

Market offer: A market offer is an offer by a **NEM retailer** or **off-market retailer** to a small customer to provide customer retail services under a market retail contract.[3]

Standing Offer: A standing offer is an offer by a NEM retailer or off-market retailer to provide customer retail services to small customers for whom it is the designated retailer at standing offer prices, and under the retailer's form of standard retail contract.

Customer related terms

Exempt customer: An exempt customer is a person to whom an **exempt seller** sells energy.[4]

Retail customer: A retail customer is a customer of an authorised retailer. This can either be a **NEM retailer customer** or an **off-market retailer customer**.[5]

Small customer: A 'small customer' is a customer who is a residential customer; or who is a business customer who consumes energy at business premises below the upper consumption threshold.[6]

Standard supply customer: A customer whose electrical supply is connected to a distribution system that is owned and operated by a **DNSP** and whose retail services are provided by a **NEM retailer**.

Other terms and definitions

Off-market: Under an off-market arrangement an **off-market retailer** or **NEM retailer** on-sells electricity purchased at a parent meter from the NEM to an embedded network customer. This is known as 'off-market' activity because the customer's electricity consumption is not settled in the NEM.

On-market: Under on-market arrangements within embedded networks, a **NEM retailer** purchases electricity in the NEM and sells it to the embedded network customer. This type of arrangement is known as "on-market" activity because the customer's metered consumption is settled in the NEM.

On-selling: On-selling is an arrangement where a person purchases electricity from the NEM, and they, or a person acting on their behalf, sells the electricity to others. On-selling is an **off-market activity**.

Parent connection point: The agreed point of supply between an embedded network and a transmission or distribution system that is serving an embedded network.

Child connection point: The point of supply between an embedded network and a customer, generating unit or other embedded network connected to that embedded network and served by that embedded network.

Network exemption guideline: The Electricity Network Service Provider - Registration Exemption Guideline (Network Exemption Guideline) that is published by the AER.[7]

Retail exemption guideline: The AER (Retail) Exempt Selling Guideline (Retail Exemption Guideline) that is published by the AER.[8]

Source: AEMC

Note: [1] Section 13 of the NEL and clause 2.5.1(d) of the NER. [2] Rule 2(1) of Division 1, Part 1 of the NER. [3] Section 2 of the NERL. [4] Section 109 of the NERL. [5] Section 109 of the NERL and rule 148 of the NERR. [6] Section 5(2) of the NERL. For electricity, the upper consumption threshold is set by states and territories: in the Australian Capital Territory, New South Wales, Victoria and Queensland the threshold is 100MWh per year, in South Australia it is 160MWh per year and in Tasmania 150MWh per year. [7] Version 6 is available under https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/network-service-provider-registration-exemption-guideline-march-2018. [8] Version 5 is available under https://www.aer.gov.au/retail-markets/retail-guidelines-reviews/retail-exempt-selling-guideline-march-2018.

1.5 Structure of this report

The remainder of this report is structured as follows:

- Chapter 2 provides context to the review, sets out the Commission's approach and gives an overview of the findings of the 2017 Review
- Chapter 3 presents an overview of the recommended network and seller registration, authorisation and exemption regimes
- Chapter 4 explains the Commission's recommendations for updating consumer protections and introducing embedded networks into the NECF arrangements
- Chapter 5 sets out the Commission's recommendations for market integration of embedded networks, including the proposed metering framework
- Chapter 6 focuses on network billing arrangements
- Chapter 7 explains the Commission's recommendations for the establishment of a connection framework for residential customers and non-registered embedded generators
- Chapter 8 sets out the Commission's recommendations for imposing performance standards for registered participants (including embedded generators and large load customers) connected to embedded networks
- Chapter 9 details the Commission's recommendations for transitioning certain existing embedded networks to the new framework
- Chapter 10 outlines the next steps that result from the Commission's recommendations to implement the new framework

- Chapter 11 explains the Commission's position on the regulatory framework for gas embedded networks
- Appendices: Appendix A and B provide a detailed overview of the roles and responsibilities of the newly created concepts of the ENSP and off-market retailer, Appendix C specifies the future treatment of network and retailer exemptions, Appendix D outlines jurisdictional arrangements and Appendix E looks into reliability and jurisdictional guaranteed service levels.

2 CONTEXT FOR THE CURRENT REVIEW

In the 2017 Review, the Commission found that the current regulatory framework for embedded networks is no longer fit for purpose in the face of growth in the number and scope of embedded networks. This current review is a culmination of previous work undertaken by the Commission, and has been initiated to provide the COAG Energy Council advice on implementing a new approach to regulating embedded networks.

This chapter sets out:

- what an embedded network is in the context of the national electricity market (**NEM**) and how supply arrangements to customers in embedded networks differ from standard supply customers
- an overview of how embedded networks are currently regulated under the exemptions framework administered by the AER
- the information and data available on the numbers, scale and growth of embedded networks
- analysis on the incentives driving the evolution of embedded networks
- a summary of the Commission's findings and recommendations from the 2017 Review.

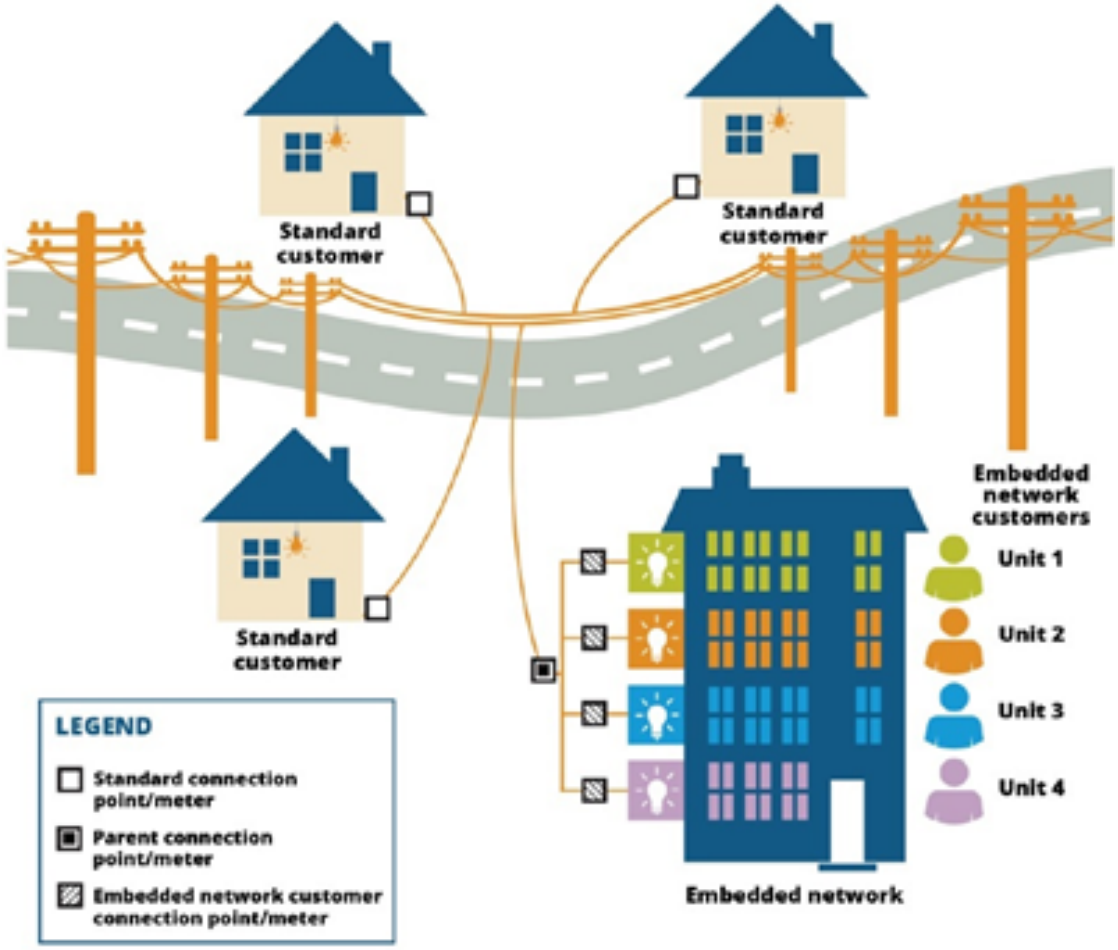
2.1 What is an embedded network?

Under 'standard supply arrangements' in the national interconnected system, each individual electricity customer has a meter and a connection point that connects them directly to the distribution network service provider's (DNSP's) network. In most jurisdictions, the standard customer is able to choose their electricity retailer. The retailer purchases electricity from the wholesale market, pays network charges to the DNSP to recover the cost of transporting electricity, and issues the customer a single bill that covers all the retailers' costs and any margin. The retailer also appoints a metering coordinator, which in turn appoints a metering data provider and metering provider. These standard customers are also known as **on-market** customers as their metered electricity consumption is settled in the NEM.

An embedded network is a private electricity network that connects multiple premises to the interconnected grid via a **parent connection point** on a distribution or transmission network. The total consumption for the entire embedded network is metered and settled in the NEM based on the metered consumption measured at the **parent meter** at the parent connection point. A party other than the regulated Local Network Service Provider (LNSP) owns and operates the embedded network.

Figure 2.1 illustrates how the configuration of an embedded network differs from the traditional model of retail supply for a standard customer.

Figure 2.1: Comparison of standard supply arrangements and embedded networks



Source: AEMC.

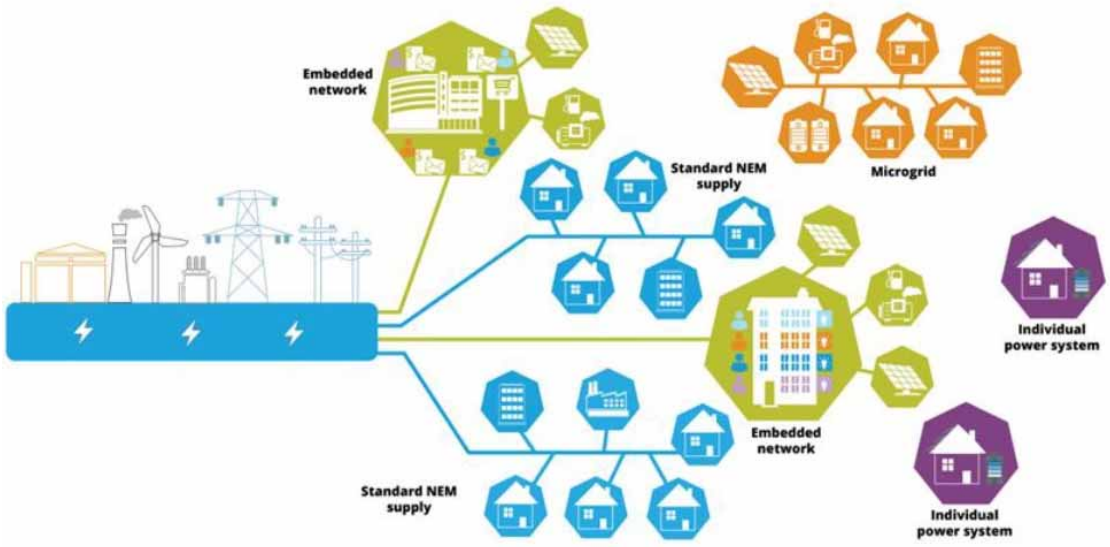
The customer at the parent connection point purchases energy at a bulk rate from a NEM retailer, typically at a lower cost than would be available to individual small consumers, and then on-sells this energy to the individual downstream embedded network customers. These downstream customers are separately metered at **child connection points** and are known as **off-market** customers because their metered electricity consumption is not settled in the NEM. Generally, the on-selling party provides a single bill to embedded network customers that recovers energy costs and network charges from the LNSP at the parent connection point.

Under this traditional embedded network model, the exempt network service provider and the exempt seller are often the same entity. Typical examples of where embedded networks have been established include:

- **Residential embedded networks managed by owners corporations** when the buildings they manage are established with (or converted to include) an embedded network. This means that the owners corporation is not only responsible for the maintenance of the common areas of property and levying appropriate fees to owners of the units, they are also responsible for the delivery of electricity, potentially gas, and sometimes other products to consumers. Many owners corporations have registered as exempted parties for both network and retail activities at their sites, or engage others to act on their behalf to supply energy to tenants.
- **Retirement village, residential park and caravan park operators** provide a range of specialised services to their clients, including the provision of electricity. These participants can register as exempted parties for both network and retail activities at their sites, or engage others to act on their behalf.
- **Businesses that on-sell to other commercial entities** which include a range of commercial arrangements where a common property owner (or agent for the owner) sells energy to commercial entities operating on site. These sellers operate facilities such as airports, ports, hotels and shopping centres.

An embedded network's connection to the national grid distinguishes it from two other types of electricity supply, namely microgrids and individual power systems, which are not grid-connected (see Figure 2.2) and which the AEMC refers to as stand-alone power systems (SAPS). A grid connection results in embedded networks being regulated under the NEL and the NER, while SAPS are not currently regulated under this national framework. As noted in Chapter 1, a review of frameworks for SAPS is currently under way.

Figure 2.2: Different models of electricity supply



Source: AEMC.

2.2 How are embedded networks currently regulated?

This section sets out the following:

- an overview of the participants and roles in the current framework for embedded networks
- the current framework for embedded networks, which relies on AER deemed, registrable and individual network and selling exemptions
- arrangements for on-market customers in embedded networks.

2.2.1 Overview of the current framework

To date, embedded networks and on-sellers of energy have generally been exempt from the regulatory obligations that apply to NEM retailers, or subject only to a limited number of conditions. The network and retail exemptions framework was initially developed to address a limited set of risks arising from a limited set of activities, where the distribution and sale of electricity was incidental to a core business activity such as caravan parks, office buildings, shopping centres and apartment complexes. The framework was designed to permit such operations without the need to register as a network service provider[10] or become an authorised retailer[11], with the associated regulatory burden and cost.

Currently, electricity network services in embedded networks are provided under **network registration exemptions** and parties that on-sell energy to off-market customers inside embedded networks generally sell energy under **retail authorisation exemptions**.[12] The broad requirements for registration (in respect of network services) and authorisation (in respect of the 'sale of energy') have resulted in the broad application of a network and retail exemption framework to exempt network service providers and exempt sellers.

Box 4 summarises the participants and roles in the current embedded networks framework.

10 Section 2 of the NEL currently defines a network service provider as a person registered by AEMO who owns, controls or operates a transmission or distribution system that forms part of the interconnected national electricity system. Under section 11(2)(b) of the NEL, an entity that is performing such activities without being registered requires either a specific derogation applicable to them or an exemption from the AER, be that party a legal person, corporation, government department or statutory body of any kind.

11 A person must not engage in the activity of selling energy to a person for premises unless the entity is a retailer authorised by the AER, or the seller is an exempt seller as determined by the AER (see section 88(1) of the NERL). The concept of the 'sale of energy' covers a wide range of activities, from energy retailing through to landlords recovering energy costs from their tenants. Energy sales do not necessarily have to be for profit – simply passing on energy costs to another person is considered to be a sale. Nor are energy sales limited by the parties involved. For example, they include sales to residential homes or other places of residence (for example, a caravan park where residents permanently reside), shopping centres and commercial sites

12 These parties could be NEM retailers, but are not necessarily required to be authorised.

BOX 4: PARTICIPANTS AND ROLES IN THE CURRENT EMBEDDED NETWORKS FRAMEWORK

Exempt Network Service Provider

Currently, all network service providers within an embedded network are subject to the exemption framework administered by the AER, and treated as exempt network service providers. An exempt network service provider is an entity that owns, controls, or operates an embedded network under an exemption granted or deemed to be granted by the AER.[1]

Exempt Seller

An exempt seller is an energy seller that has been exempted by the AER from the requirement to hold a retailer authorisation.[2] For an embedded network, an exempt seller on-sells energy purchased at a parent connection point to the off-market customers in the embedded network.

Embedded Network Manager

An ENM is accredited and registered by AEMO.[3] An ENM (which an exempt embedded network service provider must either appoint or act as, unless the AER exempts them from this requirement or if the embedded network is located where a right to a choice of retailer is unavailable) manages the market interface for child connection points within embedded networks. For new embedded networks, the ENM applies for a NMI for every metering installation and maintains metering information.

Note: [1] Chapter 10 of the NER, definition of 'exempt embedded network service provider'. [2] Section 2 of the NERL, definition of 'exempt seller'. [3] ENM meets the requirements listed in Schedule 7.7 of the NER. Chapter 10 of the NER, definition of 'embedded network manager'.

The effect of the current exemption framework administered by the AER is that the activities of exempt parties sit outside the national regulatory framework in the NER and NERR. Therefore, the sale and supply of electricity to customers is regulated under a 'two-tiered' framework, where:

- standard supply customers are supplied by registered DNSPs and NEM retailers that are regulated under the NER and NERR
- the majority of embedded network customers (a growing number of energy consumers) are supplied by exempt network service providers and exempt sellers that are regulated under various AER exemption conditions.

NEM retailers can sell energy to embedded network customers as well. These arrangements are discussed in section 2.2.3. Some energy on-sellers selling only to off-market customers in embedded networks also have retail authorisations from the AER.[13]

13 For example, OC Energy is an embedded network seller that has obtained a retail authorisation from the AER.

2.2.2 Current exemptions regime

The NEL does not stipulate the kinds of network service provider exemptions that the AER can grant or the criteria that the AER should consider when assessing an application for a network exemption. The NERL includes policy principles the AER must take into account when exercising its exemption functions and powers in relation to sellers of both electricity and gas.[14] The NERL also provides the AER with guidance on the exempt seller and customer related factors it may wish to consider. However, the NEL and the NERL do not guide the AER regarding the conditions that apply to each class of exemption.

Under these limited constraints and guidance, the AER develops and applies two exemption guidelines:

- Electricity Network Service Provider Registration Exemption Guideline (**Network Exemption Guideline**)
- (Retail) Exempt Selling Guideline (**Retail Exemption Guideline**).

The AER has discretion whether to grant an exemption and the kinds of exemptions it can grant. Once exempted from being registered as a network service provider or holding a retail authorisation, exempt network service providers and exempt sellers must comply with the terms and conditions of these exemptions under the AER's network exemption guideline and retail exemption guideline.[15]

The AER's network and retail exemption guidelines outline three categories of network and retail exemptions - deemed, registrable and individual.[16]

The AER has developed different classes of exemptions under the deemed and registrable categories. The majority of exemptions provided by the AER fall into the deemed and registrable categories, which are not assessed or approved by the AER. Within the deemed and registrable types of exemptions, the different classes of exemption allow the AER to assign different conditions to networks with different characteristics.

Deemed exemptions

Parties eligible for deemed exemptions are not required to register with AEMO (for network operation) or with the AER (for the sale of energy).

Small networks and small scale selling arrangements are generally eligible for a deemed exemption. Deemed network and retail exemptions apply automatically to certain types of networks and energy sellers, respectively. These do not require application or registration with the AER, but the exempt party must still comply with the conditions of the exemption, which vary depending on the type of embedded network and selling activities. Deemed

14 Part 5, Division 6 of the NERL.

15 For embedded networks that require an individual exemption, the terms and conditions are set out in the individual exemption specific to the exempt network service provider instead of the AER's Network and Retail Exemption Guidelines.

16 These categories are set out in the NERL for retail exemptions, and the AER applies them to both network and retail exemptions through its guidelines. The *Electricity Network Service Provider - Registration Exemption Guideline* and the *(Retail) Exempt Selling Guideline* are available on the AER website, www.aer.gov.au. A full list of deemed and registrable retail exemptions and conditions can be found in the AER's Network and Retail Exemption Guidelines.

exemptions apply, for example, to persons that sell energy to fewer than 10 small businesses or residents.[17]

Registrable exemptions

Parties eligible for registrable exemptions are required to register the exemption with the AER (that is, advise the AER that they are covered by the exemption).

Larger networks are required to register a registrable exemption with the AER. Similarly, for retail exemptions, registrable exemptions are usually required where the scale of energy selling is larger. The AER publishes these registered exemptions on its website but it does not assess or approve them. Examples of energy sellers that are required to register an exemption include parties that sell to ten or more small tenants or residents within an embedded network.[18]

Individual exemptions

Networks that do not fit within one of the specified classes of deemed or registrable exemptions must seek an individual exemption from the AER. An individual exemption usually applies to the supply or sale of energy at a particular site and/or to a particular customer or group of customers. Individual exemptions apply to more bespoke or one-off arrangements and allow the AER to tailor the conditions of the exemption.

2.2.3 Existing market arrangements for embedded networks

The *Embedded Networks* Rule 2015 was intended to make it easier for customers of embedded networks to access competitive services from authorised (NEM) retailers. The NERL stipulates that customers in an embedded network should, as far as practicable, be afforded the right to a choice of retailer in the same way as comparable retail customers in the same jurisdiction have that right.[19] However, for this to occur, consumers need to be 'market-facing'. This means that the consumer's metering installation must be NEM compliant and registrable in AEMO's systems, including assigning the meter a National Metering Identifier (**NMI**).

To improve this link to the market, the *Embedded Networks* Rule introduced the Embedded Network Manager (**ENM**) role. The ENM was assigned market interface functions including allocating a NMI to child connection points where a customer chooses to purchase energy from a NEM retailer.

Where customers in an embedded network appoint a NEM retailer, they become on-market and, as such, become subject to the same arrangements as standard supply customers.

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17 Refer to exemption class ND1, AER, *Electricity Network Service Provider - Registration Exemption Guideline - version 6*, March 2018, p. 29.

18 Refer to class D1, AER, *(Retail) Exempt Selling Guideline* - version 5, March 2018, p. 27.

19 Section 114(1)(b) of the NERL.

2.3 Scale of embedded networks in the NEM

The number of embedded networks in the NEM has grown rapidly in recent years. Embedded networks in the residential apartment market are the primary driver of this growth.[20]

Across the NEM, the total number of registered network exemptions at 28 May 2019 was 4,592, while the number of electricity retail exemptions was 5,251.[21] This number and the information in Table 2.1 below only includes registered exemptions, meaning that the total number of embedded networks in the NEM is likely to be much greater. The exemption arrangements mean that no information is available about embedded networks operating or selling energy under deemed exemptions, and so no accurate numbers regarding the total number of embedded networks are available. This lack of information is a significant drawback of the current exemptions system.

Table 2.1: Registered exemptions as at 28 May 2019

JURISDICTION	EXEMPT ELECTRICITY SELLERS	NETWORK EXEMPTIONS
Queensland	2,130	2,085
New South Wales	896	817
ACT	233	20
Victoria	1,115*	1,256*
South Australia	663	409
Tasmania	214	5
TOTAL	**5,251**	**4,592**

Source: AER network and retail exemptions data, *Information obtained from the ESC and as at 31 May 2019.

In 2017, the AEMC found that the number of embedded network sites with residential customers accounts for just under half of all network exemptions. The other exemptions relate to commercial and industrial sites such as airports, mines, hotels, hospitals, and shopping centres, where all energy consumers in the embedded network are commercial entities.[22]

Box 5 below summarises findings on the numbers of embedded networks and embedded network customers from the 2017 Review. The number of customers served by embedded networks has continued to grow since this analysis, and best estimates are that there are several hundred thousand customers in embedded networks. In Victoria alone, there are approximately 120,358 residential, caravan park and retirement village customers that are

20 AEMC, *2017 Retail Energy Competition Review*, final report, 25 July 2017, pp. 160-161.

21 AER website, public register of network exemptions web page, https://www.aer.gov.au/networks-pipelines/network-exemptions/public-register-of-network-exemptions; public register of retail exemptions web page, https://www.aer.gov.au/retail-markets/retail-exemptions/public-register-of-retail-exemptions; and information obtained from the ESC.

22 AEMC, *2017 Retail Energy Competition Review*, 25 July 2017, final report, p. 162.

supplied electricity by an embedded network operator as of 31 May 2019.[23] Of these, 104,125 customers are billed by an embedded network operator. A further 20,345 small and large business customers are supplied by an embedded network operator, of which 18,141 are billed for electricity by an embedded network operator.[24]

The Commission considers that the lack of comprehensive and reliable data on embedded network customer numbers highlights some of the challenges associated with the current exemptions regime, including difficulties in effectively monitoring and enforcing compliance with the regime.

BOX 5: EMBEDDED NETWORKS IN 2017

In 2017, the AEMC obtained advice on the numbers of embedded networks and embedded network customers.

The numbers were sourced from strata title searches, building consent approvals, and from parties representing or delivering embedded network services (for instance, Caravan Industry Association and the Australian Shopping Centre Industry).

The 2017 advice contained the following estimates:

- the number of embedded networks was in the order of 4,000, which was greater than the number registered with the AER and suggests many network exemptions are unregistered
- there were 213,000 to 227,000 embedded network customers, based on billing data provided by embedded network operators
- 65 per cent of these customers were residential (including retirement villages, caravan parks) and 35 per cent were commercial
- there were 110,000 sites that could be configured as an embedded network, which would capture a total of about 1.5 million customers.[1]
- As there continues to be an unknown number of deemed exemptions, these numbers only represent estimates as no accurate numbers are available.

Source: AEMC.
Note: [1] Advice from Energy Options Australia to the AEMC, August 2017.

Figure 2.3 plots residential network exemptions registered with the AER and ESC in each jurisdiction over time. Between 2011 and 2014, there was modest growth in registrations in Queensland, New South Wales and Victoria. From 2014 and particularly between 2016 and 2017, registered residential embedded network exemptions significantly increased in Queensland. In 2015 alone, there were 391 network exemptions granted in Queensland,

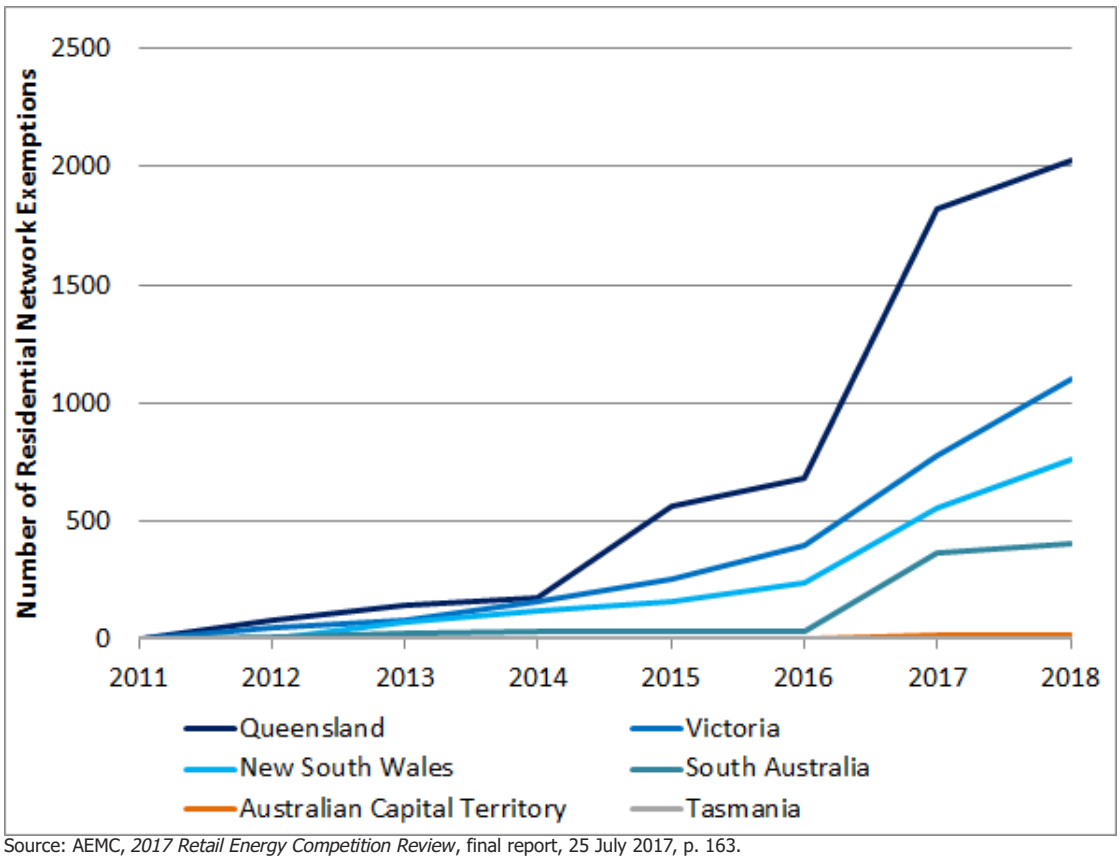
23 Information provided to the AEMC by the Essential Services Commission. A small number of embedded network sites are owned by multiple parties and are therefore registered with the ESC multiple times. This means that a small percentage of the customer numbers in the figures provided are counted twice. The ESC estimates that this is approximately a few hundred mainly business customers. The figures also include a small number of business customers who are in embedded network sites covered by deemed licence exemptions.

24 The number of retail and network exemptions is higher than the number of embedded network sites. This is because an embedded network, such as in a shopping centre, may be owned by a number of separate entities, each of whom would have a network exemption and a retail exemption registered for that site.

accounting for around 74 per cent of all network exemptions that year. Over the entire period, embedded networks in Queensland accounted for more than 50 per cent of all network exemption registrations across the NEM. Many of these registrations are likely to be related to an increase in existing embedded networks registering for the first time, coinciding with the introduction of the NECF in Queensland from 1 July 2015.[25]

Registered network exemptions in New South Wales appear to have commenced later than in Victoria and Queensland, but have had sustained growth since then, averaging around 60 registrations annually. Other jurisdictions have seen only limited growth in residential embedded networks since 2011.[26]

Figure 2.3: Jurisdictional residential network exemption registrations (cumulative)



Source: AEMC, *2017 Retail Energy Competition Review*, final report, 25 July 2017, p. 163.

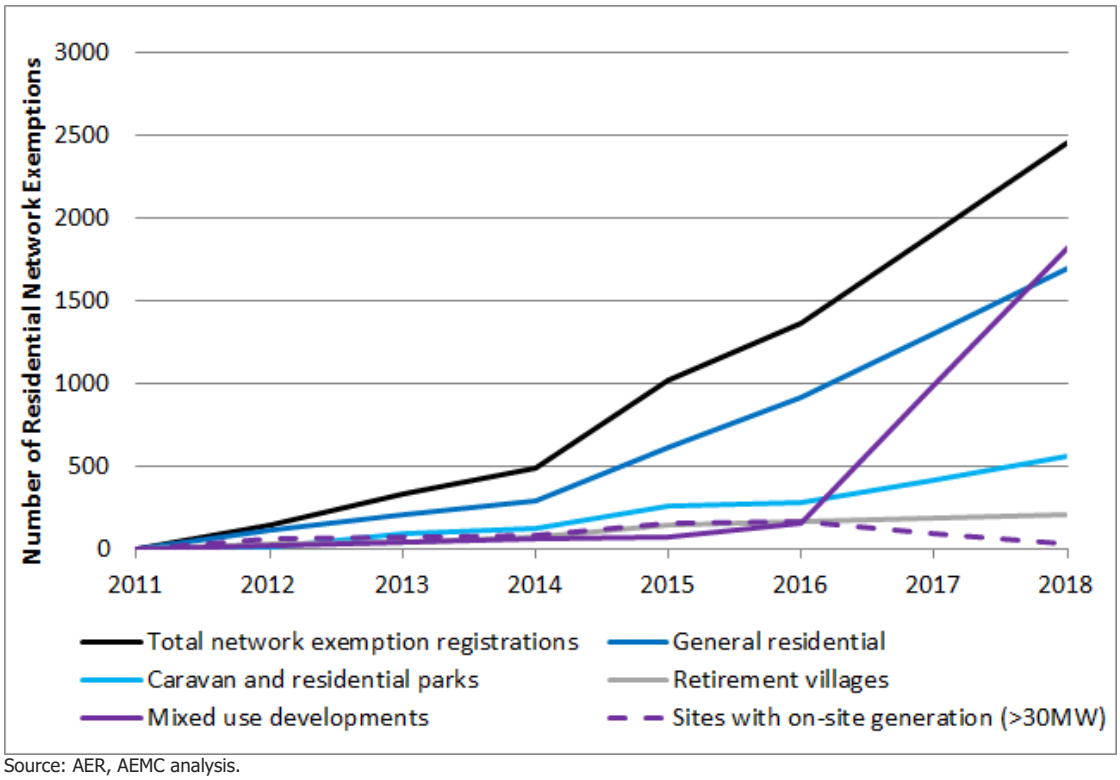
Figure 2.4 shows that the majority of residential network exemptions across NEM jurisdictions prior to 2017 have been related to general residential activities such as apartment buildings. It also shows that network exemption registrations associated with mixed use developments have risen steeply from 2016 and overtook general residential network exemptions in 2018.

25 AEMC, *2017 Retail Energy Competition Review*, final report, 25 July 2017, p. 163 (footnote 181) and p. 224.

26 For more comprehensive analysis see AEMC, *2017 Retail Energy Competition Review*, final report, 25 July 2017, chapter 9.

Figure 2.4 also shows that the number of sites with embedded generation is low and decreasing from 2016. However, the data relates only to generating units larger than 30 MW that are required to be registered with AEMO, and sites with smaller generation units that are used for network support or demand management purposes. It is likely that significantly more embedded network sites exist with non-registrable small-scale generators such as solar PV.

Figure 2.4: Total NEM residential network exemption registrations (cumulative)



Source: AER, AEMC analysis.

2.4 Evolving embedded network business models

As discussed above, the exemptions framework was originally established for parties such as caravan parks, office buildings, shopping centres and apartment complexes to on-sell electricity as part of their operations, but where it was incidental to their core business activities.

The Commission has found that a range of incentives generated by the exemptions framework and trends in high density residential building have combined to drive a proliferation of embedded network related businesses that provide a range of services. While there continue to be large numbers of 'traditional' embedded network operators such as caravan parks and retirement villages, in recent years installing and operating embedded networks has now evolved into a business model in and of itself.

As the data above suggests, the establishment of greenfields embedded networks are being driven by the construction of high density residential developments, in particular. As a result, embedded networks are becoming an increasingly common alternative to standard supply arrangements in the NEM, reflecting this shift in preferences for housing towards higher-density living within 'smart cities' and 'smart communities'.[27] Technologies such as distributed generation and energy storage are also being leveraged into the design of many embedded networks to promote these 'smart' developments.

In the traditional embedded network model, property developers would build the electricity network infrastructure assets (such as the consumer metering and power transformers) under the direction of the LNSP while meeting all applicable Australian laws, standards and codes. The developer would typically then recover these costs through the sale of the development. The developer would then 'gift' these assets to the LNSP, which then becomes the responsible party for the maintenance and servicing of the asset.

In contrast, the Commission understands developers now often choose to avoid the cost of establishing internal networks and metering by contracting a third party to fund and supply the infrastructure and the metering throughout an apartment complex. In return, the embedded network business is sometimes contracted to provide power to the whole building, which can tie a future owners corporation to lengthy contracts. These contracts are initially established before completion of construction and before strata schemes have been registered. Box 6 below provides a case study on the issues that can be faced by incoming owners corporations.

Once established, an embedded network often effectively becomes a monopoly electricity provider given the practical impediments to switching to a retailer of choice. In jurisdictions which have retail market competition and de-regulated electricity prices, an exempt seller can on-sell electricity at a price up to the local retailer's standing offer. This provides significant headroom for the exempt seller to purchase electricity at the parent meter at a bulk rate on a market offer and on-sell this at a profit without any threat of a customer switching to a NEM retailer.

Some property developers are choosing to generate an ongoing revenue stream from embedded network customers. As such, the developer chooses to retain ownership, operation and/or control of the network infrastructure in the property development. Some of these developers, or their subsidiaries, register as exempt sellers and engage with consumers in embedded networks directly with, or on behalf of, the owners corporation.

Embedded network business models are also marketed to established owners corporations and shopping centres by embedded network businesses on the basis that they can provide price and other benefits through the establishment of an embedded network. This is known as a brownfields conversion. Some of these embedded network businesses will manage all aspects of the retrofit and ongoing service including engineering, construction, regulatory

27 Smart cities and communities refers to an urban development vision to better integrate information technologies into long-term investment and coordinated planning decisions to promote positive outcomes in environment, employment, housing, and transport. See: Department of the Prime Minister and Cabinet website, Smart cities plan web page, https://cities.dpmc.gov.au/smart-citiesplan.

advice and exemptions process management, customer management functions such as billing, metering, customer calls and complaints, and other related services.

One of the primary incentives for an owners corporation or shopping centre to convert an existing building or site into an embedded network is the opportunity to purchase electricity at a parent meter in bulk at a lower tariff. Eighty five percent of end users in the embedded network must agree to a brownfield conversion which the Commission understands provides an incentive to offer favourable prices for end users even where there is a high proportion of tenants.

Many developers and 'utility businesses' are also now providing bundled services in embedded networks, including the provision of hot water, chilled water for air conditioning, gas for cooking and water and space heating, and telecommunications, in addition to electricity for lighting and power. On-site (or embedded) generation, such as solar PV, co- or tri-generation gas turbines for energy and/or heating and cooling, is increasingly being utilised by developers.

Some of these embedded network businesses are now choosing to, or being required to, apply for retailer authorisations from the AER. A further evolution in the industry has been the entry of conventional NEM retailers, such as Origin Energy, into providing embedded network services.[28] The Commission understands that where authorised retailers are providing retail services, this is sometimes done as an 'agent' to an exempt seller.

BOX 6: CASE STUDY ON APARTMENT OWNERS CAPTURED BY UTILITY CONTRACTS DRAWN UP BY A PROPERTY DEVELOPER

A committee member of an owners corporation relayed to the AEMC their experience in a new apartment building in New South Wales. There are on-selling and network exemptions that were registered with the AER under the name of the owners corporation for the apartment building. At the first annual general meeting, the committee for the owners corporation was formed and told by the property developer they were required to sign ten-year fixed term contracts with a company arranged by the property developer for utilities, including electricity. The committee was told it would get very competitive electricity rates from the company arranged by the property developer. The electricity rates turned out to be higher than the standing offer. Apartment owners were very unhappy with the rates and amounts they are being billed but were unsure if the billing company or the owners corporation is responsible for not complying with the exempt seller conditions. At the time, they were seeking legal advice about how to resolve the matter.

Source: AEMC, *Review of regulatory arrangements on embedded networks*, final report, 28 November 2017, p. 41.

28 See https://www.originenergy.com.au/for-home/electricity-and-gas/embedded-electricity-networks.html.

2.5 Findings and recommendations from the 2017 Review

In 2017, the AEMC conducted a review of the arrangements for embedded networks under the NERL and NERR. This review stemmed from a series of other reviews and rule changes which identified a number of problems with the regulatory arrangements for embedded networks. The 2017 Review provided an opportunity to consider holistically the regulatory arrangements for embedded networks and whether they were effective.

The 2017 Review found that while the purpose of the current embedded network exemptions framework was to reduce the regulatory burden on embedded network owners, the number and scope of embedded networks has grown and the current framework is no longer fit for purpose.

The underlying rationale for the exemptions framework is to reduce the regulatory burden where the cost of registering as a network service provider or having a retailer authorisation outweighs the benefits to consumers. In practice, the Commission found that:

- a limited market entry, monitoring and enforcement regime has created consumer protection gaps, growth in the numbers of embedded networks, and diversity in the capacity and resources of exempt network service providers
- embedded network customers receive a lesser level of consumer protections due to regulatory gaps
- there are significant practical barriers to customers in embedded networks accessing retail market competition.

Consequently, the Commission provided COAG with a series of recommendations for amending the regulatory arrangements for embedded networks and, in doing so, improve outcomes for customers.

These issues and the Commission's recommendations are discussed in further detail below.

2.5.1 Issues with the exemptions framework

The Commission concluded the exemptions framework was no longer fit for purpose given the growth of embedded networks. Although an owners corporation may be the registered exempt party as discussed above, the provision of embedded network and retail services is increasingly being performed by entities for which this is their core business.

The current exemptions framework does not require exempt network service providers and exempt sellers to meet any criteria or market entry test in relation to the entities' suitability to provide electricity network and retailing services. This can lead to entities and businesses with insufficient capacity and expertise delivering electricity services to large numbers of customers, including vulnerable customers.

Inadequate compliance and monitoring regime

The current exemptions regime can also result in inappropriate differences in compliance obligations, such as reporting, and enforcement options and consequences for exempt network service providers and exempt sellers. The AER does not place reporting

requirements on exempt parties and therefore has no visibility on the compliance of exempt entities with exemption conditions.[29] This means that the AER only becomes aware of breaches through customers complaints.

Limited enforcement options

There are limited enforcement options available to the AER under the current exemption framework. A breach of a condition under a retail exemption is a breach of the NERL, and this provision is a civil penalty provision.[30] However, a breach of a condition under a network exemption is not a breach of the NEL.[31] The only enforcement option available to the AER is to revoke a network exemption if there is a breach of an exemption. A civil penalty would then apply if the embedded network continued operating following the revocation of the exemption. However, the AER is reluctant to revoke a network exemption given there is no clear framework in place to transition the embedded network back to standard supply arrangements and to do so could potentially impose high costs on customers in the embedded network.

Regulatory gaps and complexity

The owners and operators of embedded networks are exempt from being required to register as a network service provider and therefore the obligations on network service providers in the NER do not apply. As embedded networks evolve and grow in number and size the Commission found that regulatory gaps are emerging. The AER has sought to address this by applying obligations similar to those found in the NER and NERR through the exemption conditions. However, this is leading to increasingly complex exemption conditions which, as discussed above, the AER has limited ability to monitor and enforce.

Lack of clarity

Customers, embedded network owners, agents and energy sellers are sometimes unclear as to which regulatory framework applies. This has resulted in instances of authorised retailers undertaking selling activities in embedded networks where a retail exemption is in place. This has introduced complexity for customers, the AER and Ombudsmen when determining:

- the party that is responsible for the supply and sale of electricity and any breach in obligations
- whether the obligations in the NERR or the AER retail exemption conditions apply
- which party should apply for Ombudsman membership.

2.5.2 Lesser consumer protections

The Commission found that the exemption conditions are increasingly replicating electricity and retail rule requirements for embedded networks that serve residential and small business

29 See section 5.1 and section 5.3 of AEMC, *Review of regulatory arrangements for embedded networks*, final report, 28 November 2017.

30 Section 112 of the NERL.

31 Section 2.4.8 of the AER's Network Exemption Guideline provides that an exemption can be revoked if there is a breach of any condition of the exemption. Section 11(2) of the NEL then makes entities liable to a civil penalty if they operate a distribution system if they are not registered or exempt. A civil penalty would only apply if the embedded network continued operating following the revocation of an exemption.

customers. This is consistent with the principle set out in the NERL that regulatory arrangements for exempt sellers should not necessarily diverge from those applying to retailers.[32] Exemption conditions are therefore as onerous for exempt parties to meet as the retail rules.

While the AER is seeking to replicate consumer protections for customers in embedded networks, some gaps in consumer protections remain. These gaps particularly affect the smaller and more vulnerable consumers. Also, as discussed above, the Commission found there was no monitoring of compliance with exemption conditions and limited enforcement options available to the AER.

It is also more difficult for embedded network customers in some jurisdictions to access concessions and Ombudsman schemes.[33]

Box 7 below provides a case study illustrating the significant impact on vulnerable customers that arise from the regulatory and practical barriers to obtaining assistance provided by jurisdictions if you are the customer of an exempt seller.

BOX 7: CASE STUDY ON QUEENSLAND GOVERNMENT'S HOME ENERGY ASSISTANCE SCHEME

The Queensland Government's Home Energy Emergency Assistance Scheme is for Queensland households experiencing problems paying their electricity or gas bills as a result of an unforeseen emergency or a short-term financial crisis. It involves a one-off emergency payment of up to $720 to assist in paying energy bills. Customers are eligible if they hold a current concession card, or have an income equal to or less than the Australian Government's maximum income rate for part-age pensioners, or are part of a retailer's hardship program or on a payment plan.

While this scheme is technically available to customers in embedded networks, we understand from our discussions with stakeholders that it is very difficult for embedded network customers to access these payments in practice. The NEM retailer or exempt seller must agree to participate in the scheme in order to deliver the payment. We understand from stakeholders involved in administration of the scheme that they encounter strong resistance to participating in the scheme from exempt sellers in embedded networks and their billing agents due to the perception that it will involve some administrative work, and it is not possible to compel exempt sellers to participate.

As a result, we understand that a large number of customers in embedded networks are unable to access these payments. This resistance to participating in concession schemes occurs despite the fact that the assistance payment will not only provide a substantial benefit to the customer, but will also benefit the exempt seller as the payment will reduce the

32 Section 114(1)(a) of the NERL.

33 For further details see section 9.2.1 and section 9.2.2 of AEMC, *Review of regulatory arrangements for embedded networks*, final report, 28 November 2017.

customer's debt to the exempt seller.

Exempt sellers also do not have the same requirements as authorised retailers to have hardship policies to assist customers that are having payment difficulties.

Source: AEMC

Note: The information for this case study was provided in a meeting with the Queensland Government and consumer groups on 29 November 2017.

Consumer protection gaps also exist where embedded network customers are supplied by an authorised retailer. This is because the NERL and NERR contemplate a tripartite relationship between a customer, the retailer and the distributor. There is currently no flexibility in this tripartite relationship to incorporate exempt network service providers. Consumer protection gaps include protections such as de-energisation and re-energisation obligations, obligations to provide connection services, life support arrangements, information provision and retailer of last resort (RoLR) arrangements.[34]

2.5.3 Impediments to accessing retail market competition

The existing regulatory framework is intended to encourage retail competition for child embedded network customers. The network exemption guideline obliges exempt embedded network service providers to facilitate access to competitive market offers where it is available in a jurisdiction and the AER does not permit an exempt embedded network service provider to impose any measures on a customer, either directly or indirectly, which would impede or penalise a customer seeking access to retail competition.

However, the Commission found NEM retailers face significant practical difficulties in accessing embedded network customers. Where barriers to embedded network customers accessing retail market offers exist, some exempt network service providers face limited incentives or obligations to pass those savings on to customers because the customers cannot source energy from an alternative provider. Under the AER's retail exemption guideline, exempt network service providers may charge up to the standing offer price for small customers and any price for large customers.

The specific barriers the Commission found included:

- NEM retailers are unable to quote and transfer customers using the usual market mechanisms due to an inability to discover information on an off-market embedded network customer and their metering installation in AEMO's MSATS system[35]
- metering infrastructure must generally be replaced due to compliance and access issues
- bespoke embedded network tariffs and embedded network billing arrangements that require NEM retailers to adapt product offerings and implement manual processes to manage transactions with large numbers of exempt network service providers.

34 For further detail see chapter 9 of the AEMC, *Review of regulatory arrangements for embedded networks*, final report, 28 November 2017.

35 See sections 5.2, 7.2 and 7.3.3 of AEMC, *Review of regulatory arrangements for embedded networks,* final report, 28 November 2017.

These barriers are discussed in more detail below.

Customer discoverability and transfer

The Commission found that the absence of standard market systems and processes to discover and transfer exempt customers from exempt sellers to NEM retailers posed a significant barrier to retail market competition in embedded networks.

In order for a NEM retailer to provide an accurate quote to a consumer it requires access to NMI standing data. NMI standing data is the information related to a customer's connection point. The information is about the physical location and properties of the meter, which includes the applicable network tariff and the consumer's consumption threshold bands. It does not include the customer's consumption data. This data is held in AEMO's MSATS system.

Off-market embedded network customers do not 'exist' in MSATS i.e. there is no NMI standing data available for an off-market embedded network customer in MSATS. For embedded networks with an ENM, the ENM is responsible for assigning a NMI to a child connection point after an embedded network customer has obtained a retail market offer from a NEM retailer. Therefore, customers face a chicken and egg situation. Customers have faced difficulties in finding a NEM retailer that will make a retail market offer and commence the transfer process unless the customer can be easily found in MSATS.

Access to NEM compliant metering

For a customer in an embedded network to go on-market with a retailer of choice, a metering coordinator must be appointed and a NEM compliant metering installation be in place. The 2017 Review identified access to NEM compliant metering infrastructure as being a significant barrier to embedded network customers accessing retail market competition.

Metering infrastructure in embedded networks was only required to meet requirements under the NER from 1 January 2012. In addition, the current AER network exemption guidelines do not require that metering installed by exempt networks be subject to the same testing and auditing requirements. There is also no public register of information on the metering infrastructure for individual customers or process in place for retailers to negotiate access to metering if it is NEM compliant.

Retailers considering providing 'on-market' offers to embedded networks customers therefore generally face the cost of installing NEM compliant metering. The Commission understands that where NEM retailers are prepared to make offers to embedded network customers it is on the basis that the customer pays for the meter up-front which is prohibitive for many customers, particularly for tenants.

Network billing

Where an embedded network customer goes on-market with a NEM retailer, the DNSP's network charges that could be attributed to this customer continue to be paid by the exempt network service provider to the NEM retailer at the parent connection point.

The network exemption guidelines permit an exempt network service provider to recover a DNSP's charges from either the NEM retailer or the embedded network customer directly. There is also some flexibility in the AER network exemption guideline on the network tariff that can be charged.

These bespoke network tariffs and billing arrangements make it costly for NEM retailers to serve embedded network customers because they must adapt product offerings and implement manual processes to manage transactions with large numbers of exempt network service providers. The Commission found the costs and risks related to network billing act to deter NEM retailers from serving embedded network customers.

2.5.4 Recommendations from the 2017 Review

The Commission concluded the exemptions framework was becoming increasingly complex, giving rise to regulatory gaps and was no longer fit for purpose given the growth of embedded networks as a business model in itself.

The Commission recommended that, as suppliers of an essential service the exempt network service providers and on-sellers that serve small customers should meet market entry tests for technical and financial capability. The Commission considers that small customers in embedded networks should also be able to expect a similar set of consumer protections and that compliance with obligations under the law would be monitored and enforced just as if they were a similar customer in a multi-tenanted premises under a standard supply arrangement.

The Commission also recommended that embedded networks should be opened to effective retail market competition. The Commission was of the view that this would improve outcomes for embedded network customers through promoting innovation, consumer choice and placing downward pressure on prices in embedded networks.

The Commission considered the most effective way of achieving these objectives would be through elevating the regulation of embedded networks into the national framework and regulating the services currently provided by the majority of exempt network service providers and on-sellers to off-market small customers under the national energy laws and rules rather than the exemptions framework. The Commission recommended updating the national framework to:

- improve retail market competition in embedded networks by making embedded network customers accessible in MSATS and establishing standardised network billing arrangements between a newly defined Embedded Network Service Provider (ENSP) and exempt ENSPs, and NEM retailers
- elevate new embedded networks into the national regulatory framework by requiring registration of ENSPs, requiring on-sellers to hold a retailer authorisation and extending metering coordinator, metering provider and metering data provider responsibilities to embedded networks

- narrow the network service provider and selling exemption frameworks to apply to circumstances where the costs of registration as an ENSP and retailer authorisation would outweigh the benefits to consumers and the need for regulatory oversight is low
- enhance consumer protections through improving the AER's ability to monitor and enforce exemption conditions, address gaps in the NERL and NERR for embedded network customers supplied by an authorised retailer and improving the information provided to consumers entering embedded networks or involved in a conversion of a property to an embedded network.

This final report's proposals give effect to the findings and recommendations of the 2017 Review, and provide background to the proposed amendments to the NEL and NERL and recommended drafting in the NER and NERR.

3 REGISTRATION AND AUTHORISATION REGIME FOR EMBEDDED NETWORKS

3.1 Introduction

Chapter 2 discussed the current framework for embedded networks and the findings of the 2017 Review in relation to issues with the current framework.

This chapter summarises the draft recommendations, consultation responses and the Commission's final recommendations for embedded network registrations, authorisations and exemptions as follows:

- a brief overview of the final proposed framework for registration and exemption
- registration of ENSPs under the NER
- network exemptions
- retailer authorisations for off-market retailers
- retail exemptions
- recommended provisions to enhance compliance with the new framework.

3.2 Overview

3.2.1 Registration and exemption

The recommended framework will significantly reduce the number of parties eligible for network service provider or retail exemptions as compared to today. Instead, two new roles will be created:

- embedded network service providers (ENSPs), which will be required to register with AEMO[36]
- off-market retailers, which will be required to obtain an authorisation from the AER, and will be subject to most requirements that existing authorised retailers are subject to.[37]

The registration of ENSPs and authorisation of off-market retailers will benefit consumers by allowing obligations relating to consumer protections and retail market competition to be placed directly on these parties and will be enforceable by the AER applying the usual NER and NERR enforcement frameworks. For those exemptions that are retained, registration will be required, enhancing transparency and strengthening the AER's ability to monitor and enforce compliance with exemption conditions.

The number of exemptions will be reduced by clarifying the definitions of 'distribution system'[38]and 'connection asset' in the NER so that some network activities currently subject to deemed exemptions under AER guidelines are taken outside the scope of the regime. Similar, some selling activities will no longer require either authorisation or an exemption.[39]

36 Final proposed rule 2.5.4 of the NER
37 Final proposed Division 1A of the NERR
38 Final proposed amendment to Chapter 10 definition of 'distribution system' and 'connection asset'
39 Final proposed rule 148A of the NERR

The following Table 3.1 illustrates the proposed treatment of a number of common types of embedded network. This table does not address legacy embedded networks, which are covered below, and only detail the proposed treatment of new embedded networks under the proposed framework. Appendix C provides further detail on the proposed treatments of classes of retail and network exemptions.

Table 3.1: Proposed treatment of common embedded network types under the recommended framework

ACTIVITY	CURRENT	PROPOSED
Short term holiday accommodation	Deemed exempt	Registered exempt
Small commercial and residential complexes	Deemed exempt	ENSP and retailer
Large commercial and residential complexes	Registered exempt	ENSP and retailer
Retirement villages	Registered exempt	ENSP and retailer
Long term holiday accommodation	Registered exempt	ENSP and retailer
Shopping malls	Registered exempt	ENSP and retailer

Source: AEMC.
Note: The listed activities refer to both energy supply and sale activities and are derived from current AER exemption classes.

3.2.2 Legacy embedded networks

Legacy embedded networks and legacy exempt sellers will fall in three main categories: those in one of the exemption classes required to transition fully to the new framework; those that will be required to partially transition by complying with the arrangements for off-market retailer under the NERR but are not required to comply with the metering arrangements under Chapter 7 of the NER; and those that will continue to be governed under the old framework.

The transitioning embedded networks, and sellers in those networks, will have a two year period after the AER makes its new guidelines to transition into the new framework through registration as an ENSP or obtaining an off-market retailer authorisation. Some embedded networks that have registered exemptions from 1 January 2020 up until the effective date of the proposed framework will be required to transition into the new framework sooner, and will have a nine month period rather than two years.

The list of transitioning exemption classes is in Appendix C.

Other legacy embedded networks will remain in the old regime for so long as they continue to qualify for the relevant exemption class or hold the required individual exemption. The AER will continue to administer and enforce the old exemptions and will be able to replace legacy

exemptions, for example where a legacy embedded network has a new owner or the network needs to move between classes due to the appointment of an ENM.

The approach to legacy embedded networks is explained further in chapter 9.

3.3 Overview of roles in the recommended framework

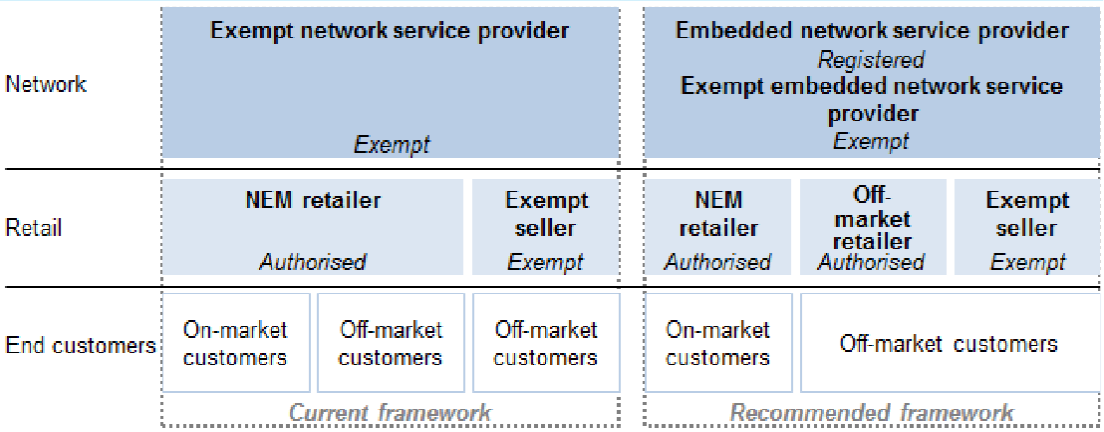
The Commission's final proposed framework for embedded network operation and on-selling has the following main features:

- establishment of the ENSP as a network service provider class with specified rights and obligations in the NEL and NER
- establishment of an off-market retailer as a class of retailer for embedded network customers of off-market retailers in the NERL and NERR
- application of the exemption framework to a smaller sub-set of exempt network service providers and energy sellers.[40]

The recommended changes to the draft proposed framework will apply to electricity distribution systems (which includes embedded electricity networks but not gas embedded networks) and to all retailers including dual fuel, gas and electricity retailers.

Figure 3.1 summarises the current and final proposed frameworks for embedded networks.

Figure 3.1: Proposed framework for embedded networks



Source: AEMC

Note: This diagram simplifies the relationships for illustration. The NEM retailer can also serve off-market customers in the recommended framework, whereas an off-market retailer can only serve off-market customers.

The below Box 8 summarises participants and roles under the new framework.[41]

40 Final proposed rule 150 of the NERR; Final proposed clause 2.14.2(b) of the NER.

41 Appendices A and B detail the roles and responsibilities for the ENSP and off-market retailer.

BOX 8: PARTICIPANTS AND ROLES UNDER THE PROPOSED EMBEDDED NETWORKS FRAMEWORK

Embedded Network Service Provider (ENSP)

The ENSP will be a person that engages in the activity of owning, controlling or operating an electricity embedded network - and does not hold a network exemption. The ENSP will be required to register with AEMO. The entity that registers as an ENSP may also be authorised as an off-market retailer.

Exempt Embedded Network Service Provider (exempt ENSP)

A small number of network service providers will continue to be eligible for exemptions from the AER. An exempt ENSP is an exempt network service provider that is an entity that owns, controls or operates an electricity distribution system that is an embedded network under an exemption registered with the AER (as all exemptions will now be registered with the AER). The AER may still require the exempt ENSP to act as, engage or appoint an ENM.[1]

Off-market retailer

An off-market retailer will be a retailer authorised by the AER that on-sells electricity purchased from a NEM retailer at a parent connection point to customers in an embedded network. The off-market retailer will be required to appoint a metering coordinator, and obliged to make an offer to all off-market and new customers in the embedded network that it operates in. The off-market retailer will be authorised by the AER. At least one off-market retailer[s] will be nominated by the ENSP for a specific embedded network area with AEMO. The entity that is nominated as an off-market retailer may also register as an ENSP.

Exempt seller

A small number of sellers in embedded networks will continue to be eligible for exemptions from the AER. An exempt seller on-sells energy purchased at a parent connection point to exempt customers in an embedded network. An entity seeking to become an exempt seller will be required to register with the AER to obtain a retail exemption.

Source: AEMC.

Note: [1] The AER's network exemption guideline includes appointment of an ENM as an exemption condition for some classes of exempt networks based on metering requirements and capabilities. Chapter 2 and 10 of the NER also provide that exempt networks that are embedded networks are, subject to certain exceptions, required to appoint ENM's where the ENM conditions are met, including in the event either a small customer enters into a market retail contract, or if a large customer enters into a contract for the sale of energy within the embedded network.

3.4 ENSP registration framework

3.4.1 Draft recommendations

Under the NEL and NER, a person that owns, operates or controls a distribution system[42] must either be:[43]

42 Section 2(1) of the NEL defines a distribution system as 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.

43 Section 11(2) of the NEL and clause 2.5.1(d) of the NER.

- registered with AEMO as a network service provider
- exempted by the AER from the requirement to register in accordance with its network exemption guideline.

In practice, registration with AEMO has been confined to distribution system operators and distribution networks that are subject to economic regulation by the AER under the NER. The NERL in turn only applies to those distribution system operators and distribution networks.[44]

The draft report proposed to create a new registration category for the operators of embedded networks. The draft report made the following recommendations:

- The NER would provide for the registration with AEMO of ENSPs as a new class of network service provider. To do so, the ENSP would be required to satisfy AEMO that it is eligible to classify its distribution system as an embedded network. Where ownership, control and operation of an embedded network is shared by multiple entities, only one would need to register as an ENSP and the others would be able to nominate the ENSP as an intermediary acting on their behalf.
- Each ENSP would be required to register at least one embedded network area, similar to the site-specific exemption that the AER currently issues to exempt network service providers in the current framework. The embedded network area would frame and clarify the ENSP's functions and obligations under the proposed framework, particularly in relation to new connections.
- An ENSP registered under the NER would not be subject to economic regulation by the AER but would have responsibilities under the NER in relation to its embedded network.
- An ENSP registered under the NER would be included as a distributor under the NERL and NERR.

The proposed responsibilities of an ENSP are discussed in detail elsewhere in this report and summarised in Box 9.

BOX 9: OVERVIEW OF THE RESPONSIBILITIES OF AN ENSP UNDER THE NER AND NERL/NERR

Under the NER, an ENSP would be required to:

- provide NEM retailers and off-market retailers in the embedded network with NMI standing data upon request
- ensure the nominated retailer for the embedded network has access to the data it needs to comply with off-market retailer obligations in Chapter 2 of the NER
- comply with metering data provision requirements in relation to retail customers (clause 7.14 of the NER), including NEM retailer customers and off-market retailer customers
- fulfil market interface functions of a DNSP (Chapter 7 of the NER)

44 Definition of distributor in section 2(1) of the NERL, and definition of regulated distribution system operator in section 2(1) of the NEL.

- implement network billing and settlement in line with AEMO procedures (including charging retailers of on-market child connection points network charges)[1]
- nominate the local off-market retailer for its embedded network[2]
- establish performance standards and potentially undertake system strength remediation works when establishing a connection for a registered generator or large load[3]
- provide basic and negotiated connection services to retail customers under Chapter 5A of the NER.

Under the NERL and NERR, an ENSP would be required to:

- provide connection services according to s. 66 of the NERL
- comply with requirements for supply interruption notifications, and other requirements for life support customers in the NERR
- disclose specified information on a website and report to the AER as required.

Source: AEMC.

Note: [1] Recommended amendments to Chapter 6B of the NER. [2] Recommended new clause 2.5.4 of the NER. [3] Recommended amendments to Chapter 5 of the NER.

3.4.2 Stakeholder views

There was support from a range of stakeholders for establishing the role of ENSP under the NER and requiring parties that wish to perform this role to register with AEMO.[45] These stakeholders considered establishing this new role would address the regulatory and consumer protection gaps in the current regime and facilitate retail market competition.

Other stakeholders raised concerns regarding the costs of registration and compliance with the obligations being proposed or alternatively outsourcing this function to a third party.[46] Some stakeholders anticipated this would increase costs for consumers. Energy Queensland considered the likely additional costs of compliance may increase the incentive for embedded networks to disconnect from the grid.[47] Energy Australia considered these costs may represent a barrier to entry while forcing some current businesses to exit the market. This could result in a consolidation of service providers and less choice for consumers, although Energy Australia acknowledged this may not be a material concern when considered in the context of the total expected costs and benefits of the entirety of the AEMC's proposed changes.[48]

Watts Energy was concerned that the process to seek registration with AEMO as an ENSP will duplicate the accreditation process for an ENM. Watts considered this duplication in market registration will introduce unnecessary regulatory costs, uncertainty and administrative

45 Submissions to the draft report: Active Utilities, p.4; AGL, p.3, Alinta, p. 3; Enerven, p. 1; ERM, p.1, Origin, p. 4; Momentum, p. 2; Red Energy, p.1; Simply Energy, p. 3.

46 Submissions to the draft report: Caravan, Camping & Touring Industry & Manufactured Housing Industry Association of NSW Ltd, p.2 & p. 11; Energy Queensland, p.2; Energy Options, Energy and plant management, p. 2; p. 5; Enerven, p. 1; Leda Commercial Properties, p. 1; Local Planning Energy, p. 2; Our Energy, p. 1; Retail First, p. 2; Shopping Centre Council of Australia, pp. 1-2.

47 Energy Queensland's submission to the draft report, p. 2.

48 Energy Australia's submission to the draft report, p. 2.

burden to AEMO and the market, leading to inefficient investment and operation of electricity services.[49]

Living Utilities raised some specific concerns with respect to the Commission's proposal that an 'intermediary' be required to register with AEMO. It noted the Commission had introduced the 'intermediary' concept to address the issue of one or more parties owning, operating and controlling an embedded network asset.[50] Living Utilities was concerned this would be problematic due to split accountabilities and would introduce complexity in dispute resolution and monitoring and enforcement by regulatory bodies.

Living Utilities proposed establishing an 'occupancy at risk' class of ENSP. This class of ENSP would be required to comply with a minimum set of obligations such as life support obligations, connection obligations, de-energisation protections and market interface requirements. However, the regulation of connection charges, dispute resolution processes and outage notifications would not apply.[51] Living Utilities argued that their customers are informed and sophisticated buyers making some of these protections unnecessary. Furthermore, it considered itself to be incentivised to continually improve service outcomes since it operates in a competitive marketplace.

3.4.3 Commission analysis

The Commission is satisfied that the creation of an ENSP class under the NER, together with its recommendations for narrowing the use of network exemptions, promotes the long term interests of consumers consistent with the National Electricity Objective (NEO) and that including ENSPs as distributors under the NERL is consistent with the development and application of consumer protections under the National Energy Retail Objective (NERO).

Including a new ENSP class in the NER and extending the NERL and the obligation to register under the NER to most new embedded networks:

- reduces the burden on the AER in managing discrete exemption applications, and exemption classes and conditions, for large sets of exempt embedded network service providers
- creates certainty around the role and responsibilities of the ENSP
- offers appropriate customer protections through setting out the obligations and requirements of ENSPs in the national frameworks.

Electricity networks eligible for network exemptions under the current framework may incur minor additional costs in preparing applications for network registration with AEMO as a result of the removal of deemed exemptions and narrowing of eligibility for registrable exemptions. AEMO has indicated it would make fees proportionate.

Consistent with the NEO and NERO, the Commission considers that these additional costs are outweighed by benefits arising from:

49 Watts Energy's submission to the draft report, p. 3.
50 Living Utilities' submission to the draft report, pp. 6-8.
51 Ibid. pp. 9-11.

- reduced upfront costs of the administration currently required by the AER in respect to monitoring and enforcement
- enhanced oversight over embedded and exempt electricity networks for all stakeholders.

As a result of responses to the draft report, the Commission's final recommendations modify the ENSP registration process and the content of AEMO's register of ENSPs. The process now treats specification of the embedded network area and nomination of a local embedded network retailer as preconditions to registration rather than information requirements.

The Commission's final recommendations include a requirement in the registration process for the AER's consent to be obtained for the conversion of a brownfield site[52]. This is intended to ensure the AER can continue to apply the existing customer protections in the AER's network exemption guidelines and retailer exemption guidelines, which require AER consent to a brownfields conversion for customers in the network. The final recommendations provide for the AER to make guidelines explaining what must be done to obtain consent.

In general terms, a brownfield site conversion occurs where the electrical installation serving multiple customers within a building or site is altered so the customers cease to be directly connected to the NEM and instead are connected through a parent connection point and take supply at a child connection point. The operators, controllers and owners of a brownfields conversion that does not have the required registration or exemption will be in breach of the NEL. The Commission recommends that the NER define a brownfield conversion to include the commencement of selling activities within an existing network (for example where a landlord decides to charge tenants separately for energy consumption).

3.4.4 Final recommendations

The Commission's final recommendations for registration of ENSPs are as follows:

- The NER should provide for the registration with AEMO of ENSPs as a new class of network operator. To register, an ENSP should be required to:
  - specify its embedded network area[53]
  - show that a retailer has consented to be the local embedded network retailer for the embedded network
  - satisfy AEMO that it is eligible to classify its distribution system as an embedded network.
- The AER should continue to regulate brownfields conversions. To enable this to occur (given other changes to the framework), the NER registration process should require AER consent as a condition of registration with AEMO.
- The AER should publish guidelines setting out its requirements for granting consent to a brownfields conversion. The NER should allow the guidelines to be published with the AER Exempt Network Guidelines that the amended NEL will require the AER to publish.

52 Final proposed clause 2.5.4(i) and (j) of the NER, which require the AER to prepare guidelines to approve the classification of brownfields conversions, which may be published as part of the AER Exempt Network Guidelines.

53 In case the embedded network area changes after registration with AEMO, the ENSP may by application to AEMO amend the registration details, including details of the embedded network area. See clause 2.5.4(h) of the NER.

- Where ownership, control and operation of an embedded network is shared by multiple entities, only one would need register as an ENSP and the others would be able to nominate the ENSP as an intermediary acting on their behalf.
- An ENSP should only be a network service provider under the NER where specifically provided for in the Rules. The provisions that should apply are identified elsewhere. An ENSP should not be subject to economic regulation by the AER under the NER.
- The NEL should be amended so that an ENSP registered under the NER is a distributor under the NERL and NERR and its embedded network is its distribution system under those instruments.

3.5 Network exemption framework

3.5.1 Draft recommendations

The AER currently specifies the network exemption classes and exemption conditions in its network exemption guidelines. The guidelines provide for deemed, registrable and individual exemptions. This is the same structure used for retail exemptions and the AER has aligned many of the exemption classes in the two frameworks. The AER specifies exemption conditions covering access to retail competition, distribution loss factors, network pricing, appointment of ENMs, information provision and brownfield conversions.

In its draft report, the Commission made the following recommendations for changes to the current network exemptions framework:

- Amending the NEL and NER to set out an exemption framework for electricity networks that is consistent with the approach in the NERL and the NERR in terms of the level of detail and procedural matters and that allows the NER to specify the principles governing the grant of exemptions and exemption conditions
- Retaining individual exemptions for transmission systems
- Removing individual exemptions for distribution systems (embedded networks) and subsuming these in the process of registering ENSPs
- Disallowing new deemed exemptions for electricity distribution networks and updating the definition of a distribution system to exclude some installations from being defined as a distribution system for the purposes of the NEL and the NER
- Providing only for registrable exemptions for electricity distribution networks, under limited circumstances
- Applying the new framework to new networks
- Transitioning current deemed network exemptions to become registrable exemptions.

3.5.2 Stakeholder views

Individual network exemptions

The AER commented that individual exemptions provided a flexible regulatory tool to regulate diverse and unanticipated business models and supply arrangements which they expect to increase over time.[54] Although this comment was made in relation to selling exemptions in particular, the AEMC understands from discussions with the AER that it holds similar concerns in relation to network exemptions.

Several other stakeholders were also concerned about a loss of flexibility in the exemption framework. Our Energy Company commented that exemptions are generally for new and novel situations or where a variation of conditions is considered necessary and desirable.[55] NEV Power also considered there should be some flexibility within the framework to provide grounds for exemption for networks that are very small and not operating as a commercial venture.

While PIAC supported limiting exemptions where possible, it considered that some innovative projects with a demonstrable consumer benefit should be able to be accommodated by a flexible approach to the consideration of exemptions.[56]

Exclusions from the definition of distribution system

Stakeholders were generally supportive of removing deemed exemptions from the framework and raised few concerns other than to identify additional activities that should be removed. EWOSA[57] supported the proposed changes to the definition of a distribution system, which would improve transparency and the ability of the AER to carry out its monitoring and enforcement rules, as well as reducing regulatory burden.

The AER submitted that there are several activities for which there are currently deemed exemption classes in the AER network exemption guideline which are included only because they fall within the current definition of a distribution system. These include the provision of energy for electric traction systems (e.g. trains, trams) and the supply of energy by privately owned electric vehicle charging stations.[58]

The first, the AER submitted, is covered by contractual agreements between large parties with negotiating power who can negotiate the terms of the energy supply, and the second is subject to competitive tension as customers are able to freely choose between fuel sources and charging stations. The AER noted that the draft framework included registrable exemption classes for these activities. However, the AER considered that there is no need to provide consumers with energy-specific protections in these instances and they therefore should not constitute a distribution system under the new framework.[59]

Norton Rose Fullbright Australia made a submission on behalf of a client in relation to the proposal to change the definition of a distribution system in the NER.[60] Norton Rose Fullbright

54 AER's submission to the draft report, p. 4.

55 Our Energy Company, submission to the draft report, p. 5.

56 PIAC's submission to the draft report, pp. 8-9.

57 EWOSA, Submission on the draft report, p. 2.

58 AER's submission to the draft report, p. 6.

59 Ibid.

60 See section 3.4.4 of Australian Energy Market Commission, *Updating the regulatory framework for embedded networks review*, draft report, 31 January 2019.

specifically commented, on behalf of a client, on the proposal that the following would not constitute a distribution system:[61]

….(c) a network forming part of, or used in conjunction with, or ancillary to, or that is primarily used to facilitate the functioning of, infrastructure for the provision of telecommunications services, data centres services provided by means of communications technology, including infrastructure for the provision of internet, telephone, mobile phone, fibre optic, hybrid fibre cable, television, radio or wifi services…"

Norton Rose Fullbright's client, which operates embedded networks consistent with the above definition, is supportive of the general intent of removing regulatory compliance activities from these activities. However, it was concerned that this may preclude access to retail market competition in these networks.[62]

Registrable network exemptions

In submissions, meetings and stakeholder workshops with the Commission, some stakeholders raised issues around the definition of "long term holiday accommodation" and how the boundaries between different types of occupancy would be drawn.[63] PLUS ES suggested that the definition of the classes eligible for embedded network exemption to be clearly defined to remove confusion within the industry.[64]

PIAC considered that short term and long term holiday accommodation (all residential accommodation) should be treated consistently in the new framework, to minimise the potential for unintended consequences impacting consumers (particularly long-term residents of caravan or residential park accommodation). As such, PIAC considered short term and long term holiday accommodation should both be required to register with AEMO. However, PIAC conceded this may require the creation of criteria so networks that exclusively offer short-term accommodation (and have never offered long-term accommodation) can apply for an exemption from some elements of the new framework.[65]

The Caravan, Camping & Touring Industry & Manufactured Housing Industry Association of NSW Ltd (CC&TI&MHA) was concerned the regulatory burden of registering with AEMO and complying with the NER would outweigh benefits to customers, particularly in relation to holiday parks. It considered that the proposed definition of "distribution system" should be amended to exclude holiday parks or develop an alternative and lower cost regulatory approach.[66] This was on the basis that occupants of short-term accommodation in holiday parks are either holiday makers or occupants that store their RVs on a park site for occasional recreational use under the terms of an 'occupation agreement.' Further, CC&TI&MHA considered energy specific consumer protections were unnecessary given

61 Norton Rose Fullbright Australia, submission on the draft report, p. 1.

62 Ibid.

63 Australian Energy Market Commission, *Updating the regulatory framework for embedded networks review;* submissions to the draft report: CC&T & MHI NSW Association, p. 16; PLUS ES, p. 3.

64 PLUS ES, submission on the draft report, p. 3.

65 PIAC's submission to the draft report, p. 4.

66 The Caravan, Camping & Touring Industry & Manufactured Housing Industry Association NSW Ltd's, submission to the draft report, p. 8.

embedded network customers in NSW holiday parks also have consumer protections under the Australian Consumer Law, the Holiday Parks (Long-term Casual Occupation) Act 2002, the Holiday Parks (Long-term Casual Occupation) Regulation 2009 and their occupation agreements.[67]

3.5.3 Commission analysis and final recommendations

Changes to the NEL and transmission exemptions

The Commission is satisfied that changes to the NEL should be made to align the exemption framework more closely with the approach in the NERL and to provide for the NER to specify the circumstances in which network exemptions may be granted and mandatory conditions. With respect to transmission exemptions, the Commission is satisfied that the AER should continue to grant these as individual exemptions.

The Commission has given further consideration to registrable exemption classes NR06 and NR07 which apply to dedicated connection assets that are not operated by a registered Network Service Provider. The Commission is satisfied that these registrable classes should continue, subject to the same mandatory conditions that currently apply under the NER.

The Commission's final recommendations with respect to these matters are as follows:

- Amend the NEL and NER to set out an exemption framework for electricity networks that is consistent with the approach in the NERL and the NERR in terms of the level of detail and procedural matters and that would:
  - require the AER to publish AER Exempt Network Guidelines
  - only permit the AER to grant network exemptions in accordance with the NER
  - allow the NER to impose mandatory exemption conditions but otherwise leave the determination of exemption conditions to the AER.
- Retain individual exemptions for transmission systems and allow the AER to determine registrable exemption classes for transmission systems so as to continue the exemption for dedicated connection assets, subject to the current mandatory exemption conditions.
- Transition individual exemptions for transmission systems and registered exemptions for dedicated connection assets into the new regime. Those individual exemptions granted prior to the effective date are to be grandfathered.

Individual network exemptions

Consultation responses have focussed on the need for more flexibility in the exemption framework for embedded networks by retaining a power to grant individual exemptions.

A key objective of the new framework is to ensure that embedded networks that would in the past have been granted an individual exemption and regulated under exemption conditions are instead registered as ENSPs and subject to the NER framework. The ENSP registration category is designed to accommodate these networks, as ENSPs have a defined set of obligations under the NER, are not subject to economic regulation by the AER and have

67 Ibid.

limited obligations to give network access to retail customers. Their obligations under the NER are intended to ensure access to consumer protections for customers connected to their networks. Reliance on exemption conditions to provide access to consumer protections has not been in the interest of consumers, as illustrated by the findings of the 2017 report.

The Commission remains of the view that holiday parks should register network exemptions in order to improve transparency.

The Commission's final recommendation is nonetheless to retain a power in the NER for the AER to grant individual network exemptions for distribution systems, subject to:

- the AER being satisfied that special circumstances warrant the grant of the exemption
- customer-focussed criteria, intended to ensure that individual exemptions are only granted where customers retain access to retail competition and consumer protections are met.

No individual exemptions will be available for a distribution system with registered generation or a large load connected to it.

The Commission considers that this framework achieves an appropriate balance between flexibility in the exemptions framework and protecting the long term interests of consumers.

The Commission remains of the view that individual exemptions should have a very limited role in the new framework. The requirement that they only be granted in special circumstances is intended give effect to this intention. The recommended framework does not define or limit what are special circumstances. The Commission considers that 'special' circumstances may potentially include temporary arrangements, or temporary exemptions while a rule change is implemented, or circumstances where the relevant activity is already subject to fit for purpose regulation under another regulatory regime (similar to rail traction).

The Commission does not intend that individual exemptions should be used as a mechanism to adapt the framework to new technology or business models; these developments reflect the normal course of business activity and if successful will most likely be implemented more broadly. In general the operation of embedded networks should be undertaken within the bounds of the registration and exemption framework. Where the framework needs to adapt to new circumstances, the preferred course should be to address this through a request for a change to the NER or NERR. This promotes transparency and consistent treatment as new technology or business models are more widely adopted.

The Commission's final recommendation is to allow the grant of individual exemptions only where:

- in the opinion of the AER, the grant of the network exemption is not inconsistent with the NEO
- prior to granting a network exemption, the AER has consulted with AEMO and the authorities responsible for administering the jurisdictional electricity legislation in the relevant participating jurisdictions
- no registered generation or large loads, or generation or load otherwise required to be accredited under the Rules, is connected to the network

- if any small customers are or may be connected to the distribution system, the applicant has demonstrated to the reasonable satisfaction of the AER that:
  - they will, as far as practicable, be afforded the right to a choice of retailer in the same way as comparable retail customers in the same jurisdiction have that right
  - they will have a NER-compliant metering installation installed and a NMI will be issued for the customer's connection point
  - they will, as far as practicable not be denied customer protections afforded to small customers in respect of supply under the NERL and the NERR.
- the AER is satisfied in all the circumstances that:
  - the grant of the network exemption would result, or be likely to result, in a benefit to the customers supplied by means of the distribution system that is not available unless the network exemption is granted
  - the benefit would outweigh the detriments that would result, or be likely to result, from the grant of the network exemption (including the costs to customers supplied by means of the exempt network and the public costs of individual network exemptions including the costs of determining, monitoring and enforcing conditions of individual network exemptions)
  - special circumstances exist such that the grant of a network exemption is warranted.

Removal of deemed exemptions

Consultation responses have drawn to the Commission's attention supply arrangements that were formerly covered by deemed exemption classes and that under the draft recommendations would have been required to register as ENSPs. These included supply within sites where all customers on the site are directly connected to the NEM and where no sale of energy is occurring (either directly or through a proxy charge such as a charge for use of the wiring within the site).

The Commission has considered the appropriate treatment of these supply arrangements in the new framework and has modified its final recommendations.

The Commission remains of the view that deemed exemptions classes should be discontinued in the new framework. Where regulation under an exemption is justified, the exemption should be registered so as to give the AER regulatory oversight. The final recommended registrable exemption categories are discussed below.

Where regulation is not required, the relevant facility or activity should be taken outside the registration and exemption regime as follows:

- The definition of connection assets in the NER should be amended to provide for the consistent classification of supply arrangements within sites and buildings where all customers are directly connected or where no sale of electricity is occurring.
- The definition of distribution system in the NER should be amended to exclude a number of former deemed exempt activities from the exemption and registration framework where there would be no net benefit in regulating under the national framework.

Each of these measures is discussed in more detail below.

Classification of wiring used to provide a direct connection or providing electricity for no charge

The NEL defines a distribution system as the apparatus, electric lines, equipment, plant and buildings used to convey or control the conveyance of electricity that the NER specify as, or as forming part of, a distribution system. The NEL allows the NER to provide more detail as to which assets will be classified as a distribution system.

Under the NER, a distribution system is 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, and dedicated connection assets in respect of which a Primary Transmission Network Services Provider is registered, do not constitute a distribution system.[68]

In effect, the NER provides for the classification of apparatus, electric lines, equipment, plant and buildings used to convey or control the conveyance of electricity as either connection assets or network assets.

Under the current framework the AER treats wiring within buildings as connection assets when all customers are directly connected to the NEM (consistent with the approach taken since the start of the NEM) but treats wiring on sites as network assets even if all customers on the site are directly connected to the NEM.[69] In practice this approach has had little impact due to the majority of small sites being covered by deemed exemption classes.

Discussions with the AER following the release of the draft report identified that (under the draft recommendations) some arrangements currently covered by deemed exemption classes (such as ND1 and ND2) would be required to register under the NER as embedded networks, even where all customers are directly connected to the NEM or a person is not being charged for electricity or for use of the network.

The Commission, in this context, is principally concerned with access to retail competition and other consumer protections. Customers directly connected to the NEM are standard supply customers and the Commission considers they should be treated consistently under the NER whether located in the same building or on a single site. Similarly, where customers are not being sold electricity or charged for use of the wiring (for example, a separate flat on a site where the occupier is not charged or where the cost of electricity is included in the rent) the Commission considers the costs of registration under the NER are likely to outweigh any benefit.

The Commission's final recommendation is to change the definition of connection assets so as to achieve consistent classification of wiring that serves multiple customers within a building or the boundaries of a site. The changes to the definition will allow wiring in a building or site (that is not part of the distribution system of a registered Network Service Provider) to be classified as connection assets where all customers are directly connected, and no electricity or service provided by means of the wiring is being sold or charged to a

68 NER Chapter 10, definition of distribution system.

69 Network exemption guidelines, page 15 and footnote 5.

third person on the site. If on the other hand customers on the site are being charged, the point of supply will be a child connection point and registration or an exemption will be required. Sites converting from direct connection to child connection points, or introducing charges for supply, will be brownfields conversions and require AER consent as described above.

The Commission recommends implementing these changes in Chapter 10 of the NER through:

- changes to 'connection asset'; 'child connection point' and 'embedded network'
- new definitions of 'embedded connection asset' and 'brownfields conversion'.

Exclusions from the definition of distribution system

The draft report noted that the current definition of distribution system is very broad, and covers 'networks' that may not be thought of as such. The Commission proposed excluding these from the regulatory framework by amending the definition of distribution system in the NER.

The Commission's final recommendation retains this approach, but with some changes to the facilities and activities excluded from the definition.

The recommended exclusions are set out in Table 3.2. The Commission is satisfied that the changes promote the NEO by excluding from the regulatory framework those networks that it is not efficient to regulate under the NER, either due to the nature of the installation, the temporary or short term nature of the supply arrangement or (in the case of rail traction systems) to avoid the unnecessary duplication of regulatory arrangements. The exclusions also reduce the regulatory burden on the AER in creating and updating exemption classes to address these instances.

In the draft report, the deemed exclusions included networks used for the provision of telecommunications services, data centre services or other services in a data centre and a network forming part of a facility for broadcasting television or radio signals. The Commission's final recommendation is to provide for the AER to make a registrable exemption class for these networks, as discussed further below, in order to provide greater visibility over the extent of the use of embedded networks for the provision of these services and to be consistent with the proposed treatment of selling electricity supplied by means of these networks.

Table 3.2: The Commission's final recommendations for exclusions from the distribution system definition

RECOMMENDED EXCLUSION[1]	EXPLANATION
Metering installations	This was included in the draft report and reflects exemption class ND4. The Commission's final recommendation is not to refer to the sub-mains or outgoing service wiring as they do not form part of the

RECOMMENDED EXCLUSION[1]	EXPLANATION
	metering installation. The Commission's final recommendations provide for the AER to make a registrable exemption class if required to cover sub-mains or outgoing service wiring.
A micro EG connection as defined in Chapter 5A, covering "a connection between an embedded generating unit and a distribution network of the kind contemplated by Australian Standard AS 4777 (Grid connection of energy systems via inverters)".	This is intended to cover domestic-scale solar PV or battery installations. Historically this was included as deemed exemption classes ND01 and ND07 on the basis that third party ownership of the installation created a network requiring registration or exemption. The Commission's final recommendations provide for the AER to make a registrable exemption class if required to cover sub-mains or outgoing service wiring.
A network formed by supply to equipment supplied by or on behalf of NBN Co Ltd for the National Broadband Network and with an input current rating not exceeding 700 watts.	The AER dealt with this as part of ND5. The Commission understands that the class was created for the network formed by customers providing a supply to standard NBN equipment. The size limit in the network exemption guidelines is 3 amps. Following discussions with the AER the Commission recommends changing this to 700 watts to avoid ambiguity where lower voltage plug pack equipment is used.
A network formed by the use of plug–in or rack mounted equipment including where formed by the charging of an electric vehicle.	Current deemed exemption class ND5 applies to plug in or rack mounted equipment, such as a home-owner providing a socket for a vacuum cleaner operated by a cleaning company. ND03 applies to electric vehicle charging stations within an exempt network. The Commission's recommended exclusion is intended to treat the vehicle in a manner consistent with the treatment of plug in equipment. The recommended exclusion is not intended to extend to the network used to supply the charging station, which (unless it is the LNSP's network) may need to register

RECOMMENDED EXCLUSION[1]	EXPLANATION
	or be exempted as an embedded network.
A network within a construction site or on a site adjacent to the construction site during the construction and commissioning phases of new facilities on a construction site.	This reflects current deemed exemption class ND04.
Electric traction systems for supply to a passenger or freight rail network.	This reflects current deemed exemption class ND05 and does extend to a network for supply for commercial or retail activities associated with the provision of passenger or freight services.

Source: AEMC.
Note: [1] Refer to the recommended rule changes and amendment to the definition of 'distribution system' in Chapter 10 of the NER for the specific wording of the exclusions.

Registrable network exemptions

The draft report provided for all new network exemptions to be registered with the AER and for the NER to specify the categories of activity for which a network exemption class could be created. The Commission has reviewed this framework in light of responses to the draft report and its final recommendations are as follows:

- provide for the grant of individual exemptions in special circumstances and where customers are protected (as discussed above) but otherwise require all other new network exemptions to be registered
- specify in the NER the categories of activity for which a network exemption class may be determined
- within the exemption categories, give the AER discretion to define the exemption classes
- give the AER discretion to determine the exemption conditions
- rename the current exempt network guidelines as the AER ExemptNetwork Guidelines and recognise them in the NEL (to align with the NERL framework)
- provide for the AER to continue to publish a register of exempt network operators, which includes names and addresses for all registered exempt embedded networks by class - in addition to other exempt distribution and transmission systems.

These recommendations, together with the removal of deemed exemption classes and registration of ENSPs under the NER, would preclude exemption of some of the current classes of registrable exemptions that compromise NEO outcomes for small customers, such as embedded networks in high rise apartment complexes.

Electricity networks eligible for deemed exemptions under the current framework that must now register for the exemption may incur minor additional exemption registration costs as a result of the removal of deemed exemptions. However, this is an up-front, one-off cost for both the network and the AER. Network exemption registration is currently done through a short online form that the Commission considers to be low cost for both a network

registering an exemption and the AER. Consistent with the NEO and NERO, the Commission considers that these additional costs are outweighed by benefits arising from:

- reduced upfront costs of the administration currently required by the AER in respect to monitoring and enforcement
- enhanced oversight over embedded and exempt electricity networks for all stakeholders.

The Commission's final recommendations provide for the specification of the exemption classes to remain within the discretion of the AER. This is intended to allow the AER to continue to define the classes in similar terms to the corresponding classes in the exempt network guidelines and provide similar guidance, and also adapt the class specifications over time.

The draft report set out a list of activities for which the AER would be permitted to make exemption classes. The Commission has reviewed the list in light of consultation responses and further discussions with the AER and has made some adjustments for the final recommendations. The Commission's final recommendations are to include in the NER:

- the activities listed in Table 3.3 below as categories for which a registrable exemption class may be made
- an overriding principle that embedded networks to which registered generating facilities or large loads are connected cannot be exempt and must be registered as ENSPs. These embedded networks must register so as to be subject to the obligations for determination of performance standards and for analysis of the impact of the connection on system strength.

Table 3.3: The Commission's final recommendations for categories of activity for which a network exemption class may be made

RECOMMENDED CATEGORIES OF ACTIVITY[1]	EXPLANATION
A distribution system used solely for the supply of electricity by a person in the class to a related body corporate of the person or to an entity controlled by, or under common control with, the person.	This reflects network exemption class ND8. The Commission agrees that registration as an ENSP is not required but considers regulatory oversight should be maintained through the exemption registration process.
A distribution system used solely for the supply of electricity to holiday-makers in holiday accommodation (including cabins, recreational vehicles such as motorhomes, campervans, caravans, camper trailers, tent trailers, fifth wheelers and slide-ons, tents and like accommodation).	This reflects network exemption class ND3. The Commission agrees that registration as an ENSP is not required. However, the Commission remains of the view that a registrable exemption should be required to improve transparency and permit conditions to be attached if the AER considers it appropriate. The Commission recommends a more detailed list of different types of holiday

RECOMMENDED CATEGORIES OF ACTIVITY[1]	EXPLANATION
	accommodation to be incorporated into the rules to respond to a request for clarification made in submissions to the draft report.
A distribution system that is part of, or is for the connection to the national grid of, or for outgoing supply from, a generating system or inverter-connected installation owned, controlled or operated by a person in the class.	This recommended category subsumes current classes ND01 (non-registered generators) ND07 (demand side-participation equipment and facilities) and NR01 (non-registered generators providing services to the market). NR02 (for registered generators) is to be discontinued as these networks will be required to register as ENSPs in order to ensure performance standards and related matters apply under Chapter 5 of the NER.
A distribution system that is for the connection to the national grid of, or for outgoing supply from, a metering installation owned, controlled or operated by a person in the class.	There is currently no corresponding exemption class (except to the extent the class is subsumed within other classes) but allows for exemption where third party metering configurations would otherwise require registration. The Commission recommends the AER assess the need for this class in developing the new guidelines.
A distribution system that provides a supply only to non–residential customers by a federal, state or local government agency or body (including a department, statutory authority or government-owned corporation) where the supply is for a purpose ancillary to the principal functions of the agency or body.	Current network exemption class ND10 extends to both government departments and some educational institutions. The Commission's final recommendation is that only government departments should continue to be eligible for the creation of an exemption class and educational institutions be required to register as ENSPs if operating a registrable embedded network.
A distribution system that is located within, and supplies electricity within, premises used primarily to house equipment used for the supply of television, radio, telecommunications or data centre services (including internet, telephone, mobile phone, fibre optic, hybrid fibre cable or wi-fi services) and where:	This recommended category subsumes current network exemption classes ND02 (sites broadcasting television and radio signals) and ND9 (supply of energy within data centre and like facilities). In the draft report, the Commission proposed excluding these activities from the regime through the definition of 'distribution system'.

RECOMMENDED CATEGORIES OF ACTIVITY[1]	EXPLANATION
(i) the supply is in conjunction with, or ancillary to, the supply of the relevant services; and (ii) the distribution system is owned, operated or controlled by the provider of the relevant services.	However the Commission is satisfied that the AER should retain regulatory oversight including the power to impose appropriate exemption conditions.

Source: AEMC.
Note: The Commission's recommended wording for these classes is in clause 2.14.2 (b) of the NER in the Final Proposed rule change package.

The draft report included 'an activity specified under jurisdictional electricity legislation as one for which an exemption from the obligation to hold a distribution licence or equivalent instrument'. In this final report, the Commission is not satisfied that these should be excluded given the different functions of jurisdictional electricity legislation compared to the national framework as other mechanisms in the national framework are better suited to jurisdictional-specific derogations. The Commission's final recommendation is not to include jurisdictional exemptions as a permitted exemption category.

The draft report also included 'the supply of electricity by means of an electric vehicle charging station'. The Commission's final recommendation is to treat the 'network' created by the charging of the vehicle in the same manner as plug-in equipment by excluding it from the definition of a distribution system.

The Commission indicated in the draft report that it would consider whether it would be appropriate to explicitly recognise joint ventures in the related bodies corporate category. The Commission is not currently satisfied that there is any basis for extending the category and has not done so in the final recommendations.

3.6 Retailer authorisation framework

3.6.1 Draft recommendations

Under the current framework, a person who wishes to sell energy to a person for premises must either hold a retailer authorisation from the AER or be exempted by the AER from the requirement to hold a retailer authorisation.[70]

Retailer authorisations are issued by the AER, subject to assessment of organisational, technical and financial capability. Exemptions are granted by the AER using an exemption framework in the NERL that establishes three kinds of exemptions (deemed, registrable and individual) and stipulates a range of exempt seller related factors and customer related factors the AER may take into account in deciding whether to grant an exemption.

70 NERL section 88.

In the draft report, the Commission recommended changes to the framework to address issues identified in the 2017 Review.[71] The draft recommendations provided for:

- changes to the NERL and NERR to allow classes of retailer to be created in the NERR, where members of the class would be subject to modified retailer obligations specified for the class
- the creation of one new retailer class, the off-market retailer, available to retailers on-selling electricity they have bought from on-market retailers to customers in embedded networks
- relaxation, for off-market retailers, of the obligations of retailers to publish a retail offer in a newspaper and not modify prices within six months
- changes to the NERL to make it clear the AER can apply different assessment criteria to different classes of applicant – for example, since an off-market retailer is only buying from other retailers and not directly from the NEM, the AER would not need to assess the capabilities of prospective off-market retailer authorisations to participate in the spot market
- provision for the AER to grant exemptions from some of the obligations of off-market retailers as part of the applications process
- a requirement in the NEL for off-market retailers to register with AEMO under the NER.

As discussed below, the draft report also recommended changes to the exemption process, with the object of subsuming many of the current exemption arrangements within the off-market retailer authorisation arrangements.

3.6.2 Stakeholder views

Many stakeholders were supportive of requiring off-market retailers to gain a retailer authorisation and requiring compliance with obligations under the NERL and the NERR,[72] whilst other considered the costs of authorisation and compliance would outweigh the benefits to customers. Those stakeholders that supported requiring retailers that on-sell to embedded networks to obtain a retailer authorisation from the AER, held mixed views on whether a separate retailer class of off-market retailer should be established.

The AER supported introducing additional flexibility in the authorisations framework to allow for 'off-market retailers' and for retailer obligations to be varied. The AER considered the current retailer authorisation framework to be inflexible, with set entry criteria and regulatory obligations that cannot be adapted to meet different customer and energy supply needs meaning the more flexible exemptions framework has had to be relied upon to deal with new and emerging energy supply arrangements.[73] Living Utilities had a firm preference for establishing a new class of off-market retailer. [74] Living Utilities considered this would enable current and ongoing targeting of fit-for purpose obligations to retailers in embedded

71 These are summarised in chapter 2 of this report.

72 Submissions to the draft report: Active Utilities, p. 4; AGL, p. 3, Alinta, p. 3; Enerven, p. 1; ERM, p. 1, Origin, p. 4; Momentum, p. 2; Red Energy, p. 1; Simply Energy, p. 3.

73 AER's submission to the draft report, p. 4.

74 Living Utilities submission to the draft report, p. 8.

networks. Our Energy also considered there should be the option to obtain an off-market retailer authorisation in order to limit compliance costs, the savings from which could be passed on to customers.[75]

Renew was of the view that requiring both on-market and off-market retailers to obtain the same class of retailer authorisation would simplify compliance, minimise regulatory arbitrage incentives, and would ensure consistency in consumer protections between on-market and off-market customers.[76]

Given that off-market retailers will be authorised by the AER and listed on an AER public register, AEMO considered the purpose of AEMO separately registering them to be unclear. AEMO noted that there are a very limited set of NER requirements for which off-market retailers would be 'registered participants' and considered there to be little benefit requiring them to be registered under Chapter 2 of the NER.[77]

3.6.3 Commission's analysis and final recommendations

The Commission remains satisfied that the authorisation and exemption framework needs to change so as to require most energy sellers to hold a retailer authorisation and to limit selling under retail exemptions. The Commission is also satisfied that, together with its recommended changes to the retail exemption framework, the creation of an off-market retailer category is a proportionate approach that will:

- support the operation of the new framework for registration of ENSPs under the NER
- reduce barriers to the authorisation of retailers who wish to on-sell but not be NEM participants
- enhance access to retail competition and consumer protections for customers in embedded networks.

The final recommendations vary from the draft recommendations in two respects. First, the final recommendations do not provide for the AER to exempt off-market retailers from the operation of the NERR or the NERL. The Commission considers that exemption offers few benefits but creates additional complexity and cost for the AER and uncertainty for consumers about what to expect from retailers. Second, off-market retailers will not be required to register with AEMO under Chapter 2 of the NER as this was likely to impose a cost on off-market retailers and AEMO that was disproportionate to the benefits given the limited application of the NER to off-market retailers. Instead, an ENSP will be required to provide access to any systems necessary for the off-market retailer to perform its obligations to appoint a metering coordinator and the off-market retailer will be required to comply with applicable provision in the NER through the NERR.

The Commission's final recommendations relating to the retailer authorisation framework are as follows:

75 Our Energy's submission to the draft report, p. 5.
76 Renew's submission to the draft report, p. 2.
77 AEMO's submission to the draft report, p. 5.

- the NERL and the NERR should be amended to allow classes of retailer to be created in the NERR and to allow retailer obligations of members of the class to be modified under the NERR
- an off-market retailer class should be created in the NERR, which would be open to retailers on-selling electricity to customers in embedded networks
- the NERR should specify that on-market retailers may also sell to customers in embedded networks
- the NERL should be amended to make it clear the AER can apply different assessment criteria to different classes of retailer
- under the NER, an ENSP should be required to nominate a local embedded retailer and (if the retailer is not registered under the NER) ensure the retailer has access to the systems and processes required to satisfy the obligations of the off-market retailer under the NER
- the NERR should specify that off-market retailers must comply with the obligations of off-market retailers under the NER.

Box 10 summarises the key functions and obligations of the off-market retailer under the proposed framework.

BOX 10: OFF-MARKET RETAILER FUNCTIONS AND OBLIGATIONS

An off-market retailer on-sells electricity purchased at a parent connection point from a NEM retailer to customers in an embedded network. Under the NER, the off-market retailer will be required to appoint a metering coordinator, and where it is the registered local embedded network retailer (and the designated retailer under the NERL), it will be obliged to have available an offer to all off-market and new customers in the embedded network it has been nominated for.[1]

To be an off-market retailer, an entity will be required to be authorised by the AER. The off-market retailer that is a local embedded network retailer will be nominated by an ENSP for an embedded network area as part of the ENSP's registration with AEMO. The entity that is nominated as an off-market retailer may also register as an ENSP. An entity may also be authorised as an off-market retailer without being registered for an embedded network area.

The off-market retailer will have a set of responsibilities that include the following:

- as local embedded network retailer, make a retail offer to all off-market and new child connection points in its embedded network area
- include network charges and connection service charges in any offer to sell electricity
- appoint the metering coordinator for the off-market child connection point and ensure that the connection point has a NMI
- comply with requirements for supply interruption notifications, and other requirements for life support customers
- maintain a 24-hour telephone line

- disclose information on its website and report as required.

The retailer obligations that the Commission proposes not to apply to the off-market retailer are publication of a retail offer in a newspaper and the requirement that prices should not be modified within six months.

Chapter 4 and Appendix B list the requirements and obligations for off-market retailers in further detail.

Source: AEMC.

Note: [1] The recommended change the definition of designated retailer in the NERL is to include the registered local embedded network retailer, which under existing s. 22 of the NERL, is obligated to make an offer to small customers within the embedded network area for which it is the designated retailer. The local embedded network retailer can be a NEM retailer or an off-market retailer.

3.7 Retail exemption framework

3.7.1 Draft recommendations

As explained in the draft report, the Commission considers that the current retail exemption framework permits the grant of exemptions to energy sellers that may be inconsistent with the NERO and the underlying rationale for the exemption framework. The Commission nonetheless considers that an energy selling exemption framework remains necessary to address limited circumstances where the costs of retail authorisation would outweigh the benefits to customers and the need for regulatory oversight is low.

The Commission's draft recommendations provided for the NERL and NERR to be amended so as to:

- discontinue individual retail exemptions and deemed retail exemptions
- require all entities that sell electricity to customers in embedded networks that are eligible for a retail exemption to register the exemption with the AER
- remove the exempt seller related factors and the customer related factors from the NERL and instead specify in the NERR the categories of activity for which the AER could determine classes of registrable exemptions
- within the exemption categories, give the AER discretion to define the exemption classes (or none at all) and require different exemption conditions for each class
- apply the new regime to new sellers and transition current deemed retail exemptions to become registrable exemptions.

3.7.2 Stakeholder views

Removal of individual exemptions

The AER was concerned that an off-market retailer authorisation may not be able to regulate the complete range of different and emerging customer and seller needs and that discontinuing individual exemptions would remove necessary regulatory flexibility. The AER considered that individual exemptions provided a flexible regulatory tool to regulate diverse

and unanticipated business models and selling arrangements which they expect to increase over time.[78]

Several other stakeholders were also concerned about a loss of flexibility in the exemption framework. Our Energy Company commented that exemptions are generally for new and novel situations or where a variation of conditions is considered necessary and desirable.[79] NEV Power also considered there should be some flexibility within the framework to provide grounds for exemption for networks and sellers that are very small and not operating as a commercial venture.[80]

While PIAC supported limiting exemptions where possible, it considered that some innovative projects with a demonstrable consumer benefit should be able to be accommodated by a flexible approach to the consideration of exemptions.[81]

Deemed and registrable seller exemptions

The draft report provided for all deemed exemptions to discontinue and for the NERR to specify the categories of activity for which a retail class should be created.

The AER considered that some of the activities currently included in the deemed class of exemption need only limited or even no regulation. This may be because the volume of energy sold is small or is regulated by some other means, for example under a commercial contract or inter-company agreement. The AER suggested consideration be given to removing low risk energy sales from the legislation by specifying they do not constitute a sale of energy.[82]

Aurizon considered the sale of electricity to rolling stock falls outside of the scope of the requirement for authorisation or exemption under the NERL and suggested retail selling obligations imposed under the new regime should exclude sale of electricity to infrastructure that relates to the electric traction network and to train services that utilise that network.[83]

3.7.3 Commission analysis and final recommendations

Individual retail exemptions

Consistent with its final recommendations for network exemptions, the Commission's final recommendation is to retain a power in the NER for the AER to grant individual retail exemptions. The power to grant an individual exemption will be subject to customer-focussed criteria that are intended to ensure that individual exemptions are only granted in special circumstances and where customers retain access to retail competition and consumer protections.

As for network exemptions, the Commission's final recommendations do not define the meaning of special circumstances. The intention is that individual exemptions should have a

78 AER's submission to the draft report, p. 4.
79 Our Energy Company, p.5.
80 NEV's submission to the draft report, p. 1.
81 PIAC's submission to the draft report, p.7.
82 AER's submission to the draft report, pp. 4-5.
83 Aurizon's submission to the draft report, p. 2.

very limited role in the new framework and should not be used as a mechanism to adapt the registration and exemption framework in preference to seeking changes to the framework itself.

The Commission's final recommendation is to allow the grant of individual exemptions only where:

- the exemption is for the sale of energy for premises at a site or contiguous sites specified in the individual exemption
- in the opinion of the AER, the grant of the retail exemption is not inconsistent with the NERO
- if any exempt customers at the site are small customers, the applicant has demonstrated to the reasonable satisfaction of the AER that:
    - the exempt customers will, as far as practicable, be afforded the right to a choice of retailer in the same way as comparable retail customers in the same jurisdiction have that right
    - the exempt customers will, as far as practicable, not be denied customer protections afforded to retail customers under the Law and the Rules
- the AER is satisfied in all the circumstances that:
    - the grant of the individual exemption would result, or be likely to result, in a benefit to the exempt customers that is not available unless the individual exemption is granted
    - the benefit would outweigh the detriments that would result, or be likely to result, from the grant of the individual exemptions, including the costs to the exempt customers and the public costs of individual exemptions including the costs of determining, monitoring and enforcing conditions of individual exemptions
    - special circumstances exist such that the grant of an individual exemption is warranted.

Deemed and registrable seller exemptions

The Commission has reviewed the draft proposed framework in light of responses to the draft report and considers that there is a small number of activities that should be removed from the authorisation and exemption framework as there are few if any benefits to registration that would justify the cost. Otherwise the Commission is satisfied that deemed exemptions should be discontinued.

The Commission's final recommendations are to:

- allow the NERR to exclude some selling activities from the authorisation and exemption framework (similar to the exclusion of some electrical installation and temporary or separately regulated networks through the NER definition of distribution system)
- discontinue deemed retail exemptions and require that all other class exemptions be registered with the AER

- remove the exempt seller related factors and the customer related factors from the NERL and instead specify in the NERR the activities for which the AER may determine classes of registrable exemptions
- within the exemption categories, give the AER discretion to define the exemption classes (or none at all)
- allow the NERR to specify mandatory exemption conditions and otherwise give the AER discretion to define exemption conditions.

The Commission recommends implementing the exclusions from the authorisation and exemption framework by:

- amending the NERL to allow the NERR to specify activities for which neither an authorisation nor an exemption is required
- including the list of excluded activities in the NERR. The Commission's final recommended list of the activities to be excluded is in Table 3.4.

Table 3.4: The Commission's recommendation for activities to exclude from the framework

ACTIVITY	BASIS OF RECOMMENDATION
Selling energy for a construction project (including general building, industrial, transport and mining projects) where the energy is consumed within the construction site or on a site adjacent, and only where the sale is of energy consumed during the construction or commissioning phases of the relevant project.	This corresponds to the current deemed exemption class D4. The draft report proposed including this as an activity for which the AER could make a registrable exemption class. However given the temporary nature of these sales, the Commission considers that there are few (if any) benefits for consumers in requiring registration of these activities in order to achieve exempt seller status and recommends excluding these sales from the regime.
Selling energy to a related body corporate of the person or to an entity controlled by, or under common control with, the person.	This corresponds to the current deemed exemption class D8. The draft report proposed including this as an activity for which the AER could make a registrable exemption class. However, the Commission considers there to be no benefit in regulating this activity under an authorisation or an exemption and recommends excluding these sales from the regime.
Sale of energy by a federal, state or local government agency or body (excluding a	This corresponds in part to exemption class D10.

ACTIVITY	BASIS OF RECOMMENDATION
housing authority or an agency or body established for the purpose of the sale, supply or generation of energy) to non–residential customers where the sale is ancillary to the principal functions of the agency or body.	The draft report proposed including this as an activity for which the AER could make a registrable exemption class. However the costs of requiring registration of this category of activity under the NERL seems likely to outweigh any benefit and the Commission recommends excluding these sales from the regime. D10 also covers universities. The Commission's final recommendation does not extend to sale of energy by these institutions and these will require authorisation or an exemption.

Source: AEMC.

To avoid doubt, this recommendation is not intended to affect the interpretation of 'selling' energy under section 88 of the NERL. The AER's exempt selling guidelines provide guidance about activities that the AER considers constitute selling, and those that do not. The Commission's final recommendations are intended to be consistent with the AER's guidance.

Box 11 summarises key guidance provided by the AER about when a person is 'selling' energy for the purposes of the NERL.

BOX 11: SELLING ENERGY

The AER's exempt selling guidelines provide guidance about when there is a sale of energy for purposes of the NERL.[1]

The AER indicates that if you sell gas or electricity to a person or business for use at premises, and you itemise that cost in a separate, discrete charge, it is likely that you are an energy seller under the Retail Law.

Some examples of a sale of energy could include:

- energy sold to a long term resident of a caravan park, based on the resident's metered consumption
- energy sold to tenants of a residential apartment block based on each residents' metered consumption (but not included in rent)
- energy costs passed through—at no profit—from a landlord to a tenant
- unmetered energy where a commercial landlord is billed and then apportions the cost between tenants

- energy sold to builders working on a construction site, even though it is on a temporary basis
- energy sold through power purchase agreements to supplement the energy a customer buys from an authorised retailer.

Energy 'sales' do not necessarily have to be for profit—even passing on energy at cost to another person is a sale.

The AER indicates that it does not consider energy is being sold where energy costs are only one part of another fixed charge (for example, a hotel tariff or rent that includes energy costs) or where the costs are shared (for example, in a group house or a community facility).

The AER indicates that it does not consider the sale of bulk hot water a 'sale of energy' under the NERL and the NERR.

Source: AEMC.
Note: [1] AER's exempt selling guidelines, section 2, page 4.

The Commission's final recommendation is to discontinue deemed retail exemptions and require all class exemptions to be registered. Registration provides information to the AER about the exempt selling required for monitoring and enforcement purposes.

The draft report identified that closing deemed exemption classes and requiring all class exemptions to be registered would result in additional costs to sellers who would otherwise have had the benefit of a deemed exemption. The main cost will be an up-front, one-off cost for the energy seller to register and for the AER to administer the registration regime. The final recommendations provide for a number of activities to be taken outside the authorisation and exemption regime and so avoid this cost. For the activities that will now require a registrable exemption, the Commission is satisfied that these costs are outweighed by the benefit from:

- reduced costs of the administration required by the AER for monitoring and enforcement
- enhanced oversight over exempt energy selling for all stakeholders.

These recommendations require the NERR to set out the activities for which the AER may make an exemption class. Table 3.4 sets out the Commission's final recommendations for these categories.

The Commission recommends that within these categories, the specification of the exemption class and any class qualification criteria remain within the discretion of the AER. This is intended to allow the AER to continue to define the classes in similar terms to the corresponding classes in the exempt selling guidelines and provide similar guidance, and also adapt the class specifications over time.

The final recommendation is for mandatory exemption conditions to be set in the NERR and otherwise, for the AER to have the discretion to determine exemption conditions.

Table 3.5: **The Commission's recommended categories of activity for exemption classes**

CATEGORY OF ACTIVITY (SUMMARY)[1]	BASIS OF RECOMMENDATION
Selling energy to holiday-makers in holiday accommodation (including cabins, recreational vehicles such as motorhomes, campervans, caravans, camper trailers, tent trailers, fifth wheelers and slide-ons, tents and like accommodation).	This corresponds to the current deemed exemption class D3. The Commission recommends a detailed list of different types of holiday accommodation to respond to a request for clarification made in submissions to the draft report.
Selling energy as a supplementary supply through a power purchase agreement to customers connected to the national grid (as defined in the NER).	This corresponds to the current registrable exemption class R8. The Commission agrees that these ancillary sales should not require the seller to hold a retailer authorisation as it is not satisfied there is any corresponding benefit. The Commission considers that regulatory oversight should be maintained by requiring registration by the seller as an exempt seller.
Selling unmetered gas for consumption at individual premises where: (i) the gas is used for limited purposes (for example, for use in cooking appliances) and is not used for space heating; (ii) the gas is for consumption at premises located within the limits of a site owned, occupied or operated by the seller; (iii) the premises are not separately metered for gas consumption; and (iv) charges for the gas consumed are shown as a separate itemised charge to the buyer.	This corresponds to the current deemed exemption class D5. The Commission recommends that this exemption class should continue in the new framework but in the form of an activity requiring a registered exempt seller. Gas embedded networks are discussed in chapter 11.
Selling electricity supplied within premises used primarily to house equipment used for the supply of television, radio, telecommunications or data centre services (including internet, telephone, mobile phone, fibre optic, hybrid fibre cable or wi-fi services) and where: (i) the sale is in conjunction with, or ancillary to, the supply of the relevant services; and	This corresponds to the current deemed exemption class D9. The Commission agrees that these ancillary sales should not require the seller to hold a retailer authorisation. The Commission considers that regulatory oversight should be maintained by requiring registration by the seller as an exempt seller.

CATEGORY OF ACTIVITY (SUMMARY)[1]	BASIS OF RECOMMENDATION
(ii) the distribution system by means of which electricity is distributed within the premises is owned, operated or controlled by the provider of the relevant services.	

Source: AEMC.
Note: [1] The recommended wording is in the Final proposed rule 150 of the NERR.

The draft report proposed including as a category of activity which the AER would be permitted to make exemption classes "selling energy to customers for premises in circumstances where the person is exempt under jurisdictional energy legislation from the obligation to hold a retailer authorisation or equivalent instrument in relation to the sale" and indicated that this would be subject to further review for the final report. The Commission's final recommendation is not to include this as a category of activity for which a registrable exemption may be made. Specific jurisdictional derogations may be made through other mechanisms.

3.8 Compliance under the recommended framework

3.8.1 ENSP

The recommended changes to the NEL and NER include requiring most service providers servicing embedded network customers to register as ENSPs. The ENSP will be treated as a type of registered participant under the NEL and NERL, and required to comply with provisions applicable to network service providers where rules expressly provide so. This includes being subject to the AER's monitoring, investigation and enforcement powers, general information gathering powers, AER made or jurisdictionally applicable distribution service standards for ENSPs, AER reporting, the Ombudsman scheme requirements in the NERL, and obligations not to prevent or hinder access to electricity network services.

In common with other network service providers who must register under the NER, all entities involved in an embedded network will be liable for the conduct of ENSPs as follows:

- Each of the entities that owns, operates or controls an embedded network must either register as an ENSP or appoint an intermediary to act on its behalf with regard to the embedded network (and in turn, obtain an exemption from AEMO from registering as an ENSP).
- An entity that would otherwise be required to be registered will be exempted from this requirement if it appoints an intermediary (registered with AEMO) to act in its place. For example, if the operator registers as an ENSP, the owner of the embedded network could be exempted by appointing the operator as its intermediary. A range of existing provisions relating to intermediaries will apply in that case, including joint and several liability of the intermediary and the original entity for the acts and omissions of the intermediary.

3.8.2 Off-market retailer

The recommended amendments to the NERL and NERR include requiring the majority of entities that would previously have previously been eligible for an exemption to register under the NERL and NEL as off-market retailers, and generally become subject to the provisions applicable to NEM retailers. This includes being subject to the NERL compliance framework applicable to NEM retailers. This compliance framework includes the AER's monitoring, investigation, enforcement and information gathering powers, obligations to establish arrangements to monitor compliance, AER reporting, the Ombudsman scheme, and the AER *Compliance Procedures and Guidelines* and information provision requirements.

The proposed amendments also extend energy marketing rules to off-market retailers and their associates, and obtaining explicit informed consent for transfers of customers from exempt sellers.

3.8.3 Exempt seller and ENO

Under the recommended framework, the AER is to maintain a register of ENOs as well as exempt sellers for transparency purposes.

Under the exemptions regime, the AER is able to set, modify and revoke conditions on ENOs and exempt sellers on an individual or class basis. Exempt sellers are also subject to compliance audit provisions at the request of the AER, whilst ENOs are subject to general information gathering powers. Any breaches of exemption conditions or a condition on an exempt seller, will be enforceable by the AER as part of their monitoring, investigation and enforcement procedures under the NERL and NEL, with breaches of those exemption conditions or network exemptions enforceable under the law.

3.9 Laws and Rules implementation

The final proposed rules and law changes include new provisions to introduce the concepts, obligations and the registration requirements for off-market retailers within the NERL [84] and the NERR[85], and similarly with ENSPs as a type of distribution network service provider not

84 Final proposed amendments to s. 2 of the NERL, including proposed new definitions of 'child connection point', 'embedded network', 'embedded network area', 'embedded network service provider', 'local embedded network retailer' 'off-market connection point', 'off-market retailer', 'parent connection point'; Final proposed s. 7B of the NERL; Final proposed amendments to Part 5, Division 2 and 5 of the NERL; Final proposed s. 238AB of the NERL; Final proposed amendments to Part 11 and 12 of the NERL

85 Final proposed amendment to rule 3 of the NERR, including proposed new definitions of 'embedded network area', 'embedded network planned interruption', 'off-market retailer authorisation', 'parent connection point' ; Final proposed rules 3B, 3C and 3D of the NERR

subject to a revenue determination,[86] and ENOs as a type of exempt network operator[87] within the NEL and NERR framework.

The final proposed rule changes include provisions to ensure brownfields conversions are subject to AER approvals in accordance with their issued guidelines (which may be included with the AER Exempt Network Guidelines).[88]

The exemptions framework is to be aligned between the NERL and NEL with deemed exemptions to be removed within the legal framework by way of amendments to the laws and corresponding amendment to the definition of 'distribution system' in the NER and a new rule in the NERR to detail activities that do not require exemption or authorisation as a seller.[89] The final proposed framework proposes that only registrable exemptions are to be retained, with the network and selling activities for which registered network and seller exemptions may be granted by the AER to be included in the NER[90] and NERR.[91]

The final proposed rules for the NER include creating a new Part B[92] to cover all network exemption processes (including transmission), including an individual exemption process (including the process for application and AER determination of those exemptions), provisions relating to the public register of exempt system operators to be maintained by the AER, provisions to ensure transmission exemptions follow the same process as before (with both registrable class exemptions and individual exemptions), and provisions to grant the AER the ability to make, or provide relief from enforceable exemption conditions. Registrable exemption classes formerly applicable to dedicated connection assets in the AER's network guidelines have been included in the NER. Other provisions include requiring that registered generation or registered participants with large loads are not able to connect to exempt networks.[93] and requiring AEMO to publish a register including for each embedded network, the identity of the ENSP and general description of the embedded network area.[94]

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86 Final proposed amendment to s. 2 of the NEL, including proposed new definition 'distribution system operator', proposed amendment to the definition of 'distribution service standard', 'interconnected national electricity system', proposed s. 90EA; Final proposed amendments to Part 6 of the NEL; Final proposed clause 2.5.4 of the NER, Final proposed amendments to Chapter 10 of the NER, including amendments to the definitions of 'child connection point', 'embedded network', 'parent connection point', 'distribution network service provider', 'distribution network service provider member', 'network service provider' and proposed new definitions 'embedded network area', 'embedded network service provider', 'local embedded network retailer', 'off-market connection point', 'off-market retailer', 'on-market child connection point'

87 Final proposed amendment to s. 2 of the NEL, including proposed new definitions 'exempt system operator', 'exemption condition', 'retail customer'; Final proposed amendments to s. 13 of the NEL; Final proposed amendments to Chapter 10 of the NER, including amendments to the definition of 'exempt embedded network service provider', new proposed definitions of 'exempt system operator' and 'exempt seller'

88 Final proposed clauses 2.5.4(d)(7), (i) and (k) of the NER; Final proposed amendment to Chapter 10 of the NER, including new definitions of 'brownfields conversion' and 'embedded connection assets'

89 Final proposed rule 148A of the NERR; Final proposed amendment to Chapter 10 of the NER, and amendment to the definition of 'distribution system'

90 Final proposed clause 2.14.2 of Chapter 2 in the NER;

91 Final proposed rule 150 of the NERR

92 Final proposed Part B of Chapter 2 of the NER; Final proposed amendment to clause 2.5.1 of the NER

93 Final proposed clause 2.14.2(c) of the NER

94 Final proposed clause 2.5.4 (g) of the NER

4 UPDATING CONSUMER PROTECTIONS IN THE NERL AND NERR

4.1 Introduction

The 2017 Review found that customers in embedded networks received a lesser level of consumer protections under the network and retail exemptions framework, compared to customers with standard supply arrangements.[95] The Commission recommended applying NERL and NERR provisions to embedded network customers by requiring that they be supplied by an authorised retailer (either a NEM retailer or off-market retailer).[96]

The approach proposed in the 2017 Review was to elevate embedded networks into the national framework and to provide customers in new embedded networks with greater access to retail market competition and equivalent consumer protections to standard supply customers. The Commission considered this would provide the following benefits to customers in embedded networks:

- continued benefit from greater innovation and choice in products and services from embedded networks in competition with NEM retailers
- off-market retailers would be incentivised to pass on savings from innovation and efficiencies to customers or risk losing customers to NEM retailers
- improved consumer protections and access to dispute resolution
- protections under the NERR relating to life support, disconnection and explicit informed consent
- coverage of existing provisions in the NER and NERR that promote transparency and information provision, for example increased access to information on their electricity consumption
- protections under the NER relating to the confidentiality of data, including metering data and NMI standing data.[97]

Under the Commission's final recommended framework, customers in new embedded networks (excluding exempt embedded networks) and some existing embedded networks[98] will be retail customers, supplied by either a NEM retailer or off-market retailer working with a registered ENSP.[99] This enables consumer protections for embedded network customers to be closely aligned with those of standard supply customers.

The final recommended framework extends almost all the consumer protections under the NERL and NERR to customers in new embedded networks, with minor amendments required to accommodate the multiple parties and broader relationships present in embedded networks.

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95 This is discussed further in chapters 2 and 3 of the 2017 final report.

96 AEMC, *Review into the regulatory arrangements in embedded networks,* final report, 28 November 2017, p. ix.

97 AEMC, *Review into the regulatory arrangements in embedded networks,* final report, 28 November 2017, p. 65.

98 See chapter 9 of this report for discussion on how legacy embedded networks will be treated.

99 Chapter 3 of this final report discusses the recommended framework in further detail.

4.1.1 The National Energy Customer Framework

The NECF is a suite of legal instruments that regulate the sale and supply of electricity and gas to customers, and harmonises most energy consumer protections across participating states and territories.[100]

The main legal instruments of the NECF are the NERL, the National Energy Retail Regulations (Regulations) and the NERR.

The NECF:

- establishes the consumer protections and obligations regarding the sale and supply of electricity and natural gas to consumers, with a particular focus on residential and small customers
- defines the rights, obligations and protections relating to the relationship between customers, energy retailers and energy distributors
- complements and operates alongside the generic consumer protections in the ACL[101] and state and territory safety and concession regimes.

The types of consumer protections provided under the NECF can be grouped under a number of themes:

- *Energy as an 'essential service'*: for example the right to access energy services, the ability to enter into a retail contract to energise the connection and obligations towards life support customers
- *Empowering consumers*: for example, NEM retailers and DNSPs must inform consumers of the risks and their rights in the context of the competitive retail market, including through informed consent requirements, requiring businesses to have dispute resolution procedures and mandating access to free and independent dispute resolution schemes
- *Minimum standards*: for example, obligations relating to the pre-contractual duties of NEM retailers
- *Billing, tariffs and payment*: for example, minimum requirements regarding the contents of bills, notification requirements on tariffs and charges applicable to consumers of NEM retailers, obligations in relation to overcharging and undercharging and payment methods
- *Vulnerable customers*: for example, NEM retailers must have hardship policies and make payment plans available.

4.1.2 Structure of this chapter

This chapter sets out:

- the current arrangements in the NEM and consumer protections in embedded networks
- an overview of the Commission's draft report position on how the relevant consumer protections should apply to embedded networks

100 The NECF currently applies, with jurisdictional specific amendments, in Queensland, New South Wales, South Australia, Tasmania and the Australian Capital Territory. The NECF only applies in a limited manner in Victoria.

101 The ACL offers protections for consumers in the areas of consumer rights when buying goods and services, product safety, unsolicited consumer agreements including direct marketing, unfair contract terms, and enforcement remedies, among others. The ACL prohibits misleading, deceptive and unconscionable conduct.

- stakeholders' views on the draft proposal
- the Commission's final analysis and recommendations regarding the recommended amendments to the NERL and detailed amendments to the NERR that the Commission considers are required to implement its final recommendations to extend most of the consumer protections under the NECF to new embedded networks, while accommodating the roles and relationships particular to such networks.

4.2 Current arrangements in the NEM and in embedded networks

The following section 4.2.1 sets out the concepts underpinning consumer protections under the NECF and current arrangements in embedded networks:

- Designated retailer
- Shared customer
- Tripartite relationship.

Subsequently, the following key areas are set out in more detail in terms of their operation in the NEM and their application in embedded networks, illustrating that changes to existing obligations are required in order to appropriately extend the operation of the NECF to embedded networks:

- Notification of planned supply interruptions (section 4.2.2)
- Life support equipment (section 4.2.3)
- RoLR (section 4.2.4)
- Additional consumer protections (section 4.2.5).

In order to extend the NECF to new embedded networks, and particularly to extend the three above concepts to embedded network customers, amendments will be required to the obligations relating to notification of planned interruptions, life support equipment and RoLR. These amendments will facilitate the flow of information and reflect the more complex relationships within an embedded network compared to standard supply arrangements.

Excluding the differences to particular obligations highlighted in this chapter, all other obligations in the NERL and NERR would apply to ENSPs and retailers (both NEM retailers and off-market retailers) in embedded networks covered by the final recommended framework.

4.2.1 Extending the NERL and NERR to embedded network customers

Introduction

The Commission's recommendation in the draft report was to elevate new embedded networks into the national framework, and provide appropriate consumer protections to customers within embedded networks. Analysing the consumer protections under the NERL and the NERR, the Commission considered that the overwhelming majority of the obligations contained within the NERL and NERR should apply to ENSPs and retailers (whether NEM retailers or off-market retailers) at child connection points in new embedded networks.

Most obligations within the NERL and NERR will apply to customers within embedded networks by requiring ENSPs to register with AEMO and off-market retailers to become authorised. However, there are a number of concepts within the NECF that raise consumer protection issues for embedded network customers due to the nature of embedded networks. These concepts are:

- designated retailer
- shared customer
- tripartite relationship.

They require further consideration to determine the impacts on customers in embedded networks, and any additional obligations that may be necessary to facilitate the extension of consumer protections under the NECF to customers in embedded networks.

Current arrangements in the NEM

Designated retailer

The concept of a designated retailer underpins the NEM retailer - customer relationship for standard supply customers. Section 2 of the NERL defines a designated retailer as either the financially responsible retailer (for existing connections) or, where there is no existing connection, the local area retailer.

Under the NERL a retailer must make an offer to a small customer for the sale of energy in accordance with the retailer's standing offer where the retailer is the designated retailer of the premises. The standing offer is for retail services at the retailer's standing offer prices under the retailer's standard retail contract.[102]

Shared customer

The NERL and NERR impose a range of obligations on NEM retailers and DNSPs on the basis that they 'share a customer'. This shared customer concept is a key feature of the retailer-distributor-customer tripartite relationship that underpins much of the NERL and NERR. The nature of the electricity sale and supply relationship is such that it is not always appropriate that the obligation should be with a single party, and instead the obligations need to be shared.

Shared obligations ensure that the NEM retailer and DNSP are required to work together in the delivery of electricity, and to resolve customer issues and complaints thereby avoiding regulatory gaps in the delivery of electricity services. The NERR contain provisions requiring both NEM retailers and DNSPs to ensure that the customer does not suffer as a result of the delineation of responsibilities.

There are a number of consumer protections that the shared customer concept relates to:

- obligation on NEM retailers and distributors to give reasonable assistance to each other in relation to shared customers (rule 94 NERR)

102 Sections 22(1), 26, 27 of the NERL.

- obligation on NEM retailers and distributors to share information regarding shared customers (rule 95 NERR)
- obligation to provide contact details to each other (rule 97 NERR)
- establishment of respective hotline numbers for customers (rule 98 NERR)
- information on planned and unplanned interruptions (rules 99 – 100 NERR)
- mutual obligations with respect to complaints and enquiries (rules 101 – 102 NERR)
- de-energisation and re-energisation of shared customer's premises (rules 103 – 106A NERR)
- billing and payment rules under Chapter 6B of the NER.

Tripartite relationship

The NERL and NERR contemplate a tripartite relationship between a customer, the NEM retailer and the DNSP.

Current arrangements in embedded networks

Designated retailer

The consumer protections built into the standing offer do not currently extend to embedded network customers. As a 'connection' for the purpose of the NERL currently only relates to regulated distribution systems, there is no recognised designated retailer for embedded network customers. Further, s. 22(5) of the NERL states that a designated retailer is not obliged to make a standing offer to a small customer if the customer's premises are not connected to a distributor's distribution system (which currently does not cover embedded networks). The absence of a standing offer means there is no obligation that guarantees supply to an embedded network customer by any party.

This gap is currently addressed by the AER through its Retail Exemption Guideline. The AER requires a core condition that imposes an obligation to supply on an exempt seller, with the exempt seller required to sell energy to a customer who meets the criteria for the relevant exemption class unless the customer's premises have been disconnected for a reason other than failure to pay a bill. If the matter leading to the disconnection has been rectified, the exempt seller must reconnect the premises and offer to sell energy to the customer.[103]

Shared customer

Chapter 6B of the NER contains the DNSP and NEM retailer obligations in relation to network charges of shared customers as well as when direct customer billing and electricity-only contracts are permitted. The equivalent is missing and arguably fundamental in the embedded network context. Chapter 6B of the NER is discussed in chapter 6 of this final report.

The provisions in the NERR requiring both NEM retailers and DNSPs to ensure that the customer does not suffer as a result of the delineation of responsibilities do not currently cover exempt network service providers and NEM retailers or exempt sellers.

103 AER, *(Retail) Exempt Selling Guideline*, version 5, March 2018, Condition 1.

There is no equivalent shared customer concept in the NERL or NERR to cover NEM retailers or off-market retailers, DNSPs and exempt network service providers. The effect is that complaints and disputes may not be efficiently resolved and the consumer protections of customers in embedded networks do not align with the consumer protections afforded to standard supply customers.

Tripartite relationship

There is currently no flexibility in the tripartite relationship to incorporate exempt network service providers and exempt sellers. The nature of embedded networks suggests that in some cases, it may not be appropriate to simply substitute an exempt network service provider for a DNSP as key information and processes may not be able to be properly administered.

For the framework to operate effectively in an embedded network context the relationship needs to be extended to include obligations regarding the relationship between the ENSP, the NEM retailer or the off-market retailer at the child connection point, the NEM retailer at the parent connection point and the DNSP to ensure that all relevant parties are involved where necessary and appropriate.

Relevant NERL and NERR provisions requiring extension of the tripartite relationship include retailers and distributors' obligations in respect to the registration of premises with life support equipment, and retailers' and distributors' obligations in respect to notification of planned interruptions.

4.2.2 Notification of planned interruptions

Introduction

Planned interruptions to power supply are carried out by both distributors and retailers from time to time. Distributors may plan interruptions to supply to maintain or replace aging or faulty components on their network, or to increase network capacity, among other reasons. Retailers may plan interruptions to supply for the purpose of maintaining or replacing the electricity meter.

For standard supply customers, if there is either a DNSP or NEM retailer interruption to electricity supply planned, the party that has planned the interruption to supply has obligations to provide advanced notification to the customers affected by the planned interruption to supply, including details of the planned interruption and a 24-hour phone number for enquiries.

Customers in embedded networks are affected by interruptions to supply, both within the embedded network, and also by interruptions to the power supply at the parent connection point carried out by the DNSP and the NEM retailer at the parent connection point. It is important that information regarding planned outages on the DNSP network connected to the embedded network, or at the parent connection point for the embedded network is provided to the affected customers in the embedded network.

This section sets out the current notification of planned interruption arrangements for standard supply customers under Part 2 and Part 4 of the NERR and embedded customers under the AER's Retail Exemption Guideline.

Current arrangements in the NEM

Notification of planned interruption obligations are in a number of sections in the NERR, with both NEM retailers and DNSPs required to comply with obligations in regard to planned interruptions.

Retailer interruptions to supply

Part 2, Division 9A in the NERR details a NEM retailer's obligation in relation to a retailer planned interruption of supply. A retailer planned interruption is an interruption of the supply of electricity to the customer that is for the purposes of installing, maintaining, repairing or replacing an electricity meter. It does not include distributor planned interruptions (see below) or interruptions to the supply of electricity to a customer who is not the customer of the retailer arranging the interruption.[104]

For both standard retail and market retail customers, if the NEM retailer arranges for a planned interruption, the NEM retailer must notify each affected customer by any appropriate means of the planned interruption at least 4 business days before the date of the interruption.[105] The notification must include the details of the interruption including the date, time and duration of the planned interruption, and include a 24-hour telephone number for enquiries, which costs no more than a local call.[106]

In addition to notifying customers, NEM retailers also have obligations under rule 99A of the NERR to notify the DNSP of NEM retailer planned interruptions, and provide the DNSP with the same information that it has provided to affected customers, within the same timeframes. If contacted by a customer about a NEM retailer's planned interruption, the DNSP must provide the contact details for the NEM retailer, or provide the customer with the information provided by the NEM retailer if the customer does not wish to contact the NEM retailer.[107]

The key parts of these obligations are civil penalty provisions.

Distributor interruptions to supply

Part 4, Division 6 in the NERR details a DNSP's obligations in relation to a distributor planned interruption of supply. A distributor planned interruption is an interruption to the supply of electricity that is for the planned maintenance, repair or augmentation of the transmission or distribution system, or for the installation of a new connection or connection alteration. It

104 Proposed amendment to rule 59B of the NERR provides that a retailer planned interruption will be permitted if the retailer's customer is at the parent connection point of an embedded network, even if embedded network customers are on-market.

105 In the Commission's final rule determination for Metering installation timeframes from 6 December 2018, the Commission made a rule to provide retailers with the flexibility to conduct planned interruptions at shorter notice, as long as the customer explicitly consents. The customer and retailer are able to agree either a date range of five business days or a specific date for a planned interruption to occur. If the retailer and the customer do not reach agreement (e.g. if the retailer is unable to contact the customer), the retailer will need to provide a minimum of four business days' notice. This rule commenced on 1 February 2019.

106 Rule 59C of the NERR.

107 Rule 99A of the NERR.

excludes retailer planned interruptions. The provisions on distributor planned interruptions apply to its customers with deemed standard connection contracts; therefore they currently exclude embedded network customers.[108]

If the DNSP arranges for a planned interruption, the DNSP must notify each affected customer (excluding customers without deemed standard connection contracts) by any appropriate means of the planned interruption at least 4 business days before the date of the interruption.[109] The notification must include the details of the interruption including the date, time and duration of the planned interruption, and include a 24-hour telephone number, which costs no more than a local call.[110]

In addition to notifying customers, DNSPs also have obligations under rule 99 of the NERR to notify the NEM retailer of DNSP planned interruptions, and provide the NEM retailer with the same information that it has provided to affected customers, within the same timeframes. If contacted by a customer about a DNSP's planned interruption the NEM retailer must provide the contact details for the DNSP, or provide the customer with the information provided by the DNSP if the customer does not wish to contact the DNSP.[111]

The key parts of these obligations are civil penalty provisions.

Current arrangements in embedded networks

Condition 18 of the AER's Retail Exemption Guideline places obligations on the exempt seller in relation to planned interruptions. Under Condition 18, the exempt seller must notify each of its affected customers at least two business days before the date of the interruption.

The notification must include:

- the expected date, time and duration of the planned interruption
- a telephone number for enquiries (the cost of which is no more than the cost of a local call)
- a statement that any enquiries regarding the planned interruptions are to be directed to the exempt seller. The exempt seller must also use its best endeavours to restore the customer's supply as soon as possible.[112]

There are no conditions in the AER's Network Exemption Guideline that relate to planned interruptions of supply.[113]

108 Rules 77, 88 of the NERR.

109 In the Commission's final rule determination for Metering installation timeframes from 6 December 2018, the Commission made a rule to provide DNSPs with the flexibility to conduct planned interruptions at shorter notice, as long as the customer explicitly consents. The customer and DNSP will be able to agree either a date range of five business days or a specific date for a planned interruption to occur. If the DNSP and the customer do not reach agreement (e.g. the DNSP is unable to contact the customer), the DNSP will need to provide a minimum of four business days' notice. This rule commenced on 1 February 2019.

110 Rule 90 of the NERR.

111 Rule 99 of the NERR.

112 AER, *(Retail) Exempt Selling Guideline*, version 5, March 2018, Condition 18.

113 AER, *Electricity Network Service Provider — Registration Exemption Guideline,* version 6, March 2018.

4.2.3 Life support requirements

Introduction

Life support requirements are designed to provide additional consumer protections and require retail and distribution businesses to register premises that have a person using life support equipment (for example an oxygen concentrator or kidney dialysis machine) that relies on electricity to operate.

The requirements facilitate the provision of information to parties that need to be aware of life support equipment at a premises, and impose obligations on NEM retailers and DNSPs to provide additional safeguards around de-energisation for consumers using life support equipment that relies on electricity to operate.

This section sets out the current life support arrangements for standard supply customers under Part 7 of the NERR and embedded network customers under the AER's Retail Exemption Guideline.

Current arrangements in the NEM

Life support obligations are contained in Part 7 of the NERR. Under Part 7, both the distributor and retailer have obligations in relation to life support equipment. These obligations require notification that a person is using life support equipment that relies on electricity at a customer's premises to be provided to both distributors and retailers through a two-way information flow. The life support rules apply to any standard or market retail contract and the key provisions are civil penalty provisions.

Current arrangements for life support customers in the NEM have been established to facilitate the communication of life support information between three parties: the customer, DNSP and the NEM retailer. Customers have a responsibility to provide confirmation from a registered medical practitioner that someone at the premises requires life support equipment. The customer can provide confirmation from a registered medical practitioner to either their DNSP or their NEM retailer.[114]

The DNSP and the NEM retailer have mirrored obligations, and are required to inform the other party of the existence of a customer requiring life support equipment at the premises and share information about the premises on their life support registers. The NEM retailer (and DNSP as well if they were the party informed by the customer of the existence of a person requiring life support at the premises) is also required to register that a person at the premises requires life support equipment, and the date from which the life support equipment is required. The customer is then mailed a medical confirmation form, along with information on registration and de-registration, general advice that there may be planned interruptions by both the NEM retailer and DNSP, and unplanned distribution interruptions, information to assist the customer prepare a plan of action in the case of an unplanned interruption and emergency contact numbers for both the NEM retailer and the DNSP.[115]

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114 Rule 124 of the NERR. The description of the current arrangements in this section reflects changes to the NERR made in the *Strengthening protections for customers requiring life support equipment* rule change, which took effect on 1 February 2019.

115 Rule 124 of the NERR.

The NEM retailer and the DNSP have further obligations once the premises is confirmed as requiring life support equipment, and ongoing obligations. Ongoing obligations include maintenance of the life support registration, provision of 4 business days written notification of planned interruptions, and restrictions on de-energisation of the premises.[116]

Current arrangements in embedded networks

Life support arrangements are a core condition in the AER's Retail Exemption Guideline. This core condition applies to all embedded networks with residential customers. Life support customers are covered by Condition 20. Condition 20 imposes the obligations on the exempt seller, and reflects the more complicated arrangements for customers within embedded networks. Not only do the embedded network customer's direct distributor (i.e. the exempt network service provider), and the customer's direct retailer at the child connection point (i.e. NEM retailer or exempt seller) need to be aware of a person requiring life support equipment at the premises, but the NEM retailer at the parent connection point and the DNSP also need to be made aware of the existence of a customer requiring life support equipment at the premises.

Under Condition 20, where a customer provides an exempt seller with confirmation from a registered medical practitioner that a person residing at the premises requires life support equipment, the exempt seller must:

- advise the exempt network service provider (if different) that a person at the premises requires life support equipment
- advise the NEM retailer at the parent connection point and the DNSP that a person at the premises requires life support
- provide the NEM retailer at the parent connection point and the DNSP with any relevant information about the premises for the purposes of updating their records and registers.[117]

The exempt seller must maintain records of any exempt customers who have life support equipment that depends on energy for its operation on their premises.[118]

Condition 20 means that an exempt customer has to tell their exempt seller, and the exempt seller will be responsible for informing the exempt network service provider, the NEM retailer at the parent connection point and the DNSP that the embedded network is connected to. This is key as a supply interruption on the DNSP's network or a NEM retailer interruption at the parent connection point will cause an outage on the embedded network.

Additionally, under Condition 10, an exempt person must not disconnect the exempt customer's premises where a person residing at the premises requires life support equipment that depends on energy for its operation.[119]

116 Rules 116(1)(a), 120(1)(a), 124-124B of the NERR.

117 AER, *(Retail) Exempt Selling Guideline*, Version 5, March 2018, Condition 20.1(a)-(c), p. 43.

118 AER, *(Retail) Exempt Selling Guideline*, Version 5, March 2018, Condition 20.2, p. 43.

119 AER, *(Retail) Exempt Selling Guideline*, Version 5, March 2018, Condition 10.1(a), p. 39.

4.2.4 Retailer of last resort functions

Introduction

The RoLR scheme under the NERL is designed to ensure that customers continue to receive electricity and/or gas supply in the event of a retailer failing (that is, being placed into administration or otherwise going out of business). The RoLR scheme protects customers by providing them with a new default retailer if their NEM retailer fails, and protects generators in the NEM by reducing their exposure to non-payment by retailers for energy they sell into the wholesale market.

Under the RoLR scheme, the AER must register and appoint a default RoLR for each connection point. If a NEM retailer fails, the affected NEM retailer customers will automatically go onto a standard contract with the default RoLR (or an additional RoLR), appointed by the AER, for their connection point.[120]

The AER is responsible for overseeing the RoLR scheme, with the AER required to publish RoLR guidelines and the RoLR plan, maintain and publish a register of RoLRs, appoint one or more RoLRs (e.g. the default RoLR and additional RoLRs) to be the designated RoLR following a RoLR event and make RoLR cost recovery scheme determinations. The RoLR plan sets out the procedures to be followed by participants in a RoLR event, including communication with the customers of the failed NEM retailer.

There is no equivalent scheme to the RoLR scheme in embedded networks. Embedded network customers have no default or designated retailer assigned to their connection point if the exempt seller fails.

This section sets out the current RoLR arrangements for standard supply customers under Part 6 of the NERL and for embedded network customers under the AER's Retail Exemption Guideline

Current arrangements in the NEM

The RoLR scheme is established under Part 6 of the NERL. This part:

- provides for the registration of RoLRs, including detailing the criteria for RoLRs, the expression of interest process and appointment and registration of default RoLRs
- details contingency events, including the AER's powers under such an event
- covers the designation of a RoLR for a RoLR event, and the development of the RoLR Guidelines and RoLR Plan by the AER
- provides obligations, roles and responsibilities on the declaration of a RoLR event
- details the arrangements for the sales of energy for transferred customers, and the cost recovery schemes for designated RoLRs

120 Under s. 125 of the NERL, the AER must appoint and register a *default* RoLR for each connection point. The AER may register one or more retailers as an *additional* RoLR, in addition to the default RoLR for the connection point. RoLR registration is done on the basis of an Expression of Interest (EoI) process. Section 132 of the NERL deals with the designation of a registered ROLR in the case of a RoLR event. It specifies that if a RoLR event occurs, the default RoLR is taken to be appointed as the designated RoLR. However, the AER may appoint more than one designated RoLR for a specific RoLR event, if it is of the opinion that is appropriate to do so, having regard to the size and circumstances of the event, e.g. to split affected customers between multiple registered RoLRs to mitigate the risk of cascading retailer failures.

- details the information requirements in connection with a RoLR event.

Under the NERL, if a RoLR event occurs, the customers of the failed retailer become customers of the retailer appointed by the AER as the 'designated RoLR'. This generally is the default RoLR, but if the AER considers it as sensible, it may appoint more than one designated RoLR for a RoLR event, e.g. to avoid cascading failures or ensure competition. The contractual arrangements for small customers and the relevant designated RoLR are the terms and conditions of the designated RoLR's standard retail contract.[121] The prices that are applicable are the relevant designated RoLR's standing offer prices.[122] That is, the current RoLR arrangements are premised on the basis of the standard retail contract and standing offer framework set out in the NERL.

The designated RoLR has responsibilities to contact the customers of the failed NEM retailer after a RoLR event to inform the NEM retailer customers about what has happened, and the options available to the customer. If the customer remains with the designated RoLR on a deemed arrangement for more than 3 months after the date of transfer, a standard retail contract is taken to have been formed between the small customer and the designated retailer. After that period of 3 months the customer and the designated RoLR can seek to negotiate a market retail contract.[123]

Current arrangements in embedded networks

The AER is required to appoint and register a default RoLR for each connection point (in the case of electricity), including child connection points for which a NEM retailer is financially responsible.[124] This means that embedded network customers that are supplied by a NEM retailer at a child connection point (i.e. NEM retailer customers) are protected by the RoLR scheme. However, embedded network customers that are supplied by an exempt seller are not currently protected by the RoLR scheme.

There are no equivalent RoLR provisions for off-market customers in embedded networks. In embedded networks the retailer may be the same party as the exempt network service provider, so if the retailer fails, the exempt network service provider may fail at the same time.

Although there is no RoLR protection for off-market customers within embedded networks, under Condition 21 of the AER's Retail Exemption Guideline the exempt person (retailer) must notify its customers and the AER immediately if exempt customers are disconnected (or they expect to be disconnected), or there is any likelihood they would be unable to continue selling energy.[125]

This condition provides notification to customers and the AER, however, it does not provide customers with the protection of a default retailer to continue the customer's energy supply.

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121 Section 145(3) of the NERL.
122 Section 145(4) of the NERL.
123 Section 147 of the NERL.
124 Section 125(1)(a) of the NERL, NER Chapter 10 definitions of 'connection point' and 'child connection point'.
125 AER, *(Retail) Exempt Selling Guideline*, version 5, March 2018, Condition 21.

4.2.5 Other NERL and NERR protections

Introduction

In addition, there are some further differences between standard supply and supply via an embedded network. These relate to:

- de-energisation
- the use of pre-paid meters
- variations to standing offer prices and retail price regulation.

This section sets out the current arrangements for standard supply customers under the NERL and NERR and embedded customers under the AER's Retail Exemption Guideline in these areas.

Current arrangements in the NEM

De-energisation

There are de-energisiation provisions relating to standard supply customers in the NEM which place prohibitions on disconnections under certain circumstances, and detail NEM retailer and DNSP obligations before a premises can be de-energised. De-energisation, or disconnection, obligations are contained in Part 6 of the NERR.

Under the NERR, NEM retailers are only permitted to disconnect customers in specific, limited circumstances, for example where the customer has failed to pay an energy account or a security deposit, or has denied access to the meter, and the NEM retailer has complied with its obligations under Part 6. NEM retailers are prohibited from arranging for the de-energisation of a customer's premises in a number of situations including where:

- the premises are registered as having life support equipment
- there is an unresolved complaint lodged with the NEM retailer or energy ombudsman
- the customer is a hardship customer or a residential customer adhering to a payment plan, or the customer has an outstanding application for assistance
- the amount outstanding is below a threshold set by the AER, or the customer has agreed to repay the outstanding amount
- there is an extreme weather event or it is a protected period.[126]

Similarly, DNSPs can only de-energise a customer's premises in certain situations, such as where the NEM retailer has informed the DNSP that it has a right to arrange for de-energisation or the customer is illegally using energy or interfering with the supply of energy. DNSPs are prohibited from de-energising a customer's premises where the premises are registered as having life support equipment, there is an unresolved complaint lodged with the DNSP or energy ombudsman or if there is an extreme weather event or it is during a protected period.[127]

126 Rule 116 of the NERR. Under rule 108 of the NERR a protected period is defined as a weekend or public holiday, a Friday or the day before a public holiday, a business day before 8am or after 3pm or between 20 December and 31 December in any year.

127 Rule 120 of the NERR.

The use of pre-paid meters

Pre-paid meter systems are meters that require the customer to pay in advance. Pre-paid meter systems are used only in jurisdictions where permitted under a local instrument of a participating jurisdiction. Under the NERL, pre-paid meter systems cannot be used to supply customers under a standard retail contract, only a market contract.[128]

If the credit on the pre-paid meter runs out (including emergency credit), the electricity supply will self-disconnect (between the hours of 10am and 3pm on a weekday only). For this reason, if there is a person using life support equipment at the premises a customer cannot be supplied via a pre-paid meter.[129]

Variations to standing agreement tariffs and retail price regulation

Under the NERL, a NEM retailer must publish its standing offer prices on its website. If the retailer varies its standing offer prices the variation must be published on its website and in a newspaper at least 10 days before the variation commences, and the retailer must include details of the variation in the customer's next bill.[130] In addition, a NEM retailer is not allowed to vary its standing offer prices more often than once every six months.[131]

Retail energy price controls are utilised when competition is "not yet effective for a market, group or users or a region."[132] Retail energy price controls are jurisdictional functions, however, they can be transferred to the AER and the AEMC at the discretion of each jurisdiction.[133]

Current arrangements in embedded networks

De-energisation of a parent connection point

A number of conditions under the AER's Retail Exemption Guideline relate to disconnection or de-energisation of premises,[134] covering the disconnection of customers at a child connection point. However, there are no conditions restricting the disconnection of child connection points which are also the parent connection for an additional ('pancaked') embedded network connected to the first embedded network.

The use of pre-paid meters

There are no conditions relating to the use of pre-paid meters in embedded networks in the AER's Retail Exemption Guideline.

128 Sections 56-57 of the NERL.

129 Section 59 of the NERL and Part 8 of the NERR.

130 Section 23 of the NERL.

131 Section 23(5) of the NERL. This is reflected in clause 8.2 of the model terms and conditions for standard retail contracts in Schedule 1 of the NERR.

132 Australian Energy Market Agreement s. 14.15.

133 Australian Energy Market Agreement s.14.15(b).

134 AER, *(Retail) Exempt Selling Guideline,* Version 5, March 2018, Conditions 9-10.

Variations to energy tariffs and retail price controls

Frequency of tariff changes is not expressly covered in the AER's Retail Exemption Guideline. Under Condition 7.1 the exempt seller must not charge the customer tariffs higher than the standing offer price that would be charged by the designated retailer for new connections. This may mean that in some cases the tariff could only change with any changes to the standing offer price charged by the designated retailer, however, there are no restrictions on the exempt customer tariff changing more frequently, as long as it remains under the relevant standing offer price.

Under Condition 7.2 of the AER's Retail Exemption Guideline, the exempt seller must provide notice to the customer of any changes in the exempt customer tariff as soon as practicable, and no later than the exempt customer's next bill. There are no specific publication requirements, such as requiring tariff changes to be published in a newspaper.

Price regulation is currently provided for customers in exempt networks in most jurisdictions through the NERR and the AER's retail exemption guideline. In Victoria, where the NERR does not apply, the equivalent provisions are set out in the Victorian General Exemption Order 2017 and the Victorian Energy Retail Code.

The NERR specifies that where the AER determines a condition relating to prices is appropriate for exempt customers, the AER must ensure that exempt customers are charged no more than the standing offer price of the local area retailer.[135] The retail exemption guideline makes it a core condition of selling exemptions that tariffs are not higher than this standing offer. These price conditions do not apply to embedded network customers who are supplied by a NEM retailer.

In Victoria, the General Exemption Order contains a provision for the Essential Services Commission (ESC) to formulate a maximum price at which electricity may be sold or supplied under the exemption.[136] As a transitional rule, until the ESC determines such a price, prices must not exceed the standing offer tariff for the local retailer in the relevant distribution area in which the customer is being served.[137]

The Commission's view at the conclusion of the 2017 Review was that the standing offer price cap was appropriate as a safety net and that it would be appropriate to extend the price cap to all off-market embedded network customers in legacy and new embedded networks. As such, the 2017 Review recommended that the NERR be amended to require all retailers supplying existing and new embedded network customers to charge these customers no more than the standing offer price of the local area retailer.

Although the effectiveness of price controls based on standing offers has been questioned in recent years, with the Commission's *2018 Retail Energy Competition Review* finding the average standing offer to be as much as $832 more annually than the best market offer,[138]

135 Rule 152(4) of the NERR.

136 Victorian General Exemption Order 2017 Clause 10(1).

137 Ibid. Clause 27.

138 AEMC, *2018 Retail energy competition review,* final report, p. viii.

the AER has the discretion to lower the price cap through its retail exemption guideline if it considers this appropriate.

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 standard supply customers. Any embedded networks would be restricted from charging more than those regulated retail prices under the pricing condition in the AER's Retail Exemption Guideline, as the regulated retail prices would be the standing offer prices in those jurisdictions.[139]

4.3 Draft report position

The draft report recommended that embedded networks are elevated into the national framework, including the NERL and NERR, and that the ability for customers within embedded networks to access consumer protections is key. The Commission's draft report position was that the majority of the consumer protections within the NERL and NERR could apply to embedded networks, and obligations could be imposed on retailers and ENSPs (a type of distributor) in embedded networks without alteration.

To facilitate the elevation of embedded networks into the national framework, and extend the application of the relevant consumer protections, the Commission's draft report set out how a number of key concepts that underpin the NERL and NERR would require amendment. Necessary amendments identified included the appointment of a designated retailer for customers in new embedded networks, the extension of the shared customer concept to embedded networks, and the extension of the tripartite relationship to encompass more parties.

These three areas require amendment or extension of the current provisions to make the relevant obligations in the NERL and NERR work, most notably for notification of planned supply interruptions, life support and RoLR consumer protections.

4.3.1 Extending the NERL and NERR to embedded network customers

Designated retailer

The draft report identified that consumer protections built into the standing offer currently do not extend to embedded networks under the NERL. The draft report proposed that extending the concept of a designated retailer to embedded networks would be supported by elevating embedded networks into the national framework, and extending the definition of distributor to include ENSPs, and the definition of authorised retailers to include off-market retailers.

At a parent connection point of an embedded network, the designated retailer should always be a NEM retailer to enable the settlement of off-market connection points below it. For a new parent connection point that is connected directly to the DNSP's network, the designated

139 In the ACT, the Independent Competition and Regulatory Commission sets regulated prices for ActewAGL's regulated retail tariffs. In Tasmania, the Economic Regulator approves the regulated offer prices offered by Aurora Energy. In the Northern Territory, the Minister 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.

retailer for the parent connection point, would be the local area retailer for the relevant geographical area. For existing parent connection points where a new customer is taking responsibility for the parent connection point, the designated retailer would be the FRMP for that connection point.

Within a new embedded network, the Commission considered in its draft report that there needs to be a designated retailer for new child connection points. There is currently no local area retailer for child connection points, therefore the Commission proposed in its draft report the development of a local embedded network retailer. The local embedded network retailer is a retailer nominated, with the consent of the retailer, by an ENSP to sell electricity in the embedded network in which it is registered as the ENSP. Local embedded network retailers may either be a NEM retailer or an off-market retailer and will be the designated retailer within the embedded network for new connection points. Therefore, they would be obligated to sell energy to the embedded network customer at their standing offer prices under a standard retail contract.

For off-market connection points no financially responsible market participant exists as off-market retailers are not market participants. Therefore, the Commission recommended in its draft report the inclusion of a defined financially responsible retailer for each embedded network customer.

For customers moving into a child connection point in an *existing* embedded network, the Commission considered that the designated retailer would be the financially responsible retailer for that connection point, with the financially responsible retailer obligated to sell energy to the customer at standing offer prices under the standard retail contract (noting that the financially responsible retailer could be a NEM retailer or an off-market retailer, depending on the registered financially responsible retailer for that connection point at the time).

Shared customer

Under the draft proposed framework the shared customer concept was outlined to cover ENSPs and retailers (NEM retailers and off-market retailers) at the child connection point. ENSPs would be included in the definition of distributor, with the distributor obligations in the NERL and NERR applying to ENSPs in embedded networks. Similarly, the retailer obligations under the NERL and NERR would apply to off-market retailers at the child connection point in embedded networks.

Consequently, under the draft proposed framework, the shared customer obligations would be extended to apply between ENSPs and retailers at the child connection point.

Further, the draft report proposed to extend Part 5 of the NERR, Relationship between distributors and retailers - retail support obligations, to:

- off-market retailers and ENSPs
- an exempt ENSP and an exempt seller where they have a shared customer, where the exempt ENSP is required to comply as a condition of its network exemption.

Tripartite relationship

The draft report proposed changes to the definition of distributor and retailer in the NEL and NERL. These proposed changes would result in the tripartite relationship contemplated in the NERL and NERR between a customer, the retailer and the distributor encompassing ENSPs and retailers at the child connection point within embedded networks. In this case, the distributor would be the ENSP and the retailer would be the retailer at the child connection point.

The draft report concluded that in many cases, the substitution of an ENSP for a distributor would be appropriate. Similarly, for many obligations it would be appropriate for the retailer at the child connection point to be required to simply perform the retailer functions. However, the draft report flagged that in some areas the relationship would need to be extended to include obligations on the ENSP, the LNSP, the retailer at the parent connection point, and the retailer at the child connection point. Relevant provisions where this is the case would include:

- detailed obligations and requirements for both retailers and distributors in the disconnection and re-energisation of small customers (NERR Part 6)
- retailers' and distributors' obligations in respect to the registration of premises with life support equipment (NERR Part 7)
- allocation of roles and responsibilities for RoLR functions (NERL Part 6)
- detailed obligations and requirements for both retailers and distributors in relation to the notification of planned outages (NERR Part 2 and Part 4).

The Commission's draft analysis and recommendations for these provisions are discussed in more detail in the following sections.

4.3.2 Notification of planned interruptions

Notifications of planned supply interruptions are important consumer protections. Customers require notification of planned interruptions to enable them to make alternative arrangements for the period of the interruption. This is especially vital for life support customers.

Notification of planned supply interruption obligations involve the shared customer concept, and are predicated on the tripartite relationship between the customer, distributor and retailer. For planned interruptions within the embedded network planned by the ENSP or the retailer at the child connection point, the current obligations in the NERR would provide the same customer protections as for standard supply customers once embedded networks are elevated into the national framework. That means that for planned interruptions within the embedded network planned by the ENSP or the retailer at the child connection point, the same notification timeframes apply as they currently do to DNSPs and NEM retailers.

However, the draft report noted that information flows regarding planned interruptions by the DNSP, or ENSP in an upstream interconnected embedded network, or a NEM retailer at a parent connection point are either not provided for or not appropriate under the current rules.

- The DNSP to whose network the embedded network is connected has an obligation to inform the NEM retailer at the parent connection point of a planned outage as well as the customer at the parent connection point, but there is currently no information requirement for customers at child connection points in the embedded network.
- The NEM retailer at the parent connection point is not able to undertake a retailer planned interruption at the parent connection point, because the interruption would affect customers at all child connection points in that embedded network, and those customers are likely to have different retailers (this restriction would not apply if the retailer at the parent connection point is also the retailer at all the child connection points).

The Commission recommended in its draft report that further obligations relating to planned embedded network interruptions be included in the rules. This would include 'embedded network interruptions' which are interruptions within an embedded network that are caused by supply interruptions outside of the embedded network. That is, interruptions as a result of a distributor planned interruption on the DNSP's network to which that embedded network is connected, or on an upstream embedded network to which the embedded network is connected (pancaking), or as a result of a retailer planned interruption at a parent connection point.

The draft report recommended that if the ENSP receives notification of a distributor planned interruption or a retailer planned interruption at the parent connection point that would interrupt the supply of electricity to the embedded network, the ENSP should have an obligation to notify each affected customer on its embedded network as soon as practicable after receipt of notification of the interruption.

Further, the Commission was of the view that ENSPs must provide this notification within one business day of receipt of notification of the interruption. The Commission considered this would provide adequate time for the ENSP to prepare notifications and provide them to customers on its embedded network. The notifications should be in the same form as required for DNSP or NEM retailer planned interruptions, however, the contact number of the notification should be that of the distributor (i.e. DNSP or ENSP) or retailer planning the interruption.

Additionally, the DNSP or retailer at a parent connection point planning the interruption to supply, which would interrupt the supply of electricity to the embedded network, should be required to provide notification to the ENSP and the retailers at each affected child connection point detailing the area affected by the interruption to supply, the date, time and duration of the planned interruption, and contact details for more information on the planned interruption.

The information obligations of a DNSP at a parent connection point, in relation to informing 'affected customers' of a distributor planned interruption, were proposed to be limited to the customers of that DNSP. This restriction was considered to be required as, due to embedded network customers having deemed customer connection contracts under the new framework, otherwise the DNSP would be required to notify embedded network customers of a planned

interruption. The Commission did not consider this as appropriate as the embedded network customers are not customers of the DNSP.

Changes to the definition of 'retailer planned interruption' were also recommended to allow a retailer with a customer at a parent connection point to undertake a retailer planned interruption.

4.3.3 Life support requirements

The Commission's draft report position was that the life support rules for customers in embedded networks should be aligned with Part 7 of the NERR, as this is important for customers who have a person using life support equipment that relies on electricity at the premises. Further, the Commission's view was that changes are required to extend the tripartite relationship to cover the ENSP, and additionally the NEM retailer at the parent connection point.

Current rules in Part 7 of the NERR are designed based on the precondition that a tripartite relationship exists between the customer, DNSP and NEM retailer. Aligning the rules to place equivalent obligations on the ENSP and the retailer (NEM retailer or off-market retailer) at the child connection point would simply place the obligations that would fall on a DNSP in a standard supply situation onto the ENSP and the retailer obligations that would fall on a NEM retailer onto the retailer at the child connection point only.

To ensure that all relevant parties are aware of the existence of a person using life support equipment that relies on electricity at a child connection point within the embedded network, the draft report stated that the information exchange and other obligations required between the parties need to extend to cover the DNSP at the parent connection point, and the NEM retailer at the parent connection point.

The Commission considered that the customer should be required to inform either the retailer at the child connection point, or the ENSP, that a person at the premises is using life support equipment that relies on electricity to operate, and provide confirmation from a registered medical practitioner. The current obligations in Part 7 of the NERR in relation to information provision to the customer, and information provision to the DNSP and NEM retailer should apply, i.e they are required to inform the other party of the existence of a customer requiring life support equipment at the premises, the customer must be mailed a medical confirmation form along with information on planned interruptions, information to assist the customer prepare a plan of action in the case of an unplanned interruptions, and emergency contact numbers for both the retailer at the child connection point (NEM retailer or off-market retailer) and the ENSP.

In addition to the current obligations in Part 7 of the NERR, the Commission considered that the retailer at the child connection point, or the ENSP (whomever the customer contacts in relation to life support equipment), should be required to inform both the retailer at the parent connection point, and the DNSP whose distribution network the embedded network is connected to. The Commission considered it as vital that both the retailer at the parent connection point and the DNSP are aware of the existence of a person using life support equipment that requires electricity at a connection within the embedded network, so they can

take appropriate precautions when planning supply interruptions, and so the DNSP is aware when responding to unplanned interruptions.

Although the Commission recommended in its draft report that disconnection of parent connection points is prohibited, the Commission also considered it is important that the DNSP is aware of the existence of a person requiring life support equipment at a connection point within the embedded network in case they are required to de-energise the premises for the purposes of an emergency or another authorised reason.

In some cases embedded networks could be 'pancaked' with other embedded networks, that is, an embedded network is not connected directly to a LNSP's distribution or transmission network, rather it is connected to one or more embedded networks which are then connected to a LNSP's network. If a life support customer resides within a pancaked embedded network, the Commission considered in its draft report that the ENSP or retailer at the child connection point of the life support customer should be required to inform the ENSP and retailer at the parent connection point for that embedded network, and each embedded network through which the embedded network is connected until the DNSP and the NEM retailer at the parent connection point that is connected to the DNSP's network are informed.

4.3.4 Retailer of last resort functions

Under the framework for embedded networks proposed in the draft report, all child connection points in a new embedded network would be required to have a NMI and be discoverable in MSATS. The draft proposed framework also provided for separation of the ENSP role and the off-market retailer role (in practice this function still may be performed by the same party in many embedded networks).

The Commission considered there are three embedded network RoLR scenarios that could occur relating to different types of retailers failing:

1. Failure of the NEM retailer at the parent connection point
2. Failure of a NEM retailer at an on-market child connection point within an embedded network
3. Failure of an off-market retailer at an off-market child connection point within an embedded network.

Each of these scenarios is discussed in more detail in Box 12.

BOX 12: ROLR SCENARIOS RELATING TO EMBEDDED NETWORKS

Scenario 1: the NEM retailer at the parent connection point fails.

In this scenario, the Commission considered that the standard RoLR provisions in the NERL already apply. The designated RoLR for that failed NEM retailer would become the default retailer for the customer at the parent connection point.

Scenario 2: a NEM retailer supplying electricity to one or more on-market customers at child

connection points in the embedded network fails.

As in scenario 1, the Commission considered that the standard RoLR provisions in the NERL already apply. The designated RoLR for that failed NEM retailer would become the default retailer for all child connection points supplied by the failed NEM retailer.

Scenario 3: an off-market retailer supplying electricity to one or more off-market customers at child connection points within the embedded network fails.

In the third scenario, as the retailer is off-market there would be no designated retailer for the child connection point under the current RoLR provisions in the NERL. The Commission considered that, the NERL should be amended so that the RoLR scheme applies by making the retailer at the parent connection point become the designated retailer for all off-market child connection points.

The NEM retailer at the parent connection point is the retailer participating in the wholesale market, buying the energy that the off-market retailer is on-supplying to customers at the child connection point. If the off-market retailer fails, the NEM retailer at the parent connection point risks not being paid for the energy it has supplied to the off-market retailer. Designating the NEM retailer at the parent connection point as the designated RoLR for all off-market child connection points would therefore help to mitigate the risk of non-payment for the NEM retailer at the parent connection point. It would become the retailer for the off-market connection points, and could recover the costs of the portion of electricity used by the off-market customers directly from the off-market customers.

Source: AEMC.

The Commission's draft report underlined that in all scenarios, aside from the allocation of the registered or designated RoLR for off-market customers, the obligations under Part 6 of the NERL should apply. Therefore, the same responsibilities, contractual arrangements, terms and conditions of the designated RoLR's standard retail contract should apply in the case of a RoLR event for a standard supply customer and an embedded network customer.

The Commission considered that as the child connection point has a NMI and is discoverable in MSATS, extending the RoLR scheme to off-market customers would involve minimal additional costs. The benefits of extending the RoLR scheme to off-market customers in embedded networks would provide protection for the off-market customer if the off-market retailer fails, and additionally provide some protection to the NEM retailer at the parent connection point who bears the risk of not being paid if the off-market retailer (who would generally be the customer at the child connection point) fails.

To facilitate the extension of the RoLR scheme for off-market customers as recommended in scenario three, amendments to the NERL would be required. The Commission's draft proposal recommended amendments to the NERL to include default arrangements for a child connection point supplied by an off-market retailer. The recommended default arrangements were that the default RoLR for an off-market connection point should be the FRMP at the primary parent connection point.

The draft proposed framework considered extending the RoLR scheme for the provision of retail services in new embedded networks only. In the case of ENSP failure, the owner of the embedded network will be responsible for either registering itself, or appointing an intermediary as the ENSP for the embedded network.

4.3.5 Other NERL and NERR protections

Due to the nature of embedded networks being connected to either a DNSP's network (or on occasion to another embedded network), there are some additional protections the Commission's draft report considered to be required either to protect customers at child connection points from actions taken at the parent connection point, or to remove an onerous obligation on an off-market retailer.

De-energisation of a parent connection point

If a parent connection point is de-energised,[140] all customers at child connection points within the embedded network, as well as any customers in a pancaked embedded network, will also be de-energised. Without a prohibition on disconnections of customers at a parent connection point, customers at child connection points (either on-market or off-market) could pay their energy accounts to their NEM retailer or off-market retailer and still be disconnected due to the local embedded network retailer failing to pay for energy costs at the parent connection point. This is clearly an adverse outcome for those customers at child connection points and the Commission's draft report did not consider this outcome to be acceptable.

Consequently, the Commission recommended that retailers and distributors should not be allowed to disconnect parent connection points. If the local embedded network retailer fails to pay the retailer at the parent connection point (or fails to allow access to the meter, etc.), the retailer at the parent connection point would be required to pursue avenues other than de-energisation to resolve the situation. The Commission considered this to be a commercial risk that would need to be managed by retailers.

The draft report acknowledged that exceptions to the prohibition on de-energisation at the parent connection point would still need apply where there are health and safety reasons, an emergency warranting de-energisation, or if the distributor has been required to de-energise at the direction of a relevant authority. The Commission's draft proposal also considered that ENSPs should be able to request disconnection of the parent connection point in certain circumstances, for example in cases where there are closures of embedded network buildings to carry out extensive renovations and remodelling with no customers residing in the building. For embedded networks that have one or more embedded networks connected through the embedded network's parent connection point, the ENSP would not be able to request de-energisation unless it had the consent of the ENSP or exempt ENSP for each connected embedded network.

140 Note that this is distinct from a temporary interruption due to a retailer planned interruption or distribution planned interruption, as discussed above.

The use of pre-paid meters

For similar reasons to the prohibition on de-energisation of parent connection points discussed above, the draft report concluded that pre-paid meters should be prohibited at parent connection points. However, the draft report also acknowledged that it is very unlikely that any pre-payment meters are currently used at parent connection points in an embedded network.

Pre-paid meters can 'self disconnect' when the credit, including any emergency credit, runs out. Although this is a very unlikely scenario, self disconnection would subsequently disconnect all customers at child connection points, and any other embedded networks connected through the parent connection point. As for disconnection of non-payment at the parent connection point under a traditional metering arrangement, this is clearly an adverse outcome for those customers at child connection points.

Variations to standing offer prices and retail price regulation

Currently under the NERR, if a NEM retailer varies its standing offer prices it must publish that variation both on its website and in a newspaper, as well as providing the affected customer with details of the variation in their next bill. Variations of an off-market retailer's standing offer prices will in many cases impact a much smaller number of customers than when a NEM retailer varies its standing offer prices, as they will generally only apply in that embedded network.

While the Commission's draft proposal recommended that off-market retailers in embedded networks would need to publish details of any variations on their websites, and provide details of the variation in the affected customers' next bills, the Commission did not consider it would provide a proportionate benefit to require an off-market retailer to publish a variation of its standing offer prices in a newspaper. Consequently, the Commission recommended amending the NERL and the model terms and conditions for standard retail contacts in Schedule 1 of the NERR to exclude off-market retailers from the obligation to publish variations to standing offer prices in a newspaper.

Off-market retailers would be required to purchase electricity from a NEM retailer at the parent connection point, likely through a market agreement. The NEM retailer at the parent connection point may vary the prices the off-market retailer is paying more frequently than once every six months under a market agreement. Consequently, the Commission was of the view that it would be appropriate to allow the off-market retailer to vary its tariffs more frequently than once every six months.

In its draft report, the Commission further noted that in line with its 2017 Review, it continued to be of the view that price conditions are appropriate for legacy embedded networks, in particular where workable competition may not emerge due to impediments to transitioning to the new framework, and that there may be some new embedded networks where retail price regulation is also necessary. However, the Commission did not make any recommendations in regard to implementing the 2017 recommendations that the NERR be amended to require all retailers to charge customers in embedded networks no more than the standing offer price of the local area retailer, or any other recommendations in relation to

price regulation in legacy embedded networks. This was on the basis that, under the new framework, all embedded network customers would have access to retail competition.

4.4 Stakeholder views

General support for providing embedded network customers with important consumer protections was expressed in the submissions to the draft report from Retailers (including AGL, Alinta, Origin, ERM, Red and Lumo, Simply, Momentum, Energy Australia);[141] DNSPs and affiliates (Energy Networks Australia, Ausgrid, AusNet, TasNetworks);[142] ENMs, embedded network operators and retailers, and consultancy businesses for energy on-sellers (Watts Energy, Landlease, Active Utilities, Energy Options Australia, LPE);[143] consumer group representatives (PIAC and CALC);[144] and Ombudsmen (EWOQ, EWON, EWOSA).[145]

PIAC and Renew expressed their support by quoting a statement from the AEMC's draft report, that 'consumer protections should be driven by the needs of customers and not the business model of suppliers'.[146] Likewise, Landlease underlined in its submission that ENSPs should have 'non-negotiable obligations' concerning consumer protections, including for life support customers, de-energisation, access to information, variation of retailers' offers and RoLR arrangements.[147]

Although expressing general support, Energy Options Australia expressed concerns relating to the increased regulatory obligations of embedded network owners and operators would result in reduced savings, i.e. higher costs, for embedded network customers.[148]

A number of stakeholders likewise expressed concerns regarding the draft report's recommendations relating to:

- Supply interruptions in embedded networks
- Life support arrangements
- Retailer of last resort functions and ENSP of last resort
- De-energisation of a parent connection point and the use of pre-paid meters
- Retail price regulation.

These points are discussed in more detail in the following sections.

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141 AGL, submission to draft report, p. 4/5; Alinta, submission to draft report, p. 7/8; Origin, submission to draft report, p. 4; ERM, submission to draft report, p. 1; Red and Lumo, submission to draft report, p. 1; Simply, submission to draft report, p. 1/2; Momentum, submission to draft report, p. 1; Energy Australia, submission to draft report, p.1.

142 Energy Networks Australia, submission to draft report, p. 1; Ausgrid, submission to draft report, p. 2; AusNet, submission to draft report, p. 1; TasNetworks, submission to draft report, p. 1; Enerven, submission to draft report, p. 1.

143 Watts Energy, submission to draft report, p. 1; Landlease, submission to draft report, p. 9; Active Utilities, submission to draft report, p. 1; Energy Options Australia, submission to draft report, p. 3; LPE, submission to draft rejport, p. 4.

144 PIAC, submission to draft report, p. 1; CALC, submission to draft report, p. 1/2.

145 EWOQ, submission to draft report, p. 1/2; EWON, submission to draft report, p. 1/2; EWOSA, submission to draft report, p. 1.

146 AEMC, *Updating the regulatory frameworks for embedded networks*, draft report, p. i; PIAC, submission to draft report, p. 1; Renew, submission to draft report, p. 2.

147 Landlease, submission to draft report, p. 9.

148 Energy Options Australia, submission to draft report, p. 3.

4.4.1 Notification of planned interruptions

Stakeholders generally supported the AEMC's proposal to put an obligation on ENSPs to notify their customers at child connection points in embedded networks about planned interruptions. However, some stakeholders expressed concerns with regard to the draft report's proposed position concerning the:

- splitting of notification responsibilities, relating to DNSPs' obligation to inform retailers at child connection points and ENSPs' obligation to inform customers at child connection points
- notification timeframes.

DNSPs' obligation to inform retailers at child connection points

ERM, Energy Networks Australia, and Ausgrid raised concerns regarding the splitting of notification responsibilities in terms of the DNSP having to notify the retailer at the child connection point, whereas the ENSP would inform the customer at the child connection point.

ERM expressed the view that ENSPs should also have the obligation to notify customers' respective child retailers, rather than placing an obligation on the DNSP or parent retailer to notify retailers at child connection points.[149] Energy Networks Australia and Ausgrid shared this view and considered the proposed obligation of DNSPs to inform child retailers as problematic, as the proposed expanded notification requirements would result in additional costs from system enhancement and additional staff, necessary to manage DNSPs' new administrative tasks associated with the new notification responsibilities.[150] Energy Queensland added to this that the system changes, to ensure compliance with the increased DNSP obligations under the draft proposed framework, would require sufficient time to be implemented.[151]

Further, Energy Networks Australia and Ausgrid mentioned that DNSPs having to notify child retailers could lead to potential confusion, particularly in instances where retailers of child customers anticipate outages as notified by the DNSP, but ENSPs use embedded generation to supply customers during DNSP planned outages or if multiple supply points to the embedded network exist, as in the latter case the DNSP is unaware of which child NMIs are connected to which service point.[152]

AusNet recommended additional specification of the notification process, and suggested that DNSPs should be able to notify ENSPs through written email notifications, in order for ENSPs to be able to provide their customers with a notice of interruption within one business day (which would also benefit from being done through SMS notification). To enable this, AusNet suggested that there should be a strict obligation on retailers of parent connection points to provide an email address for the embedded network's outage contact, i.e. the ENSP, to DNSPs.[153]

149 ERM, submission to draft report, p. 5.
150 Energy Network Australia, submission to draft report, p. 2-3; Ausgrid, submission to draft report, p. 6/7.
151 Energy Queensland, submission to draft report, p. 8.
152 Energy Network Australia, submission to draft report, p. 2-3; Ausgrid, submission to draft report, p. 6/7.
153 AusNet, submission to draft report, p. 2.

Notification period

Regarding the notification period for planned interruptions, Watts Energy mentioned in its submission that the proposed notification period for ENSPs to inform their customers within one business day of receipt of the notification from the DNSP or retailer seems unreasonable, especially in larger embedded networks, considering that currently the AER Retail Exemption Guideline provides that embedded networks have at least two business days to provide such notification.[154]

TasNetwork's comments related to DNSPs' existing obligation to provide customers, including an ENSP, with a minimum notice of four days in case of a DNSP planned interruption.[155] TasNetworks noted that as a result, customers in embedded networks would have a shorter notification timeframe, as the ENSP, after being notified by the DNSP, has to pass on the relevant information to customers. Although not suggested by the AEMC in its draft report, TasNetworks raised concerns regarding putting an obligation on DNSP's to manage two different notification timeframes, including a longer timeframe to allow ENSPs to turn around the notification and still provide its customers with four days' notice, which would create additional costs for DNSPs. As such, the AEMC considers TasNetworks' comment as expressing support for the AEMC's draft position.

4.4.2 Life support requirements

Retailers (Alinta and ERM) and DNSPs (Ausgrid and TasNetworks) commented on the draft report's proposed life support requirements in embedded networks.

Alinta expressed support for the AEMC's recommendations in relation to life support customers in new embedded networks, but also suggested reviewing the effectiveness of the current regime for legacy embedded networks (Condition 20 under the AER's Retail Exemptions Guideline).[156]

ERM suggested that any initial notices of customers' life support requirements should be coordinated by the ENSP (and not the child retailer) to the parent retailer and DNSP.[157] Other than flagging the site as life support, the parent retailer and DNSP should not be required to hold customer contact information of a child customer with life support requirements. Any notice of outage to child connection points should be made by the ENSP to child connection customers and retailers. Ausgrid shared this view of assigning the ENSP with the sole responsibility for passing on life support requirement information to the DNSP and parent retailer to ensure clearly allocated responsibilities.[158]

Other than flagging the site as life support, ERM expressed the view that the parent retailer and DNSP should not be required to hold individualised customer or contact information of a child connection life support customer.[159] Ausgrid expressed related concerns regarding the

154 Watts Energy, submission to draft report, p. 6.
155 TasNetworks, submission to draft report, p. 2.
156 Alinta, submission to draft report, p. 8.
157 ERM, submission to draft report, p. 5.
158 Ausgrid, submission to draft report, p. 7/8.
159 ERM, submission to draft report, p. 5.

additional costs that would result from system enhancements and additional staff to manage DNSPs' new responsibilities with regard to holding individualised data for embedded network customers requiring life support.[160]

TasNetworks requested further specification regarding the notification process between ENSPs and DNSPs. In contrast to Ausgrid's submission, TasNetworks considered there may be problems if a life support customer requirement notification would only lead to a flag in the DNSP's system, as in the absence of individualised data, there would be no indication of how many customers in an embedded network may actually have a life support requirement. Accordingly, TasNetworks expressed concerns that a flag in the DNSP's system may be inadvertently removed if no individualised data is stored by the DNSP, for example when one life support customer moves out of the embedded network, but others remain in the embedded network.[161]

4.4.3 Retailer of last resort functions and ENSP of last resort

Support amongst stakeholders for the proposed application of the RoLR scheme in embedded networks was mixed.

Origin and Enerven supported the Commission's proposed approach to assigning a default ROLR in the event an off-market retailer fails.[162]

Energy Australia, ERM, Landlease and Simply Energy all expressed concern that the Commission's draft proposed approach could result in a retailer being required to serve customers that they are potentially not equipped to serve.[163] ERM and Simply Energy both considered that, because of this, the Commission's draft proposed approach would not work in practice.

Simply Energy noted that parent meters are 'large' or aggregated loads and retailers manage these sites via bespoke commercial and industrial contracts. On the other hand, loads at child connection points are generally small customers. Consequently, to the extent that the retailer at a parent connection point does not service small customers, assigning that retailer as default ROLR could lead to complications.

ERM's specific concerns were:

- The approach would place an unacceptable compliance risk on a retailer that is forced to supply an unintended customer class
- At worst, it places a retailer in a position of servicing a customer it does not have a licence to retail to
- As a result, retailers may not be willing to offer services as a parent connection retailer and therefore competition may be reduced

160 Ausgrid, submission to draft report, p. 7/8.

161 TasNetworks, submission to draft report, p. 2.

162 Origin, submission to draft report, p. 4; Enerven, submission to draft report, p.2.

163 Energy Australia, submission to draft report, p. 3; ERM, submission to draft report, p. 3/4; Landlease, submission to draft report, p. 19; Simply, submission to draft report, p. 3.

- Alternatively, prices may increase to account for the additional risk premium, reducing competitive tension.

Alternative solutions proposed by Simply Energy and ERM were, respectively, conducting a standard ROLR application process where retailers express their interest to be the ROLR, and designating the ROLR at the parent connection point as ROLR of a child connection point.

Enerven questioned what would happen in the event that the ENSP failed.

4.4.4 Designated retailer

For the same reasons provided in relation to the AEMC's proposed RoLR arrangements (a retailer has chosen to only supply a certain customer category), ERM opposed the proposal that the designated retailer would be the financially responsible retailer for that connection point. As such, the (at the time) respective financially responsible retailer (which could be a NEM retailer or an off-market retailer) would be obligated to sell energy to the customer at standing offer prices under the standard retail contract. ERM considers the Commission's draft proposal as problematic, as this retailer may have previously served a business customer in a mixed development and may not have the capacity to supply a residential customer who may be the new customer at the premises.[164] ERM therefore suggested in its submission that the appointed local embedded network retailer, nominated by the ENSP, with consent of the local embedded network retailer, to be the designated retailer. Failing the appointment of a local embedded network retailer, in ERM's view the local retailer for the area in which the embedded network is located would be well-equipped to take on this responsibility, provided it is notified within a reasonable timeframe.

4.4.5 Prohibition of de-energisation of a parent connection point and the use of pre-paid meters

AGL and Alinta mentioned concerns with regard to restricting the ability of retailers and distributors at parent connection points to disconnect parent connection points.[165] AGL considered that contractual arrangements alone may not be sufficient for parent retailers to ensure compliance of embedded network retailers supplying child connection points and, in the absence of a disconnection framework, retailers at parent connection points may be exposed to time consuming and costly litigation to recoup losses. Similarly, Alinta submitted that commercial solutions to manage payment of energy costs to a parent retailer may require prudential requirements or the application of a risk premium as part of any energy supply arrangement between parent and child retailers.[166]

Alinta expressed support for prohibiting pre-paid meters at parent connection points for embedded networks.[167]

164 ERM, submission to draft report, p. 4.
165 AGL, submission to draft report, p. 5.
166 Alinta, submission to draft report, p. 8.
167 Alinta, submission to draft report, p. 8.

4.4.6 Retail price controls

In response to the draft report's position in relation to price regulation, Energy Australia and Alinta noted that the AEMC should consider the implications of the Default Market Offer (DMO) and the Victorian Default Offer (VDO).[168]

Origin agreed that the existing arrangements restricting prices to no higher than the standing offer/a generally available DMO price would ensure appropriate protections for legacy off-market customers.[169] CALC was supportive of the VDO becoming the price cap in legacy embedded networks without full retail competition, but considered the DMO may not represent a fair price cap due to methodology for determining the DMO.[170]

Renew considered that price regulation is necessary to continue to protect customers where the cost of providing access to retail competition outweighs the benefits, and recommended that the DMO form the reference price rather than the current standing offer.[171] Active Utilities recommended a model to ensure embedded supply charges are lower than the relevant standing offer/future DMO.[172]

4.5 Analysis and final recommendations

This section addresses the comments received from stakeholders in their submissions, outlines changes to the draft report position and provides the rationale for the Commission's final recommendation. It provides an overview of the final recommendations before going into more detail with regard to the final recommendations where changes were made to the draft position, or changes were requested but not made.

4.5.1 Overview of final recommendations

The final recommendations largely reflect the draft recommendations. However, some changes were made, which are discussed in further detail below. The key aspects of the final recommendations are:

- *Application of the three key concepts underpinning current consumer protections in the NEM*: designated retailer, shared customer and tripartite relationship.
- *Extension of notification of planned interruptions*: the ENSP would be responsible for notifying both retailers and customers at child connection points on its network of planned supply interruptions (*change to draft report position*).
- *Life support requirements*: the ENSP would be responsible for passing on aggregate life support requirement information (in terms of life support requirements to be flagged at the parent connection point, and no individualised data) to the parent retailer and the DNSP (*change to draft report position*).

168 Energy Australia, submission to draft report, p. 2; Alinta, submission to draft report, p. 8.
169 Origin, submission to final report, p. 5.
170 CALC, submission to draft report, p. 2.
171 Renew, submission to final report, p. 3.
172 Active Utilities, submission to final report, p. 1.

- *RoLR*: in the event that an off-market retailer fails, the ROLR will be the FRMP at the parent connection point unless (1) that retailer is the failed retailer or (2) the retailer has previously obtained a waiver from the AER from being the ROLR at the parent connection point by demonstrating to the AER that it does not supply small customers and the retailer continues to demonstrate this on a quarterly basis, in which case the ROLR will be the default ROLR for the parent connection point.
- *Other NERL and NERR protections*: de-energisation of parent connection points and the use of pre-paid meters at a parent connection point are recommended to be prohibited in embedded networks. With regard to variations to standing offer prices, off-market retailers in embedded networks would be required to publish details of variations on their websites and provide details of the variation in the affected customer's next bills, but off-market retailers will not be required to publish a variation of their standing offer prices in newspapers.
- *Retail price regulation*: no additional price protections are introduced, with access to retail competition under the final recommended framework providing the constraint to retail pricing. In contrast, in legacy embedded networks, where workable competition may not emerge, the Commission's final recommendations are to amend the Rules to provide clarity that the AER may set a price cap in embedded networks that is lower than or equal to the standing offer of the local area retailer. As such, the Commission is recommending two amendments to clause 152(4) of the NERR (*change to draft report position*):
  - To extend the AER's ability to impose a condition in relation to prices to be charged to exempt customers to small business customers as well as residential customers.
  - To clarify that, where the AER determines that it is appropriate to impose a condition in relation to prices to be charged to exempt customers at residential premises by an exempt seller, the AER can set a price that is equal to or lower than the standing offer price of the local area retailer.[173]
  - The AER is also to be given a similar power, and be able to publish a pricing schedule permitting them to set prices off-market retailers can charge in legacy embedded networks, up to the standing offer price of the local retailer. This will be by way of an AER Notice.

4.5.2 Detailed outline of final recommendations

Notification of planned interruption

In its draft report, the Commission proposed that in case of a DNSP planned interruption, the ENSP would be responsible for notifying its customers at child connection points in an embedded network, and the DNSP, to whose network the embedded network is connected to, would be responsible for notifying the retailers at child connection points.

173 The Commission notes that the DMO will not apply to the tariffs charged by NEM retailers in embedded networks or off-market retailers, as customers of embedded networks have been excluded under the code that gives effect to the DMO. However, residential customers of exempt sellers will indirectly have their prices capped at the DMO where the pricing condition in clause 152(4) of the NERR is imposed.

Stakeholders expressed concerns regarding the proposal to split notification responsibilities, which they perceived as creating a risk of an unclear allocation of responsibilities. In addition, as highlighted by DNSPs, confusion could result in cases where ENSPs use embedded generation to supply embedded network customers during DNSP planned outages or if multiple supply points to the embedded network exist. A child retailer may in this case expect an interruption upon notification from the DNSP, but this interruption may actually not occur.

The Commission acknowledges this as a valid concern and has accordingly amended its position. Its final recommendation is to remove the obligation on DNSPs to inform retailers at child connection points and transfer this obligation to the ENSP. As a result, the ENSP would be the sole responsible party for notifying retailers at child connection points and customers on its network about planned supply interruptions. The Commission sees benefits in the bundling the responsibility for passing on planned network interruption information, which would lead to a clearer allocation of responsibilities, lower costs for DNSPs and less room for error.

Notification timeframes

The Commission's draft position relating to the notification period for planned interruptions was that ENSPs would have to inform their customers within the embedded network within one business day of receipt of the notification from the DNSP or retailer.

A small number of stakeholders considered this obligation to be too onerous, given that currently the AER Retail Exemption Guideline provides for a notification period of at least two business days in embedded networks. Their main argument was the size of some embedded networks, which may make it difficult for an ENSP to notify its customers within the recommended timeframe.

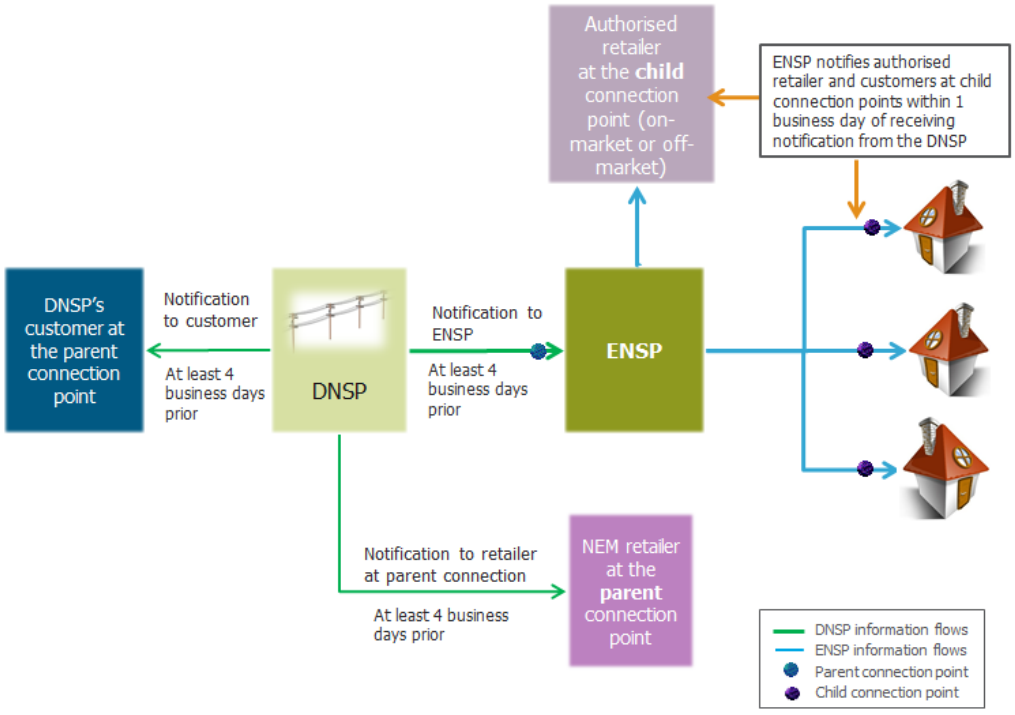
The Commission's final position reflects its draft position. The Commission considers a swift notification to be in the interest of customers, with a shorter notification timeframe increasing consumer protections in embedded networks. Also, having regard to the relatively small network size of most embedded networks (e.g. an apartment block compared to a DNSP's network), the Commission is of the view that no strong arguments for changing its draft position were articulated in stakeholder submissions. It seems reasonable and proportionate for an ENSP to be required to forward a supply interruption to its customers within one business day of receipt of a notification, whether it be a notification of a distributor planned interruption on the DNSP's network to which the respective embedded network is connected, or on an upstream embedded network to which the embedded network is connected (pancaking), or as a result of a retailer planned interruption at a parent connection point.

Regarding a stakeholder's comment relating to the need for further specification of the notification process, in terms of enabling DNSPs to timely notify ENSPs through written email notifications, the AEMC does not consider it necessary to introduce a regulatory obligation on any party to provide the DNSP with the email address of the ENSP. The DNSP can choose email notification as an appropriate means of communication, if it wishes to do so. However, email notification is not a necessary requirement for the notification process to work. The NERR sufficiently specifies that "*the distributor must notify each affected customer* ***by any***

appropriate means *of the interruption as least 4 business days before the date of the interruption*".[174] As the NERR already provides for the requested changes, the AEMC does not consider that any changes are necessary to its draft report position.

Figure 4.1 illustrates the Commission's final recommendation regarding the required information flows in case of a planned embedded network interruption due to a planned interruption on the DNSP's network.

Figure 4.1: Final recommendation - notification of planned embedded network interruption due to a DNSP planned interruption



Source: AEMC.

Life support requirements

The draft report position was that the customer at a child connection point could either inform the ENSP or the retailer at the child connection point (off-market or NEM retailer) about life support requirements. The informed party, either the ENSP or the child retailer, would have to share this information with the other party as well as pass on this information to the parent retailer and the DNSP. Accordingly, the parent retailer and the DNSP could be informed by the child retailer *or* the ENSP.

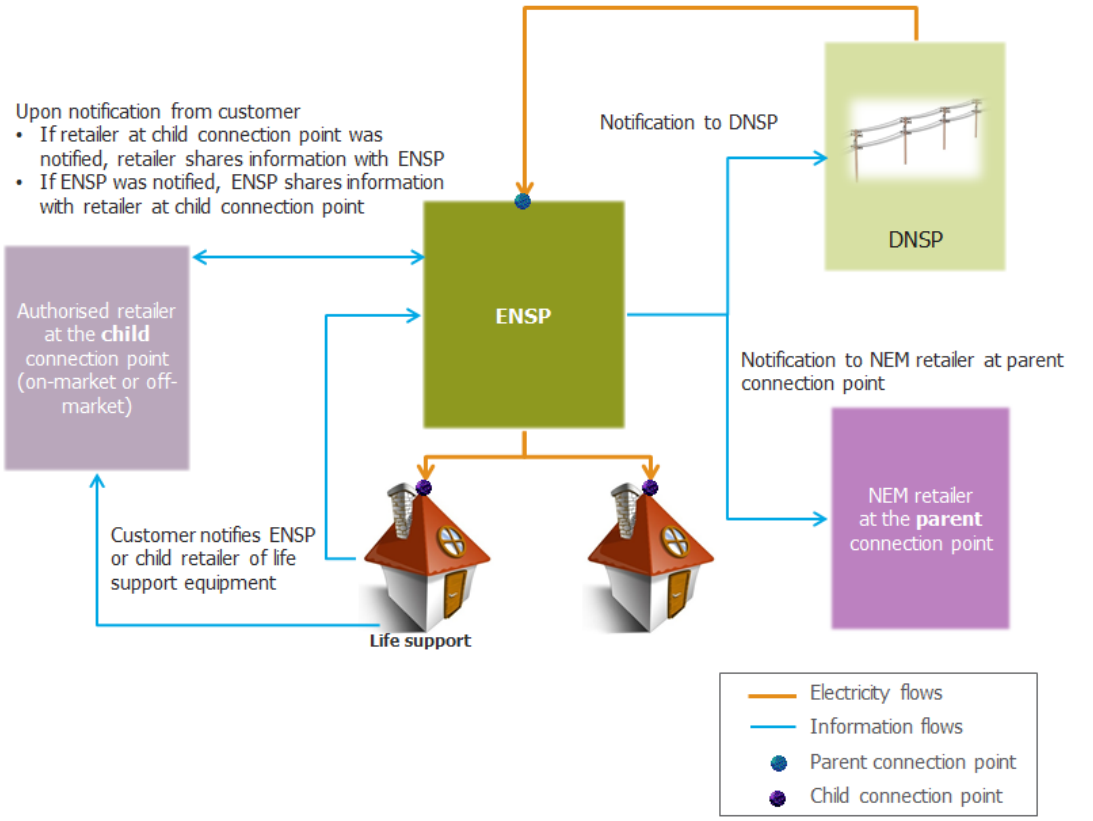
In line with the Commission's proposal to bundle obligations for passing on notifications for planned interruptions to customers and child retailers, by allocating the sole responsibility for

174 Existing rule 90(1B) of the NERR.

information provision to the ENSP, the Commission considers it sensible to likewise change its draft position relating to life support requirements. Upon notification by an embedded network customer requiring life support, the child retailer must forward the relevant information to the ENSP. Equally, if the ENSP is informed about life support requirements by a customer, the ENSP must share this information with the relevant child retailer. However, in the interest of clear lines of responsibility, the Commission's final recommendation is to make the ENSP the sole responsible party for passing on life support requirement information to the parent retailer and the DNSP.

Figure 4.2 shows the Commission's final position regarding the flow of information within an embedded network where a customer has informed their distributor (the ENSP) or retailer at the child connection point that a person at the premises is using life support equipment that relies on electricity.

Figure 4.2: Final recommendation - life support information flows in an embedded network



Source: AEMC.

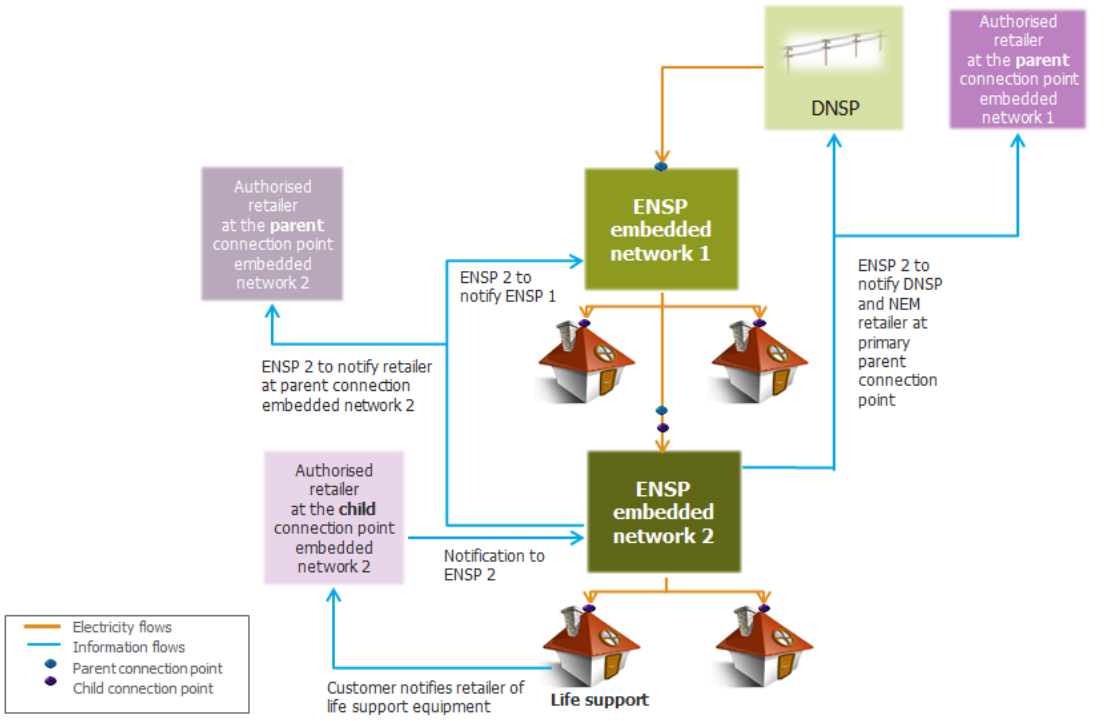
Regarding a life support customer residing within a pancaked embedded network, the Commission's final recommendation also changed from its draft report position in line with the proposed clearer allocation of responsibilities by obliging the ENSP to forward the relevant information. Accordingly, the ENSP at the child connection point of the life support

customer would be required to inform the ENSP and retailer at the parent connection point for that embedded network, and similarly would be responsible for passing on the information to the DNSP and the NEM retailer at the primary parent connection point.

Figure 4.3 shows the final position regarding the flow of information within an embedded network that is pancaked within another embedded network, and where a customer has informed their ENSP (i.e. the ENSP for embedded network 2) that a person at the premises is using life support equipment that relies on electricity. If the customer instead informs their child retailer (the retailer at the child connection point in embedded network 2) of the life support equipment, the retailer for embedded network 2 would have information obligations with regard to the ENSP for embedded network 2, however, only the ENSP for embedded network 2 has the obligation to provide this information to embedded network 1 as well as the NEM retailer and DNSP at the primary connection point.

The Commission is of the view that locating the responsibility for information provision within the ENSP of the pancaked network (ENSP2), who has to provide the relevant information up to the primary connection point, provides for a clear allocation of responsibility and a timely provision of the relevant information to all parties.

Figure 4.3: Final recommendation - life support information flows in a pancaked embedded network



Source: AEMC.

Further, the draft report proposed that individualised information would be passed on to the DNSP and the parent retailer, who would be required to hold individualised information in terms of flagging life support requirements for individual child NMIs in their systems. This would have required DNSPs and NEM retailers at parent connection points to extend their systems by including individualised NMI data, whereas currently only the parent connection point is flagged as requiring life support.

DNSPs mentioned in their submissions the additional costs that would result from system enhancements and additional staff to manage their new responsibilities with regard to holding individualised embedded network customer data, but at the same time also voiced concerns regarding the risk of inadvertently removing a flag from a parent connection point if multiple life support customers reside behind the parent connection point.

The Commission has reviewed its draft position that DNSPs and parent retailers are obliged to hold individualised information for the purpose of flagging life support requirements for individual child NMIs in their systems. After careful consideration, the Commission came to the conclusion that flagging the parent connection point as one with life support requirements, instead of the individual embedded network customer, would still provide customers in embedded networks with the same benefits and consumer protections as standard supply customers, without putting any additional costs on DNSPs or parent retailers. It is not considered to be of any relevance for the DNSP or parent retailer how many life support customers live behind the parent connection point, as long as the parent connection point is being flagged as one with life support requirements. Whether one or multiple customers with life support requirements reside in an ENSP's network, the ENSP has to ensure the DNSP and parent retailer receive the aggregate information for the parent connection point. With DNSPs and parent retailers only handling aggregate information, the Commission actually considers the risk of errors to be less than if individualised information would be communicated, which would moreover not make any difference to the DNSP or the parent retailer, as the DNSP's customer is only the ENSP at the parent connection point, and not the child customer in an embedded network connected to the DNSP's network.

Considering stakeholders' requests to analyse the effectiveness of the current regime for legacy embedded networks, as specified in the AER's Retail Exemption Guideline, the Commission considers such a review to be out of scope of this review. Rather, the AEMC recommends that the effectiveness of the current regime for legacy embedded networks would need to be addressed as part of the AER's Retail Exemption Guideline revision process.

Retailer of last resort functions

The Commission has considered the concerns raised in submissions that the draft proposed approach could result in a retailer being required to serve customers that they are potentially not equipped to serve. There are two potential circumstances to consider where a retailer at the parent connection point that typically only serves C&I customers becomes the RoLR:

1. The retailer may not be licensed to serve small customers, and so the retailer would in effect be required to supply small customers without a licence to do so. This could occur

in Victoria, where retailers must obtain separate licences to supply small customers (<160 MWh per annum) and large customers (>160 MWh per annum)

2. The retailer may have a licence to serve small customers but may have chosen to focus on the C&I sector. Consequently, they may not have policies, procedures and systems in place to meet the more stringent requirements associated with supplying small customers, such as specific billing requirements and hardship policies. This could be the case in jurisdictions that have adopted the NECF, where a single retail license is required to supply all customers.

In respect of the first scenario, the Commission agrees that it would not be appropriate for the NERL to require a retailer to supply customers that they are not permitted to supply under jurisdictional licensing requirements. However, this is a jurisdictional scenario that is specific to Victoria. The Commission recommends that the Victorian Government give consideration to this issue in its implementing legislation.

In relation to the second scenario, the Commission considers that retailers have a strong incentive to manage the risk that they may become a RoLR for small customers, not only because they may otherwise be in breach of the NER/NERR, but because they have a financial incentive to do so. The FRMP at the parent connection point will continue to be exposed to their hedging contracts following the failure of an off-market retailer. However, if another NEM retailer becomes the designated RoLR, that NEM retailer is under no obligation to source its electricity from the FRMP at the parent connection point. Rather, the outcome would be that the designated RoLR will simply place all customers in the embedded network on-market and supply them directly. Consequently, no energy would be settled through the FRMP at the connection point, who may as a result not be able to recover its hedging costs from the embedded network customers.

Retailers could manage the risk of becoming ROLR to small customers by:

- Entering into an arrangement to contract out billing and other functions to another party that is equipped to comply with NECF requirements, noting that the retailer will still be responsible for complying with all NECF and other relevant obligations.
- Requesting a letter of no action from the AER. It is up to the AER to enforce compliance with the Rules and the AER can choose to grant a letter of no action under certain circumstances. In this instance, the AER may wish to consider granting a letter of no action to a retailer in relation to complying with certain aspects of the Rules for a period of time sufficient for the relevant retailer to either develop the necessary policies, processes and systems itself or to contract these out to another party.

However the Commission acknowledges that requiring the retailer at the parent connection point to become the ROLR places significant risk on retailers at a parent connection point that do not supply small customers. Further, customers themselves may not receive the information and protections that they are eligible for or require if a retailer does not have the appropriate systems in place for some time, such as concession payments and payment plans. Consequently the Commission has decided to amend its position in relation to the ROLR.

While the Commission considers it appropriate that the parent retailer become the ROLR in the majority of circumstances and that retailers generally should not be able to opt out of doing so, the Commission has provided a mechanism to allow retailers that do not supply small customers to be able to obtain a waiver from the AER from being the ROLR at the parent connection point. To obtain a waiver, the retailer must:

- prior to a ROLR event, demonstrate to the AER that it does not supply small customers and satisfy the AER that this is the case and
- continue to demonstrate on a quarterly basis to the AER that it continues to not have any small customers. The retailer may comply with this requirement through existing reporting processes.

If the retailer fails to demonstrate to the AER that it continues to not have any small customers, the retailer will become the default retailer (unless it is a failed retailer).

ENSP of last resort

Concerns have also been raised regarding whether an equivalent to RoLR is required in relation to the failure of an ENSP. The situation should only arise where the embedded network owner becomes insolvent. If the failed entity is an operator appointed by the owner, the owner would be responsible for appointing a new operator since it is joint and severally liable for complying with relevant obligations in the Rules.

In the situation where it is the embedded network owner that becomes insolvent, standard insolvency laws will apply.

In the short term there should be no impact on embedded network customers' electricity supply, provided there are no faults on the embedded network. Electricity should continue to flow since a parent connection point cannot be de-energised. However, the obligations of the ENSP would no longer be fulfilled such as billing NEM retailers for network charges for on-market customers in the embedded network, processing new connections and informing the DNSP and others of life support customers. Further, there could be supply issues if there are any unplanned outages and no one responsible for fixing them.

Ultimately, electricity will only be one of a number of services that the embedded network owner – typically a body corporate or shopping centre – will no longer be providing to the customers in the relevant apartment or shopping centre. In this instance, the Commission considers that it is appropriate for standard insolvency processes to apply and a RoLR equivalent is not required.

Designated retailer

The Commission's draft report position regarding the designated retailer in an embedded network is aligned with the current standard supply arrangements:

- for new child connection points, the appointed local embedded network retailer (i.e. the NEM retailer or off-market retailer appointed by the ENSP) would be the designated retailer

- for existing child connection points, where a new customer moves into the premises at the child connection point, the designated retailer would be the last retailer that has served the relevant connection point.

For the same reasons provided in relation to the AEMC's proposed RoLR arrangements in new embedded networks (retailer has chosen to only supply a certain customer category), stakeholders expressed concerns regarding the Commission's proposal on the designated retailer for existing child connection points. A retailer may have previously served a business customer in a mixed development and may not have the capacity to supply a residential customer that may be the new customer moving into the child connection point.

As the Commission's draft position aligns with the current arrangements for standard supply customers in the NEM, the Commission does not view the argument being put forward as substantive enough to require a revision of its draft position. No additional obligation would result for NEM retailers as their current obligations would simply be extended to also apply in embedded networks. As such, the Commission's final recommendation relating to the extension of the concept of a designated retailer to embedded networks has not changed from its draft recommendation.

De-energisation of parent connection point

The Commission's draft report recommended that retailers and distributors should not be allowed to disconnect parent connection points. The Commission's view is that parent retailers would need to manage the commercial risk of a local embedded network retailer failing to pay the retailer at the parent connection point.

Stakeholder submissions mentioned that the Commission's draft proposal may require parent retailers to put commercial solutions in place, e.g the application of a risk premium to any supply arrangements between parent and child retailer, and mentioned that, in the absence of a disconnection framework, retailers at parent connection points may be exposed to time consuming and costly litigation to recoup losses.

The Commission is of the view that this is a commercial risk to be addressed by a parent retailer entering into a commercial relationship with a child retailer. This could include, for example, a requirement on the child retailer to provide credit support to cover a three month period. The AEMC acknowledges that this places some commercial risk on the parent retailer. However, the Commission considers it imperative that customers at child connection points are not at risk of having their electricity supply cut off through no fault of their own. Consequently the AEMC considers that the need for appropriate consumer protections outweighs any potential commercial risks that may emerge as a result for parent retailers. Parent retailers may have to assess such commercial risks when making a decision on whether to supply a parent connection point of an embedded network and what price to charge.

Accordingly, in the interest of embedded network customers, the Commission's final recommendation relating to the prohibition of disconnecting the parent connection point of an embedded network has not changed from its draft report position.

Retail price controls

Generally, the Commission considers that prices set through competitive market processes will deliver the best value to customers. Therefore, where possible, the best form of pricing protection for embedded network customers is to facilitate access to effective retail competition. Indeed, improving access to the competitive market for customers within embedded networks was a key driver for introducing the new framework, whereby all customers will have registered NMIs and have access to retail competition (to the extent available in the relevant jurisdiction).

By providing all embedded network customers with access to retail competition under the new framework, additional pricing protections such as the existing price cap of the local area retailer's standing offer are no longer required. Therefore, in relation to the new framework, the Commission's final recommendation is that no additional pricing protections are introduced. This is consistent with the current framework, whereby the prices charged to on-market customers in embedded networks are no longer capped at the local area retailer's standing offer price.

The Commission continues to be of the view that price conditions are appropriate in legacy embedded networks, in particular where workable competition may not emerge due to impediments to transitioning to the new framework. Therefore the existing provision under clause 152(4) of the NERR that permits the AER to impose conditions in relation to prices to be charged to exempt customers at residential premises by an exempt seller will remain.

The Commission recommends two amendments to Rule 152(4) to extend and clarify its application. First, the Commission recommends that the Rule is extended to apply to small business customers of exempt sellers, where the AER sees fit to impose the obligation. Currently the Rule only applies to residential customers of exempt sellers. The Commission considers that small business customers should also be afforded the same protections. This is consistent with the application of other customer protections to both residential and small business customers.

The Commission also recommends Rule 152(4) is amended to clarify that the AER may set a price that is lower than or equal to the standing offer of the local area retailer.[175] While the AER is currently permitted to set a price that is lower than the standing offer of the local area retailer, concerns have been raised with the AEMC that this power is not sufficiently clear and the Commission considers that this amendment will put the matter beyond doubt.

Although exempt sellers in certain embedded networks established prior to 1 December 2017 will be transitioned to the off-market retailer framework, as discussed in chapter 9 of this report, the respective exempt network service providers will remain exempt. Workable competition in some of these embedded networks may also be limited. Therefore, the Commission recommends that the AER be given a similar power to that which it has in relation to exempt sellers. With this power the AER will be able to publish a pricing schedule permitting them to set prices off-market retailers can charge, up to the standing offer price of the local retailer. This will be by way of an AER Notice.

175 See proposed drafting of Rule 152(4) of the NERR.

The Commission notes that from 1 July 2019 the DMO[176] and the VDO[177] will have the effect of capping the standing offer prices that retailers are required to offer to small customers in the NEM.

The Commission notes that the DMO only has effect in NSW, South Australia and South East Queensland. Retail prices in Tasmania, the ACT and Queensland outside of the South East continue to be regulated, and so the DMO does not apply.

Victoria has adopted its own arrangement in the form of the VDO to apply from 1 July 2019. The VDO is given effect through an amendment to the Victorian *Electricity Industry Act 2000*. The amendment abolishes standing offers and allows the VDO to be set through an Order in Council. The Victorian Essential Services Commission (ESC) may be directed to determine the price for the VDO for electricity retail services.

The application of the DMO and the VDO to embedded networks is a matter for the Commonwealth and the Victorian Governments, respectively.

4.6 Laws and Rules implementation

Extending the NERL and the NERR to embedded network customers

The proposed changes in the NERL include amending the definition of 'shared customer' to include customers of a retailer and an exempt network operator. An amendment to the definition of 'distributor' and 'retailer' will mean customers of embedded network service providers and retailers (both off-market retailers and NEM retailers) will also be 'shared customers' under the NERL. Retailers will also be required to obtain explicit informed consent from small customers when they transfer from exempt sellers.[178]

The proposed change to the definition of 'designated retailer' will deem the local embedded network retailer for an embedded network, the designated retailer for new small customers seeking a connection to the corresponding embedded network (customers connecting to child connection points within the embedded network). The 'local embedded network retailer' in turn is to be the registered retailer for an embedded network as proposed and registered with AEMO by the ENSP as part of its registration process under changes to Chapter 2 of the NER. Similarly, proposed amendments to part (b) of the definition of 'designated retailer' and the definition of 'financially responsible retailer' for a connection to premises will enable the previous retailer (whether it is a NEM retailer or off-market retailer) to be the designated retailer for a pre-existing connection point.

176 In the final report of its Retail Electricity Pricing Inquiry (REPI), the Australian Competition and Consumer Commission (ACCC) found that the standing offers were no longer working as intended, and that the AER should be given the power to set the maximum price for the default offer in each jurisdiction. On 30 April 2019 the AER published its final determination establishing the DMO for 1 July 2019 to 30 June 2020. The DMO is given effect through the *Competition and Consumer (Industry Code – Electricity Retail) Regulations* 2019.

177 The implementation of a Victorian Default Offer was recommended as part of the Independent Review into the Electricity and Gas Retail Markets, also known as the "Thwaites Review". The Thwaites Review found that there was evidence of market failure in the retail electricity and gas markets in Victoria, and recommended the introduction of a basic service offer. The Victorian Government agreed and tasked the Essential Services Commission with establishing the level of the VDO.

178 Final proposed amendment to s. 38(a) of the NERL.

A summary of proposed law and rule changes relating to disconnection and re-energisation, life-support, RoLR and planned outages is detailed below.

Notification of planned interruptions

Provisions in Part 5 of the NERR relating to assistance and cooperation that currently apply to retailers and distributors with shared customers are to apply to exempt embedded network service providers and retailers where they have shared customers, or where exempt ENSPs are required to comply as part of an exemption condition.[179] This includes requiring distributors to provide planned interruption notices to the distributor for the embedded network[180] and similarly requiring the retailer at the parent connection point to provide planned interruption notices to the distributor for each embedded network connected through the parent connection point.[181] ENSPs are to be the main provider of planned interruption notices to embedded network customers, and are proposed to be subject to information disclosure requirements in the NERR, including being required to inform a customer of a relevant distributor's contact information to field enquiries when relevant,[182] as well as inform distributors of an issue relating to that distributor's distribution network on receipt of an enquiry from a customer.[183]

Proposed amendments to the NERR include provisions regarding the notification of embedded network planned interruptions (an interruption of supply of energy at an embedded network due to a retailer planned interruption, or a distributor planned interruption at or above the parent connection point).[184]

ENSPs are proposed to be required to notify each affected customer in their network of embedded network planned interruptions, and also notify retailers of the embedded network customers, as soon as practicable after receiving notice.[185]

Life support requirements

The life support provisions are proposed to be modified to require retailers and distributors (including ENSPs), when notified by a customer that a premises requires life support equipment, to:

- advise those customers that an embedded network planned interruption to supply could occur[186]
- notify the relevant ENSP (and exempt network where relevant) of the presence of a life support customer

179 Final proposed new rules 93(1A) and (3) of the NERR.
180 Proposed new rule 99B(1) of the NERR.
181 Proposed new rule 99B(4) of the NERR.
182 Proposed new rule 100(3), (4) and 102A of the NERR.
183 Proposed new rule 102A of the NERR.
184 Proposed new definition of 'embedded network planned interruption' in rule 88 of the NERR.
185 Proposed new rule 90A of the NERR, and 99B(2).
186 Proposed new rules 124(1)(b) and 4(b) of the NERR.

- (only the ENSP)[187] notify distributors and the retailer at any parent connection point within an embedded network that there is a customer with life support equipment.

It is proposed that off-market retailers and distributors for life-support customers must give those customers notice of interruptions as soon as practicable after becoming aware of any proposed interruption, and in any event, within one business day of becoming aware of the proposed interruption. [188]

Retailer of last resort functions

Amendments to the RoLR provisions are proposed to apply to embedded networks specifically. These provisions include that the default ROLR for an off-market connection point is the financially responsible market participant retailer at the parent connection point unless that retailer becomes a failed retailer or has obtained a waiver from the AER from being the ROLR at the parent connection point (by demonstrating it does not supply small customers, and continues to demonstrate this on a quarterly basis). The default RoLR becomes the default ROLR as appointed by the AER at the parent connection point under Division 6 of the NERL.[189] The registration requirements for RoLRs are proposed not to apply to off-market connection points.

The default RoLR in an embedded network will also be required to appoint a metering coordinator and to assume contracts with pre-existing metering coordinators as between the previous failed retailers and those off-market connection points.[190]

Other NERL and NERR protections in embedded networks

A new provision in the NERL is recommended to explicitly prohibiting the use of a pre-payment meter system at a parent connection point.[191]

Proposed amendments to the NERR include permitting off-market retailers to vary their standing offer prices more often than once every 6 months, and exempting them from having to publish variations of their offers in newspapers.[192]

Parent connection points are proposed not to be able to be de-energised by a retailer.[193] It is proposed that if a distributor (whether an ENSP or ENO for an embedded network) has requested the de-energisation, and where there are multiple embedded networks within the one parent connection point, the consent of all ENSPs or ENOs within that network is required.[194] Distributors are to re-energise premises subject to any applicable distributor service standards.[195]

187 Final proposed rule 124(4A) of the NERR
188 Proposed new rules 124B(1)(f) and (2)(a)(vi) of the NERR.
189 Final proposed new s. 122A of the NERL on default RoLR provisions for off-market child connection points, and final proposed rule 135 of the NERR
190 Proposed amendments to s. 140 of the NERL.
191 Proposed new s. 56A of the NERL.
192 Proposed amendment to s. 23 of the NERL, proposed amendment to rule 3D of the NERR.
193 Proposed new rule 116(1A) of the NERR.
194 Proposed new rule 120(2A) of the NERR.
195 Proposed amendment to rule 122 of the NERR.

With regard to variations to standing offer prices, off-market retailers in embedded networks would be required to publish details of variations on their websites and provide details of the variation in the affected customer's next bills, but off-market retailers will not be required to publish a variation of their standing offer prices in newspapers.[196]

For legacy embedded networks that are exempt (and for future exempt sellers), the final proposed amendments include amending the Rules to provide clarity that the AER may set a price cap that is lower than or equal to the standing offer of the local area retailer.[197]

196 Final proposed rule 3D of the NERR

197 Final proposed rule 152(4) of the NERR

5 MARKET AND SYSTEM INTEGRATION

5.1 Introduction

The Commission recommended in the 2017 Review that the regulation of embedded networks should be elevated into the national framework and into the NEM. In part this would be achieved by extending the metering framework in the NER to new embedded networks, further integrating embedded networks into AEMO's market systems.[198]

The Commission considered that elevating embedded networks into the national framework would be in the long term interests of consumers consistent with energy objectives. Extending the NER metering framework and integrating embedded networks into the NEM are key to providing customers in embedded networks improved access to retail market competition and important consumer protections. These consumer protections include keeping customer metering data secure while also providing customers the rights and ability to easily access their electricity consumption data so that they can make more informed decisions about their energy consumption if they wish and to shop around different retailers for a better deal.

The remainder of this chapter sets out the current arrangements, draft recommendations, stakeholder views, the Commission's final analysis and recommendations and the associated law and rules implementation in relation to:

- extending the metering framework in the NER to new embedded networks
- the appropriate party to fulfil market interface functions in new and legacy embedded networks
- the arrangements for access to data in new embedded networks
- incorporating the new roles of ENSP and off-market retailer into the B2B framework
- allocating distribution loss factors for new embedded networks.

The remainder of this section provides an overview of each of these issues.

5.1.1 Extending the metering framework

Metering services are a key component of the electricity supply system. Electricity meters measure a customer's electricity consumption which is important for accurate billing and wholesale market settlement.

Technological innovation has meant that meters can now do much more than just measure the flow of electricity. The range of services that will be enabled by advanced meters will evolve over time as new benefits are identified and the technology develops. The additional services supported by advanced meters can enable:

- consumers to monitor, manage and adjust their use of electricity to suit their lifestyle and budget

198 For a detailed discussion on this recommendation see chapter 8 of AEMC, *Review into regulatory arrangements in embedded networks,* final report, 28 November 2017.

- retailers to offer different pricing options and more efficiently operate their businesses, by reducing costs for remote meter reading and connecting customers more quickly
- DNSPs to better manage the operation of their electricity networks with access to more detailed outage and power quality information
- third party services including energy management services.

Given the importance of metering as an enabling technology which links customers to the NEM, the Commission recommended, in the 2017 Review, extending the metering framework in Chapter 7 of the NER to new embedded networks.[199]

5.1.2 Market interface functions

Customers must be market facing to participate in the NEM and be able to choose and transfer to a retailer of choice. DNSPs perform the market interface functions for standard supply customers connected to their distribution network. These services link customers to the NEM systems that allow them to purchase electricity from NEM retailers. These services include providing NMIs to customers, maintaining NMI standing data[200](for example, a customer's address) within AEMO's MSATS and facilitating transfers between NEM retailers.

5.1.3 Arrangements for access to data

Access to accurate data of varying types is important for:

- settling the wholesale market by measuring consumption and generation so that NEM retailers can be billed and generators can be paid accurately by AEMO
- providing technical data to network businesses to assist them to manage their networks safely and efficiently
- providing customers accurate bills so that they do not overpay or underpay for the electricity they consume
- providing customers with the information they need to make informed choices about their energy consumption and choice of retailer.

As more embedded customers are likely to choose to go on-market with NEM retailers of their choice and be settled in the wholesale market, it is important to consider the access to data requirements of market participants, embedded network participants and embedded network customers. It is also important to consider the types of protections that are required so that customer data is only accessed by the customer or by a party authorised to do so.

199 AEMC, *Review into regulatory arrangements in embedded networks,* final report, 28 November 2017, p. 94.

200 NMI standing data is the information related to a customer's connection point. The information is about the physical location and properties of the meter, which includes the applicable network tariff and the consumer's consumption threshold bands. It does not include the customer's consumption data. Schedule 7.1 in the NER sets out what information must be contained in the meter register. The meter register is contained in MSATS which AEMO maintains. AEMO also maintains standing data for MSATS procedures. See https://www.aemo.com.au/-/media/Files/Electricity/NEM/Retail_and_Metering/Market_Settlement_And_Transfer_Solutions/2017/Standing-Data-for-MSATS.pdf

5.1.4 B2B framework

Chapter 7 of the NER sets out a framework for B2B communications. The B2B framework provides for a standard form of communications between businesses for certain services related to small customer meters.

The B2B framework which includes an electronic communications platform, the B2B e-hub, provided and operated by AEMO, contributes towards interoperability as participants only need to develop one set of processes in order to interact with other participants in the market.

5.1.5 Distribution loss factors

When energy is transferred from one location to another (i.e. a generator to a customer), some energy is lost in the network elements in the form of heat. Loss factors are used to scale either prices or energy quantities to account for losses in the network when transferring energy from one location to another. The purpose of distribution loss factors (DLFs) is to balance energy being injected into and energy being taken out of a distribution network.

5.2 Current arrangements

5.2.1 Extending the metering arrangements

Current arrangements in the NEM

Prior to the commencement of the *Competition in metering* Rule in 2017, DNSPs were generally responsible for the provision, installation and maintenance of a small customer's meter, as well as the collection and delivery of metering data.

In making the *Competition in metering* Rule, the Commission considered that metering services can be more effectively provided by entities that are operating competitively with each other. The rule therefore ended the effective monopoly of DNSPs over the provision of metering services for small customers by allowing any party that meets certain registration requirements to provide those metering services. This was achieved by transferring responsibilities for metering services to the 'metering coordinator'.[201]

Under the NER arrangements that now apply, NEM retailers are responsible for arranging metering services for small customers.[202] Retailers must appoint a metering coordinator for each of their small customer's connection points[203] and obtain a NMI for each meter.[204] In general, the retailer provides instructions to the metering coordinator for any metering work needed by the customer.

The metering coordinator has overall responsibility for all issues related to the metering installations for which it has been appointed. The metering coordinator appoints a metering

201 AEMC, National Electricity Amendment (*Expanding competition in metering and related services*), 26 November 2015.

202 This is part of their responsibility as the FRMP.

203 Clause 7.2.1(a) of the NER. Under clause 7.6.2(a)(3) of the NER a large customer may appoint its own metering coordinator.

204 Clause 7.8.2(c)(1) of the NER. This involves applying to the distributor for a NMI and providing it to the metering coordinator within five business days of receiving it.

provider for each connection point to provide, install and maintain the meter installation.[205] The metering coordinator also appoints a metering data provider who is responsible for the collection and processing of metering data.[206].

Any person can perform one or more of these three metering roles provided that they are registered and accredited by AEMO for the relevant roles. In practice, most metering coordinator businesses are also registered and accredited as metering providers and metering data providers.

NEM retailers may negotiate 'churn agreements' with a variety of metering businesses so that when they win a new customer from another retailer, they can access the metering services from the previous retailer's appointed metering coordinator. It will usually be in the incoming NEM retailer's interest not to have to replace the existing meter.

These arrangements, in combination with retail competition, act to put downward pressure on the cost of metering services while providing incentives to NEM retailers and metering businesses to provide the types of services that customers want.

Chapter 7 of the NER sets out the regulatory framework for the provision of metering services in the NEM. It outlines arrangements relating to matters including the:

- roles and responsibilities of a FRMP at a connection point (the FRMP is the NEM retailer for a small customer), metering coordinator and AEMO
- provision, installation, accuracy and maintenance of a metering installation
- collection and provision of metering data
- security of, and rights of access to, metering data and energy data
- the minimum services that all new and replacement meters must be capable of providing[207]
- obligations relating to managing access to services provided by advanced meters, including remote reconnection and disconnections services
- the appointment of, standards of performance and accreditation requirements of metering providers and metering data providers.

Current arrangements in embedded networks

Exempt network service providers are currently responsible under the AER's Network Exemption Guideline for metering installations and services in embedded networks.

Over subsequent versions, the AER's Network Exemption Guideline have included additional requirements to increase the standards of metering arrangements in embedded networks.

205 Clauses 7.3.2(a), 7.8.1(c) and 7.8.2(a) of the NER.

206 Clauses 7.3.2(d) and 7.10 of the NER

207 The minimum services specification, set out in Table S7.5.1.1 in the NER, includes the following services: remote disconnection service; remote reconnection service; remote on-demand meter read service; remote scheduled meter read service; metering installation inquiry service; and advanced meter reconfiguration service.

Under the current Network Exemption Guideline, the exempt network service provider must (with regard to metering):[208]

- comply with National Measurement Act 1960 (Cth) requirements[209] for electricity meters installed from 1 January 2013 and other applicable Australian standards
- for electricity meters installed from 1 December 2017, where a jurisdiction has adopted the AEMC Power of Choice reforms, comply with the minimum specification for advanced metering in schedule 7.5 of the NER.

However, the Network Exemption Guideline does not require the same reading, testing and inspection standards as the NER. For example, exempt network service providers are only required under the Network Exemption Guideline to test meters for accuracy in the event of a billing dispute.[210]

NEM retailers selling to on-market child embedded network customers need access to child embedded customer metering which is both NEM compliant and compatible with the parent meter for the purpose of the settlement by difference process. The lesser requirements applicable to exempt network service providers regarding metering services in embedded networks means that NEM retailers in many cases will need to replace a meter in order to take an embedded network customer on-market. This cost can make it uneconomic for a NEM retailer to make an offer to an embedded network customer unless the customer is willing to pay for the meter up-front. This cost can be a disincentive for embedded network customers wishing to switch to a competitive market offer.

The lesser requirements placed on exempt network service providers, including the shortcomings in the compliance and enforcement framework discussed in chapter 2, also raise consumer protection issues for customers in embedded networks relating to safety and the accuracy of metering and billing in embedded networks.

5.2.2 Market interface functions

As described in section 5.1.2, DNSPs perform the market interface functions for standard supply customers connected to their distribution network.

The *Embedded Networks* final rule determination found the NER did not allocate responsibility for performing the market interface functions required to link embedded network customers to retailers in the national electricity market systems.[211] This rule change addressed this barrier by creating a new accredited provider role of the ENM, who is to perform the market interface functions that link embedded network customers with the national electricity market systems.

The rule set out the detailed functions, responsibilities, and governance arrangements for ENMs and specified the circumstances under which exempt network service providers are

208 Section 2.1.1 of the Network Exemption Guideline as accessed on March 2018 from https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/network-service-provider-registration-exemption-guideline-march-2018.

209 For further information, see www.measurement.gov.au.

210 Clause 4.2.2.5 of the network exemption guideline, version 6 dated March 2018.

211 AEMC, National Electricity Amendment (Embedded Networks) Rule 2015, 17 December 2015.

required to appoint an ENM, or are otherwise exempt from this requirement. Where an embedded network customer goes on market, an ENM has clear responsibilities to perform the market interface functions, including assigning the customer a NMI.[212] The Rule also triggered changes in the relevant AEMO procedures and the AER's Network Exemption Guideline.

Since the *Embedded Networks* Rule commenced on 1 December 2017, 26 ENMs have been accredited by AEMO as at 18 April 2019.[213]

5.2.3 Arrangements for access to data

Current arrangements for access to data in the NEM

Current arrangements for accessing energy data and metering data have been established to enable parties to obtain the metrology related data they require to support their market and settlement functions.

The current arrangements also provide rights to retail customers, or their authorised representative, to receive metering data, with the objective of providing retail customers the ability to make more informed decisions about their electricity consumption, including making decisions on switching retailers or energy plans.

Types of data referred to in the NERR and NER

Different types of data are referred to in the NERR and NER including: energy data; metering data; NMI standing data; and settlements ready data.

Energy data is data held in the metering installation relating to a consumer's measured consumption of electricity at their premises.[214] Once energy data is collected from the metering installation it becomes metering data.[215]

Settlements ready data refers to metering data that has been collected and validated by AEMO and used for billing purposes.[216]

Billing data refers to the electricity or gas usage data, which may be estimated in certain instances,[217] and which is used to calculate charges.

NMI standing data is data related to a customer's connection point. The data includes information relating to (amongst other things) the physical location and properties of a customer's meter and the customer's applicable network tariff. It does not include the customer's consumption data.

Who can access data under the NER?

212 Chapter 7, clause 7.8.2(ea) of the NER as introduced as part of the *Embedded Networks* Rule.

213 For a list of accredited ENMs, see: https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Retail-and-metering/Accreditation-and-Registration.

214 See the definitions of 'energy data', 'accumulated energy data' and 'interval energy data' in Chapter 10 of the NER.

215 See the definitions of 'metering data', 'accumulated metering data' and 'interval metering data' in Chapter 10 of the NER.

216 Chapter 10 definition of 'settlements ready data' in the NER.

217 Rule 9.3 of the NERR.

The parties that may currently access or receive metering data, settlements ready data, NMI standing data and data from the metering register for a metering installation are set out in clause 7.15.5(c) of the NER and are (in summary):

- Registered participants with a financial interest in the metering installation or the energy measured by that metering installation which includes a customer's NEM retailer or previous retailer that requires data for a final bill
- the metering coordinator (or previous metering coordinator in certain circumstances)
- the metering provider
- the metering data provider (or previous metering data provider in certain circumstances)
- AEMO and its authorised agents
- for metering installations at child connection points, an ENM
- the AER or jurisdictional regulators in certain circumstances.

Certain additional parties may access or receive metering data, including:[218]

- a retail customer (including both small and large customers under the NER) or customer authorised representative in certain circumstances
- a person with the small customer's consent
- a large customer or customer authorised representative in respect of the large customer's connection point
- the energy ombudsman in certain circumstances
- exempt network service providers in relation to child connection point metering installations on their network.

In addition, the NER provides that a retailer (including a retailer who is not the FRMP) may access and receive NMI standing data.

Protections provided by the NER and other relevant laws

The NER provides that (among other things) energy data, metering data, NMI standing data and information in the metering register and passwords are confidential and must be treated as confidential information in accordance with the rules.[219] However, metering data may be disclosed, used or reproduced with the consent of the NEM retail customer.[220]

The NER also places obligations on metering coordinators and metering data providers to manage the access of authorised parties to services provided by advanced meters. This means no one has access to a consumer's meter, the data it contains or the services it can provide unless the person seeking access:[221]

- has the customer's consent or

218 Clause 7.15.5(d) of the NER.

219 Clause 7.15.1 of the NER.

220 For a more detailed explanation of how clause 7.15.1 and clause 8.62(c) of the NER interact such that metering data may be disclosed, used or reproduced with the consent of the retail customer see AEMC, *Final Determination Expanding competition in metering and related services*, 2015, p. 256.

221 Clause 7.15.4 of the NER.

- is accessing the service, including data services, for a purpose explicitly allowed under the rules e.g. a NEM retailer seeking to disconnect a move-out customer.

These obligations are civil penalty provisions with financial penalties for non-compliance.

AEMO procedures

The NER also requires AEMO to establish and maintain a number of detailed procedures to facilitate access to data and the provision of data including:

- metrology procedures[222]
- metering data provider service level procedures
- metering data provision procedures.

Current arrangements for access to data in embedded networks

Given embedded networks have generally operated as 'closed systems' and only interacted with the NEM at the parent connection point, there have been limited requirements placed on exempt network service providers regarding access to data. The data from meters behind the parent connection point has not been significant to AEMO or other market participants.

There are no specific requirements setting out the parties that should have access to data or the security of that data. There are only two broad requirements in the Network Exemption Guideline relating to the physical access to a meter including:

- that all meters installed in an exempt distribution network must be in an accessible location with safe, convenient access at no cost to the customer to facilitate meter reading by the network operator and the customer or their respective agents and, where relevant, to permit meter testing and maintenance
- Where security or safety considerations result in limited access to metering, local arrangements must be made that allow customers or their agents ready access to metering on request and at no cost to the customer.

5.2.4 B2B framework

Chapter 7 of the NER sets out a framework for B2B communications including arrangements for the B2B e-hub, accreditation of B2B participants, the content of B2B procedures, the change process for B2B procedures and the Information Exchange Committee (IEC).

The IEC is responsible, amongst other things, for managing the ongoing development of B2B procedures which prescribe the content of, the processes for, and the information to be provided to support, B2B communications. The IEC membership consists of:

- one DNSP member (elected by DNSPs)
- one retailer member (elected by retailers and local retailers)
- one metering member (elected by metering coordinators, metering providers and metering data providers)
- one third party B2B participant member (elected by third party B2B participants)

222 Clause 7.16.3 of the NER.

- one consumer member (appointed by AEMO)
- at least two, and up to four, discretionary members (appointed by AEMO).

5.2.5 Distribution loss factors

Current arrangements in the NEM

The NER defines distribution losses as the "electrical energy losses incurred in the conveyance of electricity over a distribution network"[223] and describes DLFs as notionally referring to "the average electrical energy losses for electricity transmitted on a distribution network between a distribution network connection point and a transmission network connection point or virtual transmission node for the financial year in which they apply".

The NER requires that DLFs must be determined by a DNSP for all connection points on its distribution network.[224]

DLFs are determined on a site specific basis for connection points for:[225]

- an embedded generator with actual generation of more than 10 MW, based on the most recent data available for a consecutive 12 month period
- a load or a collection of loads which, in total, is more than 10 MW peak demand or 40 GWh per annum, based on the most recent data available for a consecutive 12 month period
- a connection point for a DNSP
- a connection point between two or more distribution networks.

For smaller loads, DLFs are calculated in accordance with the methodology determined by the AER or the DNSP using predefined criteria set out in the NER.[226] Where a methodology has not been published by the AER for the determination of DLFs, the NER allows every DNSP to have a different methodology, provided the pre-defined criteria are met.

DNSPs must submit DLF calculations to the AER for approval before their DLFs are published by AEMO.[227]

This process occurs every year and the DLFs are provided to AEMO for publication by 1 April for the next financial year.

For historical reasons, DLF calculations are performed by each distributor using a methodology that the LNSP has developed for their own use in their network. Although there is no standard methodology which applies across the NEM, distributors in a state generally share a common approach in that state.[228] However, states differ widely in their approaches.[229]

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223 Clause 3.6.3 of the NER.

224 This must be done either individually, for all connection points assigned to a single transmission network connection point under clause 3.6.3(c), or collectively, for all connection points assigned to a transmission network connection point or a virtual transmission node and a particular distribution network connection point class under clause 3.6.3(d) of the NER.

225 Clause 3.6.3(b)(2)(i) of the NER.

226 Clause 3.6.3(h) of the NER sets out criteria for calculating DLFs.

227 Clause 3.6.3(i) of the NER.

228 AER, *Electricity Network Service Provider - Registration Exemption Guideline*, March 2018, p. 57.

Current arrangements in embedded networks

The AER is of the view that network losses in a small exempt network will generally not be of sufficient magnitude to warrant calculating a DLF for child connection points within that network.[230] To avoid imposing additional costs on exempt networks the AER applies a policy that the losses within the exempt network can be ignored for each individual child connection point.[231] This policy means the exempt network service provider must absorb the cost of losses in the exempt network.

The AER refers to this as the 'standard loss factor approach'. Under this approach, in exempt networks which constitute a 'small load' and which serve a number of smaller loads at child connection points, the DLF of each child connection point is the published DLF that would be applied by the LNSP at the metered point of connection if the DNSP was serving the customer directly.

However, if this DLF cannot be readily ascertained, it is the DLF otherwise applicable to the connection of the exempt network to the local distribution network, i.e. at the parent connection point.[232]

If the combined loading of an exempt network results in that network becoming a significant load or, if the network contains a significant generation source,[233] the AER requires that the exempt network uses the methodology published by the relevant DNSP for a site-specific load to calculate the DLF at the child connection point.

5.3 Draft report

5.3.1 Extending the metering framework

In the 2017 Review, the Commission recommended that the authorised on-selling retailer (which under the proposed framework is referred to as an off-market retailer) appoint a metering coordinator to provide metering services at off-market child connection points within each embedded network to which the proposed registration framework applies.

As part of the draft (and final) proposed framework, the Commission recommended a new category of retailer, an off-market retailer, be established in the NERL and the NERR. In embedded networks, the off-market retailer will be the party which is purchasing electricity at a parent connection point from a NEM retailer and on-selling that electricity to customers at off-market child connection points. Consistent with its recommendation in the 2017 Review, the Commission recommended the off-market retailer be the party responsible for appointing a metering coordinator at its off-market connection points.

Application of the metering framework in Chapter 7 of the NER to embedded networks was discussed during the round table discussions at the AEMC's stakeholder workshop on 23 October 2018. Embedded network businesses at the round table questioned the requirement

229 Ibid.
230 AER, *Electricity Network Service Provider - Registration Exemption Guideline*, March 2018, p. 57.
231 Ibid.
232 Ibid. p. 58.
233 As described in clause 3.6.3(b)(2)(i) of the NER.

to adopt NEM roles for the management of metering installations. Some businesses were of the view that ENSPs should continue to be responsible for the provision and maintenance of metering in embedded networks and that there should be restrictions placed on meter churn.

However, in the draft report the Commission remained of the view that extending the metering framework in Chapter 7 of the NER would promote compliance with NEM metering requirements and remove key barriers to retail competition for embedded network customers. The Commission considered that it is in the interests of consumers that there be consistency in the regulatory approach to metering between on-market and off-market customers. The Commission also considered that a number of benefits would accrue to embedded network customers from having NEM-compliant metering, including accurate billing, security requirements in relation to data, rights to access data and the ability to more readily switch to a NEM retailer.

The Commission also considered:

- it is appropriate that metering services are provided by parties that are registered and accredited with AEMO
- requiring the appointment of a metering coordinator removes key barriers to embedded networks customers being able to access retail market competition including by reducing transaction costs for retailers and mitigating the need for a retailer to negotiate with an ENSP

In summary, the Commission recommended that the off-market retailer appoint a metering coordinator to provide metering services at off-market connection points within each embedded network to which the proposed registration framework applies. The metering coordinator in turn would have an obligation to appoint a metering provider and metering data provider.

Metering coordinators, metering providers and metering data providers would have the same responsibilities at an off-market child connection point as they would have in relation to a standard supply customer's connection point or an on-market child connection point.

These arrangements would not prevent the ENSP and off-market retailer (which will often be the same party in any case) from cooperating to appoint a metering coordinator that provides the services each require in relation to retail and network services within the embedded network.

In the draft report, the Commission noted that metering arrangements in legacy networks would be considered as part of the final report.

5.3.2 Market interface functions

New embedded networks

The 2017 Review recommended that ENSPs be required to appoint an ENM for all new embedded networks to perform the market interface functions for embedded network customers.[234]

234 AEMC, *Review of regulatory arrangements for embedded networks*, final report, 28 November 2017, pp. 95-96.

In its draft report, the Commission considered the allocation of roles and responsibilities further and concluded that it would reduce regulatory complexity to subsume the market interface functions into the new role of the ENSP (and not require ENSPs to appoint an ENM as a requirement under the proposed rules). This would not prevent the ENSP from sub-contracting these functions. However, it would be accountable for the delivery of these services under the NER.

As discussed in chapter 7 of the 2017 Review, in order for customers to benefit from competition they require access to competitive market offers without the need to incur substantial search costs, and the ability to readily move from one provider to another. Registering and maintaining information on off-market connection points in MSATS makes these customers visible to NEM retailers and provides the information these retailers require to make an offer to a customer and then request this customer be transferred. This is achieved through registering a NMI for a connection point in MSATS and maintaining NMI standing data for the connection point in MSATS.

Consistent with the recommendations made in the 2017 Review, the Commission's draft recommendations were that for new embedded networks, an ENSP be required to:

- apply to AEMO for NMIs for all child connection points
- register the NMI for connection points with AEMO (i.e. through MSATS)
- maintain information in the metering register (i.e. NMI standing data kept in MSATS).

Legacy and new exempt embedded networks

In creating the role of the ENM, the Embedded Networks Rule made in 2015 addressed a specific barrier to customers going on-market. In its draft report for this review, the Commission recommended the role of ENM be retained to provide market interface services to legacy embedded networks.

However, as discussed above, the Commission found a number of other barriers and practical impediments to customers going on-market, including that off-market embedded network customers are not discoverable in MSATS. This means that NEM retailers cannot request a customer transfer before an ENM is appointed, and a NMI is allocated and registered in MSATS for a customer.

The Commission recommended that the above proposed requirements on ENSPs in new embedded networks relating to applying to AEMO for NMIs, registering NMIs and maintaining NMI standing data continue to be placed on the existing role of ENM in legacy embedded networks in certain circumstances.[235] ENMs are required to be appointed by exempt ENSPs unless the corresponding embedded network is located in a participating jurisdiction where a right to a choice of retailer is not available, or if the AER determines that this is not necessary.

235 These requirements were introduced as part of the *Embedded Networks* Rule.

5.3.3 Arrangements for access to data

As embedded networks become integrated into NEM systems and processes and access to retail market competition becomes possible, the requirements under the exemption framework are insufficient to ensure that only authorised parties have access to data and that customers have appropriate rights to access their electricity consumption data. As such, in its draft report the Commission recommended the access to data arrangements in the NER and NERR be extended to embedded network participants including the ENSP and the off-market retailer.[236]

The Commission considered that extending the access to data arrangements in the NER and NERR to embedded networks would support retail market competition by providing:

- customers access to their data to be able to make informed decisions on the best retail offers for their circumstances
- retailers access to NMI standing data so that they have the necessary information, including network tariffs, to embedded network customers
- facilitating the provision of metering for network billing of on-market customers.

The access to data arrangements would also provide customers in embedded networks the same protections regarding data security and rights to access their data.

The NER provides that (among other things) energy data, metering data, NMI standing data and information in the metering register and passwords are confidential and must be treated as confidential information in accordance with the rules.[237] However, metering data may be disclosed, used or reproduced with the consent of the retail customer.[238]

A key responsibility of the metering coordinator is to ensure only parties authorised to access services from advanced meters under the NER are provided access to these services. The metering coordinator has obligations under the NER in relation to managing access to, and security of, small customer metering installations, services provided by the metering installation and energy data held in the metering installation.[239]

Under the NERR, small retail customers or their customer authorised representative may obtain up to 2 years of historical billing data from their NEM retailer on request, at no charge, up to four times in any 12 month period.[240] NEM retailers and DNSPs are required to comply with minimum requirements under the NER when responding to requests for electricity consumption data from customers or parties authorised by customers so that data is provided in a timely manner, in a standard, understandable format and at a reasonable cost.

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236 It should be noted the current access to data arrangements under Chapter 7 of the NER already provide some flexibility which will permit off-market retailers, embedded network and metering businesses to negotiate alternative arrangements regarding the provision of data.

237 Clause 7.15.1 of the NER.

238 For a more detailed explanation of how clauses 7.15.1 and 8.6.2(c) of the NER interact such that metering data may be disclosed, used or reproduced with the consent of the retail customer see AEMC, *Expanding competition in metering and related services*, final determination, 2015, p. 256.

239 See clauses 7.15.4(a) and (b) of the NER.

240 Rules 28 and 56A of the NERR.

5.3.4 B2B framework

As noted previously, the B2B framework facilitates interactions between participants in the market. In its draft report, the Commission recommended that ENSPs and off-market retailers become B2B parties under the framework and be permitted to use B2B communications if they acquire accreditation with AEMO. This would not prevent ENSPs and off-market retailers from agreeing with other parties, including each other, to alternative communication methods.

With respect to membership of the IEC, the Commission recommended clarifying that 'distribution network service provider' refers to a regulated DNSP under clause 7.17.6(b)(1) of the NER. This would have the effect of retaining DNSPs' existing place for one member on the IEC. However, the Commission anticipated that ENSPs may desire input to the ongoing development of B2B procedures.

The inclusion of one third party member, discretionary members and independent members provides some flexibility in the membership. These positions can be used to bring particular desirable expertise into the decision-making process and also allows the membership to adapt to changing market conditions without the need for a rule change.

This flexibility in the framework could be utilised to provide ENSPs a place on the IEC. As such, the Commission recommended that as part of the implementation of the updated framework, AEMO consider appointing an ENSP as a discretionary member on the IEC.

5.3.5 Distribution loss factors

As the AER observes in the Network Exemption Guideline, network losses in embedded networks will generally be small.[241] For example, the effect of losses in an embedded network may be less than the normal metering errors that occur. In its draft report the Commission agreed that in embedded networks under a certain size threshold the losses are not of sufficient magnitude to warrant calculating a DLF for child connection points in an embedded network.

The Commission therefore recommended implementing the AER's current standard loss factor approach to DLFs as a default in embedded networks under the current threshold set in the NER i.e. where there is an embedded generator with actual generation of less than 10MW or a load or a collection of loads which, in total, is less than 10MW peak demand or 40 GWh per annum.[242] However, the Commission also recommended providing for the AER to develop and publish a methodology for the determination of DLFs in these embedded networks if it considers it is warranted.

It is currently rare for an embedded network to exceed the threshold set in the NER. However, this may change in the future if, for example, embedded networks are established to serve large precincts. In embedded networks that exceed the threshold set in the NER[243] and have an embedded generator with actual generation of more than 10 MW or a load or a

241 AER, *Electricity Network Service Provider - Registration Exemption Guideline*, March 2018, p. 57.
242 Clause 3.6.3(b)(2)(i) of the NER.
243 Clause 3.6.3(b)(2)(i) of the NER.

collection of loads which, in total, is more than 10 MW peak demand or 40 GWh per annum, the Commission recommended a site–specific DLF for those loads or generators must be calculated in accordance with:

- a methodology developed, published and maintained by the AER for the determination of DLFs, or
- where the AER has not published a methodology, the methodology published for this purpose by the relevant DNSP.

Under the draft proposal, the AER would be required to create a guideline to assist ENSPs calculate, apply and comply with DLF calculation provisions in the NER as applicable to embedded networks.[244]

5.4 Stakeholder views

5.4.1 Extending the metering framework

AGL, Alinta, ERM, Energy Options Australia, EWON, Origin Energy and Powermetric all supported the proposal to extend the current NEM metering framework to embedded networks.[245] Generally this was on the basis that this approach would remove a barrier to retail competition and would also support accurate meter readings for billing and market settlement. Powermetric also noted the approach would remove an existing discrepancy between off-market and on-market customers and improve maintenance, testing and inspection regimes.

Energy Queensland Ltd was concerned that extending the metering framework to embedded networks could add an extra level of complexity, particularly where the roles of metering coordinator, metering provider and meter data provider do not currently exist in embedded networks.[246] They also suggested that to limit compliance costs, large customers should be able to appoint their own metering coordinator while off-market retailers should be responsible for appointing metering coordinators for small customers.[247]

Active Utilities supported the requirement to install NEM-compliant metering, noting that Active Utilities already installs NEM-compliant metering in greenfield embedded networks.[248] However, they considered that ENSPs should continue to be responsible for the provision and maintenance of metering in embedded networks. As such, they considered the appointment of a MC, MP and MDP to be unnecessary.[249]

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244 Proposed new clause 3.6.2B of the NER on distribution losses on embedded networks.

245 Submissions to the draft report: AGL, p. 3; Alinta, p. 4; ERM, p. 3; Energy Options Australia, p. 4; EWON, p. 1; Origin Energy, p. 3; Powermetric, p. 1.

246 Energy Queensland Ltd's submission to the draft report, p. 7.

247 Under Chapter 7 of the NER, large customers are permitted to appoint their own metering coordinator. The FRMP at a connection point is required to appoint a metering coordinator for that connection point other than where a large customer has appointed its own metering coordinator. The same arrangements will apply in the context of embedded networks. That is, a large, off-market customer will be permitted to appoint their own metering coordinator. However, if they do not do so, the off-market retailer must appoint a metering coordinator at that connection point.

248 Active Utilities' submission to the draft report, p. 5. Active Utilities noted that NEM compliant meters are being replaced by NEM retailers in favour of their own systems and infrastructure.

249 Ibid, p. 4.

Local Planning Energy considered the introduction of the MC role would increase the cost of implementing the embedded network and is unnecessary if the embedded network is well managed.[250] They further considered the ENSP should have an obligation to maintain private metering.

Although the Commission did not address metering in legacy embedded networks in the draft report, a number of stakeholders also commented on the potential application of Chapter 7 of the NER. These comments are noted and addressed in chapter 9 of this report.

5.4.2 Market interface functions

AGL, ERM, EWON, Momentum Energy, Origin and Simply Energy supported improving the visibility of child connection points in AEMO's systems, allowing discoverability.[251] Simply Energy noted that this would improve customer service, as currently embedded network customers cannot be identified in MSATS.

AusNet Services also supported requiring all embedded network customers (where required) to have NMIs.[252] As well as improving retail competition, they noted that it would provide DNSPs with the ability to identify if a customer is a DNSP customer or not by way of NMI information.

Origin Energy recommended that the status of the NMI for a meter at a child connection point should be identifiable as being in an embedded network. They considered this important to help inform a retailer's offer.[253] Origin Energy also recommended the details of a customer who has accepted a market offer should be visible to the off-market retailer, since this option currently exists for market retailers. Related to this, Origin Energy also considered that customers should be informed of their status as an embedded network customer at the time they receive a market offer, and that the off-market retailer should have a reasonable opportunity to provide an alternative offer to their customers.[254]

Our Energy considered the requirement to acquire market interface capability is costly, particularly where all customers choose to remain off market.[255] They considered that new embedded networks should not be required to appoint an ENM, at least until a minimum threshold, such as 30 customers, is met. They further considered that the need to acquire market interface capability should not be required until a customer wishes to appoint a NEM retailer, and that there should be no requirement for the child NMIs to be discoverable in MSATS.

Active Utilities considered that ENSPs should not have to ensure that all connection points have an assigned NMI, or that all child connection points should be registered with AEMO and have information maintained in AEMO's systems.[256] Active Utilities accepts that an

250 Local Planning Energy's submission to the draft report, p. 2.
251 Submissions to the draft report: AGL, p. 3; ERM, p. 3; EWON, p. 1. Momentum Energy, p. 2; Origin, p. 4; Simply Energy, p. 3.
252 AusNet Services' submission to the draft report, p. 2.
253 Origin Energy's submission to the draft report, p, 4.
254 Origin Energy's supplementary submission to the draft report, p. 1.
255 Our Energy's submission to the draft report, pp. 7-8.
256 Active Utilities' submission to the draft report, p. 4.

inability for NMI standing data to be obtained may prevent NEM retailers from making offers to embedded network customers. However, they considered that the biggest barrier for retailers is the lack of knowledge of the process for transferring embedded network customers on-market. They considered this could be addressed through training.[257]

Energy and Plant Management does not see the value of making child meters visible to the market due to the costs involved in upgrading metering.[258]

Plus ES considered the market interface role currently provided by ENOs remains separate from the ENSP role.[259]

5.4.3 Arrangements for access to data

ERM agreed that providing embedded network customers with access to their metering data by extending the current arrangements would have positive outcomes for these customers.[260] ERM noted that customers would be empowered to make informed choices about their energy use, as well as providing them with opportunities to seek energy management solutions and innovative products that may improve their energy productivity and alleviate costs pressures. Similarly, Alinta supported extending the access to data arrangements to embedded network customers.[261]

Local Planning Energy considered the ENSP should have an obligation to private access to data as well as maintain private metering.[262]

5.4.4 B2B framework

Many of the submissions to the draft report referred to the use of the B2B framework specifically in the context of network billing. These comments are noted and addressed in chapter 6 of this report.

Simply Energy considered that the development of standardised B2B procedures, similar to those between retailers and DNSPs would minimise technical and procedural barriers for retailers.[263] Simply Energy noted that the most common process used between retailers and DNSPs is in relation to customers moving in and out of properties.

Origin Energy agreed that ENSPs and off-market retailers ought to become B2B parties under the B2B framework and be permitted to use B2B communications if they acquire accreditation with AEMO.[264]

Living Utilities agreed with the adoption of AEMO's B2B framework on the basis that it would avoid retailers mandating alternative methods for communication.[265]

257 Active Utilities' submission to the draft report, p. 6.
258 Energy and Plant Management's submission to the draft report, p, 1.
259 Plus ES' submission to the draft report, p. 2.
260 ERM's submission to the draft report, p. 3.
261 Alinta's submission to the draft report, p. 4.
262 Local Planning Energy's submission to the draft report, p. 2.
263 Simply Energy's submission to the draft report, p. 2.
264 Origin Energy's submission to the draft report, p. 4.
265 Living Utilities' submission to the draft report, p. 16.

5.4.5 Distribution loss factors

Alinta Energy, Origin Energy, Living Utilities and Our Energy supported the Commission's proposed draft report in relation to the application of DLFs.[266] where embedded networks are of sufficient scale to justify the application of a methodology determined by the AER.

The AER was of the view that it should not be mandatory for them to publish a guideline providing guidance on approving DLF methodologies.[267] The AER stated that they have previously chosen not to publish a guideline for a number of reasons, including that different DLF methodologies are preferred for different jurisdictions. For this reason, the AER considered that the proposed clause 3.6.2B(2) be amended to state the AER *may* publish a guideline. The AER also suggested that the new rule be clarified to specify that ENSPs only need to determine site specific DLFs within their respective networks.

5.5 Final analysis and recommendations

This section sets out the Commission's final analysis and recommendations and a response to issues raised in submissions.

5.5.1 Overview of final recommendations

The final recommendations largely reflect the draft recommendations. The key aspects of the final proposal are:

- In respect of extending the metering framework to embedded networks:
  - The metering framework set out in Chapter 7 of the NER will apply to embedded networks by requiring the off-market retailer to appoint a metering coordinator, other than where a large customer at an off-market child connection point has appointed their own metering coordinator. In turn, as required under Chapter 7 of the NER, the metering coordinator will be required to appoint a metering provider and metering data provider.
  - Metering coordinators, metering providers and metering data providers will have the same responsibilities at an off-market child connection point as they would have in relation to a standard supply customer's connection point or an on-market child connection point.
- In respect of the market interface functions for embedded networks:
  - ENSPs be required to: apply to AEMO for NMIs for all child connection points; register the NMI for connection points with AEMO through MSATS; and maintain information in the metering register.
  - In respect of legacy and new exempt embedded networks, the ENM will continue to be responsible for the above functions.
- In respect of the arrangements for access to data:

266 Submissions to the draft report: Alinta Energy, p. 4; Origin Energy, p. 4; Living Utilities, p. 16; and Our Energy, p. 7.

267 AER's submission to the draft report, p. 7.

    - Access to data arrangements in the NER and NERR be extended to embedded network participants including the ENSP and the off-market retailer
- In respect of the use of the B2B framework:
    - ENSPs and off-market retailers should become B2B parties and be permitted to use B2B communications if they acquire accreditation with AEMO
    - the definition of 'distribution network service provider' should be clarified under clause 7.17.6(b)(1) of the NER to refer to regulated DNSPs
    - AEMO should consider appointing an ENSP as a discretionary member on the IEC.
- In respect of distribution loss factors:
    - the AER's current standard loss factor approach to DLFs will apply as a default in embedded networks under the current threshold set in the NER, i.e. where there is an embedded generator with actual generation of less than 10MW or a load or a collection of loads which, in total, is less than 10MW peak demand or 40 GWh per annum
    - for embedded networks above this threshold, a site-specific DLF for loads or generators must be calculated in accordance with a methodology developed, published and maintained by the AER for the determination of DLFs or, where the AER has not published a methodology, the methodology published for this purpose by the relevant DNSP
    - The AER will be *permitted* to create a guideline to assist ENSPs calculate, apply and comply with DLF calculation provisions in the NER as applicable to embedded networks. This is a small change from the draft report, which *required* the AER to create such a guideline.

5.5.2 Extending the metering framework

The Commission continues to consider that Chapter 7 of the NER should apply to new embedded networks. The application of Chapter 7 of the NER to legacy embedded networks is discussed in chapter 9 of this report.

The Commission acknowledges that some stakeholders considered the ENSP should continue to be responsible for metering in embedded networks and, as such, the appointment of a metering coordinator should not be required.

However, the Commission continues to be of the view that off-market customers should also be able to benefit from the NEM arrangements set out in Chapter 7 of the NER, including:

- the application of the same reading, testing and inspection standards which will result in more accurate bills for customers
- metering installation security requirements and restrictions on access to data will apply which protect the security of a customer's energy and metering data
- consumers will have rights and processes to access information about their energy consumption to assist them to manage their electricity use if they wish or shop around for a better deal

- consumers will be more readily able to switch between off-market retailers to NEM retailers.

Applying Chapter 7 of the NER to off-market customers will also provide consistency in the regulatory arrangements for both on-market and off-market customers within an embedded network, as well as consistency with standard supply customers.

The roles of metering coordinator, metering provider and metering data provider are highly specialised roles which require registration and accreditation with AEMO. Requiring these services to be provided by those registered and accredited with AEMO means only appropriately qualified parties can perform these important roles. The Commission continues to hold the view that the additional costs incurred in appointing a metering coordinator, metering provider and metering data provider will be outweighed by the benefits to customers described above.

Should ENSPs wish to provide metering services they could choose to apply for registration as a metering coordinator and/or accreditation as a metering provider and metering data provider.

Reallocating responsibility for metering from the ENSP to the metering coordinator also removes key barriers to embedded networks customers being able to access retail market competition. Appointing a metering coordinator to all child connection points means that:

- NEM retailers can be confident that the metering installation will be NEM compliant
- NEM retailers can negotiate agreements for metering services from metering coordinators serving embedded networks. This mitigates the need for a retailer to negotiate with an ENSP for access to metering in circumstances where the ENSP may have an incentive to frustrate competition and maintain the end user's connection as an off-market connection
- transaction costs for retailers will significantly reduce, including by facilitating the use of existing churn agreements with metering coordinators and reducing the number of potential counter-parties with whom a retailer would be required to negotiate in order to supply electricity at a child connection point.

5.5.3 Market interface functions

The Commission continues to consider that for new embedded networks the ENSP should be responsible for the market interface functions. This includes:

- applying to AEMO for NMIs for all child connection points
- registering the NMI for connection points with AEMO (i.e. through MSATS)
- maintaining information in the metering register (i.e. NMI standing data kept in MSATS).

Where relevant in legacy and new exempt embedded networks, the ENM will be required to perform these functions. The trigger for an ENM to be appointed by an exempt network service provider is where a customer wishes to go on-market or where an embedded network has at least 30 customers.

When an ENM is appointed, the Commission proposes that the ENM will be required to apply to AEMO for NMIs for all child connection points, irrespective of whether a connection point is on-market or off-market.

While some stakeholders query whether all child connection points should have NMIs assigned, the majority of stakeholders supported this approach on the basis that it would remove a current barrier to retailer competition. By allowing all NMIs to be discoverable in MSATS, retailers have the information they need to provide an offer to embedded network customers. At least one DNSP also explicitly supported this approach on the basis that it would be easier for DNSPs to identify whether a customer is a DNSP customer or not, allowing them to improve their customer service.

The Commission continues to consider that providing child connection points with NMIs is an essential step in improving customers' access to retail competition.

Origin Energy provided a number of comments in relation to what customer information should be visible in MSATS. The Commission agrees that the status of the NMI for a child connection point should be identifiable as being in an embedded network. However, this is a matter for AEMO's MSATS procedures. Origin Energy also proposed that when a NEM retailer approaches a customer, the retailer should be required to inform the customer that they are in an embedded network and that the off-market retailer should have access to any market offer. Again, this latter issue is a matter for AEMO's MSATS procedures. In relation to information that NEM retailers must provide customers, the Commission does not consider that any additional information provision requirements should be placed on NEM retailers for embedded network customers over and above those for standard supply customers. It is up to both NEM and off-market retailers to choose how to market their products and services.

Plus ES considered that the ENSP and ENM should continue to be separate roles. As noted in the draft report, the Commission considers that it is appropriate to consolidate these roles and have a single entity responsible for market facing, as well as other functions for new embedded networks. However, the ENSP could choose to contract out the role of the ENM to another party, noting that the ENSP would retain responsibility for complying with the Rules.

5.5.4 Arrangements for access to data

The Commission continues to consider that customers in embedded networks should benefit from the access to data arrangements contained in the NER and NERR, including requirements relating to security and confidentiality of data. The reasons for this position are set out in section 5.3.3.

The vast majority of stakeholders either explicitly supported or did not comment on the proposed arrangements. The one exception was Local Planning Energy which, consistent with its view that ENSPs should be responsible for metering, considered that ENSPs should have an obligation regarding access to data.

5.5.5 B2B framework

The Commission has retained its draft position in relation to the B2B framework. That is, the Commission recommends that ENSPs and off-market retailers may become B2B parties under the framework and be permitted to use B2B communications if they acquire accreditation with AEMO. This would not prevent ENSPs and off-market retailers from agreeing with other parties, including each other, to alternative communication methods.

A number of stakeholders explicitly supported the use of B2B communications to reduce transaction costs. While a number of stakeholders raised concerns with the cost of implementing systems to comply with B2B requirements, these were generally made in the context of network billing. These comments are addressed in chapter 6 of this report.

With respect to membership of the IEC the Commission's final recommendation, consistent with its draft recommendation, is:

- clarifying that 'distribution network service provider' refers to a regulated DNSP under clause 7.17.6(b)(1) of the NER. This would have the effect of retaining DNSPs' existing place for one member on the IEC
- AEMO consider appointing an ENSP as a discretionary member on the IEC.

The Commission considers it appropriate that regulated DNSPs continue to have representation on the IEC. The proposed clarification to the definition of distribution network service provider will achieve this outcome. However, the Commission also considers that ENSPs may desire input to the ongoing development of B2B procedures. The Rules already provide for flexibility in the membership of the IEC, allowing one third party member, discretionary members and independent members. The Commission considers AEMO has sufficient flexibility to appoint an ENSP to the IEC without the need for any further amendments to the Rules.

5.5.6 Distribution loss factors

The Commission has broadly retained its draft position in relation to DLFs. The Commission continues to consider that network losses in embedded networks will generally be small, and so the cost of developing site-specific DLFs will likely outweigh the benefits in most cases. However, where an embedded network exceeds the threshold set in the NER and have an embedded generator with actual generation of more than 10 MW or a load or a collection of loads which, in total, is more than 10 MW peak demand or 40 GWh per annum, the Commission recommends a site-specific DLF for those loads or generators. No stakeholder raised any concerns with this approach.

The Commission accepts the AER's view that it should not be mandatory for them to publish a guideline providing guidance on approving DLF methodologies. As such, the Commission has recommended amending its draft proposed clause 3.6.2B(2) of the NER such that the AER *may* develop a guideline relating to DLFs. The Commission also accepted a number of other detailed drafting amendments proposed by the AER.

5.6 Laws and Rules implementation

5.6.1 Extending the metering framework

The proposed changes in the NER include amending the definitions of a 'registered participant' and what a FRMP is in Chapter 7 of the NER so as to extend these terms to apply to off-market retailers that are selling electricity to off-market child connection points.[268] This in turn extends obligations to appoint the metering coordinator, metering provider and metering data provider within embedded networks to off-market retailers (so that these appointments are necessary before an off-market retailer can sell to an off-market connection point). The proposed changes in the NER also include requiring ENSPs to ensure that local embedded network retailers (whether they be on-market or off-market retailers) have access to information and systems required to comply with the Chapter 7 obligations. [269]

The requirement that installation and maintenance of metering installations are only carried out by metering providers is not proposed to apply to connection points within embedded networks where the retail customer is buying from an exempt seller.[270]

5.6.2 Market interface functions

The proposed amendments to give effect to retaining the ENM function and ensuring NMI's are allocated for all child connection points in new embedded networks include extending Chapter 7 provisions in the NER to off-market retailers to act as the FRMP, and requiring off-market retailers to appoint a metering coordinator and metering provider. This in turn requires FRMPs to apply to the LNSP for a NMI for child connection points within an embedded network. [271]

The proposed amendments do not affect substantive provisions pertaining to the appointment of ENMs by Exempt ENSPs as introduced by the Embedded Networks Rule, although amendments include requiring ENMs to provide NMI standing data when requested by a retailer, and to have an understanding of the shadow network charges procedure going forward.[272]

The proposed amendments include requiring ENSPs to apply to AEMO to register NMI's, and maintaining information in the metering register.[273]

5.6.3 Arrangements for access to data

As a consequence of proposed amendments to the NER requiring off-market retailers and ENSPs to register under Chapter 2 of the NER, the access to data provisions under clauses 7.15.5(a) and (c) will extend to both parties as registered participants. This in turn means

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268 Proposed clauses 7.1.2(a) and (b) of the NER.

269 Final proposed clause 7.2.1(e) of the NER, which in turn extends clauses 7.3, 7.4 and other provisions applicable to metering coordinators, metering providers and metering data providers in Chapter 7 of the NER to apply to off-market connection points; Final proposed clause 7.1.2(c) and (d).

270 Final proposed clause 7.8.1(d) of the NER.

271 Proposed amendment to Chapter 7, clauses and amendments to clause 7.2.1(d), 7.4.1(f), 7.8.2(c) of the NER.

272 Some minor amendments are proposed for Chapter 10 definition 'ENM conditions trigger' to incorporate the term '*connected* to the embedded network' for clarity; Final proposed amendment to clause 7.8.7 (b), 7.13.2, 7.13.3, S7.7.2 of the NER.

273 Clause 7.8.2(d) of the NER.

that off-market retailers and ENSPs will both have access to metering data, settlements ready data, NMI standing data, and data from the metering register for a metering installation within their corresponding embedded networks. This also extends confidentiality provisions, and security controls for energy data provisions to off-market retailers.[274] AEMO will also be required to ensure that the metering database includes off-market connection points for which an off-market retailer is present.[275]

5.6.4 B2B framework

Proposed amendments regarding network billing[276] include a requirement for AEMO to prepare a shadow network charges procedure applicable to off-market retailers, ENSPs and exempt ENSP for the communication of, and payment of network charges for on-market retail customers in embedded networks. The B2B procedures will also need to be updated to support these communications.

Though network service providers and retailers are able to communicate in any other format other than through the B2B mechanism if agreed, the procedure encourages registration and use of B2B to manage network billing for on-market embedded network customers.[277]

Furthermore, proposed amendments to Chapter 10 of the NER mean that the DNSP member appointed by the IEC will not include ENSPs, with the IEC able to exercise their discretion in appointing an ENSP as a third party or discretionary member under the NER.[278]

5.6.5 Distribution loss factors

Proposed amendments to the NER include extending references to DNSPs to include ENSPs in clause 3.6.3 of the NER. This is so that the DLF calculation provisions extend to embedded networks. Proposed amendments to Chapter 7 of the NER include permitting (rather than requiring) the AER to create a guideline to provide information to ENSPs on how to apply DLFs to embedded networks.[279]

Provisions in clause 3.6.3 of the NER are to be modified to require that for child connection points in embedded networks, DLFs are to be determined by applying the AER's standard loss factor approach,[280] and where the AER has not published a methodology, the methodology published by the LNSP for the area for which the parent connection point of the embedded network is located, or a methodology agreed by the ENSP and distribution customer (and as approved by the AER). For larger loads in embedded networks, proposed amendments are to require that the applicable DLF for the child connection point be the DLF applicable as if it were connected to the LNSP's distribution network directly, or where this DLF is hard to ascertain, the DLF applicable to the parent connection point for the embedded network.[281]

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274 Final proposed clauses 7.15.3(c) and 7.15.5(a) of the NER.
275 Final proposed amendment to clause 7.12.1(a) of the NER.
276 Refer to chapter 6 of this report for further discussion on network billing.
277 Proposed clauses 6B.A1.3 and 7.17.3 of the NER.
278 Proposed amendment to Chapter 10 definition of 'distribution network service provider member'.
279 Final proposed new clause 3.6.2B(1) and (2) of the NER.
280 Final proposed amendment to 3.6.3(g) and new clause (g1).
281 Proposed new clause 3.6.3(g1) and amendments to clause 3.6.3(g)(2) of the NER.

6 NETWORK BILLING

6.1 Introduction

The AEMC's 2017 Review found that while exempt network service providers are required to take reasonable steps to facilitate access to retail competition for on-market embedded network customers, a number of practical impediments to competition remain. These impediments include the need for NEM retailers to use bespoke embedded network tariffs and embedded network billing arrangements. As a consequence, NEM retailers must adapt product offerings and implement manual processes to manage transactions with large numbers of exempt network service providers.

The 2017 Review recommended that network charging and billing arrangements for new and legacy embedded networks should be standardised. The Commission recommended that the ENSP (registered with AEMO in the case of new embedded networks, or the exempt party in the case of legacy embedded networks) would issue a bill to the NEM retailer for recovery of a portion of the network charges that are paid by the ENSP/exempt parties at the parent connection point. The Commission also recommended that the ENSP be required to charge the NEM retailer no more than the equivalent external network charge that would have been charged by the LNSP if the customer had been directly connected to the LNSP's network (the 'shadow price').

The Commission considered this would promote retail market competition in embedded networks by lowering the cost for NEM retailers to serve embedded network customers. The Commission also considered this would provide certainty to ENSPs regarding the obligations of a NEM retailer to pay the ENSP for network charges for on-market embedded network customers.

This section sets out the detailed amendments to the NER the Commission considers are required to implement its recommendations to standardise network charging and billing arrangements for embedded networks. These recommendations apply to the network billing arrangements between NEM retailers of on-market embedded network customers and ENSPs/ENOs. The Commission does not consider it necessary to place these obligations on off-market retailers and ENSPs, which will often be the same entity in relation to shared embedded network customers.[282]

In establishing the network billing and payment arrangements for on-market embedded network customers, the AEMC has been guided by the following principles:

- improving consumer choice in energy services and products
- clarity, transparency and predictability for consumers, market participants and embedded network participants
- efficiency and the avoidance of unnecessary administrative burden
- the appropriate allocation of risks and costs leading to:

282 The Commission also proposes that off-market retailers are to be restricted from making energy only offers, refer to proposed new rule 3C in the NERR.

- *mitigation of risk* - the consequences of that risk should it materialise (that is, the potential for loss - either in a financial or a physical sense) being avoided or lessened
- *incentives to improve risk management over time* - this involves allocating risk to a party who can, relative to others, better manage the consequences of that risk.

This chapter also discusses the current arrangements for, and the Commission's recommendations on, the ability for ENSPs to levy charges for their internal embedded network.

6.2 Current arrangements

6.2.1 Current arrangements in the NEM for recovering external network charges

DNSPs charge customers connected to their distribution network for the conveyance of electricity to their connection point (where customers are not on energy only agreements). These network charges are generally levied on a NEM retailer for the customers of that retailer. Network charges include several components:[283]

- pass-through charges for the transmission of electricity (Transmission Use of System, TUoS charges)
- charges for the distribution of electricity that generally include a fixed component and variable energy component (Distribution Use of System, DUoS charges)
- other customer specific charges.[284]

Collectively these are referred to as NUoS charges. We also refer to these charges as 'external network charges' to distinguish them from any potential charges associated with internal network infrastructure.

The NER and NERR do not regulate the relationship between network charges and retail prices. A small customer's bill for the supply of electricity to their connection point generally does not separately list retail and network charges.

The AER regulates the total revenue that a DNSP can earn for regulated services and DNSPs must set prices according to the requirements set out in the NER.

Chapter 6B of the NER sets out requirements for the billing and payment of network charges. With the exception of New South Wales (which has B2B procedures for network billing), no detailed procedures apply to network billing and payment.[285] The AEMC understands NEM retailers and DNSPs generally agree to the format and communication of these bills.

As a customer connected to a DNSP's distribution network, an embedded network is levied NUoS charges at the parent connection point of the embedded network.

283 Large customers above a certain size are billed directly by the DNSP for network charges.

284 This would include metering charges for legacy type 5 and 6 meters supplied by the DNSP, as well as recovery of various jurisdictional charges.

285 The New South Wales procedures are required under Section 63C of the *Electricity Supply Act 1995 (NSW)*, with the most recent procedures being the Market Operations Rule (NSW Electricity Business to Business Procedures) No.1 of 2017.

6.2.2 Current arrangements for recovering external network charges in embedded networks

The AER network exemption guideline permits external network charges to be apportioned to each customer in an exempt network on a 'causer pays' basis in proportion to the metered energy consumption of each customer.

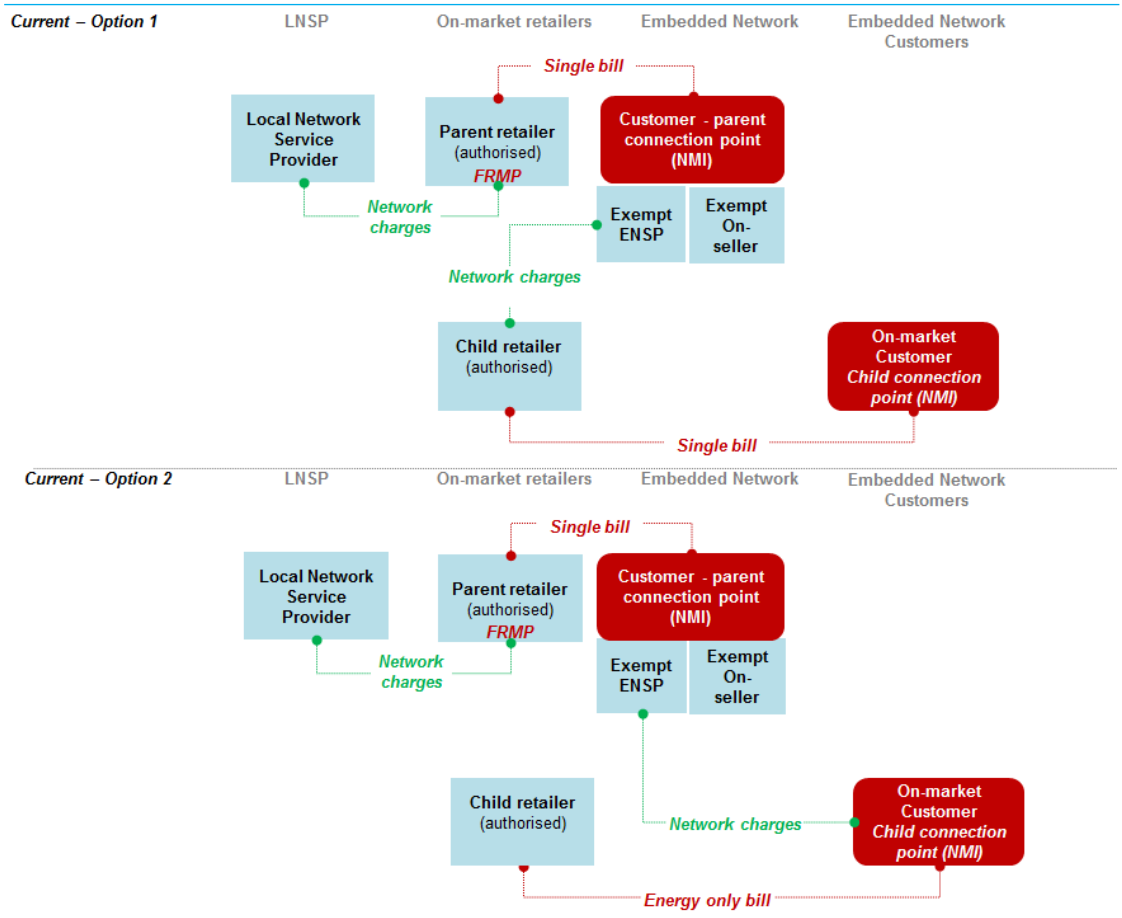
Where an embedded network customer goes on-market with a NEM retailer, the DNSP's network charges that could be attributed to this customer continue to be paid by the embedded network owner to the NEM retailer at the parent connection point.

A DNSP's network charges are currently "passed-through" to the on-market embedded network customer through one of two ways:

1. The retailer at the child connection point comes to an agreement with the exempt network service provider to be billed for network services, and the retailer then issues the customer a single bill for both network and energy services.
2. The customer pays two separate bills, one to the exempt network service provider for network charges and one to the retailer at the child connection point for energy services.

Network billing and payment for on-market embedded network customers is illustrated in Figure 6.1 below.

Figure 6.1: Current network billing and payment arrangements in embedded networks



Source: AEMC

6.2.3 Current arrangements for recovering internal network charges

In addition to external network charges, ENSPs will incur costs in relation to the construction and ongoing use and maintenance of the (internal) embedded network. The AER does not generally allow internal network charges to be levied on embedded network customers. The AER's Network Exemption Guideline sets out the limited circumstances in which it permits an exempt network service provider to charge for the use of the internal network.[286]

Where an exempt network exists within a commercial building, shopping centre, airport, residential apartment building, retirement village or the like, the AER considers the network development costs to have been met in the initial establishment of the facility. The AER considers such costs are capital in nature and are normally recoverable through lease payments, fit–out charges or similar. As such, the AER considers that a charge for internal

286 AER, *Electricity Network Service Provider Registration Exemption Guideline*, p. 62.

network services is not appropriate in embedded networks as it may result in the customer being charged twice for the same facility.

Accordingly, under the AER's Network Exemption Guideline no charge is permitted for internal network services except where the parties have entered into an agreement on mutually agreed terms and the network user is a large customer or large corporate entity.

6.3 Draft recommendations

6.3.1 External network charges

Options considered

The Commission presented a number of alternative options for network billing in relation to recovering external network charges at a workshop held in Sydney on 23 October 2018. Those options were:

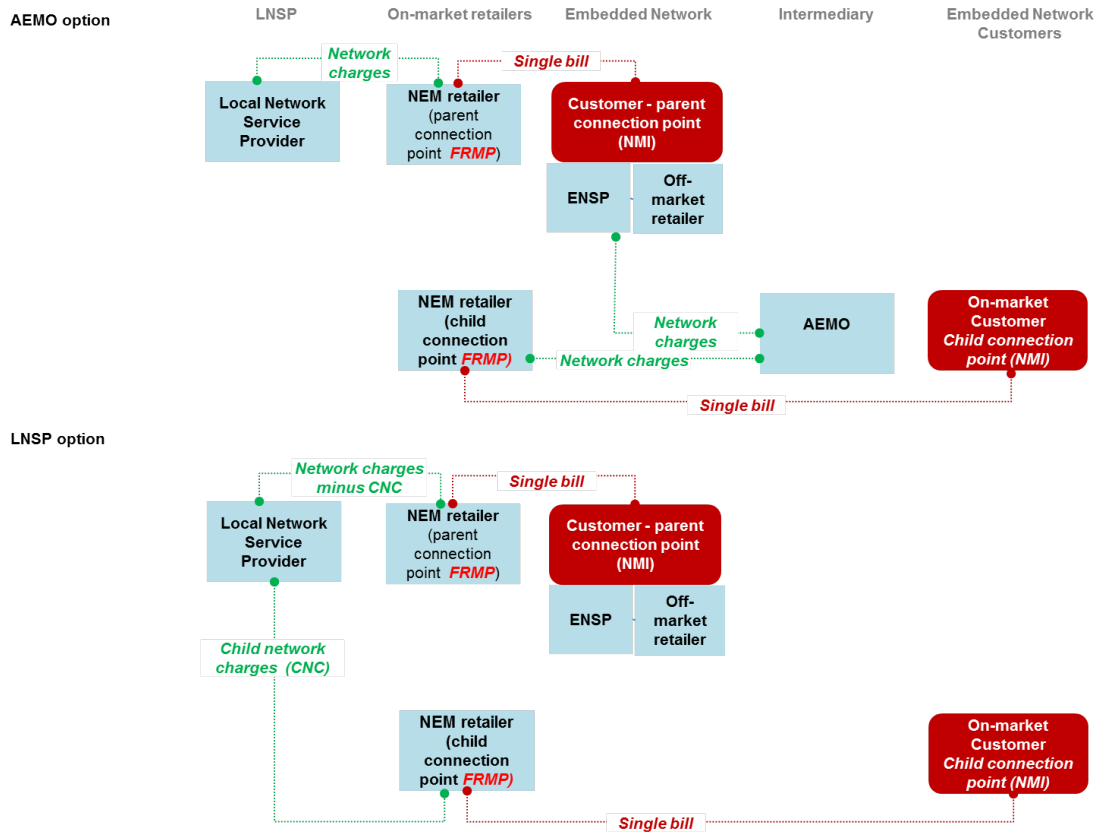
- consistent with the 2017 Review, require ENSPs to be responsible for network billing in embedded networks and introduce a greater level of standardisation for billing formats
- assign responsibility for network billing to an intermediary, likely either AEMO[287] or LNSPs.[288]

Under each of these options, the NEM retailer would receive the invoice and the customer would receive a single bill for both energy and network charges. Financial and billing flows under the intermediary option are show in Figure 6.2.

287 AEMO currently performs similar functions in respect of wholesale market settlement and has the capabilities to build a network tariff calculation engine. AEMO will also have access to the relevant metering data and network tariff data.

288 LNSPs already undertake network billing functions for standard supply customers and may be able to perform this function for embedded networks if the cost of providing this service could be recovered.

Figure 6.2: Intermediary options for network billing in embedded networks



Source: AEMC

At the workshop, stakeholders generally agreed that greater standardisation was required to promote efficiency and lower costs for both embedded network businesses and retailers.

Some stakeholders considered that unless network billing became seamless for NEM retailers, for example by making DNSPs responsible for network billing for on-market customers in embedded networks and netting these network charges off from network charges billed to the NEM retailer at the parent connection point, then retail market competition was unlikely to emerge in embedded networks.

However, some stakeholders raised a number of concerns with the proposal for an intermediary. Several embedded network businesses raised concerns regarding additional complexity and costs of introducing an intermediary and said they would prefer to retain control of this key function.

DNSPs at the workshop were also concerned, to differing degrees, regarding the complexity of establishing processes for netting off network charges for NEM retailer customers against network charges at the parent connection point, cost recovery implications and how the risk

for non-payment of network charges by retailers would be managed if DNSPs were to assume the role of network billing for these customers.

Embedded network businesses at the workshop emphasised they had established successful network billing processes with some NEM retailers by replicating the data and file format of the LNSP's statement of charges and argued standardisation of the billing format and process was more important than having a single party that issued network bills to NEM retailers on behalf of embedded networks.

Embedded network businesses also indicated during the consultation process for the 2017 Review and at stakeholder workshops that they consider a dispute resolution process should be provided for retailers and ENSPs in the NER.

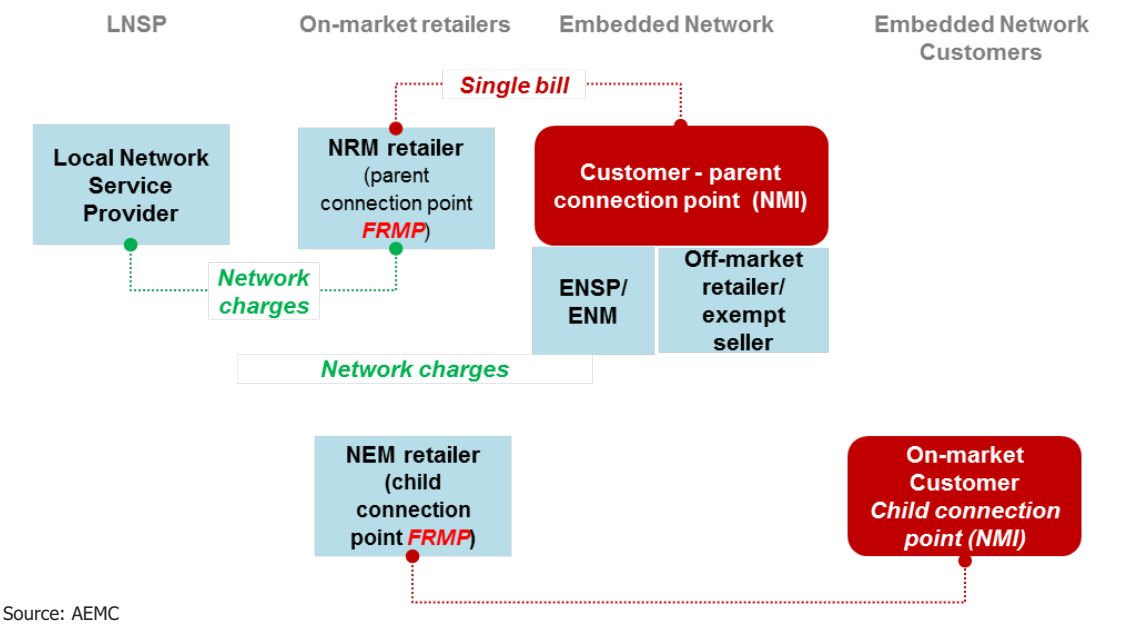
Draft recommendations

The Commission's draft recommendation was that standardisation be achieved through amending Chapter 6B of the NER to apply to ENSPs (and ENOs with on-market customers, as discussed further below in relation to legacy embedded networks). Given the complexities of assigning an intermediary role to DNSPs, and stakeholder concerns regarding the potential costs of introducing an intermediary, the Commission considered the ENSP was best placed to undertake billing of NEM retailers of on-market customers. The draft proposal implemented this approach via a number of obligations on ENSPs, retailers and AEMO.

First, the draft proposal established a requirement for ENSPs to charge a shadow network tariff which would be the equivalent network tariff that a customer would have been charged by the DNSP if the customer had been directly connected to the DNSP’s network. The draft proposed model for network billing is set out in Figure 6.3. The ENSP and NEM retailer would also be permitted to negotiate an alternative network tariff. The Commission recognised that this approach could allow ENSPs to arbitrage the network tariff. However, the Commission considered that the benefits of using shadow network tariffs outweighed any concerns regarding ENSPs 'over-recovering' network charges from on-market customers.

The Commission also noted that AEMO's MSATS procedures would need to be updated to allow the assignment of network tariffs for embedded network customers in MSATS, as well as procedures for checking the accuracy of network tariffs and permitting ENSPs and retailers to dispute the assignment or amendment of network tariffs.

Figure 6.3: Proposed model for network billing in embedded networks



Source: AEMC

Second, the draft proposal introduced an obligation for retailers to pay ENSPs for network charges. This would make it clear that a NEM retailer has a statutory obligation to pay an ENSP (or ENO) for network charges in respect of an on-market child connection point.

Third, an obligation would be placed on AEMO to establish shadow network charging procedures for the billing, communication and payment of network charges for on-market child connection points to standardise these arrangements between ENSPs. The Commission considered AEMO to be the appropriate entity to undertake this function, rather than the AER, because of its existing role in establishing market operations, administrative and service level procedures.

In response to feedback from ENSPs and retailers during the stakeholder workshop in October 2018, the Commission also included in the draft proposal an obligation that AEMO set out the information to be included in a bill for network charges (the 'statement of charges') and the detailed data and file format for this bill which would be provided to the NEM retailer of an on-market embedded network customer.

Under the draft proposed rules, AEMO could also consider including other matters that would promote efficient billing and payment of network charges. The Commission considered this could include, for example, setting out the method of communicating a statement of charges and credit support requirements. The Commission also noted that ENSPs and NEM retailers may find that statements of charges are best communicated through the B2B processes.

Finally, the Commission noted that applying Chapter 6B to ENSPs would also mean, amongst other things, that the rules relating to credit support provision by retailers would apply to

retailers selling to on-market customers in embedded networks. In addition, clause 6B.A3.3 of the NER would apply to disputed statements of charges between retailers and ENSPs, and this would address concerns that the proposed framework lacked a dispute resolution process between on-market retailers and ENSPs/ENOs regarding disputed charges.

The Commission acknowledged that Chapter 6B would only address credit risk issues in respect of NEM retailers that have a record of failing to pay in the last 12 months. Despite this, the Commission did not recommend any further credit support measures be implemented due to concern that placing further obligations on retailers would dampen the prospects for retail competition in embedded networks.

In relation to legacy embedded networks, the Commission recommended that the role of the ENM be expanded by requiring an ENO to engage its ENM to provide network billing services. The Commission considered this would be consistent with the NEM's expanded market interface functions, would reduce the number of parties that NEM retailers would need to transact with, and would provide the market with confidence that the network billing processes would be complied with in legacy embedded networks as ENMs would need to be accredited with AEMO.

The Commission considered that the need for existing ENMs to develop the capabilities to receive metering data and generate compliant network bills would be outweighed by the benefits to embedded network customers of increased access to retail market offers and the downward pressure this would place on prices for off-market embedded network customers.

6.3.2 Internal network charges

With respect to internal network charges, the Commission agreed with the AER that the network development costs should have been met in the initial establishment of a facility. These initial costs are generally recovered through the sale or lease of properties which the embedded network serves. As the AER points out, it would be inappropriate to recover these costs twice through charging embedded network customers for the use of the internal network, and making revenue determinations to set the efficient amount of these charges would be a complex process which would be disproportionate to the scale of most embedded networks.

The Commission considered that the owner of the embedded network should also be responsible for the costs of operating, maintaining and replacing the network which has been established. This is consistent with how costs are recovered for internal wiring in buildings that have not been established as an embedded network with a parent connection point. Where an embedded network has not been established, the costs of operating, maintaining and replacing an internal network is the responsibility of the owner and these costs are generally recovered through strata fees or rent.

As such, the Commission's draft recommendation was that the AER's policy on charging embedded network customers for use of the internal network should be maintained and elevated into the NER. This means an ENSP would only be permitted to charge large customers and large corporate entities for DUoS charges for the internal network by mutual agreement.

In addition, the Commission did not consider it necessary to stipulate how off-market retailers should pass on external network charges to off-market retail customers in embedded networks. This is consistent with how NEM retailers under the national framework are currently able to make a bundled offer to customers. The Commission did not consider that off-market retailers require an ability to make energy only offers to embedded network customers, given an off-market retailer will always pass on external network charges.

6.4 Stakeholder views on the draft recommendations

Generally stakeholders acknowledged that network billing arrangements required improvement and that standardisation of network billing and tariffs would assist. However views differed on how standardised billing should be implemented. This section provides a summary of stakeholder views on:

- the requirement for ENSPs/ENOs to charge shadow network tariffs and who should provide the billing service
- the obligation for AEMO to develop shadow network charging procedures
- how legacy embedded networks should be treated for billing purposes
- credit support arrangements
- arrangements for recovery of the costs associated with internal network infrastructure.

6.4.1 Requirement for ENSPs/ENOs to charge a shadow network tariff

AEMO, a number of NEM retailers, Network Energy Services and Renew explicitly expressed support for the concept of shadow pricing.[289] Other stakeholders generally supported the proposed arrangements, providing implicit support for shadow pricing.

Ausgrid commented that embedded networks' ability to arbitrage network tariffs resulted in customers outside of embedded networks paying more than similar customers inside embedded networks.[290] Ausgrid raised a concern that ENSPs may have a reduced incentive to win back on-market customers if they are permitted to 'over recover' network charges.

There were mixed views on the requirement for ENSPs to be responsible for network billing. AEMO, Alinta, Enerven and Watts Energy all raised concerns regarding the obligation on the ENSP to be responsible for network billing and generally considered a central clearing house model would reduce the cost and complexity of the network billing model.

AEMO was concerned that requiring ENSPs to undertake network billing would be detrimental to competition and the cost of service, compliance and traceability and proportionality.[291] Its concerns included:

289 Submissions to the draft report: AEMO p. 2; AGL p. 3; EnergyAustralia p. 2; ERM p. 4; Momentum p. 2; Network Energy Services p. 2; Origin p. 4; Renew, p. 4; Simply Energy p. 2.

290 Ausgrid's submission to the draft report, p. 5.

291 AEMO's submission to the draft report, pp. 2-4.

- the cost to establish such complex systems and receive and store the data needed to perform the required calculations and produce invoices is likely to be substantial and will be required of each ENSP
- it is unlikely the model could be reasonably applied to a range of diverse and smaller embedded networks
- for ENSPs, AEMO anticipates it could mean chasing multiple retailers for relatively small amounts of money, with any dispute requiring records of invoice delivery, receipt, follow up and response.

Rather, AEMO considered that an intermediary model would resolve these issues. AEMO also considered it is well-placed to perform this role given its current functions.

Alinta also supported a central clearing house model, noting that this would simplify the process as both ENSPs and retailers would only have to register with the central clearing house, rather than every retailer or ENSP.[292] Alinta considered this approach would be lower cost for customers. Alinta noted advantages with AEMO performing this role, including reducing risks for ENSPs associated with retailer failure, allowing the costs of the clearing house to be borne centrally by ENSPs in fees to AEMO and bypassing the remaining deficiencies of applying the Chapter 6B provisions.

Enerven also expressed concern with the cost involved in setting up the necessary systems for ENSPs to bill retailers directly, particularly if required to do so via B2B arrangements.[293] Enerven considered the costs of ENSPs undertaking the network billing function far outweigh any benefit from customers receiving a single bill.

Watts Energy supported the use of a network billing intermediary on the basis that an entity such as AEMO would already have the system capability and access to metering data, but noted that further consideration would be required in relation to how the costs of a billing intermediary should be recovered.[294] Watts Energy was concerned about the risk of increased billing disputes, billing errors and oversight with possibly thousands of ENSPs undertaking network billing to retailers. Retail First also expressed a preference for an indetermediary to perfoming network billing services, but at a reasonable cost.[295]

DNSPs did not support the option of LNSPs acting as an intermediary to provide network billing services.[296] For example, the ENA noted that DNSPs have no visibility of Child NMIs and have no obligation to monitor interactions between network operators, sellers and customers within embedded networks.[297] As such, they do not have the necessary systems to perform network functions beyond the parent NMI. No other stakeholder expressed specific support for DNSPs to undertake this function.

292 Alinta's submission to the draft report, p. 5.
293 Enerven's submission to the draft report, pp. 1-2.
294 Watts Energy's submission to the draft report, p. 4.
295 Retail First's submission to the draft report, p. 2.
296 Submissions to the draft report: Ausgrid, p. 3; Energy Queensland Ltd, pp. 1-2; ENA, pp. 1-2.
297 ENA's submission to the draft report, pp. 1-2.

Energy Options Australia considered the "AEMC could consider a simpler arrangement to net out the data (real time) for any embedded customer so that a retailer can bill the customer for all components of the electricity consumed".[298] It went on to note that an uplift could be applied to account for any losses within the embedded networks and the embedded network owner would then be billed for the balance used within the embedded network.

Active Utilities and EnergyAustralia considered a standardised NUoS agreement is required between the ENSP and NEM retailer. Active Utilities considered network billing should be addressed through a standard NUoS agreement, which should be a mandatory or default agreement between and ENM/ENSP and NEM retailer.[299] EnergyAustralia considered that the network billing arrangements would need to be accompanied by a standardised NUoS agreement, and noted that it would be less costly if the AER developed a model agreement from which retailers and ENSPs could depart by agreement.[300]

ERM considered that "child connection customers should have the opportunity to review and optimise the assigned network tariff".[301]

6.4.2 Obligation for AEMO to establish procedures

AGL and Momentum considered that the AER should be responsible for establishing shadow network charging procedures rather than AEMO.[302] This was on the basis that the AER already has a role in approving electricity network tariffs.

ERM argued that, given their criticality, minimum requirements for file formats, naming conventions/coding, structure and prices for shadow network tariffs should be elevated to the NER rather than procedures.[303]

Enerven was concerned about the possibility of ENSPs having to establish systems to enable network charges to be provided to retailers via the B2B processes.[304] Enerven stated that "B2B system costs can easily exceed $10m" and was concerned that this would make it impractical for all but a few of the larger ENSPs and retailers with existing embedded network businesses to establish B2B processes.

On the other hand, AGL, EnergyAustralia and Simply Energy all supported the use of B2B processes. AGL encouraged further consideration of the way in which new participants would be included in the NEM B2B processes.[305] Similarly, EnergyAustralia sought clarification on whether embedded network managers would be required to use the B2B e-hub, noting the requirement to use B2B processes depends on the category in which they are registered.[306]

298 Energy Options Australia's submission to the draft report, p. 3.
299 Active Utilities' submission to the draft report, pp. 8 and 13.
300 EnergyAustralia's submission to the draft report, p. 2.
301 ERM's submission to the draft report, p. 4.
302 Submissions to the draft report: AGL p. 4; Momentum p. 3.
303 ERM's submission to the draft report, p. 4.
304 Enerven's submission to the draft report, p. 2.
305 AGL's submission to the draft report, p. 4.
306 EnergyAustralia's submission to the draft report, p. 3.

Simply Energy noted that B2B processes assist in avoiding procedural gaps and provide reporting and tracking capabilities.[307]

ERM considered the mandatory use of market systems such as B2B and procedures to facilitate invoicing from ENSPs would need to be consistent with the current distribution network settlement processes to minimise the costs to authorised retailers serving embedded networks.[308]

6.4.3 Credit support

Alinta, ERM and Origin[309] all expressed support for the draft proposed credit support arrangements for ENSPs. Alinta considered, however, that having a central clearing house for billing would also address non-payment risks for ENSPs.[310] Alinta also supported the Commission's view that additional credit support measures are not required in relation to ENSPs, as the risks for ENSPs are far less material than those associated with participating in the NEM and managing costs from DNSPs. ERM considered the draft proposal to extend Chapter 6B of the NER to ENSPs is sufficient to cover the credit risk of these parties, and that any further risks could be managed by ENSPs.[311]

Renew acknowledged the potential problem of non-payment of network charges by retailers, but considered that clear rules, a robust compliance framework and transparent billing processes should assist in reducing this risk.[312]

In contrast, Active Utilities and Network Energy Services were concerned that the credit support arrangements in Chapter 6B were insufficient. Active Utilities considered further provisions should be added to enable ENSPs to disconnect when commercial payment terms are not met by the relevant retailer.[313] Network Energy Services considered that if a retailer becomes insolvent, there should be a minimum period of exposure to defaulting such as 30 days before another retailer assumes responsibility.[314]

6.4.4 Legacy networks

Energy Networks Services considered the proposal for the ENM to generate on-market child network bills has merit, but noted provisions may be needed for the ENM to receive metered data from the NEM retailer's MDP in order to prepare the invoice.[315]

Our Energy considered an ENSP should not be required to engage an ENM to provide network billing services for on-market customers if the ENSP has the capability to perform these services itself.[316]

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307 Simply Energy's submission to the draft report, p. 2.
308 ERM's submission to the draft report, p. 4.
309 Origin's submission to the draft report, p. 4.
310 Alinta's submission to the draft report, p. 5.
311 ERM's submission to the draft report, p. 4.
312 Renew's submission to the draft report, p. 5.
313 Active Utilities' submission to the draft report, p. 9.
314 Network Energy Services' submission to the draft report, p. 2.
315 Network Energy Services' submission to the draft report, p. 3.
316 Our Energy's submission to the draft report, p. 7.

Energy Queensland considered that expanding the ENM role to include network billing services in legacy networks could accelerate the exit of ENMs due to the increasing complexity and costs.[317]

6.4.5 Other issues regarding recovery of external network charges

AusNet recommended that provisions be included to enable the application of cost reflective network tariffs to customers residing in embedded networks.[318] It considered, for example, that where an embedded network's parent connection point is assigned a network tariff that is a "demand tariff", it would be appropriate to assign customers on child connection points with an equivalent demand tariff. AusNet considered that this would enable customers within the embedded networks to respond to cost reflective network pricing.

EnergyAustralia suggested that there are currently gaps in Chapter 6B of the NER in relation to billing arrangements regarding 'unknown customer' and related non-payment issues.[319] EnergyAustralia considered the AEMC should address these gaps.

6.4.6 Recovery of internal network costs

Few stakeholders commented on the Commission's draft proposal that the AER's existing policy preventing the recovery of any internal network costs via energy charges be maintained and elevated into the NER.

Of those that did comment, PIAC was concerned that the current (and draft proposed) approach is not efficient or transparent, nor does it provide sufficient protections for customers.[320] PIAC considered that cost recovery through energy charges in some defined and monitored circumstances would result in better regulatory protection for embedded network customers than recovery through lease payments. PIAC acknowledged that it is not practical for each ENSP to have a full regulatory determination, but suggested instead that the AER be responsible for approving a charging approach upon application by an ENSP.

Alinta agreed that internal network charges should not be levied on an ongoing basis to customers within an embedded network on the basis that this would result in over-recovery of embedded network costs.[321]

ERM agreed that any charges levied on large customers for any internal embedded network costs should only be permitted by mutual agreement between the customer and the ENSP.[322]

6.5 Final analysis and recommendations

This section sets out the Commission's final analysis and recommendations, including:

317 Energy Queensland's submission to the draft report, p. 7.
318 AusNet's submission to the draft report, p. 2.
319 EnergyAustralia's submission to the draft report, p. 2.
320 PIAC's submission to the draft report, pp. 6-8.
321 Alinta's submission to the draft report, p. 7.
322 ERM's submission to the draft report, p. 4.

- an overview of the final recommendations and how these differ from the Commission's draft proposals
- the requirement for ENSPs/ENOs to charge a shadow network tariff
- the obligation for AEMO to establish shadow network charging procedures
- credit support for ENSPs/ENOs in relation to external network charges
- application to legacy embedded networks
- other issues regarding recovery of external network charges
- recovering internal network charges.

6.5.1 Overview of final recommendations

The final recommendations largely reflect the draft recommendations. The key aspects of the final proposal are:

- In respect of external network charges:
  - ENSPs (and ENOs with on-market customers within their exempt networks) will be required to charge a shadow network tariff which would be the equivalent network tariff that a customer would have been charged by the DNSP if the customer had been directly connected to the DNSP's network
  - As an addition to the draft proposals, DNSPs will be required to provide AEMO with updates on their network tariffs to allow ENSPs/ENOs to readily access this information when undertaking billing
  - Retailers will be required to pay ENSPs/ENOs for network charges
  - AEMO will be required to establish shadow network charging procedures for the billing, communication and payment of network charges for on-market child connection points to standardise these arrangements between ENSPs, ENOs and retailers.
- In respect of internal network charges:
  - ENSPs will be prohibited from charging DUoS charges for the conveyance of electricity in an embedded network unless the network user is a large customer or large corporate entity and the ENSP and the network user have entered into an agreement regarding the payment of DUoS charges.[323]
  - Off-market retailers will not be permitted to make energy only offers.

6.5.2 Requirement for ENSPs to charge a shadow network tariff

The Commission continues to consider that requiring ENSPs/ENOs to charge a shadow network tariff to their on-market customers will provide the most transparent and consistent approach to passing on external network charges.[324] This approach provides retailers with certainty and a means by which NEM retailers can offer customers a complete, bundled service. Consistent with the draft proposed rule, the final proposed rule permits ENSPs/ENOs

323 Final proposed new rule 6.1.5 of the NER.

324 Proposed new clause 6B.A1.3 of the NER.

and NEM retailers to negotiate an alternative network tariff. Generally, stakeholders supported this approach.

To assist ENSPs/ENOs in identifying the appropriate charges to apply for each network tariff (where these are not separately agreed), the Commission's final proposal includes a requirement for AEMO to develop and maintain a database of current network charges for each DNSP. In turn, DNSPs will have an obligation to provide AEMO with their updated network charges as these are amended, in a format to be agreed between AEMO and the DNSPs. This is a change from the draft proposal, which did not specify how ENSPs/ENOs would obtain up-to-date network charges.

The purpose of this addition is to ensure that ENSPs/ENOs have ready access to current network charges, as required. Creating a central repository of up-to-date charges will avoid the need for DNSPs to push out the information to every ENSP on its network. In doing so it will also reduce the risk of ENSPs/ENOs using out of date charging information.

While Ausgrid raised some concerns regarding the ability of ENSPs/ENOs to over-recover network charges and what that might mean for ENSPs' incentives to win back customers, the Commission continues to consider that it is unnecessary to implement specific rules preventing over-recovery. One of the benefits of the proposed approach is that it provides a simple and transparent means to identify the appropriate charge. The increased complexity and costs associated with adjusting the charge to avoid over-recovery are likely to outweigh the benefits. Further, we note that NEM retailers will be permitted to negotiate an alternative network tariff, should they see fit.

The Commission has also decided to retain the draft proposal that ENSPs (and ENOs for on-market customers) be responsible for network billing. The Commission notes that a number of stakeholders considered that a central clearing house model may be less costly and could resolve a number of other concerns. For example, a central clearing house could be designed to mitigate credit risk for ENSPs/ENOs that must pay network charges in advance. A number of stakeholders supported, or did not oppose, AEMO taking on this role. DNSPs did not support LNSPs being responsible for providing billing services on behalf of ENSPs/ENOs, but generally did not express a preference between AEMO providing this function or ENSPs/ENOs being responsible for billing.

The Commission considers there may be some benefits from adopting a central clearing house model. However, shifting this responsibility to AEMO would represent a significant expansion of its current functions. At this stage there is insufficient evidence to suggest that the costs associated with implementing such a model, including AEMO investing in the necessary infrastructure and processes, would be lower than the costs incurred by ENSPs/ENOs in undertaking the billing themselves. However, the Commission notes a clearing house model could be reconsidered in the future if there is strong interest from industry.

Further, the key issue that regulating the approach to network billing sought to address was one of standardisation to provide a transparent and consistent approach to levying network charges and in doing so allow NEM retailers to more easily make offers to customers of

embedded networks. In turn, this would improve competition. The majority of NEM retailers appear to support the network billing reforms set out in the draft report.

The Commission is conscious that ENSPs/ENOs will incur some costs in setting up the network billing capability and complying with the network charging and billing procedures. As noted by ERM, this could lead to some ENSPs/ENOs exiting the market. However, as suggested elsewhere in this report, the Commission expects that some consolidation in the market for embedded network services will occur as not all ENSPs/ENOs will be equipped to ensure that their customers are covered by the necessary protections, and that market exit, as well as entry, can be a sign of a competitive and healthy market.

The Commission notes that some stakeholders raised the prospect of the development of default Use of System Agreements to support the proposed billing arrangements and, more generally, govern the relationship between ENSPs/ENOs and on-market retailers. The Commission's intention is that the network charging and billing procedures, in concert with new Rules provisions and obligations, will obviate the need for any such agreements. In particular:

- The default charge to NEM retailers to recover external network charges incurred by ENSPs and ENOs will be the shadow network tariff. The methodology for determining the appropriate tariff will be set out by AEMO in procedures. Consequently there is no requirement for this to be set out in a separate Use of System Agreement. However, NEM retailers and ENSPs/ENOs will be able to agree a different basis on which to recover external network charges. This is a matter for those parties to agree.
- Similarly, AEMO's procedures will establish a standard format for exchanging information, including information about any changes to network charges, standard payment terms and any other matter required for the efficient and timely billing, settlement and secure payment of network charges. Further, NEM retailers and ENSPs/ENOs will be required to comply with those procedures. Consequently, separate agreements between retailers and ENSPs/ENOs will not be required to address these issues.
- Dispute resolution procedures between retailers with on-market customers and ENSPs/ENOs for disputed charges will be provided through existing provisions in Chapter 6B of the NER.
- Assignment of the network tariff by the MP will be addressed in AEMO's MSATS procedures and will mirror existing arrangements for standard supply customers.

Under section 21 of the Victorian *Electricity Industry Act 2000* conditions on retail and distribution licences may require, among other things, that retailers have agreements in place with relevant distribution companies to ensure electricity is distributed or supplied to the extent necessary to enable the retailer to sell electricity to its customers. Our understanding is that most embedded network electricity sellers are exempted under the General Exemption Order, rather than having a licence. The General Exemption Order does not place obligations on exempt electricity suppliers to have a Use of System Agreement. However, to the extent that use of system agreements are required in Victoria in relation to embedded networks, this is a jurisdictional issue that the Victorian Government will need to consider.

Finally, the Commission notes ERM's view that customers should be able to request a network tariff re-assignment. Under the NER, standard supply customers cannot choose their own network tariff. Rather, a retailer may request the DNSP to review the tariff to which the customer is assigned.[325] As noted in the draft report, AEMO's MSATS procedures will need to be updated to provide for the assignment of network tariffs for embedded network customers in MSATS. AEMO indicated that it could implement a similar procedure for embedded network customers as currently applies to standard supply customers which:

- requires a metering provider to assign and update the network tariff for an embedded network customer
- permits an ENSP to dispute the network tariff assigned by a metering provider
- permits a retailer to dispute a tariff that has been amended.

The Commission considers this approach will provide consistency between embedded network customers and standard supply customers in relation to network tariff assignment.

6.5.3 Obligation for AEMO to establish procedures

In the draft report the Commission proposed that AEMO be required to develop shadow network charging procedures for the billing and payment of network charges for on-market child connection points to standardise arrangements between NEM retailers and ENSPs or ENOs. The procedures are intended to achieve standardisation and establish a greater level of prescription, which will be necessary given the larger number of participants that will be using them.

The Commission continues to consider that AEMO is the appropriate entity to develop the procedures, rather than the AER as proposed by AGL and Momentum. The Commission notes that the AER has a role in approving electricity network tariffs. However, the core functions of the AER are economic regulation of network businesses and monitoring compliance with the NEL, NER and associated regulations. However, AEMO is responsible for market operation, including the development of a range of detailed procedures to assist in, among other things, the functioning of the retail market including customer transfers. The nature of the shadow network charging procedures are more aligned with AEMO's functions. Note that the network tariffs that AEMO will be responsible for making procedures on will have already been approved by the AER in the DNSPs' determinations.

The draft report also included an obligation for AEMO to set out detailed requirements in relation to the information contained on the bill for network charges as well as the file format. While the majority of stakeholders agreed with this approach, ERM considered these details should be included in the NER. The Commission notes the criticality of standardisation in supporting retail competition in embedded networks. However, the Commission considers:

- ENSPs and ENOs by way of the ENM will be required to comply with the procedures
- it is appropriate that this level of detail be contained in procedures

325 See Clause 6B.A3.2 of the NER.

- AEMO will be required to consult on the development of the procedures and ERM will have an opportunity to identify the critical elements that it considers must be addressed
- it is a more straightforward to amend procedures, if required, which will allow the procedures to be updated in response to technology or other changes.

For these reasons, the Commission's final proposal is that, consistent with the draft, these details be contained in AEMO's procedures.

Among other things, the shadow network charging procedures will need to address the way in which the statement of charges and other relevant information is communicated between relevant parties. In the draft report, the Commission noted that one method could be through B2B processes. In response, some stakeholders queried how this would operate in practice, and other stakeholders raised concerns about the cost for ENSPs/ENOs of investing in the necessary systems.

The Commission does not have a view on the most appropriate means by which communications in relation to network billing should take place. Rather, the Commission is concerned that these processes are standardised to more easily facilitate retail competition. The method of communication is best left to AEMO to determine, in consultation with stakeholders, in developing the shadow network charging procedures. While one approach may be to use the B2B e-Hub, similar to MSATS transactions, there may be other more appropriate solutions.

6.5.4 Credit support

The Commission continues to consider that it is appropriate to extend the credit support arrangements in Chapter 6B of the NER to ENSPs/ENOs, and that no further credit support arrangements are required.

In the NEM, a time lag exists between when network services are provided to customers and when the payment for those services is made by the NEM retailer. Due to the combination of a time lag and DNSPs not charging customers directly, distributors face the risk of retailer default and the subsequent non-payment of network charges. Similar issues apply for ENSPs/ENOs, which will be responsible for paying external network charges and passing these on to the NEM retailers of its on-market customers. The credit support requirements set out in Chapter 6B of the NER, which will be extended to ENSPs/ENOs, serve to limit a DNSP's financial exposure to NEM retailer default.[326]

The Commission notes Active Utilities and Network Energy Services' concerns that this would only address credit risk issues in respect to NEM retailers which have a record of failing to pay in last 12 months. As such, where the ENSP is unable to require credit support, and a

326 There are also a number of other measures to manage the risk of retailer default which are available to regulated DNSPs:
- The overs-and-unders process is available to distributors whose regulatory revenue determination is based on a revenue cap control mechanism.
- The retailer insolvency cost pass-through mechanism.
- Incorporating some consideration for the risk into a distributor's allowed revenues through the regulatory determination process which would take into the account the costs of commercial insurance and self-insurance.

retailer fails, the ENSP will still be required to pay the DNSP for network charges for the child customer.

In the draft report, the Commission noted a number of other options that ENSPs/ENOs will have in relation to this issue:

- ENSPs/ENOs would be able to take further steps to manage any risks arising, such as taking out commercial insurance.
- Joining a general corporate insolvency process is an option that will be available to an ENSP that is unable to collect unpaid network charges owed to it by an insolvent retailer. The ENSP would join this process as an unsecured creditor under the Corporations Act 2001 (Cth).

While the Commission acknowledges that some of the measures to manage the risk of NEM retailer default that are available to regulated DNSPs (such as cost pass-throughs) would not be available to ENSPs/ENOs, the Commission remains concerned that allowing ENSPs/ENOs to place any further credit support obligations on retailers would dampen the prospects for retail competition in embedded networks.

While it might be possible to design additional regulatory solutions that avoid impacting on retail competition (such as the creation of a retailer default fund[327] for ENSPs), the implementation of these would best be facilitated through intermediary arrangements. As discussed above, the Commission does not consider that an intermediary arrangements is the appropriate solution to the broader issue of network billing at this stage.

Finally, credit risk issues are one of a number of risks that ENSPs/ENOs will need to manage as part of running their business. The Commission does not consider that the risks are so great as to warrant a regulatory solution.

6.5.5 Legacy embedded networks

The Commission continues to consider that the ENM, via the ENO, is best placed to provide network billing services in legacy exempt embedded networks. The ENM is already required to provide market interface functions and its capabilities are consistent with network billing functions. AEMO's accreditation process for ENMs will also provide confidence that ENMs will comply with network billing processes in legacy embedded networks.

With respect to ENSPs/ENOs having the relevant data to prepare a network bill, under the recommended approach to access and provision of data set out in section 5.5, metering data providers will be required to provide metering data to ENSPs/ENOs to enable ENSPs/ENOs to fulfil their network billing function for on-market embedded network customers.

6.5.6 Other issues regarding recovery of external network charges

The Commission has retained the draft proposal that a NEM retailer will have a statutory obligation to pay an ENSP (or ENO) for network charges. This will provide greater certainty

327 The Commission has previously considered the introduction of a retailer default fund for DNSPs. See: AEMC, *Retailer-Distributor Credit Support Requirements*, Options Paper, 22 October 2015, p. 41.

for ENSPs (ENOs) that they will be able to recover their costs associated with external network charges when a customer goes on-market.

Similarly, as per the draft report, the Commission continues to consider it is not necessary to stipulate how off-market retailers should pass on external network charges to off-market retail customers in embedded networks, consistent with the framework for NEM retailers. The Commission notes that the ability for off-market retailers to over-recover external network charges from off-market customers will be curbed by the ability for those customers to switch to a NEM retailer, as is the case for standard supply customers. Consequently, the Commission does not consider it necessary to regulate the recovery of external network charges from its off-market customers.

AusNet has recommended that customers residing in embedded networks should face cost reflective network tariffs where these are applied at the parent connection point. In respect of on-market customers, the Commission notes that the applicable network tariff will be that which would otherwise apply if the customer was connected to the DNSP's network. Depending on the DNSP's tariff structures and assignment policy, this could be a cost reflective network tariff. For off-market customers, as noted above the Commission is not proposing to regulate the way in which network charges are passed through. To the extent the ENSP is facing a cost reflective network tariff, such as a demand tariff, it will likely have an incentive to pass this structure through to the off-market retailer, who will similarly have an incentive to pass it on to its customers. Consequently, the Commission does not consider it necessary to include provisions to enable the application of cost reflective network tariffs.

EnergyAustralia has suggested that gaps in Chapter 6B in relation to billing arrangements be addressed via this review. The Commission considers that issues arising more broadly outside of the embedded network arrangements are out of scope of this review and are better addressed through a rule change request.

6.5.7 Recovering internal network costs

Consistent with the draft report, the Commission's final proposal in relation to internal network costs is that ENSPs generally are not permitted to recover internal network charges from their customers.[328] However, if mutually agreed, an ENSP may levy DUoS charges for the internal network from large customer and/or large corporate entities. This approach will reduce any risk of customers being charged twice for the internal infrastructure, via both strata fees/rent and energy charges. However, the Commission's final proposal does not preclude DUoS charges being payable by a retailer in respect of a distribution network user having a connection point within an embedded network.[329]

The majority of stakeholders supported or did not oppose this approach. The Commission acknowledge's PIAC's concerns that the proposed approach does not provide a transparent means by which energy infrastructure costs are recovered. However, the Commission continues to be of the view that providing regulatory oversight of energy infrastructure

328 Final proposed new clause 6.1.5 of the NER.

329 Final proposed clause 6.1.5(c) of the NER

charges across numerous ENSPs/ENOs is not feasible, and that the costs of doing so are likely to outweigh the benefits. The Commission also notes that the recovery of common costs in apartment blocks, residential apartments etc. is a broader issue.

Finally, EnergyAustralia has suggested that agreements for levying DUoS charges to recover internal network costs under clause 6.1.5(a)(2) for mass market customers will be costly to develop in each circumstance.[330] To clarify, under the Commission's proposal the ENSP will not be permitted to levy internal network charges on small customers. Such charges can only apply to large customers and large corporate entities, and only by mutual agreement. Consequently, the Commission considers a standard form agreement is not required.

6.6 Laws and Rules implementation

Amendments to Chapter 6B of the NER are proposed to facilitate ENSPs and ENOs (by way of the appointed ENM where there are on-market customers in the embedded network) calculating network charges, and communicating with and receiving network charges from on-market retailers for on-market customers within their network.[331]

These provisions are not intended to apply to off-market retailers, as they are able to manage network charges directly with the local embedded network operator. Instead of requiring an intermediary to manage network charges, AEMO is to prepare the shadow network charges procedure[332] by way of the rules consultation procedure to set out how network charges for embedded networks are to be calculated, payment methodology, and how billing information is to be communicated by the parties by way of standardisation of billing information including settlement communication, form and file formats.

AEMO is also to prepare and establish a database containing DNSP network charges relevant to embedded networks, to be used by ENSPs and ENOs to calculate network charges as part of the shadow network charges procedure (with information to be provided by DNSP's).[333]

The credit support provisions in Part B of NER Chapter 6B are proposed to be extended to embedded networks.

Proposed amendments to Chapter 6 include provisions to prohibit ENSPs from charging, DUoS charges for the conveyance of electricity in an embedded network unless the network user is a large customer or large corporate entity and the ENSP and the network user have entered into an agreement regarding the payment of DUoS charges.[334] Final proposed amendments to the NERR prohibit off-market retailers from making energy only offers.[335]

330 EnergyAustralia's submission to the draft report, p. 2.
331 Proposed amendments to NER clause 6B.A1.1(a)(1), proposed new NER clause 6B.A1.1(b).
332 Proposed new NER clauses 6B.A1.3 and 6B.A2.3(b).
333 New proposed 6B.A1.4 of the NER.
334 Final proposed new rule 6.1.5 of the NER.
335 Final proposed rule 3C(4) of the NERR

7 CONNECTION OF RETAIL CUSTOMERS AND NON-REGISTERED EMBEDDED GENERATORS

7.1 Introduction

This chapter sets out the Commission's final position in relation to the connection framework for retail customers, which includes small and large customers that are not registered participants, and non-registered embedded generators to embedded networks.[336]

Customers in embedded networks should enjoy the same or very similar consumer protections as grid connected customers. Consistent with standard supply customers, embedded network customers should have rights to connect to the grid and be protected from unreasonable charges from monopoly network service providers. Accordingly, ENSPs, as suppliers of an essential service, should be subject to appropriate obligations with respect to network connection services and connection charges, similar to DNSPs. This requires a suitable connection framework for embedded networks, ensuring that the process for new connections and connection alterations is transparent, predictable, proportionate and provides consumers with appropriate protections.

Accordingly, the Commission has considered how the connection framework for retail customers and non-registered embedded generators set out in Chapter 5A of the NER should be adapted to be appropriate for embedded networks.

This chapter outlines:

- Current arrangements in the NEM and in embedded networks
- The Commission's draft report position regarding the framework for connection of retail customers and non-registered embedded generators under Chapter 5A of the NER in embedded networks
- Stakeholder views, including submissions to the draft report and outcomes of stakeholder workshops held by the AEMC
- The Commission's analysis and final recommendation, including any changes to the draft report position.

The connection of registered participants (customers with large load and large embedded generators) is addressed in chapter 7 of this final report.

7.2 Current arrangements in the NEM and in embedded networks

This section sets out the current arrangements in the NEM and in embedded networks in relation to the:

- obligation to provide connection services
- types of connection offers

336 As specified in the NERL, a small customer is a residential or business customer, who consumes electricity below the upper consumption threshold. A large customer consumes electricity at or above the upper consumption threshold. The customer consumption thresholds are defined by jurisdictions.

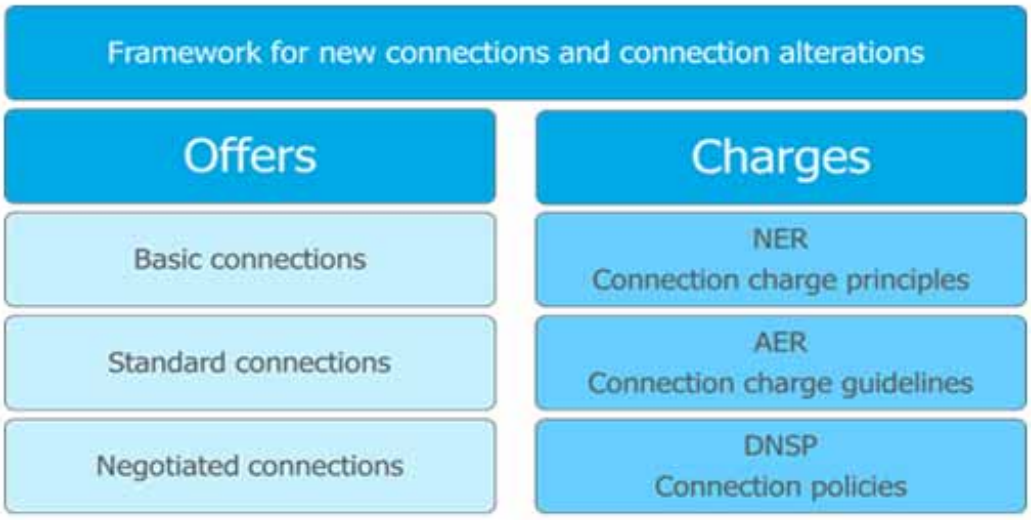
- connection policies and connection charging.

7.2.1 Obligation to provide connection services

Current arrangements in the NEM

The current connection framework, governing electricity connections for small and large customers as well as embedded generators (that are not registered participants) in the NEM, consists of two building blocks: *offers for new connections and connection alterations* and *connection service charges* under Chapter 5A and Part DA of Chapter 6 of the NER. The individual components of this framework are discussed in further detail in the following sections.

Figure 7.1: Connections framework



Source: AEMC.

In jurisdictions that have adopted the NECF, the obligation to provide connection services is imposed on distributors under the NERL. Section 66(1) of the NERL provides that a distributor must, subject to and in accordance with the energy laws, provide customer connection services for the premises of a customer:[337]

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

Section 66(2) of the NERL also specifies that the customer connection services must be provided to a customer in accordance with the relevant customer connection contract. The rights and obligations refer to the 'customer', which is the person who enters the contract with the DNSP, e.g. the owner of a premises for which a new connection or connection

337 The term 'customer' covers both small and large customers, as specified in the note to section 65 of the NERL.

upgrade is being sought and who then enters into a standard connection contract with the DNSP.[338]

Part 4 of the NERR sets out in detail the relationship between distributors and customers in relation to connection services. This Part applies only in relation to:

- customers with an existing connection
- deemed standard connection contracts
- deemed AER approved standard connection contracts.

Part 4 of the NERR also sets out the responsibilities of a NEM retailer in relation to an application for connection services, which is to make an application to a distributor on behalf of the customer where the retailer has a relevant contract with the customer in relation to the premises.[339]

A distributor is obliged to provide a deemed standard connection contract for a new connection or a connection alteration within its distribution network.[340] The connection contract commences on acceptance by the customer of the distributor's connection offer for a new connection or connection alteration in accordance with the requirements under Chapter 5A of the NER.

At the same time as the contract for a new connection commences, a standard connection contract is also formed. Generally, the deemed standard connection contract under Schedule 2 of the NERR is being adopted. That contract establishes the terms and conditions upon which the DNSP will provide ongoing connection services once a new connection is established.

Current arrangements in embedded networks

The AER Network Exemption Guideline conditions do not place an obligation on exempt network service providers to connect new customers or provide connection alterations to existing customers. Any new connections and alterations are negotiated with the owner of the embedded network, which is generally the party deemed or registered as the exempt network service provider.

7.2.2 Types of connection offers

A clear, predictable and transparent process for connecting to the distribution network provides customers with appropriate protections while maintaining technical standards so the quality, reliability and safety of connections and the distribution network are not compromised.

Standardising connection offers under a certain threshold (defined in terms of capacity of the connection or any other measure the AER considers appropriate) provides benefits to both connection applicants and the DNSP. Connection offers set out both the applicant's and

338 Regarding the rights of tenants to request a connection upgrade, their rights depend on the respective contractual arrangement between the owner/landlord as the owner of the premises for which an upgrade is being requested, and the tenant.

339 Rule 79(3) of the NERR.

340 Part 4, Division 3 of the NERR.

distribution network's obligations and form the basis of the connection contract once accepted by the applicant. Standardised connection offers can streamline the process by providing for automatic approval of certain types of common connection applications and remove the costs of formulating and negotiating unique connection contracts for every applicant.

Where standardised offers are inappropriate, a clear and structured negotiation process provides guidance to the applicant and the DNSP and can reduce the costs of negotiation while maintaining flexibility to cater for a range of different types of connections.

Current arrangements in the NEM

The types of connection services for new and altered connections for NEM retailer customers are specified in Chapter 5A of the NER. Chapter 5A outlines three types of offers to provide connection services: basic, standard and negotiated.

Chapter 5A also applies to embedded generator proponents proposing to connect a generating system of less than the standing exemption from the requirement to register as a participant with AEMO (currently 5MW), or holding an exemption from the requirement to register with AEMO. These are known as:

- micro embedded generators (embedded generator connections that comply with Australian Standard AS4777); and
- non-registered embedded generators (a system of less than 5 MW but larger than a micro-embedded generator, or a system of 5MW or greater that holds an exemption from the requirement to register with AEMO).[341]

Basic connection services

Basic connection services apply where the provision of connection services involves minimal or no augmentation of the distribution network.[342] In general, these services cover the majority of simple connections by NEM retailer customers, including those customers that are micro embedded generator connections (for example, residential rooftop solar systems and battery storage).

A DNSP *must* submit for the AER's approval and publish on its website a model standing offer for basic connections, on specified terms and conditions.[343] The terms and conditions of the DNSP's proposed model standing offer must cover:[344]

- a description of the connection, including a statement of its maximum capacity
- timeframes for commencing and completing the work

341 For a comprehensive discussion of the framework for exemption from registration as a generator, see section 7.2.2 of this final report.

342 Part B, Division 1 of Chapter 5A of the NER.

343 A DNSP can publish different model standing offers for different subclasses of basic connections, e.g. one offer for a basic connection with only load and one offer for a basic connection including micro embedded generation.

344 The terms and conditions also refer to jurisdictional or other legislation and statutory instruments that impose specific requirements (qualifications of service provider, safety and technical requirements) to be complied with by the provider of a contestable service, in jurisdictions where contestability in connection services exists.

- details of the connection charges, or the basis on which they will be calculated[345]
- the manner in which connection charges are to be paid by the customer of a NEM retailer
- if the service is connection of a micro embedded generator, the particular requirements regarding the export of electricity into the distribution system.

Standard connection services

Standard connection services apply where the provision of connection services involves augmentation of the distribution network. Offers for standard connection services would typically apply to large multi-occupant developments, large commercial and industrial developments and embedded generators that are not micro embedded generators. A DNSP *may*, but is not obliged to, provide one or multiple model standing offer(s) for different subclasses of standard connection services, on specified terms and conditions (corresponding to the ones for basic connection services).[346]

The Commission has observed that the majority of DNSPs do not provide a model standing offer for standard connection services. The Commission understands that this is due to the varied and specific needs of potential connection applicants that would seek a standard connection. There are, for example, numerous types of non-registered embedded generators, including co-generation plants, medium-scale solar installations and small hydro plants that may seek to connect to a distribution network and each applicant is likely to have unique connection service requirements. Negotiated connection services may better meet the needs of both the applicant and the DNSP in these cases. If a DNSP develops a model standing offer for standard connection services, it must submit it for approval by the AER.

Negotiated connection services

Negotiated connection services apply where a connection service sought by a connection applicant is neither a basic nor a standard connection service, or the connection applicant elects to negotiate the terms and conditions on which the connection service is to be provided. As most DNSPs do not provide for a model standing offer for a standard connection service, connection applicants seeking a connection service that exceeds a basic connection have to rely on the negotiated connection process. The negotiations between a DNSP and a connection applicant are governed by a set of rules.[347] The negotiation framework represents a structured process, outlining the steps and timeframes to be followed and the information to be exchanged by the parties. The process is designed to be open, flexible and relatively short; yet creates certainty about the obligations of the connection applicant and the DNSP when negotiating a connection contract.[348]

Current arrangements in embedded networks

As set out above, the AER Network Exemption Guideline conditions do not place an obligation on exempt network service providers to connect new customers or offer alterations.

345 Including the cost of any relevant premises connection assets and necessary extension to the distribution system.

346 Part 1, Division 2 of Chapter 5A of the NER.

347 Part C of Chapter 5A of the NER.

348 Non-registered embedded generators that fall under the NER Chapter 5A connection process can also elect to use the connection process under Chapter 5, which applies to registered embedded generators and represents are more detailed process.

Consequently, the guidelines do not provide a framework for standardising or negotiating connection service offers for new connections or connection alterations.

7.2.3 Connection policies and connection charging

When a customer connects to a distribution network (including an embedded network) there may be a number of capital and administrative costs, including those related to:

- site inspection fees if a site inspection is required to assess a connection service
- extending the distribution network to reach the customer's premises
- augmenting the network to permit an additional load or embedded generator to connect, such as installing transformers with a larger capacity
- assessing connection applications and preparing an offer to connect.

As discussed above, obligations are placed on DNSPs to provide connection services under the NERL. As a monopoly network service provider, customers also require regulatory protections from unreasonable charges for connection services.

Current arrangements in the NEM

The NER sets out the principles and framework that DNSPs must use to determine connection charges. This framework includes:

- the connection charge principles that a DNSP must apply in determining connection charges[349]
- a requirement that the AER must develop and publish connection charge guidelines for the development of connection policies by DNSPs, to ensure connection charges are reasonable, based on efficient costs and competitively neutral (if connection services are contestable)[350]
- a requirement that a DNSP prepare a connection policy that is consistent with the connection charge principles and connection charge guidelines and further specifies the circumstances under which a retail customer may be required to pay a connection charge for the provision of a connection service[351]
- a DNSP's revenue determination which will, amongst other things, classify connection services as either standard control services or alternative control services.

Connection charge principles

In determining connection charges, a DNSP must apply the following connection charge principles set out in Part E of Chapter 5A of the NER.

The connection charge principles:

- prohibit retail customers (other than a non-registered embedded generator or a real estate developer) from being required to make a capital contribution towards the cost of

349 Clause 5A.E.1 of the NER.
350 Clause 5A.E.3 of the NER.
351 Part DA, Chapter 6 of the NER.

augmenting the shared network if the customer's application is for a basic connection service or under a relevant threshold set in a DNSP's connection policy

- permit connection charges to include a reasonable capital contribution towards the cost of an extension to the distribution network where this is necessary to provide a connection service[352]
- provide that where augmentation of a premises' connection assets[353] at the retail customer's connection point or an augmentation of the distribution system[354] is necessary to provide a connection service that exceeds a basic connection service, connection charges may include a reasonable capital contribution towards the cost of the necessary augmentation of the distribution system to provide the service and to provide efficiently for forecast load growth.

Connection charge guidelines

The AER is required to develop and publish connection charge guidelines for the development of a connection policy by a DNSP under Part E of Chapter 5A of the NER. The purpose of the guidelines is to ensure that connection charges are reasonable, cost-reflective and, if the connection services are contestable, competitively neutral.

Further, the guidelines must describe the circumstances under which a retail customer may have to make a capital contribution for the provision of connection services, the methodology for determining the amount of any such capital contribution, and establish principles for fixing a threshold below which retail customers are exempt from making a capital contribution for an augmentation (other than an extension) to the distribution network that is necessary to make the connection.

The AER's connection charge guidelines adopt the form of control determined for each component of the connection service in each DNSP's distribution determination.

Connection policy

A DNSP must publish a connection policy under Part DA of Chapter 6 of the NER. The connection policy must be consistent with the connection charge principles and connection charge guidelines and further specify the circumstances under which a NEM retailer customer may be required to pay a connection charge for the provision of a connection service.

AER revenue determinations

Currently, the AER approves a DNSP's connection charges based on its assessment of whether they are consistent with the DNSP's distribution determination.

352 A capital contribution may only be required if provision for the costs has not already been made through existing DUoS charges or a tariff applicable to the connection.

353 For the declared transmission system of an adoptive jurisdiction, and a distribution system, connection assets are those components of a transmission or distribution system which are used to provide connection services.

354 An augmentation of the distribution system may, for example, include upgrading the capacity of a substation upstream of a new connection to accommodate a large load.

Connection services are currently classified by the AER as either standard control services or alternative control services.[355] Where a connection service is classified as an alternative control service, the full cost of the service can be recovered from the individual customers using that service. The AER decides for the regulatory control period on the prices a DNSP is allowed to charge customers for the provision of alternative control services.

DNSPs are able to recover the costs of providing connection services that have been classified as a standard control connection service through DUoS charges, which are the annual charges paid by all customers who use the distribution network. Standard control services are services that are central to electricity supply and therefore relied on by most (if not all) customers who use the distribution network.

A DNSP is also allowed to include augmentation capital expenditure in its distribution determination proposal to account for forecast augmentation of its network. Such augmentation of the network is considered as a standard control service.

Current arrangements in embedded networks

Currently, no framework exists for new connections and connection alterations in embedded networks. The AER Network Exemption Guideline conditions permit an exempt network service provider to charge small and large customers actual costs incurred in making metering changes or service capacity upgrades requested by the tenant.[356]

7.3 Draft report position

The current connection framework was designed to apply to DNSPs that cover large numbers of customers and which are subject to AER revenue determinations under Chapter 6 of the NER. ENSPs will have neither the scale of DNSPs nor will they be subject to revenue determinations. Some embedded networks will also be serving very specific sets of customers such as business customers in an industrial park or retailers in a shopping centre.

While there are differences between DNSPs and ENSPs, the Commission recommended in its draft report the current connection framework under Chapter 5A of the NER, with some adaptations, would form an appropriate basis for connection arrangements for ENSPs. This would mean that customers in embedded networks are provided with similar protections while reducing the regulatory burden on ENSPs where possible so as not to create unnecessary costs that may be passed onto consumers.

7.3.1 Obligation to provide connection services in embedded networks

The Commission acknowledged in its draft report that many embedded network owners will be incentivised to connect new customers. It is unlikely, for example, that a new tenancy within a building would be established without a connection to the embedded network being provided. However, without an obligation to provide connection services in embedded

355 Alternative control services are services provided by distributors to specific customers. They do not form part of their distribution use of system revenue allowance approved by the AER for each distributor. Distributors recover the costs of providing alternative control services through a 'user pays' basis.

356 Section 4.6.4.2 of the AER Network Exemption Guideline.

networks, as embedded networks grow in number and size and evolve into more complex arrangements, embedded network customers may find themselves in a position where they are unable to:

- connect to an embedded network, even though a customer's premises for which a connection is being sought is covered by the area of the embedded network and the customer has no other connection options
- upgrade their existing connection in an embedded network to export electricity from embedded generation behind the child meter, or not be able to upgrade its capacity so that they can install a fast charge station for an electric vehicle.

The Commission stated in its draft report that an ENSP should have the same obligations as a DNSP under the NERL and the NERR to:

- make an offer for a new connection or provide a service relating to a connection alteration, if a retail customer seeks a new connection or connection alteration within the embedded network
- provide connection services in respect of the customer's premises as soon as practicable after the retailer (either a NEM retailer or off-market retailer) notifies the distributor of the formation of the relevant contract.

The draft report recommended that embedded networks are elevated into the national regulatory framework, including introducing definitions of ENSP and embedded network into the NERL and making ENSPs a type of network service provider. Extending connection and alteration obligations to ENSPs will therefore be achieved as a consequence of ENSPs being required to comply with the existing obligations on network service providers to provide connection services in accordance with s. 66 of the NERL.

These draft recommended amendments to elevate ENSPs and embedded networks into the NERL would also have the effect of placing obligations on off-market retailers as a result of becoming a subset of authorised retailer, including requiring off-market retailers to apply for connection services on behalf of embedded network customers.

However, the Commission recommended these obligations be restricted to a specific location to prevent placing obligations on an embedded network would be unable to meet. For example, it would be infeasible for an embedded network that served an apartment building to be required to connect a retail customer across a road under which they did not have access to an easement. The Commission recommended this be achieved through linking the obligation to connect to the embedded network area notified by the ENSP to AEMO at the point of registration.

The Commission proposed in the draft report that at the time of registration, an embedded network owner would be required to provide details of the embedded network area that the ENSP would be serving (which can be updated subject to an application to AEMO)[357]. Supporting information may, for example, include maps, land title information and line diagrams setting out the catchment for the embedded network. The information on the

357 The process would be specified by AEMO as per AEMO's guidelines.

embedded network area would need to be made transparent and publicly accessible, either through AEMO or on the ENSP's website. The registration of a certain area as the embedded network area would also need to comply with any applicable jurisdictional requirements.

Consistent with the connection framework for DNSPs under Chapter 5A of the NER, the Commission also recommended that an ENSP has an obligation to make an offer for a new connection to non-registered embedded generators seeking to connect to an embedded network. Among other things, this would prevent a situation where a small embedded generator's application to connect is rejected for anti-competitive reasons, e.g. if the owner of the embedded network is also an embedded generator and seeks to maintain its local generation monopoly within the embedded network.

Under the draft proposed framework, the obligation for new connections and connection alterations would lie with the ENSP. If the ENSP is not the same entity as the embedded network owner, these two entities would need to establish their responsibilities to each other in relation to new connections and alterations through contractual arrangements, including what rights and information the ENSP requires to perform its obligations with regard to connections to the embedded network.[358]

7.3.2 Types of connection offers

The Commission outlined in its draft report that establishing a framework for standardising and negotiating connection services in embedded networks would benefit both connection applicants and ENSPs.

Accordingly, the Commission proposed in its draft report that the current connection framework under Chapter 5A of the NER should be adapted to embedded networks. The Commission considered that customers in embedded networks should be provided with similar protections and options for connection services, while reducing the regulatory burden on ENSPs as much as possible so as not to create inappropriately high barriers to entry.

The draft framework recommended that ENSPs have an obligation to:

- provide an offer for basic connection services, by either using a model standing offer the AER has prepared and provided for all ENSPs as part of the embedded network connection policy (and notifying the AER if this is the case), or by preparing a model standing offer of its own that is consistent with the requirements of Chapter 5A of the NER[359] and approved by the AER
- use the structured negotiated process set out in Chapter 5A of the NER for connection applicants that require a connection that exceeds the specifications of a basic connection service or choose to negotiate a connection contract
- set connection charges in line with an embedded network connection policy which the AER must establish.

358 Whether tenants can request an ENSP of an embedded network to provide a new connection or upgrade of an existing connection under s. 66 of the NERL, e.g. if a tenant seeks to install a charging station for electric vehicles, will depend on the tenancy agreement.

359 This includes a requirement that a model standing offer is consistent with the embedded network connection policy.

Extending basic and negotiated connections services to embedded networks

The Commission recommended that ENSPs *must* have a model standing offer to provide basic connection services to retail customers and publish it on its website. This would provide certainty to all connection applicants seeking a connection service under a certain threshold that they can connect under a particular set of terms and conditions.

To reduce the costs for ENSPs of producing a model standing offer, the Commission recommended that the AER be obliged to publish a model standing offer for basic connections in embedded networks, which ENSPs may adopt by notifying the AER. The Commission recommended that the AER:

- have discretion whether to publish one or multiple model standing offers for basic connection services (e.g. one offer for a basic connection with only load and a separate offer for a basic connection including micro embedded generation, or a combined offer)
- be required to set terms and conditions, following consultation, which are consistent with the same NER requirements for DNSPs' model standing offers for a basic connection.[360]

However, the Commission considered an ENSP should also be able to prepare its own model standing offer to suit its specific circumstances if it wishes. As such the Commission recommended that:

- an ENSP may prepare its own model standing offer and submit it to the AER for approval
- the standing offer prepared by an ENSP must be consistent with the NER requirements for DNSPs' model standing offers for a basic connection.

Where connection applicants require a connection that exceeds the specifications of a basic connection service, the Commission recommended that negotiated contracts be permitted under the same process available to DNSPs under Chapter 5A of the NER. This would provide connection applicants in embedded networks with the same flexibility currently provided under Chapter 5A of the NER, when a connection application with unique requirements is seeking a connection service.

Applying the proposed connection framework for connection services would also provide clarity, predictability and transparency, including in relation to the process of assessing an application and the subsequent steps of contract formation and contractual performance (in terms of commencing connection works).

Removing standard connection services for embedded networks

To simplify the connection framework for embedded networks and reduce costs, the draft report recommended that the category of standard connection offers should not apply to embedded networks. Most DNSPs do not provide model standing offers for standard connection services due to the perceived impracticability of accounting for connection applicants' diverse needs. The Commission considered this would make it clearer to

360 Where the terms and conditions refer to jurisdictional or other legislation and statutory instruments that impose safety and technical requirements as well as requirements regarding qualifications for installers to be complied with, the relevant jurisdictional legislation and statutory instruments need to spell out which provisions do not apply in embedded networks, if any.

connection applications that they may either elect to apply for a basic connection or a negotiated connection.

7.3.3 Standardising connection policies

As discussed above in relation to connection offers, to reduce the regulatory burden on ENSPs the Commission recommended removing the requirement for ENSPs to each prepare a connection policy for AER approval and instead requiring the AER to establish a connection policy that is suitable to be used by all ENSPs. The AER connection policy would set out the approach to funding connections and network augmentations consistent with the connection charge principles in Part E of Chapter 5A of the NER. ENSPs would be required to use the AER's created connection policy and would not be allowed to have their own connection policy. This would not only reduce the regulatory burden for ENSPs, who would not have to prepare a connection policy that is consistent with the connection charge principles and AER guidelines under the proposed framework, but provide greater consistency in connection charging between embedded networks and create consistency for embedded network customers.

It would be necessary for this connection policy to be appropriate for different types of embedded networks that may have different customer profiles. As such the Commission recommended that the AER, in developing its embedded network connection policy, be required to have regard to, amongst other things:

- the connection charge guidelines and the requirements of those guidelines under the NER, to the extent they are relevant to embedded networks
- the differences between various embedded networks and differences between the customers they serve (including historical and geographical differences between embedded networks).

The Commission considered it would be more cost effective for the AER to establish this single connection policy than being required to approve the connection policy of each ENSP. Standardising the connection policy would reduce costs for ENSPs and would also provide greater consistency in connection charging between embedded networks where the standardised connection policy is adopted.

The Commission recommended the embedded network connection policy sets out, amongst other things, the circumstances under which a customer is required to pay a connection charge for connecting their premises or make a capital contribution towards the cost of expanding the capacity of the embedded network.

The Commission considered that customers in embedded networks should have certainty regarding the minimum service they can expect to be provided without being required to fund augmentations in embedded networks. As such, the Commission recommended the embedded network connection policy include a threshold below which a retail customer (other than a non-registered embedded generator or a real estate developer) would not be

liable for connection charges for an augmentation of the network (other than an extension).[361]

As set out above, the Commission recommended the embedded network connection policy include one or more forms of model standing offer that may be adopted by an ENSP.

7.3.4 Connection charges

As explained above, in the context of the NEM the AER approves a DNSP's connection charges based on its assessment of whether they are reasonable in terms of being consistent with the DNSP's distribution determination. However, ENSPs would not be subject to revenue determinations by the AER.

In establishing a draft framework for new connections and connection alterations the Commission therefore considered:

- on what basis ENSP connection charges should be set and who should be charged the costs of any necessary network augmentation
- whether the AER should have a role in approving connection charges.

Setting connection charges

To protect customers from unreasonably high connection charges in an embedded network, the Commission considered ENSPs should be required to set charges based on a set of principles set out in the NER.

The Commission recommended that the NER requires that ENSPs set connection charges that:

- are reasonable, taking into account the efficient costs of providing the connection services arising from the new connection or connection alteration and the revenue the LNSP[362] would require to provide those connection services
- provide a user-pays signal to reflect the efficient cost of providing the connection services
- limit cross-subsidisation of connection costs between different classes (or subclasses) of retail customers
- if the connection services are contestable – be competitively neutral.

Should connection charges be approved by the AER?

The Commission considered it would be impractical and costly for the AER to review and approve each ENSP's connection charges. Therefore, the Commission recommended that ENSPs should not be required to have their charges approved by the AER.

However, the Commission considered that since many connection applicants will have no other connection option than the monopoly ENSP, embedded network connection applicants

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361 Under the draft proposed framework, if an augmentation to the embedded network or another network through which the embedded network is connected would be required to provide a connection service, the relevant retail customer would not be required to bear those costs where the application is for a basic connection service, and does not exceed any relevant thresholds. The 'customer' would be the account holder at the premises.

362 The Commission considers that the LNSP's connection charges would provide an appropriate benchmark for establishing the reasonableness of connection charges.

should have the ability to bring a dispute on connection charges, or any other terms and conditions, to the AER for a determination.

The Commission recommended that if there is a dispute between an ENSP and a customer about connection charges or the proposed or actual terms and conditions of a basic or negotiated connection contract, the dispute resolution process under Part G of Chapter 5A of the NER should apply.

The Commission recommended that, in determining a relevant dispute about connection charges, the AER may give consideration to the principles outlined above including the charges that the relevant LNSP is permitted to charge its customers (consistent with the relevant DNSP's distribution determination).

7.4 Stakeholder views

The majority of stakeholders expressed support for the proposed connection framework at the workshops held in Sydney in October 2018 and February 2019, and in their submissions to the draft report. Stakeholders' support for new consumer protections in the area of connection services was explicitly expressed in the submissions to the draft report from the AER, EWOQ, AGL, Alinta, Origin, Energy Networks Australia and Landlease.[363]

A number of stakeholders expressed the need for further specification, or disagreed with aspects of the Commission's draft connection framework, including in the areas of:

- model standing offer for basic connection services
- connection policy and connection charges
- dispute resolution
- non-registered embedded generation and DER in embedded networks.

7.4.1 Model standing offer for basic connection

Alinta, AGL, Origin and Energy Networks Australia expressed support for the draft recommendation of the AER providing a model standing offer for basic connection services to reduce the costs for ENSPs, whilst Origin and Alinta also expressed support to allow ENSPs to develop their own model standing offer for the AER's approval.[364]

Although not provided through their formal submission, the AER has raised concerns in discussions with the Commission regarding the draft recommendation that ENSPs would be able to decide whether to publish their own version of a model standing offer (which would require AER approval). The AER considered that this could create a significant administrative burden for the AER given the large number of embedded networks and potentially registered ENSPs submitting their own model standing offer. The AER therefore suggested that the rules be amended to add a condition that an ENSP may only propose its own model standing offer

363 AER, submission to draft report, p. 11; EWOQ, submission to draft report, p. 2; AGL, submission to draft report, p. 4; Alinta, submission to draft report, p. 6; Origin, submission to draft report, p. 2; Energy Networks Australia, submission to draft report, p. 2; Landlease, submission to draft report, p. 11/12.

364 Alinta, submission to the draft report, p. 6; Origin, submission to the draft report, p. 4; AGL submission to draft report, p. 4; Energy Networks Australia, submission to draft report, p. 2.

if the AER model standing offer cannot adequately address a specific embedded network's particular circumstances, and an ENSP would need to demonstrate why this is the case.

7.4.2 Connection policy and connection charges

Retailers expressed support for the recommendation that ENSPs should have the same obligations as DNSPs under the NERL and NER with respect to connection services.

Although Alinta also acknowledged in its submission the exceptions and practical constraints in relation to connections in an embedded network, Alinta and AGL expressed support for the proposed application of the Chapter 5A connection framework to embedded networks. They supported the basic connection offers for small customers and the negotiated connection process for more complex connections, to ensure the consistency for electricity customers.[365]

Alinta, Origin and AGL agreed that the Commission's draft recommendation would create consistency for customers through the proposed obligation on ENSPs to:[366]

- adopt the standardised embedded network connection policy, to be developed by the AER, which would provide transparency regarding the terms and conditions of connection services, and minimise the costs for embedded networks
- set connection charges in line with the proposed principles-based approach and the embedded network connection policy, rather than economic regulation of connection charges
- be transparent regarding cost pass-throughs associated with connection, and where related to asset works, costs would be clearly characterised as a responsibility of the building owner, ENSP or other party, e.g. the connection applicant.

Although Landlease expressed general agreement with the Commission's draft proposal that connection obligations should apply to all ENSPs and be limited to the embedded network area, Landlease disagreed with the Commission's draft proposal in relation to connection policy and charges. Landlease considered ENSPs should be exempt from the recommended regulations relating to connection processes and charges if an ENSP already provides for equivalent connection policy terms in lease and occupancy agreements, strata and by-laws.[367]

7.4.3 Dispute resolution

Consistent with Landlease's comments regarding connection policy and charges, Landlease requested an exemption for ENSPs from the proposed application of the dispute resolution process under Part G of Chapter 5A of the NER where an ENSP's lease agreements provide for dispute resolution agreements or tenants have access to dispute resolution through state-based legislation (or ombudsman schemes).[368]

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365 Alinta, submission to draft report, p. 6; AGL submission to draft report, p. 4.

366 See Alinta, submission to draft report, p. 6; Origin, submission to draft report, p. 4; AGL, submission to draft report, p. 4.

367 See Landlease, submission to the draft report, p. 11/12 and p. 17.

368 Landlease, submission to draft report, p. 12 and 17. It should be noted that the AER requested in its submission to the draft report (p. 11) further specification on embedded network customers accessing the dispute resolution processes specified under Part G of Chapter 5A of the NER. However, the AER clarified later that this was not a material comment and that it is supportive of the AEMC's draft connection policy with regard to the proposed dispute resolution process.

7.4.4 DER and embedded generation in embedded networks

AGL expressed support for the Commission's draft recommendation that ENSPs should have an obligation to connect non-registered embedded generators seeking to connect to an embedded network to ensure that an application would not be rejected based on anti-competitive reasons.[369] However, DNSPs and Renew expressed concerns that such connections would not be visible to the DNSP to which the embedded network is connected, but may impact its distribution network.[370]

Energy Networks Australia and Energy Queensland were concerned about the potential flow-on impacts of DER and non-registered embedded generation in an embedded network connected to a DNSP's network at the parent connection point, increasing the risk of distribution system security and reliability, which may eventually lead to system security issues on the interconnected grid.[371]

Energy Queensland raised concerns regarding unclear information flows between parties and a lack of participant obligations when connecting non-registered embedded generators to an embedded networks within a DNSP's distribution network.[372] Energy Networks Australia mentioned that these risks may be exacerbated by the potential for poor quality connections in an embedded network in the absence of DNSP oversight or relevant rules applying to connections in embedded networks.[373]

Energy Queensland and Renew highlighted the importance of DNSPs having visibility of embedded generation and larger load connections, as well as DER in their systems.

Energy Queensland mentioned that currently, where embedded network owners wish to make changes to their load or non-registered embedded generation connection requirements that are above existing contractual agreements, the embedded network owner consults with the DNSP (as per their connection agreement).[374] However, to ensure visibility of connections within embedded networks and mitigate the risk for system stability and security issues, Energy Queensland suggested in its submission to the draft report that the AEMC considers the issue of load or embedded generation connections to embedded networks.[375]

Renew proposed that embedded networks be explicitly required to seek DNSP approval for DER installations to provide visibility of DER for DNSPs. Renew also recommended that parallel changes be made to the regulatory arrangements for DNSPs, to ensure DNSPs

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369 AGL, submission to draft report, p. 4.

370 Renew, submission to draft report, p. 5; Energy Networks Australia, submission to draft report, p. 2; Energy Queensland, submission to draft report, p. 6.

371 Energy Networks Australia, submission to draft report, p. 2; Energy Queensland, submission to the draft report, p. 4.

372 Energy Queensland, submission to draft report, p. 4.

373 Energy Networks Australia, submission to draft report, p. 2.

374 Energy Queensland mentioned in their submission (p. 5) that with regard to the connection of embedded generating systems to embedded networks within Energy Queensland's DNSPs' networks (Ergon Energy and Energex) the aggregate nameplate rating of all embedded generating systems (regardless of technology or operation type) along with the connection voltage (high or low) determines the applicable standards for the connection of embedded generating systems. The DNSP will consider the technical impacts on the DNSP's assets upstream of the connection point and general power system operation. Further, connection applications are reviewed for compliance with technical standards (which relate to the size of and voltage of connection to the distribution network) and systems with aggregate capacities greater than 30kVA have to include comprehensive submissions with single line diagrams and technical settings, and require the submission of compliance reports completed by a registered professional engineer in Queensland.

375 Energy Queensland, submission to draft report, p. 6.

negotiate in good faith with embedded network customers regarding DER connections based on the adoption of consistent, responsive and evidence-based principles for determining the terms for DER connections.[376]

7.5 Commission analysis and final recommendations

This section addresses the comments received from stakeholders in their submissions, outlines any changes to the draft report position and provides the rationale for changes to the Commission's final recommendation. It provides an overview of the final recommendations before going into more detail with regard to the final recommendations where changes were made to the draft position, or changes were requested but not made.

7.5.1 Overview of final recommendations

The final recommendations largely reflect the draft recommendations, however, some changes were made to the final recommendation, which are discussed in further detail below. The key aspects of the final recommendations are:

- ENSPs have an obligation to connect under Chapter 5A. This obligation is limited by the embedded network area.
- All ENSPs *must* adopt the AER's embedded network connection policy.
- ENSPs *must* adopt the AER's model standing offer for a class (or subclass) of basic connection services published by the AER, unless the specific circumstances of the embedded network require material alteration, omissions or alterations to a model standing offer published by the AER. In this case an ENSP may submit to the AER for approval its own model standing for a class (or subclass) of basic connection services (*change to draft report position*).
- Connection charges in embedded networks must be consistent with the connection charging principles under the Rules, and be reasonable, taking into account the connection charges the LNSP for the embedded network would charge to provide those services.
- The AER's dispute resolution process under Part G of Chapter 5A of the NER should apply to all embedded networks operated by a registered ENSP.
- Non-registered embedded generators that seek connection to an embedded network under Chapter 5A of the NER cannot elect to use the Chapter 5 process unlike non-registered embedded generators that seek to connect to a DNSP's distribution network (*change to draft report position*).
- To ensure visibility of negotiated connections in an embedded network, where a connection applicant is seeking a negotiated connection service the ENSP must notify the DNSP to whose network the embedded network is connected to (*change to draft report position*).

376 Renew, submission to draft report, p. 5.

- ENSPs must provide DER information to AEMO under rule 3.7E(d) of the NER to provide DNSPs with increased visibility of any downstream DER connections (*change to draft report position*).

7.5.2 Detailed outline of final recommendations

Model standing offer for basic connection services

The draft report recommended that ENSPs be required to have in place a model standing offer for basic connection services. The Commission proposed that this can be done either by adopting a model standing offer for basic connection services the AER has prepared as part of its embedded network connection policy, or preparing their own model standing offer(s) that is consistent with the requirements of Chapter 5A of the NER (e.g. the connection charging principles). If an ENSP opts to prepare its own model standing offer(s) for basic connection services, the offer needs to be submitted to the AER for approval.

In its submission to the draft report the AER raised concerns about the potentially high administrative costs approving of a potentially significant number of ENSPs' model standing offers for basic connection services. Comparing the potentially substantial costs for the AER with the potentially minor benefits of having not identical, but very similar model standing offers for basic connection in embedded networks, the Commission agrees that changes to its draft position are appropriate.

The Commission agrees that the AER could potentially face high costs associated with reviewing individual model standing offers for basic connection services. Further, only minor benefits will arise where the individualised model standing offer only vary slightly from the AER's model standing offer. For this reason, the Commission has amended its position. While ENSPs will still be able to submit to the AER their own model standing offer, they will only be able to do so where the specific circumstances of the embedded network require material alteration, omissions or alterations to a model standing offer published by the AER. An ENSP may only submit its own model standing offer for a class or subclass of basic connection services where the specific circumstances of the embedded network require alterations, omissions or additions to a model standing offer published by the AER. In submitting its own model standing offer for a basic connection service to the AER, the ENSP must include an explanation of the circumstances applicable to the embedded network that the alterations, omissions or additions are intended to address. Further, the terms and conditions of the proposed model standing offer must be fair and reasonable and comply with applicable requirements of the energy laws.[377]

Connection policy and connection charges

The Commission continues to consider that all ENSPs should be subject to the proposed connection policy framework. Landlease requested that the Rules permit an exemption to the requirement to adopt the AER's embedded network connection policy if an ENSP provides for equivalent connection policy terms in its lease and occupancy agreements, strata and bylaws or other matters on title.

377 New proposed clauses 5A.B.8(b) and (c) of the NER.

The Commission is concerned that Landlease's proposal would create a 'two-tiered' ENSP model, whereby some parts of the proposed connection framework apply to some ENSPs but not to others. The Commission is of the view that such a 'two-tiered' approach would have more disadvantages than advantages, specifically:

- The AER would face potentially significant administrative costs by being required to assess a potentially large number of ENSPs' connection policies and provide for increased monitoring of compliance and enforcement of ENSPs' individual connection policy terms and conditions as specified in their individual lease agreements, bylaws, etc.
- Consumers across different embedded networks may face different regulatory arrangements, including different terms and conditions for connections.

Further, ENSPs would benefit from lower administrative costs by adopting the AER's connection policy for embedded networks and not having to develop and update their own terms and conditions of connection

As such, the Commission's final recommendation remains that all ENSPs must adopt the AER's embedded network connection policy, as proposed in the draft report. The Commission does not consider it appropriate that those conditions vary. This is the very issue the new framework is trying to address. This final recommendation of a standardised connection policy would also be consistent with the Commission's approach to not pursue a two-tiered approach, but to favour a consistent approach with regard to a standardised embedded network connection policy, as well as achieving consistency through an AER model standing offer for basic connection services and the application of the dispute resolution process under Part G of Chapter 5 of the NER for embedded network customers.

In addition to the draft report position, the Commission has given further thought to the information required by a connection applicant in deciding whether to proceed with a request for a connection service where a capital contribution may arise. Some connections may require augmentation at the parent connection point (for a retail customer if the connection request exceeds a basic connection service). Where this occurs, the connection applicant would be required to make a capital contribution to allow the ENSP to recover its costs directly incurred for the relevant augmentation at the parent connection point. The Commission considers it as important that the connection applicant be provided with this information at the start of the negotiation process. This will enable the connection applicant to have all the relevant information to make a decision on whether to proceed with its request for a connection service to the embedded network or seek a connection directly to the DNSP's network.[378] For this reason the Commission's final recommendations include an obligation on ENSPs to inform a connection applicant as soon as practicable during the negotiation process if augmentation at the parent connection point would be required.

378 New proposed clause 5A.C.2(b)(1) of the NER.

Dispute resolution

In relation to dispute resolution, the Commission continues to consider that embedded network customers should have access to the dispute resolution process provided for under Part G of Chapter 5A of the NER.

The Commission notes Landlease's request that where embedded network operators already provide for a dispute resolution process to deal with connection charges or the proposed or actual terms and conditions of a basic or negotiated connection contract, an ENSP should not be subject to the energy dispute resolution process under Part G of Chapter 5A of the NER.

However, the Commission considers it to be in the interest of embedded network customers to have access to the same energy dispute resolution arrangements as grid connected customers with regard to connection disputes, irrespective of which embedded network they are connected to. As such, the Commission's final recommendation does not change from its draft recommendation, namely that the AER's dispute resolution process under Chapter 5A, Part G should apply to all embedded networks operated by a registered ENSP. The Commission considers that a consistent approach to dispute resolution will result in lower administrative costs and greater benefits to consumers.

Visibility of DER in embedded networks

The Commission agrees with stakeholder concerns about the visibility of DER in embedded networks by the relevant DNSP.

The Commission's final recommendations extend the changes to the NER introduced through the National Electricity Amendment (Register of Distributed Energy Resources) Rule 2018[379] to also include embedded networks. The DER Rule:[380]

- places an obligation on AEMO to establish, maintain and update a register of static data for DER in the NEM, including small scale battery storage systems and solar
- requires network service providers to request from their customers specific DER generation information outlined by AEMO in guidelines (through the network connection process and deemed standard connection contract), and provide this data to AEMO
- introduces a data sharing framework that obliges AEMO to share disaggregated data regarding the locational and technical characteristics of devices in the DER register with network businesses in relation to their network areas (including data that was not reported through their connection application process or contracts), subject to privacy laws and protected information provisions in the NEL
- places an obligation on AEMO to periodically report publicly relevant information from the DER register at an appropriate level of aggregation

379 DER Rule in the following.

380 The DER Rule will commence operation on 1 December 2019, with AEMO having an obligation to make and publish the first DER register information guidelines by 1 June 2019, and for network service provider to provide AEMO with all information that they currently hold which would be DER generation information under the new rule by the commencement date of the rule.

- allows AEMO to provide DER register information to an emergency services agency if requested for the purposes of that agency's response to an emergency or for planning in relation to emergency responses.

The Commission considers that extending the obligation on network service providers to provide DER information to AEMO under rule 3.7E(d) of the NER to ENSPs is consistent with the application of the broader connection framework to ENSPs and more generally introducing consistency between DNSP and ENSP obligations where possible.

However, the Commission does not propose to extend the requirement to ENSPs to provide any information regarding 'active load', that is responsive to either demand for, or price of, electricity to AEMO. Distributed generation can be 'smart', that is when a generation device has the ability to respond automatically to short term changes in prices or signals from the wholesale markets or elsewhere in the supply chain. Load must be 'smart' in order to be characterised as DER for the purposes of the register. The DER register covers devices that have the effect of injecting power into the electricity network, either through direct generation (e.g. solar PV) or the active curtailment of load (e.g. a demand response contract between a DNSP and a consumer to regulate the use of an appliance, such as an air conditioner, during a time of the day when it would otherwise be expected to operate).[381]

Whilst the Commission is of the view that an ENSP should also have a reporting obligation under the DER register with regard to generation connected to its embedded network, the Commission does not consider it necessary to require ENSPs to provide 'active load' information in order to address the concerns raised by the relevant stakeholders in their submissions to the draft report, which were primarily made with regard to insufficient control over generation connected to embedded networks.

However, to ensure DNSPs have visibility of DER *and* large load in their systems, the Commission's final recommendation is that ENSPs should have an obligation to notify a DNSP, to whose distribution network an ENSP's embedded network is connected to, about any new or modified connections that are subject to the negotiated connection process. This new notification obligation of ENSPs with regard to DNSPs under the final proposed framework would include any small scale embedded generation, exceeding the capacity threshold of micro-embedded generation, and any load exceeding the DNSP's defined threshold for a basic connection service in its connection policy and under its standing model offer for a basic connection service.[382]

The combination of the proposed application of the information provision requirements under the DER register to ENSPs and the proposed obligation on ENSPs to notify the DNSP about any generation or load being connected under a negotiated connection under Chapter 5A, should provide DNSPs with the relevant information necessary for managing network security issues that may arise as a result of small scale generation and larger load connecting to an embedded network. In addition, DNSPs are able to specify further requirements regarding

381 DNSPs already report the 'active' load information that is relevant to the DER register to AEMO under AEMO's *Demand Side Participation Information Guideline*. As such, to avoid duplicating the data collection process for 'active' load information, AEMO is required to include the information reported under its *Demand Side Participation Information Guideline* into the DER Register on an ongoing basis.

382 New proposed clause 5A.C.3(a)(4) of the NER.

information provision obligations for ENSPs through their connection agreements with ENSPs under Chapter 5 of the NER.

Connection of embedded generation to embedded networks

As discussed further in chapter 8 of this report, the Commission does not propose to apply the connection process specified in Chapter 5 of the NER to embedded networks (with the exception of performance standards). For consistency, the Commission's final recommendation is that non-registered embedded generators that seek connection to an embedded network under Chapter 5A cannot elect to use the Chapter 5 connection process instead of the Chapter 5A connection process (unlike non-registered embedded generators that seek to connect to a DNSP's distribution network).[383]

7.6 Laws and Rules implementation

Obligation to connect

It is proposed that an ENSP has an obligation to provide customer connection services under the NERL, to a customer who requests those services, and whose premises is connected, or who is seeking to have those premises connected to the ENSP's distribution system, and limited to within the embedded network area. This obligation is limited to the ENSP establishing a new connection for premises, or providing a service relating to a connection alteration for premises, where the premises are located in the ENSP's embedded network area.[384]

Off-market retailers will, in their capacity as a retailer, be required to request a customer connection service in respect of an existing connection to a customers premises, on behalf of a customer with the DNSP.[385]

Connection policies and charges

The AER is to create and publish the *embedded network connection policy* for different classes or subclasses of embedded network (as determined by the AER) detailing the basic connection services that apply to embedded networks and be adopted by an ENSP.[386] ENSPs must adopt a model standing offer applicable to its corresponding class and published in this policy (unless the ENSP has approval to use a modified version of an AER published model standing offer).[387] The policy must specify matters including:

- circumstances in which connection charges are payable to an ENSP

383 New proposed clause 5A.A.2 (c) of the NER.
384 Proposed amendment to s. 66 of the NERL.
385 Proposed new rule 3C of the NERR.
386 Final proposed new clauses 5A.B.2 and 5A.E.3A and 5A.E.3B of the NER.
387 Proposed new clauses 5A.B.2(a1), 5A.B.8 and 5A.E.3A(i) of the NER.

- the types of model standing offers that an ENSP can adopt (including providing guidance on the use of those terms, and how alternatively, the ENSP may submit a model standing offer for the AER's approval)[388]
- circumstances in which connection charges are payable to an ENSP
- the basis for determining the amounts of connection charges.[389]

The policy is required to provide a connection charge methodology that is reasonable and consistent with the connection charging principles in the rules[390] and stipulate when retail customers are not required to make capital contributions towards the cost of network augmentation.[391] It is also proposed that the existing provisions on DNSP requirements for a connection policy be moved from Chapter 6 into this Chapter 5A for consistency.[392] However, these provisions on DNSP connection policies would not cover ENSPs.

Types of connection offers

Under the NER, provisions in Chapter 5A of the NER are proposed to be extended to off-market retailers by subsuming off-market retailers into the definition of registered participants for the purposes of this chapter, and extended to ENSPs by subsuming ENSPs into the definition of DNSP for the purposes of this chapter.[393] As a result, ENSPs will be required to have a model standing offer to provide basic connection services to retail customers (and may do so for different subclasses or classes of customers as currently offered by DNSPs).[394]

Where an ENSP adopts a model standing offer[395] published in the embedded network connection policy, the ENSP must notify the AER. An ENSP may alternatively, or additionally, submit to the AER for approval a modified version of an AER published model standing offer for an embedded network class or sub-class (and not its own proposed model standing offers as suggested in the draft report),[396] which are subject to the AER approval process provided for in the final proposed amendments to the NER.[397]

An ENSP is also proposed to be able to offer a negotiated connection contract under the current framework.[398] Further, it is proposed that ENSPs must:

- publish information on applications for connection services (including contact details of the local embedded network retailer for its embedded network, as well as information

388 Proposed new clauses 5A.B.2(a1) and 5A.E.3A(c)(5) of the NER.
389 Proposed new clauses 5A.E.3A(a)-(c) of the NER.
390 Proposed new clause 5A.E.3Aof the NER.
391 Proposed new clause 5A.E.3A(e) of the NER.
392 Proposed new clause 5A.E.3B of the NER, containing the current provisions of clause 6.7A.1 of the NER (which is to be moved from Chapter 6).
393 Final proposed new clause 5A.A.1A of the NER, and amendments to clause 5A.A.1 definitions.
394 Clause 5A.B.1 of the NER.
395 Final proposed amendments to clause 5A.A.1 of the NER, definition of 'model standing offer'; proposed new clauses 5A.B.2(a1) and 5A.B.8(a) of the NER.
396 Final proposed new clause 5A.B.8 of the NER.
397 Clauses 5A.B.8(b), (c), 5A.B.6 and 5A.B.3 of the NER.
398 Chapter 5A, Part C 'Negotiated connection' of the NER.

that a customer has the right to choose a retailer other than the local embedded network retailer)[399]

- maintain a register of completed embedded generation projects where applicable[400]
- be subject to dispute resolution procedures if disputes are raised by retail customers (that is, end-use customers such as households) or real estate developers[401]
- non-registered embedded generators seeking connection to embedded networks under Chapter 5A can no longer elect to use the Chapter 5 process unlike non-registered embedded generators seeking to connect to a DNSP's distribution network[402]
- ENSP's will be required to notify DNSP's of negotiated connection agreements to the embedded network[403], and
- ENSP's will be required to provide DER information to AEMO (and as obtained from connection applicants)[404]

399 Proposed amendments to clause 5A.D.1(a)(8) of the NER.
400 Proposed amendments to clause 5A.D.1A of the NER.
401 Chapter 5A, Part G of the NER.
402 Final proposed amendment to clause 5A.D.1(7) of the NER
403 Final proposed clause 5A.C.1(f) and 5A.C.2
404 Clause 5A.C.2 and 3 of Chapter 5A, and clause 3.7E(d)

8 CONNECTION OF REGISTERED PARTICIPANTS

8.1 Introduction

As part of elevating embedded networks into the national framework, consideration needs to be given to the connection process and the performance standards that should apply to registered participants seeking to connect embedded generators and large loads to an embedded network. The draft report for this review did raise the issue of applying performance standards to a registered participant connecting to an embedded network, but did not set out a framework for how a registered participant could establish a connection to an embedded network and how to apply and enforce performance standards. This final report addresses this issue to ensure plant of registered participants connected to an ENSP's embedded network will have agreed performance standards.

The Commission's recommendations formulated in this chapter would apply to the connection of registered (and intending to register) participants (generation and load) to embedded networks under Chapter 5 of the NER. Registered participants for these purposes include:

- *Embedded generators*: a generator that is connected to a distribution system and that is not exempted by AEMO from the requirement to register as a generator under Chapter 2 of the NER.
- *Customers*[405]: a large load customer that purchases electricity directly from the wholesale market, which could include smelters, factories, etc.

Performance standards are essential for the secure and reliable operation of the power system. They address the needs of a stable power system through, for example, being a means to effectively ensure a generating system is capable of operating within certain frequency limits and can respond to voltage disturbances to prevent significant power system disruption. As such, performance standards are one of the principal tools AEMO uses to manage power system security, by specifying the technical requirements for the connection of load and generation to a network. Performance standards are negotiated between the network service provider and the connection applicant, with AEMO having an advisory function, during the connection process under Chapter 5 of the NER. Once established in a connection agreement, the negotiated performance standards for equipment connected to the power system are registered by AEMO and become the performance standards for that plant. These registered performance standards accordingly represent the enforceable technical standards for the connected plant and a registered participant's compliance with its performance standards can be monitored and enforced by the AER under section 15 of the NEL and Chapter 4 of the NER.

This chapter outlines a framework for the connection of registered (and intending to register) participants to embedded networks under the NER to ensure plant connected to an ENSP's distribution network will have agreed performance standards. The proposed framework provides a mechanism for how performance standards should be determined under Chapter 5

405 As registered under Chapter 2 of the NER

and how a registered participant's compliance with the relevant performance standards will be monitored and enforced under Chapter 4 of the NER.

The proposed framework would apply to all registered participants, including embedded generators and customers that seek to connect load to a registered embedded network. However, there are instances where the framework only applies to embedded generators, e.g. with regard to system strength requirements. Where this is the case, it will be clearly pointed out in this chapter.

This chapter sets out:

- the current arrangements in the NEM and embedded networks for connection of registered participants and application of performance standards
- a summary of the draft report position
- stakeholder views on the application of performance standards to registered participants connecting to an exempt network
- the Commission's analysis and final recommendations regarding a framework for the connection of registered participants to embedded networks to ensure the application of performance standards.

The connection of retail customers, including micro-embedded generation, non-registered embedded generators and large loads that are not registered participants to embedded networks is addressed in chapter 6 of this final report.

8.2 Current arrangements in the NEM and embedded networks for the connection of registered participants

8.2.1 Introduction

To connect to the grid, a registered embedded generator must have a connection agreement with the relevant registered network service provider.

Chapter 5 of the NER provides the framework for connection applicants that are registered participants seeking to connect a generating system or large load to the grid. As part of the connection process registered participants are required to negotiate with the LNSP (who is advised on some matters by AEMO) on the level of performance for the equipment they are seeking to connect to the power system.

To negotiate a connection agreement under Chapter 5 of the NER requires both the network service provider and the embedded generator or customer seeking to connect large load to be registered with AEMO. However, embedded network operators are currently exempt from the requirement to register with AEMO as a network service provider under Chapter 2 of the NER. As a result, Chapter 5 of the NER does currently not apply to the connection of registered participants to embedded networks, and as such there is no obligation to negotiate a connection agreement.

A key component of a connection agreement is the definition of performance standards that will apply to the connected equipment of a registered participant. Without the requirement to negotiate a connection agreement:

- there is no NER obligation to establish performance standards for that generator or customer in the connection agreement with the exempt network operator
- there is no requirement for AEMO to approve any negotiated performance standards
- there are no clear performance standards for AEMO and the AER to monitor and enforce against a connecting party who is a registered participant, based on performance data recorded at its connection point to the exempt network.

Network exemption therefore creates a disconnect between the requirement for registered participants to comply with registered performance standards for their plant in an exempt network, and the means of establishing those performance standards under the NER.

8.2.2 Current arrangements in the NEM

Part B of Chapter 5 of the NER provides the framework for connection and access to a transmission or distribution network and to the national grid. Elevating embedded networks into the national regulatory regime would require embedded networks to become a registered distribution system, and as such they would form part of the national grid.[406]

The principles governing connection to the national grid are that:[407]

- all registered participants should have the opportunity to form a connection to a network and have access to the network services provided by the networks forming part of the national grid
- the terms and conditions of a connection are to be set out in commercial agreements (the connection agreement) on reasonable terms between the network service provider and registered participants
- the technical terms and conditions of connection agreements regarding performance standards for the equipment that is to be connected must be established at a level at or above the minimum access standards set out in the relevant schedules of Chapter 5, to ensure the power system operates securely and reliably.

Accordingly, Chapter 5 not only regulates the connection of registered participants to the national grid, but also puts an obligation on registered participants to operate their equipment in a manner to assist AEMO in preventing or controlling instability within the power system, as well as assist AEMO with the maintenance of, or restoration to, a satisfactory operating state of the power system, by complying with their performance standards.[408]

Exemption from registration as a generator

Both the connection applicant (generator or customer) and the network service provider, must be registered in order to form a connection agreement and negotiate performance standards. The NEL and the NER require a person who owns, operates or controls a

406 According to the definition in Chapter 10 of the NER, the national grid is the sum of all connected transmission and distribution systems within the participating jurisdiction.

407 As outlined in clauses 5.1A.2 (a)-(c) of the NER.

408 Clause 5.2.1(b) of the NER.

generating system connected to the grid to be registered with AEMO, unless AEMO exempts them from doing so.[409]

According to clause 2.2.1(c) of the NER, AEMO may, in accordance with guidelines issued by AEMO, exempt a person or class of persons from the requirement to register as a generator.[410] AEMO's current Generator Exemption Guide provides for an exemption from the requirement to register as a generator based on the characteristics of the generating system (nature, size, type and operation).[411] Exemptions based on generating system characteristics are broadly grouped as follows by AEMO:

- *Standing/automatic exemptions*: are available to proponents who own, operate or control a generating system whose output is consumed or purchased locally with a nameplate rating of less than 5MW, when fully connected to a transmission or distribution system. A standing exemption does not require a person to submit an application for exemption from registration to AEMO, as generating systems with a nameplate rating of less than 5MW are unlikely to have a material impact on other network users.[412]
- *Applications for exemptions*: may be made by proponents who own, operate or control a generating system with a nameplate rating of at least 5MW but less than 30MW (other than those that include battery storage facilities).[413] Applications for exemptions may also be made by persons who own, operate or control a generating systems with a nameplate rating over 30MW.[414]

In limited specified circumstances, AEMO granting an exemption from the requirement to register as a generator based on the characteristics of the generating system does not automatically preclude generators having to negotiate certain technical standards for their equipment with the LNSP as explained below.

Exempt generators (less than 5MW) - application of technical standards defined by the LNSP

Generating systems eligible for an automatic/standing exemption contractually agree with the relevant DNSP on certain technical standards outside of Chapter 5 of the NER. Given that automatic/standing exemptions by nature are not recorded by AEMO, there are no attached conditions relating to these agreed technical standards.

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409 Sections 11(1)(b) and 12 in the NEL and clause 2.2.1 of the NER.

410 AEMO, *Guide to Generator Exemptions and Classification of Generating Units*, Version 3.1, 20 November 2018.

411 According to clause 2.9.3 of the NER, a person that would be required to register as a generator can also apply for an exemption if an intermediary is to be registered instead of that person. AEMO must allow the exemption and approve the intermediary where: a) the intermediary consents in writing to act as an intermediary, and b) the applicant establishes to AEMO's reasonable satisfaction that, from a technical perspective, the intermediary can be treated, for the purposes of the NER, as the applicant with respect to the relevant generating system by providing relevant evidence, such as a connection agreement or the like. See also section 4, AEMO, *Guide to Generator Exemptions and Classification of Generating Units*, Version 3.1, 20 November 2018.

412 Sections 2.3 to 3.2.1, AEMO, *Guide to Generator Exemptions and Classification of Generating Units*, Version 3.1, 20 November 2018.

413 Section 3.1, AEMO, Guide to Generator Exemptions and Classification of Generating Units. No exemption from registration is available to battery storage facilities with a capacity of 5MW or more due to their unique characteristics in terms of their extremely fast ramp rates, their ability to switch from maximum charge to maximum discharge within one cycle (Hz) (for example, a battery storage facility with a nameplate rating of 5 MW can switch from 5MW discharge to 5 MW charge, resulting in an instantaneous change of generation of 10 MW) and their operation cannot be readily forecasted.

414 See clause 2.3 of the AEMO, Guide to Generator Exemptions and Classification of Generating Units. Applications for exemption for generating systems with a nameplate rating over 30MW may be made (i) if the purpose for which exemption is sought is the provision of unscheduled reserve in accordance with an unscheduled reserve contract, or (ii) for existing generating systems in exceptional circumstances at AEMO's absolute discretion.

Proponents seeking to connect an embedded generating system with a nameplate capacity of less than 5MW,[415] which are eligible for a standing exemption from registration with AEMO, generally follow the negotiated connection process regulated by Chapter 5A of the NER.[416] In this case, non-registered embedded generators seeking a network connection need to comply with the relevant network standards and other technical requirements defined by the respective DNSP.[417]

Exempt generators (5MW or more) - requirement to provide AEMO with a statement on agreed performance standards with the LNSP

Persons eligible to apply for an exemption from the requirement to register as a generator (i.e. generating systems with a total nameplate rating of at least 5MW but less than 30MW) are not automatically exempt from the requirement to comply with the technical requirements in Schedule 5.2 of the NER. When applying for an exemption, applicants will also need to provide to AEMO:

1. a copy of the performance standards agreed with their connecting network service provider; or
2. a letter from their connecting network service provider stating that their generating system is intended for use in a manner the network service provider considers is unlikely to cause a material degradation in the quality of supply to other network users.[418]

In both cases, if a generator is eligible for a standing exemption or has applied for an exemption from the requirement to register, the relevant technical standards for a non-registered participant are not negotiated under the Chapter 5 process due to the embedded generator being an exempt party, and as such not being required to enter a connection agreement with the relevant network service provider under Chapter 5 of the NER. The AEMC understands that the negotiated technical standards are not registered by AEMO and likewise cannot be enforced under Chapter 4 of the NER.

Connection framework for registered participants under Chapter 5 of the NER

Chapter 5 of the NER provides the framework for applying for a connection to regulated networks for registered participants and persons intending to become registered participants. The principles relating to connection to the national grid specify that all registered

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415 Regarding generation below 30kW, in terms of micro embedded generators (10kVA for single phase or up to 30kVA for three phase units), the NER does not impose detailed performance standards on micro-embedded generators. However, DNSPs may impose requirements through their basic connection agreement. The micro embedded generating unit, the electrical installation, and the premises' connection assets also need to comply with various jurisdictional technical and safety rules and standards.

416 See chapter 7 of this final report. The negotiated connection process applies if the relevant network service provider does not provide for a model standing offer for a standard connection service that covers connection of embedded generators (the majority of DNSPs does not provide for a model standing offer for a standard connection service), and the embedded generator does not elect to apply the connection process under Chapter 5 of the NER instead of the process outlined under Chapter 5A of the NER, as non-registered embedded generators that fall under the Chapter 5A connection process can also elect to use the connection process under Chapter 5, which applies ot registered embedded generators and represents a more detailed process.

417 Australian Standard AS 5577-2013 - Electricity network safety management systems provides nationally consistent requirements for the development of an Electricity Network Safety Management System (ENSMS) by an electricity network operator. An ENSMS is used to define how the network service provider ensures the safe design, construction, commissioning, operation, maintenance and decommissioning of its electricity network. AS 5577-2013 applies to electricity supply networks but also covers electricity generation facilities that are installed and operated by the network operator as part of its electricity network. These include, but are not limited to, permanent embedded generation facilities, temporary embedded generation facilities, and emergency generators.

418 See section 3.3.3, AEMO, *Guide to Generator Exemptions and Classification of Generating Units*, Version 3.1, 20 November 2018.

participants should have the opportunity to form a connection to a network and have access to the network services provided by the networks forming part of the national grid.[419]

An application to connect must be made under clause 5.3 or 5.3A of the NER. These clauses:

- set out in detail the information that must be exchanged for the purpose of defining the connection applicant's requirements and the process that needs to be followed for an offer to connect
- require the network service provider to make an offer to connect if requested
- provide a dispute resolution process, if required, to determine the terms of access.

The process outlined under clause 5.3 of the NER applies to registered participants (or a person intending to become a registered participant), including registered customers that wish to connect large load to a distribution or transmission system, and registered generators that seek to connect to a transmission system.

The process outlined under clause 5.3A applies to registered embedded generators that seek to establish a connection to a DNSP's distribution network.

In addition, for both the connection processes set out under clause 5.3 and 5.3A of the NER, the following two additional clauses apply

- Clause 5.3.4A, dealing with determining performance standards for all registered participants and requiring AEMO to be involved in this process, and
- Clause 5.3.4B, dealing with system strength requirements for generators and AEMO to be consulted in this process.

Under this connection framework, in both cases, whether the process under clause 5.3 or 5.3A is followed, connection applicants are required to negotiate with a network service provider (who is advised on some matters by AEMO) on the level of performance for the equipment they are seeking to connect to the power system.[420]

The NER currently allows network service providers and AEMO, in respect of its advisory matters, to refuse to agree to a proposed negotiated access standard if, among other things, the connecting equipment would adversely affect system security or the quality of power supply to other network users.[421] AEMO must also review proposed system strength remediation, if required, under rule 5.3.4B of the NER.

The access standards for registered generators connecting to the grid (whether they connect to a distribution or transmission system) relate to a wide range of technical requirements, set out in Schedule 5.2 of the NER.[422] These include the requirements for generators:

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419 Clause 5.1A.2 of the NER.

420 Within a range provided by an automatic access standard (where a connection cannot be denied access on the basis of that technical requirement) and a minimum access standard (below which a connection must be denied access) that are each set out in the NER.

421 Chapter 10 of the NER defines AEMO advisory matters. Advice on the acceptability of negotiated access standards under the following clauses are deemed to be AEMO advisory matters: S5.1.9, S5.2.5.1, S5.2.5.3 to S5.2.5.5, S5.2.5.7 to S5.2.5.14, S5.2.6.1, S5.2.6.2, S5.3a.4.1 and S5.3a.14.

422 The access standards for customers are likewise set out in Schedule 5.3 of the NER.

- to be able to control their active and reactive power and reactive current response, which helps to keep the system stable during normal operation of the power system, and also when the system experiences unexpected frequency and voltage disturbances
- to be able to maintain operation in the face of these unexpected disturbances (including faults and contingency events) that can lead to cascading failures and blackouts
- to address an adverse system strength impact.

These access standards in the NER represent the reference points used for negotiations between connection applicants, the network service provider and, where relevant, AEMO, to set the specific levels of technical performance of equipment that connects to the power system. Once established in a connection agreement, the access standards for a generating system are registered by AEMO and become the performance standards for that plant.[423]

The Commission recently determined to make a rule change, on 27 September 2018, to the way levels of technical performance are negotiated for equipment connecting to the power system, and improve the technical requirements for new generating systems.[424] The rule improves and clarifies the negotiating process for new connections. Under the rule, negotiations can occur more efficiently so that each generating system that connects is required to have a level of performance that maintains system security and quality of supply at the lowest cost.

Monitoring, compliance and enforcement of performance standards for registered participants that have entered a connection agreement with a network service provider under Chapter 5 of the NER

Under the NEL, the AER is responsible for monitoring, compliance and enforcement of registered participants, including technical performance requirements for embedded generators and customers with large load connected. Chapter 4 of the NER sets out compliance obligations of registered participants and what happens in the event of a likely or actual breach of performance standards.[425]

8.2.3 Current arrangements in embedded networks

Given that performance standards are defined by reference to the connection agreement with the relevant network service provider, where a network is exempt, including an embedded network, performance standards cannot be applied since Chapter 5 of the NER does not apply. Consequently, AEMO has no monitoring and enforcement powers of performance standards for registered embedded generators and customers connected to embedded networks.

To address the issue in the short-term, AEMO amended its Generator Exemption Guide and the AER likewise amended its Network Exemption Guideline.

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423 Rule 4.14 of the NER on the acceptance of performance standards and AEMO's obligation to establish and maintain a register of the performance standards applicable to plant as advised by the registered participant.

424 AEMC, National Electricity Amendment (Generator Technical Performance Standards) Rule 2018, 27 September 2018, see under https://www.aemc.gov.au/rule-changes/generator-technical-performance-standards.

425 Rule 4.15(f)-(q) of the NER.

AEMO's Generator Exemption Guide - different threshold for automatic exemptions in embedded networks

AEMO's Generator Exemption Guide specifies for embedded networks a different threshold for automatic/standing exemption from the requirement to register as a generator, compared to DNSPs' distribution networks (where the exemption threshold is less than 5MW for an individual generating system). For an embedded network, AEMO specifies that "*Where the **combined nameplate rating of generating units or generating systems** that are connected to a distribution system or transmission system through an embedded network **is less than 5MW at the parent connection point**, the person who owns, operates or controls these generating units or generating systems **will be automatically exempt from the requirement to register as a Generator**."*[426]

In turn, where the combined nameplate rating of generating systems in an embedded network is 5MW or more at the parent connection point, the person(s) who own, operate or control these generating systems need to register as a generator(s) or apply to AEMO for a discretionary exemption.

To date no precedent exists for how the generator registration threshold in embedded networks would apply, once the threshold is triggered, where the generating units are not connected at the same time (e.g. if there is already a 4MW generating system connected and an additional 2MW generating system seeks to connect). It is not clear whether this would result in a requirement for registration of the 'triggering generator', or whether retrospectively each generating system would be required to register as a generator.[427]

Although generating systems with a combined nameplate capacity of 5MW or more at the parent connection point need to register with AEMO as they exceed the capacity threshold for an automatic exemption in an embedded network, the AEMC understands that AEMO still faces problems with regard to monitoring and enforcing generator performance standards in exempt networks. Due to the fact that the operator of an embedded network is not a registered network service provider, no connection agreement, including performance standards, needs to be established under Chapter 5 of the NER, and as such no monitoring and enforcement of technical standards by AEMO can occur.

AER Network Exemption Guideline - AEMO review as a condition for registration of network exemption including on-market energy generation

Likewise, the AER amended its Network Exemption Guideline regarding the conditions of certain exemption classes that would provide for on-market and off-market generation[428] (Condition 4.2.3):[429]

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426 Sections 3.2.1 and 3.2.2, AEMO, *Guide to Generator Exemptions and Classification of Generating Units*, Version 3.1, 20 November 2018.

427 AEMO could clarify the application of the threshold or, as an alternative, revise the defined threshold in its Generator Exemption Guide for embedded generation in embedded networks, e.g. lower the threshold for individual generators rather than specifying the threshold in relation to the combined generation capacity at the parent connection point, in order to provide clarity and ensure greater oversight of generation connecting to embedded networks.

428 On-market energy generation refers to generated energy that is being sold in the NEM, off-market energy generation refers to generated energy that, for example, is used to provide network support in the form of a battery, but not sold in the NEM.

429 Exemption classes ND01, NR01 and NR02. In particular exemption class NR02 is of relevance as it provides for on-market energy generation by equipment owned, operated or controlled by a third party and connected to the NEM via an exempt network, with

*"**Additional requirements set by AEMO may apply to generator or battery or inverter type installations with an aggregate capacity measured at the connection point to the NEM greater than 5MW output** (The output is the aggregate nameplate capacity of all generation sources. It is not the export capacity of the system, which may be a lesser amount). **All such systems** intending to register or be deemed exempt in classes NDO1, NRO1 and NRO2 **require review by AEMO**. **This is to ensure that all necessary generator performance standards will apply and that the system is unlikely to pose an undue risk to system security or reliability.***

***When seeking to register in Activity Class NRO1 or NRO2 the applicant must hold evidence of this AEMO review and make it available to the AER on request. In the absence of an AEMO review, an NDO1, NRO1 or NRO2 exemption is invalid and of no effect.** A further review by AEMO must be sought whenever an increase in generation capacity is added to any deemed or registered exempt network in classes NDO1, NRO1 or NRO2 which results in total aggregate generation exceeding 5MW."*[430]

The purpose of these requirements is to provide a means by which AEMO can confirm that all necessary performance standards will apply and the generating system is unlikely to pose undue risk to power system security or reliability, prior to the AER making a decision to granting an exemption.

However, the AEMC understands that uncertainty persists regarding whether compliance with performance standard can be enforced in such instances, since neither Chapter 4 nor 5 of the NER apply. Further, the current process for registrable exemptions does not include a formal approval process by the AER, which may make it difficult for the AER to ensure compliance with exemption condition 4.2.3.

Lack of regulatory provisions to ensure sufficient oversight by DNSPs

The substitute review processes outlined in the AEMO and AER Guidelines still do not provide a means for the DNSP to be involved in this process of ensuring the suitability of connecting equipment. Only Condition 4.1.3 of the AER's Network Exemption Guideline places a general obligation on exempt network operators to provide all information that is reasonably required by a DNSP, which may include information about any load or generation above a certain threshold seeking connection to the embedded network.[431]

Accordingly, under the current exemption framework a DNSP can only control the connection of registered generators or customers through an embedded network to its network through the information requirement formulated in the AER's Network Exemption Guidelines and any information requirement specified in the connection agreement with an embedded network operator. However, in the absence of any regulatory obligations under the Rules, especially with regard to monitoring and enforcement of technical requirements under Chapter 4 of the

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the energy generation (including inverter) installations required to be registered with AEMO under clause 2.5.2 of the NER.

430 See Condition 4.2.3, p. 51, Version 6 of the AER Network Exemption Guideline from March 2018.

431 See AER Network Exemption Guideline, p. 36: "All owners and operators of exempt networks must comply with the reasonable requests of a local DNSP for demand forecasting data, relevant details of the physical network infrastructure and assets and any other data relevant to the control, operation or maintenance of the network".

NER, the question emerges whether these provisions are sufficient to ensure a DNSP has enough oversight of large generation and load connected to an embedded network within its distribution network.

8.3 Draft report

In its draft report for this review, the Commission did raise the issue of applying performance standards to a registered participant connecting to an embedded network, but did not set out a framework for how a registered participant could establish a connection to an embedded network and how to apply and enforce performance standards. However, the draft report provided a summary of the options proposed by AEMO in a stakeholder paper to apply performance standards to a generating system or load in an exempt network.

AEMO's paper on emerging generation and storage

In November 2018, AEMO published a stakeholder paper *Emerging Generation and Energy Storage in the NEM*, expressing AEMO's views on the issue of applying performance standards to a generating system or load in an exempt network.[432]

AEMO stated in its stakeholder paper that it has received at least six enquiries regarding connecting generating systems and load in exempt networks and proponent interest continues in early design discussions with AEMO. Given the increasing number of proposed connections to exempt networks, AEMO considers resolving this issue to be a priority.

The stakeholder paper included a number of potential options to address the issue, including:

- amending the NER to ensure that relevant clauses of Chapter 4 and 5 of the NER apply to ensure plant connected to exempt networks by registered participants will have agreed access standards that apply as performance standards for the purposes of the NER
- amending the definition of network service provider to include the owners/operators of exempt networks in appropriate cases, excluding for the purposes of Chapter 6A and 6 of the NER
- amending the definition of connection agreement so it is not restricted to registered networks
- amending the NEL and NER to ensure the AER's exemption power in relation to networks only extends to economic and access regulation, rather than the technical requirements of the NER.

Under the draft proposed framework, the AEMC proposed to streamline the current exemptions framework. As a result, the majority of formerly exempt network operators would be required to register as an ENSP with AEMO.[433] However, as part of its draft report, the Commission did not make any recommendations on how to negotiate, monitor and enforce performance standards applying to registered participants connected to embedded networks under Chapter 5 and 4 of the NER. A complexity to be considered in designing an appropriate

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432 AEMO, *Emerging Generation and Energy Storage in the NEM*, Stakeholder Paper, November 2018.

433 Refer to chapter 3 of this final report with regard to the authorisation and exemption framework for embedded network operators and retailers.

framework for the connection of registered participants to embedded networks is that there are multiple parties that must be involved in the process of negotiating, monitoring and enforcing performance standards, including AEMO, the DNSP, the ENSP and the registered participant.

8.4 Stakeholder views

8.4.1 Stakeholder submissions

The Commission received comments from stakeholders on generator connections in the submissions to the draft report.

AEMO and Energy Queensland raised the issue of embedded generation connecting to an embedded network.

AEMO expressed support for the AEMC's draft proposal to require embedded network operators to register as ENSPs where they connect individual generators that are required to register with AEMO or provide network support.[434] AEMO also suggested that the requirement to register as an ENSP should extend to embedded networks where the aggregate amount of connected generation exceeds the 5MW threshold.[435] AEMO considered it crucial that registered generators comply with technical performance requirements designed to ensure that their plant does not adversely impact on quality of supply to other network users, or on the security of the power system. AEMO also suggested that registered generators be required to fund, or establish and maintain, system strength remediation measures where their connection results in system strength falling below acceptable limits.[436]

AEMO expressed concerned about its inability to manage the power system, especially with regard to asynchronous generation connections increasing in weaker parts of the grid, with AEMO currently having no regulatory powers to establish and enforce performance obligations in exempt networks due to the present non-application of Chapter 5 of the NER. As such, AEMO considered it critical to apply connection requirements to the proposed new category of registered ENSPs that incorporate the Chapter 5 processes for determining performance standards and undertaking appropriate system strength assessments.[437]

Energy Queensland raised similar concerns regarding the application of performance standards to exempt networks, which has resulted in DNSPs not having visibility and a role in determining the performance standards to apply. Energy Queensland highlighted that the performance of the DNSP's network at the parent connection point is critical to assessing whether a generating system is likely to pose undue risk to power system security or reliability.[438] Energy Queensland therefore suggested that a clause similar to 5.3.5(d) of the

434 AEMO, submission to draft report, p. 6.
435 AEMO, submission to draft report, p. 6.
436 AEMO, submission to draft report, p. 6.
437 AEMO, submission to draft report, p. 7.
438 Energy Queensland, submission to draft report, p. 6.

NER[439] should apply to an ENSP when making a connection offer to ensure the DNSP has sufficient ability to assess/negotiate performance standards at the connection point.[440]

8.4.2 Stakeholder workshop

The AEMC held a targeted stakeholder workshop to consult on the issue of a framework for connection of registered embedded generators to embedded networks on 1 May 2019 in Sydney. Participants included AEMO, the AER, DNSP representatives and relevant recent generator proponents and their consultants.

Case studies considered at the workshop focussed on recent instances where embedded networks are purely set up for the purpose of connecting registered embedded generators. That being said, participants considered it very likely that in the future situations may occur where once an embedded network was set up for the sole purpose of connecting a registered embedded generator or load, residential customers may also seek connection to this particular embedded network.

8.5 Commission analysis and final recommendations

This section sets out the recommended framework for the connection of registered participants (embedded generators and customers seeking to connect large loads) to embedded networks.

It should be noted that the final recommendations with regard to the application of Chapters 5A, and Chapters 4 and 5 of the NER have key differences:

- Chapter 5A deals with the connection framework for retail customers and non-registered embedded generators. The objective of the Commission's final recommendation is to ensure retail customers in embedded networks have the same consumer protections as standard supply customers. Accordingly, ENSPs have an obligation to connect customers under the recommended changes to Chapter 5A of the NER.
- Chapters 4 and 5 deal with the connection framework for registered participants (or those intending to be registered). The objective of this aspect of the Commission's final recommendation is to ensure power system security, for which the application, compliance and enforcement of performance standards to connected facilities is the key. As such, the Commission's intention is not to put an obligation to connect registered participants on ENSPs, but ensure *if* a registered participant connects, performance standards apply.

Accordingly, the Commission's final recommendations relate to the:

439 Clause 5.3.5(d) of the NER provides that to maintain levels of service and quality of supply to existing registered participants in accordance with the Rules, the network service provider in preparing the offer to connect must consult with AEMO and other registered participants with whom it has connection agreements, if the network service provider believes in its reasonable opinion that compliance with the terms and conditions of those connection agreements will be affected, in order to assess the application to connect and determine: 1) the technical requirements for the equipment to be connected, 2) the extent and cost of augmentations and changes to all affected networks, 3) any consequent changes in network service charges, 4) any possible material effect if this new connection on the network power transfer capability, including that of other networks.

440 Energy Queensland, submission to draft report, p. 6.

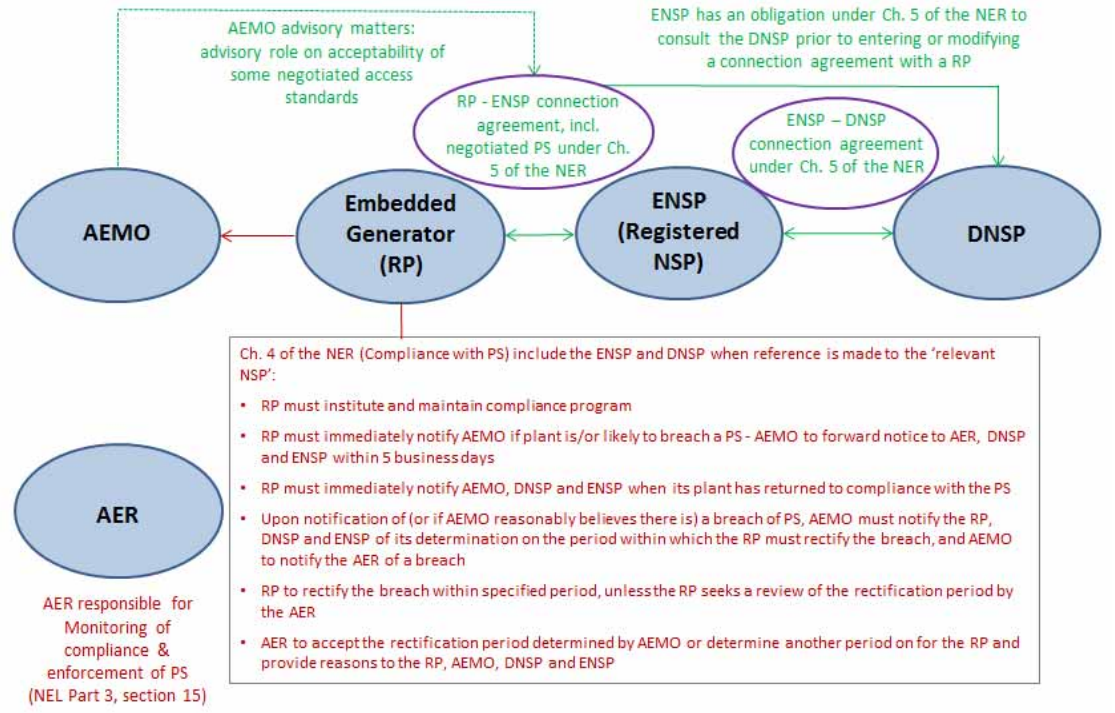
- requirement for ENSPs to negotiate enforceable performance standards under Chapters 4 and 5 of the NER when entering into a connection agreement with a registered participant, and similarly, to not allow a registered generator or participant to connect to an exempt network
- network access framework
- approaches to provide oversight for AEMO, the LNSP and ENSP
- framework for the resolution of connection access disputes
- application of the framework for connections of registered participants to legacy embedded networks.

The recommended framework for the application of performance standards to registered participants when connecting to embedded networks builds on the following key features:

1. There will no longer be a network exemption for an embedded network that seeks to connect a registered participant
2. ENSPs must negotiate performance standards as part of establishing a connection agreement with a registered participant, with AEMO having an advisory role on the acceptability of some negotiated access standards
3. The ENSP has an obligation under Chapter 5 of the NER to consult the LNSP prior to entering or modifying a connection agreement with a registered participant
4. The ENSP and LNSP will both be included in the information flow under the compliance framework for performance standards under Chapter 4 of the NER

Figure 8.1 illustrates the final proposed framework for the connection of registered participants to embedded networks. The individual components of the final proposed framework are discussed in more detail in the following sections.

Figure 8.1: Registered participant connections to an embedded network



Source: AEMC.

Note: RP=Registered Participant, PS=Performance Standards, NSP= Network Service Provider. The connection framework is pictured in green, the compliance framework is pictured in red. Any reference to a registered participant includes embedded generators and customers seeking to connect large loads.

The recommended framework for the connection of registered participants to embedded networks would provide the following benefits to AEMO, registered participants, DNSPs and residential customers:

- By requiring the registered participant (embedded generator or customer) to enter into a connection agreement with the ENSP, ensuring the application of clauses 5.3.4A and 5.3.4B dealing with the determination of performance standards and system strength requirements, and requiring AEMO to be consulted in this process, the recommended framework would ensure AEMO is appropriately involved in the negotiation of performance standards and these can be effectively monitored and enforced in embedded networks.
- Registered participants (embedded generators and customers) would have regulatory certainty regarding the process for determining, monitoring and enforcing compliance with performance standards and, if applicable, in the case of registered embedded generators, system strength requirements.

- DNSPs would be provided with sufficient oversight and control of registered embedded generation and large loads seeking to connect or alter their existing connection to an embedded network within their distribution network. This would be ensured by
  - requiring the ENSP to consult the DNSP prior to entering or modifying a connection agreement with a registered participant
  - extending the information and notification obligations of registered participants, the AER and AEMO with regard to network service providers
- Residential customers could also seek to connect to an embedded network that is initially only set up to provide connection to a registered participant (embedded generator or customer), and these residential customers would enjoy important consumer protections and access to retail market competition under the new framework for embedded networks. As such, the outlined connection framework for registered participants to embedded networks represents a 'future-proofed approach', as embedded networks may continue to grow and especially large embedded networks may in the future increasingly involve the connection of registered participants.

8.5.1 ENSPs to negotiate enforceable performance standards under Chapters 4 and 5 with a registered participant

The AEMC's final proposed framework will ensure that most operators of new embedded networks will have to register as an ENSP with AEMO, and as such will be captured under the definition of network service provider under Chapter 10 of the NER, or be exempted by the AER (under limited circumstances).[441] Requiring most embedded network operators to become a registered network service provider would enable the negotiation of performance standards between a registered ENSP and a registered participant (an embedded generator or customer with a large load) seeking connection to the embedded network.

Under the recommended framework, however, only certain parts of Chapters 4 and 5 of the NER are proposed to apply to ENSPs, as also suggested by AEMO in its stakeholder consultation paper *Emerging Generation and Energy Storage in the NEM*.[442] ENSPs will primarily be treated as network service providers for the purposes of determining, monitoring compliance with and enforcing performance standards (and, if necessary, system strength requirements) applicable to a registered participant's plant, when entering a connection agreement with a registered participant, to ensure the secure and reliable operation of the power system by AEMO. However, it is not intended that they have exactly the same obligations as DNSPs under Chapter 5, as outlined in further detail below. Whilst DNSPs are economically regulated by the AER, and as such can expect regulated revenue, ENSPs are not and thereby may face greater financial risks than DNSPs. Accordingly, the proposed connection framework for registered participants to embedded networks needs to take this difference into account, for example when designing the connection processes to be followed and an access framework to an embedded network.

441 See chapter 3 of this final report.

442 See AEMO, *Emerging Generation and Energy Storage in the NEM*, Stakeholder paper, November 2018, section 3.1.3, p. 32.

Application of Chapter 5 to registered participants connecting to embedded networks

Due to the different physical configuration of embedded networks, the Commission considers it unreasonable to require ENSPs to fulfil the same obligations as DNSPs, including requirements relating to:

- network planning and expansion[443]
- power system performance and quality of supply standards[444]
- network performance requirements to be provided or co-ordinated by network service providers.[445]

However, for AEMO to be able to securely and reliably operate the power system, the Commission considers it as necessary that ENSPs, when connecting a registered participant, also have an obligation to:

- Provide for the determination or amendment of performance standards applicable to any generating plant or large load connected to the ENSP's network, and ensure compliance with these performance standards and system standards, which are necessary for the safe and reliable operation of the facilities of registered participants.[446]
- Give effect to the design, registration, commissioning, testing, maintenance, secure and safe operation, and disconnection of any plant connected to an ENSP's network.[447]
- Ensure the timely provision of information to AEMO and the DNSP, to whose network the embedded network is connected, about the protection and control systems of any connected equipment.[448]

Application of Chapter 4 to registered participants connecting to embedded networks

The Commission recommends that the relevant clauses of Chapter 4, setting out the compliance, monitoring and enforcement framework for performance standards for registered participants should apply.

To ensure AEMO has the same rights and obligations in the context of accepting performance standards and having to establish and maintain a register of performance standards applicable to an individual plant, existing rule 4.14 of the NER is recommended also to apply to registered participants connecting to a registered embedded network under the final proposed framework.[449]

In extending the application of the existing framework for compliance with performance standards under rule 4.15 of the NER to also cover embedded networks, any reference to the relevant network service provider is proposed to include the ENSP and the relevant DNSP to

443 Part D of Chapter 5 of the NER.

444 Clause 5.2.3 of the NER.

445 Schedule 5.1 (Network performance requirements to be provided or co-ordinated by network service providers) of the NER. However, existing Schedule 5.1a (System standards) is proposed to apply to ENSPs to provide a registered participant with the opportunity to negotiate the relevant terms of a connection agreement to improve the standard of supply to the level of the system standard (except for standards of frequency and system stability), including voltage levels and fault clearance times.

446 Proposed new clauses 5.2.3B(c) and 5.3C(d) of the NER.

447 Proposed new clauses 5.2.3B(d)(4), (6), (7), (8) of the NER.

448 Proposed new clause 5.2.3B(j) of the NER.

449 Proposed amendment to existing rule 4.14 of the NER to extend its application to ENSPs.

whose network an ENSP is connected. Accordingly, the proposed amendments to rule 4.15 of the NER will allow AEMO, DNSPs *and* ENSPs to all be notified in relation to any breach and return to compliance with the relevant performance standards for a registered participant's plant.

The Commission considers it is necessary for the relevant DNSP to be included under the Chapter 4 compliance framework process and information flow, to ensure AEMO, the AER, the ENSP and relevant DNSP have sufficient control and oversight to ensure a registered participant's compliance with performance standards. This regulatory approach will address DNSPs' concerns regarding insufficient oversight of the compliance of embedded generation with technical requirements once connected to an embedded network within their distribution network.[450]

Embedded networks being no longer eligible for a network exemption when connecting a registered embedded generator

Embedded networks to which a registered generating system (or load) is seeking to connect will no longer be eligible for a network exemption from the AER. This addresses AEMO's concerns regarding its inability to effectively guarantee power system security in the case of registered generators being connected to exempt networks. The Commission recommends that:[451]

- the AER will no longer be able to grant a new network exemption to a distribution system to which a registered (or required to be registered) generating system is connected
- an existing registered network exemption is to be revoked automatically if a registered (or required to be registered) generating system connects to the exempt network.

In particular, the AER will under the final proposed framework no longer be able to grant a registrable network exemption relating to on-market energy generation equipment connected via an exempt network, with the equipment required to be registered with AEMO under clause 2.5.2 of the NER (current registrable exemption class NR02).[452]

Under the final proposed framework, only a very limited number of embedded network operators will continue to be exempt from the requirement to register as an ENSP. Of the networks that continue to be exempt from the requirement to register as an ENSP, as soon as a registered generating system connects to such an exempt network, the exempt network operator will also be required to register as an ENSP, to ensure the relevant provisions under Chapters 4 and 5 relating to the secure connection of equipment to the national grid will apply.

Moreover, under the final proposed framework, where an ENSP registers with AEMO it will be subject to all provisions applicable to ENSPs. Similarly, the Commission also recommends that

450 As mentioned by DNSP representatives at the AEMC's targeted stakeholder consultation workshop on 1 May 2019, see also Energy Queensland, submission to draft report, p. 6.

451 Proposed new clauses 2.14.2(c)(1) and (2) of the NER.

452 AER registration data suggests that currently four network exemptions exist with on-market energy generation under the NR02 exemption class. However, as these are registrable exemptions, information is provided by applicants with little or no verification by the AER. As such, applicants may have provided inaccurate information and may not have updated information with the AER when site details change.

the AER will no longer have the ability to exempt network service providers from the operation of Chapter 5 of the NER on a case-by-case basis.[453]

8.5.2 Access framework

Where a registered participant seeks to connect to an embedded network, the ENSP and the registered participant must negotiate a connection agreement, including performance standards. The Commission considers this as a necessary condition for equipping AEMO with the relevant tools to manage power system security. However, the Commission does not propose to put an obligation on the ENSP to make an offer to connect a registered participant under Chapter 5 of the NER.

In contrast to the proposed obligation of ENSPs to make an offer to connect under Chapter 5A of the NER to ensure important consumer protections are realised in embedded networks,[454] the Commission does not consider it as necessary to likewise put an obligation to make an offer to connect on ENSPs under Chapter 5 with regard to the connection of registered participants. Instead the objective is to ensure power system security, for which the application of performance standards would be sufficient.

In deciding not to impose an obligation on ENSPs to connect registered participants, the Commission considered the following factors:

- There may be valid reasons why an ENSP does not wish to connect a registered participant seeking connection to its embedded network, such as a lack of network capacity, reservation of spare capacity for its own future use or site characteristics.
- The obligations to provide information and have specific processes in place under rule 5.3A and rule 5.3 are likely to be too onerous for the majority of ENSPs.
- Putting an obligation to connect on ENSPs under Chapter 5 could potentially involve a financial risk for a registered participant seeking to connect to an ENSP's network, as an ENSP's connection offer would be subject to consultation with the DNSP to whose distribution network the ENSP's embedded network is connected to. Entering into connection negotiations with an ENSP is likely to require a significant financial contribution and time investment to provide the ENSP with all the relevant technical data necessary to negotiate performance standards and, if applicable, system strength requirements. However, the ENSP's ability to make an offer to connect is ultimately dependent on the DNSP's approval, which may or may not occur.

Based on stakeholder feedback, the Commission recommends that there is no regulatory obligation for the ENSP to connect a registered participant, and neither rule 5.3 nor rule 5.3A, outlining the relevant connection process to be followed, should apply to registered participants seeking to establish or modify an existing connection to an embedded network.

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453 Existing clause 2.5.1(d) of the NER to be removed under the final proposed framework. As an alternative to granting an individual network exemption, the AER may currently require the relevant person to register as an DNSP but exempt them from the operation of Chapter 5. However, the Commission understands that the AER would then typically attach conditions to the exemption requiring the exempt person to comply with certain provisions of Chapter 5. The Commission's recommended mechanism, with its targeted application of Chapter 5, would replace these arrr

454 See chapter 7 of this final report.

However, for the following two clauses should apply to ensure performance standards are negotiated and a system strength assessment is undertaken:

- Clause 5.3.4A, dealing with determining performance standards and requiring AEMO to be involved in this process
- Clause 5.3.4B, dealing with system strength requirements and AEMO to be consulted in this process.

This does not prevent an ENSP agreeing to connect a registered participant if it considers to do so, but there is no obligation to do so and the processes in rules 5.3 and 5.3A will not apply.

8.5.3 Regulatory and contractual approach to ensure sufficient oversight for the ENSP, LNSP and AEMO

An ENSP will have to enter into a connection agreement with a registered participant to enable the determination of performance standards and the assessment of system strength requirements, and ensure AEMO is consulted in these processes.

The DNSP will also be able to exert some control over any downstream connections of registered participants through its connection agreement with the ENSP, whereby the DNSP can define any contractual requirements it considers necessary to meet its regulatory obligations.

The final proposed framework will also provide for AEMO to be appropriately involved in the negotiation of, and enforcement of compliance with, performance standards, and in the process of system strength impact assessment for new connections, to ensure AEMO has sufficient information to operate the power system securely and reliably.

Connection agreement between the ENSP and the registered participant

Under the recommended framework, an ENSP's obligations under Chapter 5 will be set out in the new rule 5.2.3B, and registered participant connections to embedded networks will be covered under the new rule 5.3C.[455] Connection applicants that are, or are intending to become, a registered participant and who wish to connect to (or modify an existing connection to) an embedded network will need to enter into a connection agreement with the relevant ENSP.[456]

The new rules 5.3B and 5.3C define the obligations of an ENSP when connecting a registered participant to its embedded network. An ENSP must ensure the technical requirements relevant to the connected plant are determined and form part of the terms and conditions of the respective connection agreement, including performance standards, the applicable plant standards and the normal voltage level, if that is to change from the nominal voltage level.[457]

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455 An application to connect by an ENSP to a DNSP's network is subject to the existing rules 5.3 and 5.6 to 5.9 of the NER, as has previously been the case, including the application of Schedule 5.3 (Conditions for connection of customers) to an ENSP connecting to a DNSP's network, requiring the agreement of performance standards for the ENSP.

456 See Final proposed clauses 5.2.4(1A), 5.2.5(1A) and new rule 5.3C of the NER under the final proposed framework.

457 Final proposed new clause 5.3C(d) of the NER.

Moreover, the relevant post-connection agreement matters as currently specified in Part C of Chapter 5 of the NER will also extend to ENSPs under the final proposed framework, including the design of connected equipment,[458] entering, inspecting and testing of a connected facility,[459] commissioning of any new or replacement equipment,[460] and disconnection and reconnection of equipment.[461]

In the case of the ENSP and the registered participant being the same or a related party, the ENSP must prepare and maintain a statement of technical terms and conditions of connection of the respective facility or load. This statement will have the same character as a connection agreement under the Rules and needs to be provided to AEMO.[462] To ensure the appropriateness of such a connection statement the Commission recommends that a new Part C (Connection statements) be included under Schedule 5.6 of the NER. This new Part C of Schedule 5.6 will specify what a connection statement needs to cover in terms of the technical terms and conditions for access to an embedded network, including (but not limited to):

- details of each access standard and all related conditions resulting from the application of Schedule 5.2 for generators, or Schedule 5.3 for customers under the NER
- details of any system strength remediation scheme agreed, determined or modified
- metering arrangements
- testing and maintenance provisions.

Connection agreement between the ENSP and the DNSP

The ENSP is accountable under its connection agreement to the DNSP at the parent connection point, whilst the registered participant that has a facility connected to an embedded network is only accountable to the ENSP under its connection agreement. As such, the DNSP cannot in general rely on its rights under the Rules in relation to a facility in an embedded network. Accordingly, in relation to imposing requirements on a facility in an embedded network connected to its distribution network, the DNSP has no role in negotiating performance standards or most of the post connection matters in Part C of Chapter 5 of the NER. If it requires any rights, it must include them in its DNSP-ENSP connection agreement.

A DNSP will be able to ensure it has sufficient oversight and control over registered participants connected to an embedded network through the contractual requirements built into the connection agreement with an ENSP. A DNSP can ensure that any connection agreement between a registered participant and an ENSP must comply with the requirements set out in the connection agreement between an ENSP and the DNSP.[463]

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458 Existing rule 5.6 and proposed new clause 5.2.3B(d)(4) of the NER.

459 Existing rule 5.7 and proposed new rule 5.2.3B(d)(6) of the NER.

460 Existing rule 5.8 and proposed new rule 5.2.3B(d)(7) of the NER.

461 Existing rule 5.9 and proposed new clause 5.2.3B(d)(8) of the NER. The AEMC notes that proposed drafting rule 5.9 of the NER will now apply to embedded network generator disconnections within embedded networks.

462 See Final proposed clause 5.3C(b) of the NER. The obligation to make this statement is to be a civil penalty provision.

463 It should be noted that it is not proposed that precedence of the DNSP-ENSP connection agreement would be regulated through the Rules.

Through the DNSP-ENSP connection agreement, the DNSP can also contractually ensure that it has the power to issue instructions to the ENSP relating to a registered embedded generator connected to the embedded network. For example, the DNSP could contractually ensure that it can instruct an ENSP to disconnect an individual registered embedded generator connected to the ENSP's embedded network, if certain conditions, as specified in the terms and conditions of the DNSP-ENSP's connection agreement, are fulfilled, e.g. in the case of an emergency.

The Commission does not consider it feasible for the DNSP to have the power through the Rules to disconnect an embedded generator that is connected to an ENSP's embedded network given that the DNSP would have no direct contractual relationship with an embedded generator connected to an embedded network.

Due to the very different nature of embedded networks that may be connected to a DNSP's network, the Commission considers such a contractual approach as more suitable than a regulatory solution, as prescribing obligations of the DNSP and ENSP under the Rules may increase the regulatory burden for DNSPs and ENSPs alike.

Regulatory powers of the DNSP through the Rules

In addition to the contractual agreement between the DNSP and the ENSP, the Commission considers it necessary to provide DNSPs with explicit rights under the Rules in certain circumstances. These are:

- a right to be consulted in the case of new, or the modification of existing, connections
- a right to enter and inspect
- a right to require testing
- a right to be notified when a registered participant in disconnecting from an embedded network
- a right to be given technical and capacity information by a registered participant for planning purposes.

If a registered participant seeks to connect to an embedded network, or change an existing connection, the ENSP has an obligation to consult with the DNSP prior to entering or modifying a connection agreement with a registered participant. This is consistent with the existing obligations of a DNSP under Chapter 5 of the NER. Currently, a DNSP, in preparing an offer to connect a registered participant must consult with AEMO and other registered participants with whom it has connection agreements, if the DNSP believes that compliance with the terms and conditions of those connection agreements will be affected.[464] In addition, if an application to connect involves the connection of embedded generating units having a nameplate rating of 10MW or greater, the ENSP must consult the relevant DNSP and TNSP regarding the impact of the connection contemplated by the application to connect on fault levels, line reclosure protocols and stability aspects.[465]

464 Existing clause 5.3A.10(b) of the NER.

465 Existing clause 5.3.A.10(c) of the NER.

Extending these regulatory provisions to apply to ENSPs, so they must consult the DNSP, AEMO, and other registered participants with whom it has connection agreements and, if necessary, the TNSP when preparing or modifying an offer to connect, would create consistency and, in particular, provide the DNSP with sufficient control over downstream connections that could potentially have significant effects on its network.

Prescribing this consultation requirement for ENSPs in the Rules will effectively address DNSPs' concerns regarding a lack of visibility of registered embedded generators or large load connecting to an embedded network within their distribution network.[466]

The Commission further considers it appropriate to extend the DNSP's existing right to enter, inspect and test the commissioned and/or connected facility of a registered participant connected to an embedded network within a DNSP's distribution network.

Currently, if a DNSP reasonably believes that the party with which it has a connection agreement is not complying with its technical obligations under the Rules and the DNSP is suffering, or is likely to suffer, a material adverse effect as a result of the suspected non-compliance, then the DNSP:

- may enter the relevant facility at the connection point of the connected registered participant in order to assess its compliance with its technical obligations[467]
- may request testing of the relevant equipment by giving notice in writing to the registered participant[468] and also may request a registered participant to conduct tests to demonstrate compliance with system strength remediation schemes.[469]

To ensure the DNSP also has sufficient oversight over any registered participants seeking to, or being connected to an embedded network within its distribution network, under the Commission's recommended framework the DNSP will also be able to exert similar control over any downstream connections of registered participants:

- The DNSP may enter the relevant facility of a registered participant connected to an embedded network within its distribution networks to assess compliance by the registered participant with its technical obligations under the Rules.[470]
- The DNSP has the right to request testing of equipment owned or operated by a registered participant connected to an embedded network within its network, where the DNSP has reasonable grounds to believe that the relevant equipment may not comply with the Rules.[471] The LNSP's right of testing also extends to a registered participant who is in the process of commissioning its connection and/or connected facility. [472]

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466 Further, with regard to small, non-registered generation, it is proposed that ENSPs will also have an obligation to collect DER information under the National Electricity Amendment (Register of distributed energy resources) Rule 2018 under Chapter 5A.

467 Existing clause 5.7.1 of the NER.

468 Existing clause 5.7.2(a) of the NER.

469 Existing clause 5.7.3A of the NER.

470 Proposed new clause 5.7.1(a1) of the NER.

471 Proposed new clause 5.7.2(a1) of the NER.

472 Proposed new clause 5.8.1A of the NER.

Further the registered participant will also be obligated to notify both the ENSP and the LNSP about voluntary and involuntary disconnection.[473]

In addition, the ENSP will have an obligation to provide the DNSP with all relevant information (load and generation capacity) for planning purposes.[474] Likewise, the existing information provision obligations of a generator (in respect of a generating system with a combined nameplate rating of 30MW or more), who is negotiating a connection agreement with an ENSP, will be expected to require the generators to also provide the relevant technical details to support the application for connection to the DNSP. [475] This relevant technical information that will also be provided to the DNSP includes information about the protection systems and control systems of the generating system.[476]

The Commission considers these control and information rights are particularly important in cases where the ENSP and a registered participant, for example an embedded generator, happen to be the same or related party.

AEMO's powers to participate in the negotiation and enforcement of performance standards in embedded networks

The final proposed framework will provide for AEMO to be appropriately involved in the negotiation of performance standards and be consulted in the process of system strength impact assessment for new connections, and if necessary, the determination of a system strength remediation scheme.[477]

Also, under the final proposed framework registered participant connections to embedded networks will be covered under the existing compliance regime under Chapter 4 of the NER.[478] This will enable AEMO to effectively monitor and enforce performance standards in embedded networks.

In addition, the Commission recommends further changes to ensure AEMO has sufficient oversight and control powers to operate the power system securely and reliably. ENSPs will be required to:

- operate their network, if a registered embedded generator is connected to it, in accordance with instructions given by AEMO[479]
- provide AEMO (and any other relevant network service provider) with all relevant information, including (but not restricted to) information about protection and control

473 Proposed new clause 5.9.1A of the NER.

474 Proposed new clauses 5.2.3B(d)(5), (11) and (12) of the NER.

475 Schedule 5.5 of the NER lists the range of data that may be required, however, the actual data required will be advised by the ENSP and will form part of the technical specification of the connection agreement, see S5.5.1 under the proposed final framework.

476 Proposed application of the relevant clauses under Schedule 5.2 (Conditions for connection of generators) of the NER, S5.2.4(b)(5) and (8).

477 Proposed amendment of existing clauses 5.3.4A and 5.3.B of the NER to include embedded networks.

478 See, in particular, proposed amendment of existing clauses 4.15(f)-(q) of the NER (Compliance with performance standards) to include ENSPs.

479 Proposed new clause 5.2.3B(e) of the NER.

systems of the connected equipment, if AEMO reasonably believes that there is a risk an ENSPs plant or equipment will have adverse effects on the power system[480]

- when making a connection application or alteration to a connection, comply with reasonable requirements from AEMO in accordance with rule 5.6 (Design of connected equipment) and schedule 5.3a (Conditions for connection of Market Network Services)[481]
- consult with the relevant DNSP and AEMO during the process of connecting a registered participant (embedded generator or customer) to their network, and ENSPs will also need to consult with the relevant TNSP and DNSP where an application to connect exceeds 10MW[482]
- provide AEMO with all relevant information (load and generation capacity) for modelling and other power system security purposes[483]
- when negotiating a connection agreement with a registered embedded generator with a combined nameplate rating of 30MW or more, the ENSP will need to provide the relevant technical information (including protection system and control system information) to the DNSP and AEMO on request.[484]

8.5.4 Dispute resolution

Disputes relating to access to an electricity network are dealt with in Part 10 of the NEL (Access disputes). If a prospective network service user is unable to agree with a network service provider about one or more aspects of access to a network service provided by a distribution system, the (prospective) network service user or network service provider may notify the AER in writing that an access dispute exists.[485] Unless the AER terminates an access dispute (without making an access determination, for example, if it considers that the subject matter of the dispute is trivial),[486] the AER must make a determination on access by the (prospective) network service user.[487]

Part 10 of the NEL is implemented through Chapter 8 of the NER, applying to any disputes that may arise about the proposed access arrangements or connection agreements of an intending participant or a connection applicant for connection and access to a distribution network.[488]

Elevating embedded networks into the national regulatory framework would thus mean that connection disputes between registered participants (embedded generators and customers) and ENSPs would fall within Chapter 8 access and connection agreement disputes.

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480 Proposed new clause 5.2.3B(j) and proposed amendment of existing clause 4.3.4(o) of the NER to include ENSPs.

481 Proposed new clause 5.2.3B(g) of the NER.

482 Proposed new clause XX of the NER (similar provision to existing clauses 5.3A.10(b) and (c)).

483 Proposed new clauses 5.2.3B(d) (11), (12) and (13) of the NER. With regard to the data required for modelling the static and dynamic performance of the power system, the AEMC expects AEMO to specify, e.g. through some guidelines, what specific data AEMO expects.

484 Extension of existing clauses S5.2.4(b)(5) of the NER to include embedded networks.

485 Current section 125 of the NEL.

486 Current section 131 of the NEL

487 Current section 128 of the NEL.

488 Current clause 8.2.1(a)(4) of the NER.

Likewise, access disputes between an ENSP and a DNSP would also fall within Chapter 8 disputes in the future.

The Commission considers this is an appropriate mechanism by which disputes between ENSPs, connection applicants and DNSPs can be resolved.

8.5.5 Legacy embedded networks

The final proposed framework would not apply to existing registered participants connected to an embedded network, but would apply to existing embedded networks that seek to connect a registered participant in the future:

- Existing registered participants connected to an embedded network are not required to transition to the final proposed framework due to difficulties with retrospectively requiring registered participants to negotiate performance standards would arise in terms of having to re-negotiate existing contracts, which may pose a great financial risk to these registered participants.
- If a registered participant connected to an embedded network seeks to augment its generation or load capacity, these recommendations also would not apply. Again, it would be too difficult for the registered participant having to retrospectively re-negotiate performance standards.
- Existing embedded networks where a registered participant is seeking a new connection to the embedded network will have to transition to the final proposed framework. This would mean that the exempt embedded network operator would have to become a registered ENSP for the purposes of entering into a connection agreement with a registered participant and negotiating performance standards (and if applicable system strength requirements) for the plant that is seeking to be connected.

8.6 Law and rules implementation

The final proposed amendments to the NER include providing a new rule 5.2.3B[489] to detail the obligations of ENSPs with regards to registered participants and performance standards, provisions detailing customer and generator obligations regarding embedded networks,[490] and new rule 5.3C[491] to create a framework requiring ENSPs to have a connection agreement, and to negotiate performance standards with registered participants and registered generators connecting to its network, with AEMO having an advisory role on the acceptability of aspects of those negotiated access standards.[492]

ENSPs are required to provide modelling data, notices for disconnections and other relevant information to NSPs and AEMO, comply with AEMO instructions where required, and consult with AEMO and other NSP's to maintain levels of service and quality of supply under the rules

489 Final proposed clause 5.2.3B

490 Final proposed clause 5.2.4(1A) and 5.2.5(b)(1A)

491 Final proposed rule 5.3C

492 Final proposed clauses and amendments to Chapter 5 of the NER, including clause 5.1.2(d), (e), 5.1A.1(i), clause 5.3.4A, 5.3.4B, 5.3.9, rule 5.6, 5.7, 5.8, 5.9, 5.18B, Schedule 5.1a, Schedule 5.2, Schedule 5.3 and Schedule 5.5

before allowing a connection applicant to establish (or alter) a connection to the embedded network.[493]

Provisions include requiring that the ENSP conducts (with the assistance where required of the corresponding NSP) the system strength remediation assessment where required,[494] and that NSPs that have a connection agreement with an ENSP have the right to entry and inspect, and request the testing of registered participant plant connected to that embedded network.[495],

Amendments have been proposed to ensure that information flows to NSPs and AEMC under the compliance framework for breaches of, notification of, compliance with, and rectification of[496], the embedded network's obligations under the rules and performance standards.[497]

493 Final proposed rules 5.3C.3 and 5.2.3B

494 Final proposed clause 5.2.3(d)(1B), 5.3.4B(a)(3)

495 Final proposed clauses 5.7.1(a1), and5.7.2(a1)

496 Final Proposed amendment to existing clause 4.15(f), (h), (i), (o) and (q) of the NER to include ENSPs.

497 Final proposed clause 4.2.4A, amended clause 4.14(ma), of the NER

9 THE TRANSITIONAL FRAMEWORK FOR LEGACY EMBEDDED NETWORKS

9.1 Introduction

The Commission's review of embedded networks has not only considered the framework for new embedded networks, but also those customers that are presently connected to existing (legacy) embedded networks. Without consideration of the appropriate arrangements for existing customers supplied by embedded networks, there is a risk that such customers may not get access to the appropriate levels of customer protections and retail choice. Accordingly, the Commission and considered whether, and if so, how legacy embedded networks should be transitioned to the new framework.

This chapter explains the Commission's recommended arrangements for existing customers on embedded networks ("the transitional framework"). In developing these arrangements, we have sought to balance the costs for existing embedded networks associated with the new framework with the benefits to their customers. There is a wide range of different types of existing embedded networks, and there are circumstances that mean a transition may be difficult or costly to implement. We have sought to recognise this through tailoring the coverage of the new framework to existing embedded networks and providing extended timeframes for their transition.

Where customers are not transitioned to the new framework for embedded networks, they will still be covered by other obligations and arrangements relating to retail price setting and a strengthened compliance framework.

This chapter sets out:

- the assessment criteria the Commission has used in developing the transitional framework and the components of the transitional framework
- the recommended transitional framework including the tranches of embedded networks which should be fully or partially transitioned to the new framework for Embedded Network Service Providers and off-market retailers
- the recommended plan and timeframes for achieving the transition of legacy embedded networks.

9.2 Development of the transitional framework

9.2.1 Introduction

The Commission's draft report flagged that transitioning legacy embedded networks to the new framework would provide potential benefits to a large number of consumers in these networks, and that a transition would also streamline regulatory arrangements.

In the draft report, we called for stakeholder input as to:

- the costs and benefits of transitioning legacy embedded networks to the new framework
- appropriate criteria for determining which legacy embedded networks should transition to the new framework

- potential impediments to legacy embedded networks transitioning to the new framework
- the appropriate timeframes for transitioning legacy embedded networks.

The Commission received a range of useful information and data on these points, especially on the potential costs associated with upgrading the metering infrastructure needed to achieve implementation of the new arrangements.[498] Based on the feedback received, an initial design for the transitional arrangements was discussed during a stakeholder workshop held on 8 May 2019.

Following this workshop, we received further stakeholder feedback on the draft proposed transitional framework, which the Commission has considered in the final proposed transitional framework presented in this chapter. In particular, some stakeholders throughout the process have raised resource requirements as an impediment to transitioning particular legacy embedded networks and the need for clear and reasonable arrangements which can be practically applied. Accordingly, our final proposed transitional framework aims to reflect this and provide additional time or assistance to aid in the transition process as required.

The remainder of this section sets out:

- the assessment criteria used by the Commission in developing the transitional framework
- the components of the transitional framework.

9.2.2 Assessment criteria

The overall objective of the proposed transitional framework is to extend sufficient protections and access to the benefits of retail markets where reasonable to customers in existing embedded networks. The Commission has considered the following principles in designing the proposed transitional framework. These principles are consistent with the NEO and our approach for developing the new arrangements for embedded networks.

Access to appropriate consumer protections

A key principle is that all customers connected to embedded networks should be able to access equivalent pricing and market protections, as any other customer in energy markets receives.

In line with this, a key objective of the transitional framework is that customers who are connected to a legacy embedded network are able to access benefits of the new arrangements similar to customers connecting to a new embedded network.

Existing customers are able to capture the benefits of the new arrangements where the costs of transition are proportionate

Providing access to retail competition and additional customer protections will provide benefits irrespective of how the related customer exercises this opportunity. Such benefits could increase going forward given the expected transformation in the sector. This includes, for example, flexibility for EV charging installations and access to retail hardships programs.

498 Includes stakeholder submissions to the Commission's draft report from Momentum, Strata Community Association (QLD), the Shopping Centre Council of Australia and the Caravan, Camping & Touring Industry & Manufactured Housing Industry Association of NSW Ltd.

These benefits need to be proportionate to the costs incurred for transition to the new arrangements. Such costs are likely to be dependent on the individual circumstances of current embedded networks and also could be influenced by jurisdictional arrangements which differ across the NEM. Also, costs will depend on the nature of the embedded network, the existing infrastructure, the date of establishment and the number of customers supplied. Therefore, consideration is needed on:

- the ability of legacy embedded networks to realise the benefits of transitioning to the proposed arrangements
- the costs associated with transition.

A number of stakeholder submissions have noted that there may be significant upfront costs incurred in order to ensure that metering (and associated) infrastructure is upgraded or retrofitted to be NEM compliant and identifiable. As well as this, some stakeholders noted that the new roles (and their requirements) in the proposed arrangements would create additional costs of compliance that may place pressure on smaller operators.[499]

There is a challenge in designing a transitional arrangement that takes into account a wide range of embedded networks some of which would have compliant infrastructure requiring few adjustments, through to aged equipment or space constraints that may require remedial works to reach compliance under the proposed arrangements. While it was not possible to quantify and weigh up the costs and benefits associated with the transition of each type of legacy embedded networks, the Commission has recognised these issues in the transitional framework.

Applying the transition framework is clear, simple and proportionate

Where a transitional framework is too complex and impractical to enforce, it will increase the overall costs of transition. Given the wide range of parties that currently undertake roles within an embedded network, the Commission considers that any transitional arrangements need to be simple and easy to follow, to minimise the cost of transition and ensure that parties have a clear understanding of the transition process.

Extended timeframes for transition will assist various legacy embedded networks in having the necessary time to plan any required upgrades and come to terms with the new approach, rather than having a complex framework that contains individual transition mechanisms and results in transitioned legacy embedded networks being treated differently to new embedded networks under the new arrangements.

In line with the potential costs of transition, the framework has considered suitable timelines for transition. Where these are set too long, consumers on legacy embedded networks may face a protracted period whereby they are not able to access the benefits of the proposed arrangements.

499 Concerns have been raised that particular parties may have their business model threatened by these changes, particularly small, specialised businesses and those that provide energy supply as an incidental activity (such as caravan parks providing powered sites).

On the other hand, a transition period that is too short may exacerbate the cost issue and place unrealistic timelines on particular embedded networks to meet the requirements under the proposed arrangements.

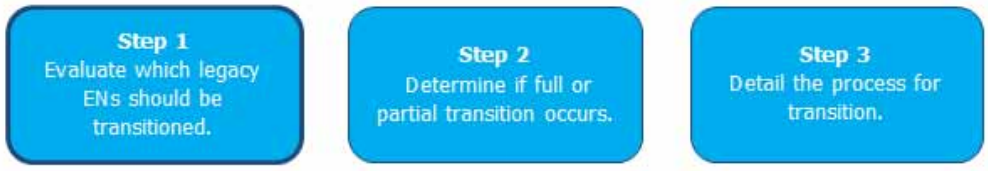
Quality of service

Where consumers are transitioned to the proposed arrangements, there should not be any reduction in the quality of service provided as compared to the status quo operation of the legacy embedded network prior to transition.

9.2.3 Components of the transitional framework

The three steps relevant to developing the transitional framework for legacy embedded networks are summarised in Figure 9.1. This is intended to be a logical process to identify embedded networks for transition, determine their treatment, and outline how these embedded networks would move to the proposed arrangements.

Figure 9.1: High level overview of transitional framework for legacy embedded networks



Source: AEMC.

Below we provide a summary of the key considerations and reasoning across these three steps.

Identification criteria

The first step of the framework identifies which legacy embedded networks would benefit from being transitioned to the new arrangements.

Currently, there is a wide range of different classifications for embedded networks applicable to individual or registered exemptions under the AER guidelines.[500][501] These classifications can distinguish the arrangements by the nature and primary use of the embedded network (for

500 Electricity Network Service Provider – Registration Exemption Guideline Version 6, Australian Energy Regulator, https://www.aer.gov.au/system/files/AER%20electricity%20NSP%20Registration%20Exemption%20Guideline%20-%20Version%206%20-%201%20March%202018.pdf

501 AER (Retail) Exempt Selling Guideline Version 5, Australian Energy Regulator, https://www.aer.gov.au/system/files/AER%20Retail%20Exempt%20Selling%20Guideline%20-%20version%205%20-%20March%202018.pdf

example, whether the embedded network is for residential, casual occupancy, aged care[502] or commercial use).

The Commission has evaluated whether it would be appropriate or practical to design the transition framework to be dependent on the primary use of the embedded network. However, given that the new arrangements will provide consumer protections and benefits to all customers on any existing embedded network, there may not be a strong enough rationale to distinguish the transition arrangements based on the use of the embedded networks (i.e. residential versus commercial).[503] Further the Commission is conscious of the risk of increased complexity in having multiple transition pathways dependent on a range of different factors.

Nature of the transition

After identifying which embedded networks are to be transitioned, the next step is determining to what degree an embedded network should be subject to these arrangements. As explained in this report, our recommended new arrangements for embedded networks will result in a wide range of outcomes for customers, some of which may be more straightforward for legacy embedded networks to implement than others.

The Commission has considered the merits of either a full or partial transition – where a selected sub-group of obligations under the proposed new arrangements are adopted for transitioning legacy embedded networks.

Transition process

Finally, the transitional framework sets out the process and timeframes for a legacy embedded network to transition to the new arrangements. The Commission has designed a flexible framework that will allow for different approaches to transition to recognise that differing embedded networks will not be able to transition at the same speed.

To assist in improving stakeholder understanding of the transition process, we have recommended a number of steps that should be taken. These are explained in section 1.6 at the end of this chapter. These include communications requirements such as notifying consumers of a transition and requiring publication of a plain English "how to" guide that explains how the transition will be carried out, and which parties will be required to transition.

9.3 Recommended transitional framework

This section sets out the Commission's analysis and recommendations on the final proposed transitional framework including:

- an overview of the final proposed transition framework

502 This definition only includes aged care properties that otherwise meet the definition of an embedded network (premises within the network are supplied via a parent connection point to the National Electricity Market). Within aged care, this typically refers to retirement villages.

503 The Commission has taken into account that in jurisdictions there are some existing customer protection arrangements which differ by the nature of the embedded networks.

- the coverage of the transitional frameworks to deemed, registrable and individual exemptions, including the access to individual exemptions that transitioning parties will have
- triggers for transitioning embedded networks and whether certain tranches should be fully or partially transitioned to the new framework.

9.3.1 Overview of the final proposed framework

The Commission has decided to exclude those legacy embedded networks subject to **deemed** and **individual** exemptions from the transitional framework. Deemed and individual exempt sellers and exempt network service providers will retain their exemptions. Customers in embedded networks not transitioned to the new framework will still be covered by other obligations and arrangements relating to retail price setting and a strengthened compliance framework for exempt sellers and exempt network service providers.

The transitional framework will apply to all legacy embedded networks that have registrable exemptions. These networks can be identified by the AER for potential transition. For these legacy embedded networks there are three possible pathways:

- **full transition** to the new framework, whereby legacy embedded networks established[504] on or after 1 December 2017 up to 31 December 2019 will be required to comply fully with the new requirements within 2 years of the effective date of the new framework, and for those networks established between 1 January 2020 and the effective date, will be required to comply within 9 months of the effective date.
- **partial transition**, whereby the legacy embedded networks established prior to 1 December 2017 will:
  - be required to comply with the arrangements for off-market retailers under the NERR (with those exempt sellers required to transition to the new framework within 2 years of the effective date), exempt from the metering provisions in Chapter 7 of the NER, but be required to comply with the AER's pricing schedule which replicates the AER's powers to impose conditions on exempt sellers with respect to prices to be charged to small customers, with the AER able to set applicable prices with a maximum price at the standing offer price of the local area retailer.
  - have network exemptions grandfathered into the new arrangements.
- Legacy embedded networks may **seek an individual exemption** from having to register as an ENSP and seek authorisation by the AER as an off-market retailer. If granted, the legacy embedded network will therefore not need to transition.

We also note that any legacy embedded network would be free to voluntarily opt-in to the new arrangements in the future. Accordingly, the Commission is of the view that there is a reasonable pathway for any legacy embedded network that sees merit in a transition to do so of its own volition.

504 The establishment of an embedded network is the date on which an exemption from the obligation to register under old clause 2.5.1(d) of the NER granted to an owner, operator or controller of the embedded network came into effect.

Table 9.1 sets out the final proposed transitional framework for legacy embedded networks which are subject to a registered exemption to move to the new arrangements as outlined within this Report. For clarity, this is a mandatory framework. Where a legacy embedded network is required to complete a transition to the new arrangement, it must do so in accordance with Table 9.1 unless it receives an individual exemption from the AER under the new exemption framework.

We are of the view that the final proposed transitional framework aims to maximise the number of consumers that are able to access the benefits of the new arrangements while acknowledging that some legacy embedded networks are not suitable for a full transition, or require an extended timeframe to do so.

Table 9.1: **Transition arrangements for legacy embedded networks**

TRANCHE	TIMING	TRANSITION ARRANGEMENTS	COMMISSION'S VIEWS
1	1 January 2020 to the effective date	Must undertake a full transition to the new arrangements. This will require exempt parties to obtain registration as an ENSP and as an off-market retailer authorisation. Transition must be completed **within 9 months** of the effective date of the new laws and rules. All embedded networks created after the effective date fall within the new framework.	• Legacy embedded networks in this tranche will transition the fastest. • This approach acknowledges that these legacy embedded networks should be aware of the new arrangements as this review into embedded networks predates the tranche thus it is considered that embedded networks established after this date should be aware of the proposed changes and are most likely to face the lowest costs to transition. • A January 2020 date provides additional lead time for projects underfoot to plan accordingly, noting that those established prior to 1 January 2020 will fall into Tranche 2.
2	Between 1	Must undertake a full	Legacy embedded networks in

TRANCHE	TIMING	TRANSITION ARRANGE-MENTS	COMMISSION'S VIEWS
	December 2017 and 31 December 2019	transition to the new arrangements. This will require exempt parties to obtain registration as an ENSP and an off-market retailer authorisation. Transition must be completed **within 2 years** of the effective date of the new laws and rules.	this category will already be captured by the metering requirements that came into effect on 1 December 2017c and improvements to retail competition access in embedded networks, thus should face few issues in transition given the existing requirements for NEM compliant meters being installed.
3	Prior to 1 December 2017	Must undertake a partial transition to the new arrangements: • All existing retail exemptions must be transitioned to an off market retailer authorisation within the new arrangements, within 2 years of the effective date. However, the transitioned off-market retailer would not be required to appoint a metering coordinator. They will be required to comply with the AER's pricing schedule which sets prices for off-market sellers (similar to exempt sellers) to grandfathered legacy networks (capped at the standing offer price of the local area retailer) • All existing network exemptions will be	• This tranche includes a wide range of legacy embedded networks, some of which may possess older equipment that may require higher costs in order to complete a transition to the new arrangements. • This transition process acknowledges the issues raised by stakeholders concerning metering and compliance issues in older embedded networks that may present a barrier to transition while still allowing consumers to access benefits associated with the new arrangements.

TRANCHE	TIMING	TRANSITION ARRANGE-MENTS	COMMISSION'S VIEWS
		retained and no transition to the new arrangements are required for this particular area. Transition by the exempt sellers must be completed within **2 years** of the effective date of the new laws and rules. For these embedded networks, where this is possible, once a customer seeks to go on-market in accordance with the existing arrangements [1][2] Chapter 7 of the NER would apply and the retailer at the on-market connection point would be responsible for appointing a metering coordinator.	

Source: AEMC

Note: [1] Australian Energy Regulator, *Making offers to embedded network customers: The process and role of retailers*, https://www.aer.gov.au/system/files/AER%20Factsheet%20-%20Making%20offers%20to%20embedded%20network%20customers%20-%20The%20process%20and%20role%20of%20retailers%20-%20May%202018.pdf

Note: [2] Metering upgrades in existing exempt embedded networks are dictated by the Australian Energy Regulator, *Electricity Network Service Provider – Registration Exemption Guideline Version 6*, March 2018, https://www.aer.gov.au/system/files/AER%20electricity%20NSP%20Registration%20Exemption%20Guideline%20-%20Version%206%20-%201%20March%202018.pdf

9.3.2 Coverage of existing exempt embedded networks

The first key feature to note of the transitional framework is the parties to which it applies to, in other words which legacy embedded networks will be required to transition to the new arrangements.

Only those legacy embedded networks currently subject to registrable exemptions are captured by the transitional framework. The nature of the transition with respect to whether a full transition is required, in which the transitioning party must comply fully with the new framework, or a partial transition is required, in which the transitioning party must only comply with a subset of the new framework is discussed in detail in section 9.3.3 below.

For clarity, legacy embedded networks that currently operate on deemed or individual exemptions under the AER's exemption guidelines are **not** required to apply the transitional framework and thus are not required to undertake a transition.

There is not a reasonable and practicable means to apply transition obligations to deemed and individual exemptions. Given the practical difficulties in identifying embedded networks operating with deemed exemptions and assessing the suitability of individual exemptions for transition, there is not a consistent manner for these legacy embedded networks to be required to transition. Accordingly, there would not be a means for the AER to monitor compliance.

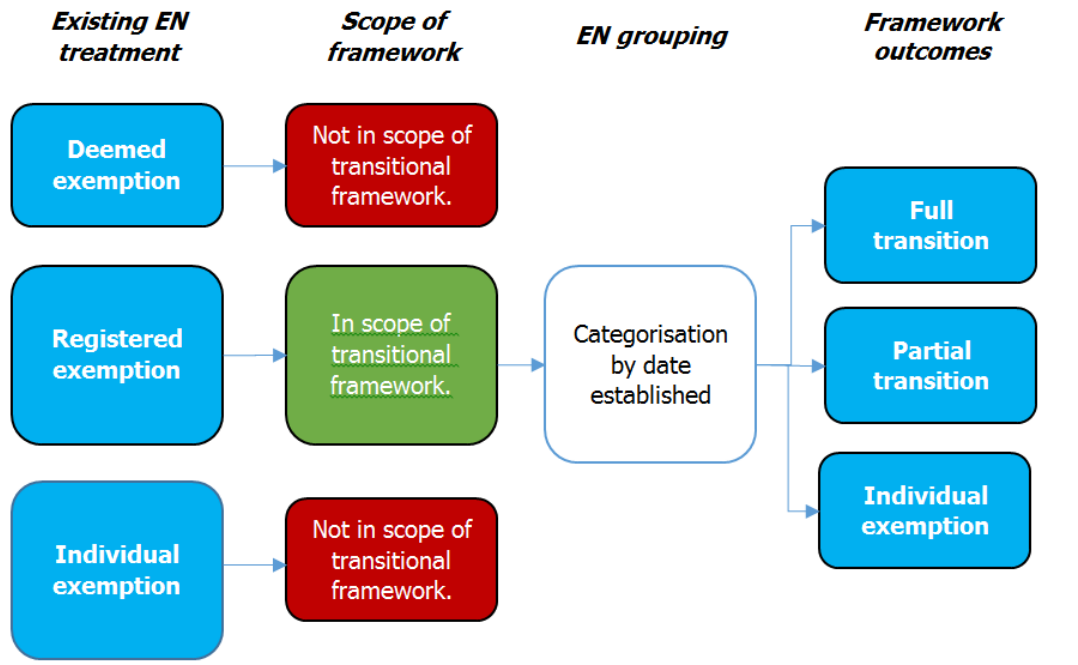
Access to individual exemptions

As we have noted within this Report, the Commission intends to retain an ability for individual selling and network exemptions to be granted by the AER in exceptional circumstances. The purpose of this is to allow for particular arrangements that are not catered for appropriately within the new arrangements.

Accordingly, legacy embedded networks that are required to transition will also be able to request an individual exemption to be granted. We believe this provides a means for legacy embedded networks with significant and unique impediments to transition to potentially receive relief on a case-by-case, and potentially time limited, basis.

The AER will also release guidelines to provide direction on how it will evaluate exemption applications and in what circumstances exemptions may be granted. This may help to clarify eligibility and criteria and help manage the number of applicants.

Figure 9.2: Scope and outcomes of the transitional framework



Source: AEMC

9.3.3 Triggers and nature of transition

This section evaluates the potential triggers that could be used to determine how and when a legacy embedded network must undertake a transition to the final proposed framework registration and authorisation framework. In deciding how legacy embedded networks should be transitioned to the new proposed framework, the Commission considered a number of options, including the following noted below:

- No transition and all legacy embedded networks retain their existing exemptions. The Commission does not consider this to be suitable as it means that a large number of consumers will not be able to realise the benefits of the new arrangements, even where transition may otherwise be relatively straightforward to achieve
- A blanket transition whereby all identified legacy embedded network types are transitioned to the new arrangements at the same time. This is a simple approach however it does not allow flexibility in transition. Thus, there is a risk that additional cost or difficulty will be imposed due to a "one size fits all" approach
- Triggers that require embedded networks matching a certain criteria to transition in a stated way. This is the Commission's preferred approach as it allows triggers to be designed in response to stakeholder feedback that capture the various circumstances facing different legacy embedded networks.

As stated earlier, based on the assessment principles the Commission has opted to use a number of time based triggers for the transition of legacy embedded networks. This will require legacy embedded networks to undertake a transition based on the date that the embedded network was established.

This can be straight forward to apply and avoids overcomplicating the arrangements through additional triggers for transition. Overall, we consider that the combination of these time based triggers plus the metering exemption will allow the transition framework to capture the benefits of the new arrangements where it is proportionate to do so.

Size based triggers

An alternative trigger for the transition of legacy embedded networks to the new arrangements is through the use of size based triggers. These would require an embedded network to undertake a transition based on the size of the network (such as the number of customers that the legacy embedded network supplies).

Size based triggers were originally contemplated in the draft transitional framework that was put to stakeholders and discussed at the workshop held on 8 May 2019. A number of different triggers were contemplated, such as 30 and 100 customer thresholds.

Based on stakeholder feedback and further analysis by the Commission, we have noted the following with regard to size based triggers:

- The existing exemption guidelines issued by the AER include size thresholds for particular deemed exemptions.[505] As deemed exemptions are not in scope of the transitional framework, this implicitly excludes very small legacy embedded networks from transition.
- There are not necessarily economies of scale achieved in larger embedded networks. Given that meter boards and other infrastructure can only house a given number of meters before another must be installed, it is likely not the case that a large installation would lead to greatly reduced infrastructure costs.
- It is difficult to capture an accurate size threshold to segment networks for transition given the varying size of embedded networks. This could lead to differing sets of arbitrary size thresholds, for which issues may still exist for individual embedded networks.
- The position on time based triggers (as discussed below) is felt to segment legacy embedded networks for transition such that additional size based triggers are not necessary.

Accordingly, the Commission has opted not to incorporate any size based triggers from the recommended transitional framework.

Equipment based triggers

The Commission also considered the possibility of equipment based triggers in the transitional framework but opted not to include this.

505 For example, network exemption classes ND1 and ND2 apply a deemed exemption to metered and unmetered supplies of energy to fewer than ten small non-residential and residential customers respectively (where an ENM is not appointed). Retail exemption classes D1 and D2 apply similar treatments.

An equipment based trigger would operate to require a transition on meeting certain criteria such as all child connection points having current NEM compliant metering.

The issue with this approach is that it is difficult to identify properties that abide by the criteria and transition.

Furthermore, this approach may be gamed by certain embedded network owners who may delay upgrades to meters and associated infrastructure on the basis that it would trigger a transition.

The Commission notes that the time base triggers included in the transitional framework have included elements of an equipment based trigger as timings have been designed with reference to the likely equipment installed.

BOX 13: NEM COMPLIANT METERING

In order for a customer to go on market and access retail offers, their metering must be "NEM compliant" and discoverable in the MSATS system. This means that each child connection point would have a NMI assigned to it. Not all metering, particularly meters installed in older buildings, may be NEM compliant and thus could need to be replaced as part of a transition to the new arrangements.

Chapter 7 of the NER contains the requirements for metering that is considered to be NEM compliant and allow access to the retail market. AEMO publishes a number of standards (including the Metrology Procedures) that set out specific standards that metering must meet, and procedures that are to be followed.

State based standards also play a role concerning installation requirements (such as the Service and Installation Rules in Victoria that are set by the DNSPs in this region to connect to the local distribution network). The Commission understands that some jurisdictions have required the necessary standards to support NEM compliant metering (including sizing of meter panels and switch boards) for some time, thus this should not be an impediment to transition.

We understand that the AER's exemption guidelines have required NEM compliant metering to be installed since 1 January 2012, which extends to metering within embedded networks. The guidelines also set out which parties are responsible for the costs of metering upgrades. Since 2013, the National Measurement Institute have also increased their requirements on metering such that meters must be verified and pattern approved.

Submissions from Alinta Energy and Simply Energy noted it is their understanding that most sites established after approximately 2011/2012 should generally contain NEM compliant metering as a result. However, other stakeholders have noted to the Commission that in a number of circumstances, legacy embedded networks would not have metering that would be considered NEM compliant.

In some cases, new meters can be installed at relatively little cost to satisfy the requirements

noted above. However, stakeholders including Origin noted scenarios where market meters would not physically fit on panels accommodating multiple off-market meters, necessitating an upgrade of the entire panel area. This may introduce significant costs to a transition which may outweigh potential benefits.

Additionally, connections in some legacy embedded networks may not comply with connection policies set by the AER in relation to the capacity that should be provided at each child connection point without upgrades to infrastructure being required. Further, it may not be possible to connect new customers to some legacy embedded networks without costly upgrades.

Source: AEMC.

Time based triggers

The Commission notes that the time based triggers included in the transitional framework have included elements of an equipment based trigger as timings have been designed with reference to the likely equipment installed.

This can be straight forward to apply and avoids overcomplicating the arrangements through additional triggers for transition. Overall, we consider that the combination of these time based triggers plus the metering exemption will allow the transition framework to capture the benefits of the new arrangements where it is proportionate to do so.

Conclusion

The Commission has considered the merits of using size, equipment and time based triggers. Given the issues that have been raised above in respect of each of these triggers the Commission recommends a time based trigger for which each tranche would either undertake a full or partial transition – a partial transition being one where a selected sub-group of obligations under the proposed new arrangements are adopted for transitioning legacy embedded networks. The Commission explains its rationale for this approach below.

Stakeholders have raised substantial concerns regarding the proposal to give legacy embedded network customers market-compliant meters that are registered with the AEMO consistent with Chapter 7 of the NER. We understand this relates primarily with the need to install new metering that allows child connection points. In some cases, this also requires upgrade or replacement of associated infrastructure (such as switch boards and meter panels) which exacerbates a cost of transition. This may lead to scenarios whereby the benefits of a transition are not proportionate with the cost, noting that some or all of those costs are likely to be passed on to consumers. It is difficult to know the extent of this issue but from stakeholder views this is a potential substantial problem for some legacy embedded networks.

While such issues and potential costs are likely to be site specific and therefore hard to verify, requiring embedded networks to implement all the new arrangements could create the possibility of large and expensive infrastructure costs being incurred which ultimately are

passed through to customers. The benefits from the full transition may not be sufficient to offset such costs.

Therefore, the Commission is proposing a time based transitional framework in which a partial or full transition will be required based on the establishment date of the embedded network. For a breakdown of all exempt networks and exempt sellers within the current framework that will be either grandfathered or transitioned into the new framework, please refer to Appendix C.

The triggers included within the transitional framework are time based triggers that requires particular legacy embedded networks to transition based on when their network was established. To promote fairness and equity amongst consumers, the Commission has recommended transitioning newer legacy embedded networks first as this is more likely to capture properties with modern infrastructure that incurs lower costs to comply with the proposed arrangements with respect to metering. A more tailored transition has been afforded to older legacy embedded networks, being cognisant of the potential increased issues faced. In this manner, the triggers aid in maximising the benefits of transition that are proportionate to the costs of doing so.

Where a partial transition is required legacy embedded networks must comply with the arrangements for off-market retailers under the NERR but will remain as exempt system operators under the NER. This means consumer protections, including price protections, under the NERR would be extended to customers in legacy embedded networks. However, the transitioned off-market retailer would not be required to appoint a metering coordinator which then triggers the requirements to install NEM compliant metering for off-market child connection points. Metering will continue to be regulated under the network exemptions that apply to those legacy embedded networks. The Commission considers this achieves an appropriate balance between the benefits of the new arrangements and the costs associated with transition.

In this manner, it accommodates for these networks while still allowing for key benefits from the new arrangements to be realised. This partial transition would only be available to those legacy embedded networks established before December 2017, which corresponds with those networks established prior to the Commission's rule changes that facilitated the increased uptake of "smart" or "advanced" metering infrastructure[506] and improved access to retail offers in embedded networks and associated changes to the AER's exemption conditions for embedded networks.[507]

A full transition is required of embedded networks established on or after 1 December 2017 on the basis that these legacy embedded networks more likely to capture properties with modern infrastructure that incurs lower costs to comply with the proposed arrangements with respect to metering in particular.

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506 Australian Energy Market Commission, *Expanding competition in metering and related services*, https://www.aemc.gov.au/rule-changes/expanding-competition-in-metering-and-related-serv

507 Australian Energy Market Commission, *Expanding competition in metering and related services*, https://www.aemc.gov.au/rule-changes/expanding-competition-in-metering-and-related-serv

We note that in stakeholder feedback on timing, the implementation of the tranches was a contentious issue – some stakeholders argued that legacy embedded networks should be transitioned faster while others believed that transition needed to be delayed. The triggers included within the transitional framework are time based triggers that require particular legacy embedded networks to transition based on when their network was established.[508] To promote fairness and equity amongst consumers, the Commission has recommended transitioning newer legacy embedded networks first as this is more likely to capture properties with modern infrastructure that incurs lower costs to comply with the proposed arrangements with respect to metering. A more tailored transition has been afforded to older legacy embedded networks, being cognisant of the potential increased issues faced. In this manner, the triggers aid in maximising the benefits of transition that are proportionate to the costs of doing so.

The Commission considers that embedded networks established from 1 January 2020 will be in a position to transition within 9 months of the full implementation of the new arrangements given their understanding of the final proposed changes and are most likely to face the lowest costs for transition. In contrast, those embedded networks established prior to 31 December 2019, will not have installed infrastructure and arrangements with the knowledge of the final proposed framework. As such the Commission recommends these embedded networks be given an additional 2 years to make either a full or partial transition depending on the tranche.

Finally, the Commission notes that a transition to the new arrangements does not preclude consumers from remaining as off market customers on existing offers. A number of submissions raised concerns that the new arrangements would mean satisfied consumers would lose this commercial offering and must take up a retail offer. This would not be the case. While a transition to the new arrangement does create new roles and responsibilities, it does not prohibit the continuation of off-market offers.

Rather, it is seeking to provide that consumers have a choice of energy offers, and the same protections as customers with NEM retailers. Where an existing commercial off-market offering is preferable to customers within a legacy embedded network, they are free to remain within this arrangement, so long as all requirements of the new obligations on off-market retailers are adhered to.

9.4 Achieving transition

9.4.1 Timeframes

A number of timelines will apply within the transitional framework based upon the transition triggers that apply to a given legacy embedded network. The actual timeframes will depend on when the COAG Energy Council passes the required law and rule changes. Based on an estimated commencement date (CD)[509] of 1 July 2020, 12 months after this review has been provided to the Ministers, and an effective date (ED)[510] of 1 July 2021, Figure 9.3 sets out a

508 The **establishment of an embedded network** is the date on which an exemption from the obligation to register under old clause 2.5.1(d) of the NER granted to an owner, operator or controller of the embedded network first came into effect.

509 Commencement day means the day that the changes to the energy and retail laws and the rule required for the transition.

timetable for transition for each tranche of legacy embedded network that is required to transition to the new arrangements.

For clarity, this timetable represents the following end dates:

For legacy embedded networks in the tranche that must transition within 9 months of the effective date, this must be completed on or before 1 April 2022. By this date:

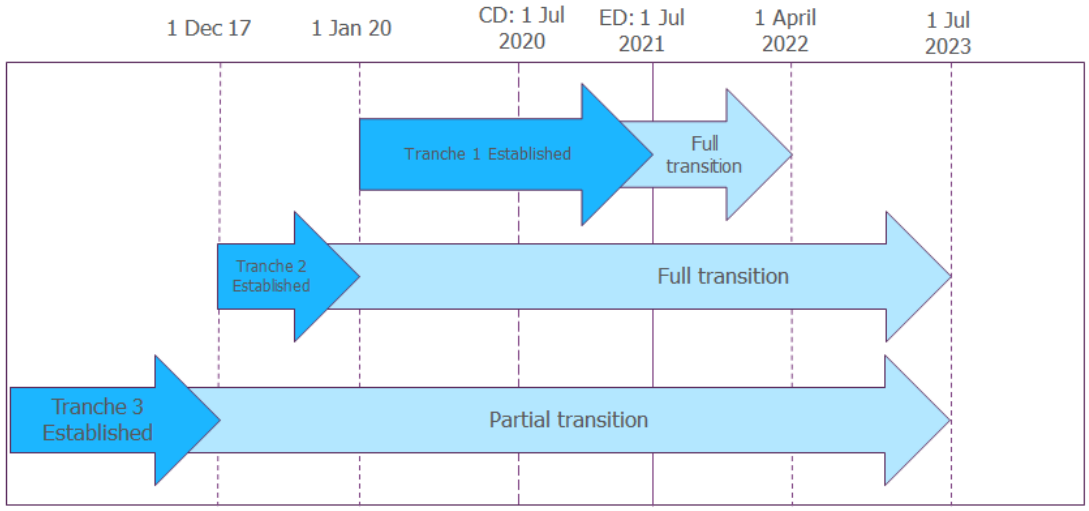
- All businesses supplying electricity to legacy embedded networks subject to the transitional framework must register as on-market retailers or as off-market retailers; and
- All embedded networks established from 1 Jan 2020 must register as embedded network service providers (ENSPs).

For the various legacy embedded networks afforded 2 years from the effective date for a transition as presented in Figure 9.3, this must be completed on or before 1 July 2023. By this date:

- **For embedded networks established between 1 December 2017 – 31 December 2019**
  - These registered exempt sellers must have registered as on-market retailers or as off-market retailers and become subject to all relevant obligations within 2 years of the ED.
  - These registered exempt networks must now have registered as ENSPs and become subject to the relevant obligations within 2 years of the ED.
- **For embedded networks established prior to 1 December 2017**
  - These registered exempt sellers must now have registered as on-market retailers or as off-market retailers and subject to all relevant obligations except the obligation to appoint a metering coordinator within 2 years of the ED. They will also be subject to the AER pricing schedule which applies to off-market sellers selling to legacy embedded networks, which mirrors the AER's powers to cap prices of exempt sellers within exempt networks at a level up to the standing offer price of the local area retailer.
  - No required changes for registered exempt networks. Their arrangements have been grandfathered into the new arrangements.

510 Effective date means the day that the new framework comes into effect, and is one year after the commencement day. Between the commencement day and the effective day, the AER and AEMO will make or update a number of guidelines and procedures. Chapter 10 of this report sets out these aspects of implementation in further detail.

Figure 9.3: Legacy embedded network transition



Source: AEMC.

The Commission notes that the end dates set out in the timetable above represent the cut-off for which a legacy embedded must complete its transition. As discussed earlier in this chapter, where a legacy embedded network wishes to transition faster, there is nothing stopping this and should be encouraged.

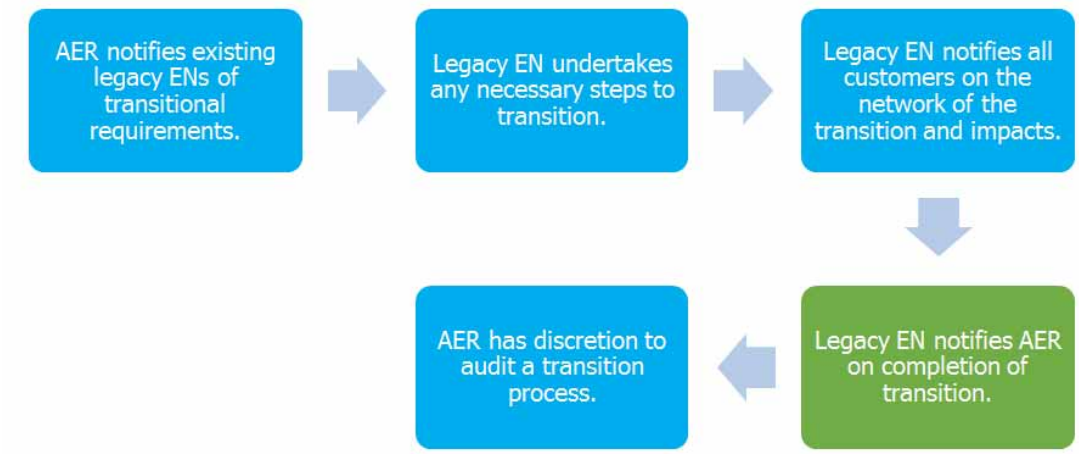
We also note that the timelines illustrated above allow adequate time for a legacy embedded network to apply for an individual exemption if the relevant criteria are met. However, this exemption must be granted on or before the due date for a relevant transition – the individual exemption process cannot be used to extend a transition.

9.4.2 Transition plan

Throughout the drafting of this transitional framework, some stakeholders have noted the need for any changes to be clearly communicated as it can be difficult for consumers in an embedded network to understand how a given set of rules and standards operate. The Commission agrees that a clear communication of the transition process is necessary and will aid in ensuring a smoother transition as stakeholders become aware of their requirements for transition.

Noting the wide and diverse nature of legacy embedded networks, information and guidance will be crucial during the transition process.

Figure 9.4: Illustration of transition process



Source: AEMC.

The Commission recommends the process below to initiate and complete each transition:

1. AER to issue a plain English "How to" guide for the legacy embedded network transition process. The Commission recommends that the AER should work with relevant stakeholders in drafting this guide to ensure it is easy to follow, while also capturing potential issues that stakeholders may face. This guide should include necessary information for embedded networks to identify which categories their network may fall into to confirm whether transition is required.
2. The AER to notify existing legacy embedded networks of the requirement to transition, and the timeframes to do so. As the AER maintains the register of registrable and individual exemptions, this should facilitate identification of the parties that need to be contacted. Along with the information provided in point 1, the Commission is of the view that these two steps will provide necessary warning to legacy embedded networks of their need to transition.
3. The AER makes a platform available for queries or issues raised by embedded network owners throughout the transition process to be dealt with. This could be achieved through means such as community consultations, email, webinars and/or telephone.
4. Embedded network owners have a requirement to notify the AER once they have completed the transition of their legacy embedded network. The means and format of this notification will be left to the AER to decide on.
5. Embedded network owners are required to notify consumers on the network of the transition and the changes that this entails. This should be communicated in a transparent manner that ensures consumers understand how the changes impact them. In conjunction with this, we recommend that the AER publishes a plain English summary

of the new arrangements,[511] which must be included within the communication pack distributed by an EN owner.

6. The AER has the option to audit any legacy embedded network transition process within 12 months of notification from the embedded network owner that the transition process has begun. The Commission prefers that this option is available on a discretionary basis so that the AER has flexibility in how it wishes to monitor compliance of the transition of legacy embedded networks.

9.5 Laws and rules implementation

The final proposed law and rule changes are structured to ensure that between the commencement date of the legislative amendments to the NEL and NERL and transitional provisions in the NER and NERR, and the effective date (1 year after the commencement date), the new legislative scheme, transitional provisions, old guidelines, and previous exemptions framework (along with all previous individual and deemed exemptions) will continue to be in effect. The new enforcement regime will, however, be in effect from the commencement date.[512]

From the effective date, the proposed changes will give effect to the new exemption framework,[513] and the new guidelines, whilst maintaining the legacy guidelines and legacy exempt framework for those embedded networks grandfathered, or in the process of transitioning into the new framework.

The AER is to prepare the AER Exempt network guidelines, AER exempt selling guidelines, brownfields conversion guidelines, legacy exempt network guidelines, legacy exempt selling guidelines, Embedded networks connection policy (and other guidelines) by the effective date to reflect the new embedded network framework.[514]

The transitional provisions in the NER and the NERR also set out the current exempt networks and exempt sellers for which network exemptions will be revoked, and the applicable time for them to transition into the new regime in accordance with Appendix C to this report (and what other conditions apply to them, as is the case for off-market sellers selling to pre 1 December 2017 legacy embedded networks who are subject to the AER's pricing schedule[515], and not required to comply with Chapter 7 obligations in the NER to appoint a metering coordinator).[516]

511 The AER could work in conjunction with customer groups to develop these documents.

512 Final proposed law changes for the NEL including new s90EA to give the South Australian Minister the power to make initial rules relating to embedded networks; Schedule 1 (section 34) subject matter of the NER and NEL to include the ability to make rules regarding exemptions; Part 17 - Transitional provisions related to network exemptions; Final proposed law changes to the NERL including new Part 2 - Transitional provisions related to exempt selling amendments; Final proposed changes to part ZZZS Embedded Networks in Chapter 11 of the NER; Final proposed part 11 of the NERR.

513 Final proposed part ZZZS Embedded Networks in Chapter 11 of the NER; Final proposed part 11 – Rules consequential of making of NERL Amendment of the NERR.

514 Final proposed clauses 11.117.2, 11.117.3 of the NER; Final proposed part 11 of the NERR.

515 Final proposed part 11, rule 11 of the NERR.

516 Final proposed clause 11.117.9, 10 and 11 of the NER; Final proposed part 11, rule 10 of the NERR.

AEMO is also required to have made the shadow network charges procedure by the effective date.[517]

The AER will also be required to prepare a pricing schedule to apply to transitioning exempt sellers that continue to sell to legacy exempt networks. This is to replicate their current powers with respect to applying a price cap condition on exempt sellers selling to retail customers within exempt networks, where the AER is able to set a price below or up to the standing offer price of the local retailer.[518]

517 Final proposed rule 11.117.12.

518 Final proposed part 11, rule 11 of the NERR.

10 IMPLEMENTATION

This section sets out the proposed timetable for implementing the new framework and the steps that will need to be undertaken by the COAG Energy Council, market institutions, jurisdictions and industry before the framework commences.

The new framework will not be implemented until:

- the COAG Energy Council has considered and approved the recommended framework
- the South Australian Parliamentary Counsel has drafted the law changes to the NEL and NERL, based on the Commission's proposed law change descriptions, and the South Australian Parliament makes the law changes
- the South Australian Minister for Energy makes the proposed rule changes.

As it is not certain when these steps will occur or how long they will take, the Commission has not been able to identify specific dates for implementing the new framework. Nevertheless, the Commission has provided for transitional rules that are linked to the commencement day of the new legislation.

Further, the Commission recommends that the COAG Energy Council and the SA Minister for Energy coordinate with the AER and AEMO to ensure the commencement date, effective date and proposed law and rule changes proposed to implement the proposed embedded networks framework factor in other major legislative and rule changes such as the Five Minute Settlement rule commencing in July 2021.

10.1 Key dates

The Commission has defined the following key dates for the implementation of the new framework for embedded networks.

Commencement day (CD) means the day that the changes to the energy and retail laws and the rules required for the transition period commence.

The Commission also recommends that the new enforcement framework should come into effect on the commencement day and apply to legacy and new exemptions from that day. That is, the AER will be able to take action for breach of legacy exemptions occurring after the commencement day under the new enforcement framework.

Following the commencement date, the current network and retail exemption guidelines will continue to apply for all exemptions.

Effective date (EF) means the day that the new framework comes into effect, and is one year after the commencement date.

Between the commencement date and the effective date, the AER will make the new network and retail exemption guidelines to take into account the new framework and AEMO will make the guidelines required for registration as an ENSP. The AER will also be required to remake the current network and retail exemption guidelines as legacy guidelines (or incorporate

them in the new guidelines under the new framework). The Commission recommends that all the new guidelines and the legacy guidelines should come into effect on the effective date.

From the effective date, all new embedded networks will fall under the new framework.

Exemptions granted prior to the effective date will be treated as legacy exemptions and some will be required to transition into the new framework, as described in Chapter 9 of this report. Transitioning networks and sellers will be able to register as ENSPs or seek authorisation as off-market retailers, as appropriate (see chapter 9 of this report), from the effective date.

To allow time for the transition to occur, for legacy networks, and exempt sellers in legacy networks, the current exemption guidelines (by then remade as the new legacy exemption guidelines) will continue to apply, including for replacement of a legacy exemption when the owner of an embedded network changes.

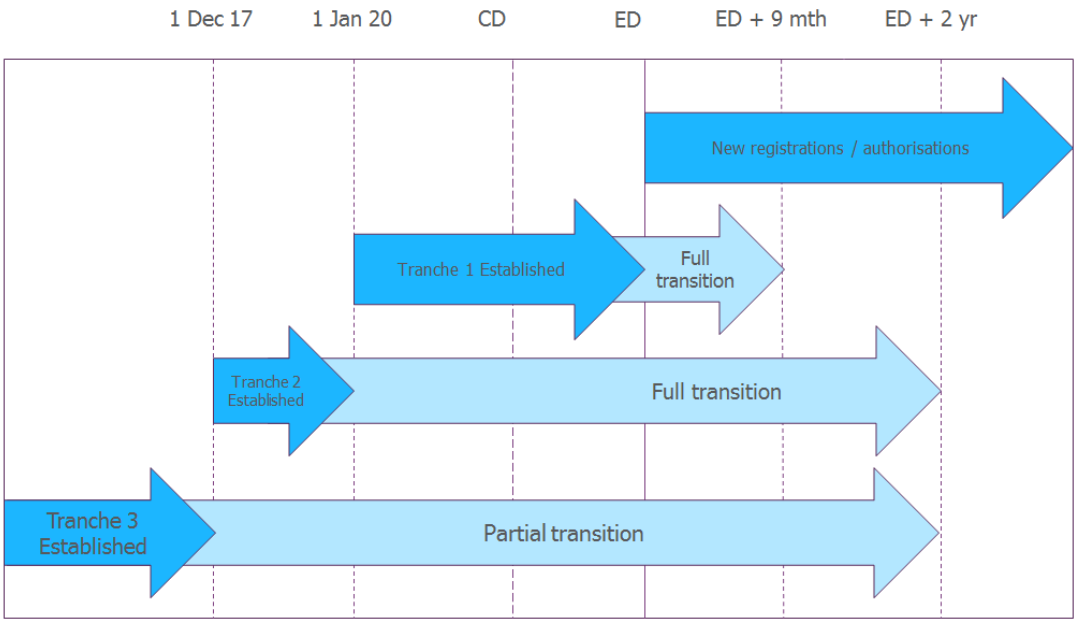
By 9 months after the effective date, all embedded networks established between 1 January 2020 and the effective date that registered an exemption under the old framework and need to transition to the new framework must have completed the transition. This will give them the opportunity to apply for and be granted authorisation as an off-market retailer and register the ENSP with AEMO.

By 2 years after the effective date, all embedded networks established prior to 1 January 2020 that are required to transition to the new framework must have completed the transition. Again, this should provide sufficient time for them to register and obtain the necessary authorisations. This includes all exempt retailers selling to grandfathered legacy embedded networks that are required to register as off-market retailers.

The AER will be able to amend the network and retail exemption guidelines, including to add new conditions for transitioning networks enabling the Commission to monitor the transition process.

The AER will retain power to amend legacy exemption classes and impose or alter exemption conditions. It may also choose to close legacy exemption classes.

Figure 10.1: Implementation of the new embedded networks framework



Source: AEMC

10.2 AER guidelines

Under the new framework, the AER is responsible for developing a number of new guidelines. In addition, it will need to update some of its existing guidelines.

The new guidelines that the AER must develop are:

- Exempt Network Guidelines.[519] These will specify the procedural requirements for making network exemptions, the conditions applying to a network exemption (which includes what rules do or do not apply to classes of network exemptions) and processes for obtaining relief from network exemption conditions as applicable to embedded networks, distribution systems and transmission systems under the new framework.
- AER to create a new Embedded Network Connection Policy[520] that details a model standing offer(s) for embedded networks and the process for ENSPs to submit their own model standing offer that modifies those offers contained in the AER's policy.
- Guidelines setting out the AER's requirements for granting consent to a brownfields conversion under the new framework.[521] These could be included in the Exempt Network Guidelines.

519 Final proposed new NER clause 11.117.2(a).
520 Final proposed clause 5A.E.3B of the NER.
521 Final proposed clause 11.117.2(b) of the NER.

- Legacy Exempt Network Guidelines that address the conditions applicable to legacy exempt networks and the revocation process for exempt network classes under the old framework.[522] These may be included in the Exempt Network Guidelines.
- Legacy Exempt Selling Guidelines that address the conditions applicable to legacy exempt sellers and the revocation process for exempt seller classes under the old framework.[523] These may be included in the Exempt Network Guidelines.

These must be developed by the effective date, and will come into effect on that date.[524] This provides a period of one year following the commencement of the revised energy laws and rules for the AER to develop the guidelines, noting that the AER must follow the Rules consultation process.

In addition, the AER may choose to exercise its power under the proposed new Rules[525] to create the new Distribution Losses in Embedded Networks Guideline to assist ENSPs in calculating site-specific DLFs. These guidelines may be developed and come into effect at any time the AER chooses to develop them.

The guidelines that the AER must update are:

- the Retailer Authorisation Guideline,[526] in order to specify entry criteria and conditions for retailer authorisations under the new framework as relevant for off-market retailers
- the Compliance Procedures and Guidelines,[527] for the purpose of monitoring compliance by exempt networks, retailers, ENSPs and off-market retailers with the new framework
- the Performance Reporting Procedures and Guidelines,[528] to include off-market retailers (noting that these procedures and guidelines do not apply to exempt sellers under the new framework)
- the Exempt Selling Guideline,[529] to reflect the new framework
- the Retail Pricing Information Guidelines,[530] with respect to off-market retailers, including the requirement for off-market retailers to publish a standing offer
- the ROLR guidelines,[531] with respect to the processes applicable when an off-market retailer fails.

The guidelines will need to be updated and in effect no later than the effective date.

522 Final proposed clause 11.117.3(a) of the NER.
523 Final proposed Part 11, Rule 3 of the NERR.
524 Final proposed clause 11.117.2(c) of the NER.
525 Final proposed clause 3.6.2B of the NER.
526 Current section 117 of the NERL.
527 Current section 218 of the NERL.
528 Current section 286 of the NERL.
529 Current section 118 of the NERL.
530 Current section 61 of the NERL, as amended.
531 Current section 135 of the NERL.

10.3 Updates to procedures, guidelines and systems

AEMO will be required to develop the shadow network charges procedure to come into effect on and from the effective date.[532] AEMO will also be required to establish the shadow network charges database[533] and prescribe a form of application for ENSPs seeking registration.[534]

AEMO will also need to update a number of its procedures to reflect the new framework, including its guide to embedded networks, metrology, MSATS and service level procedures, as well as its market systems. These updates will need to occur prior to the effective date.

Finally, AEMO will need to update its guidelines for registration to include ENSPs. As part of this AEMO will need to consider what information it reasonably needs for describing an embedded network area.

The IEC will need to consider whether to amend its B2B procedures to allow ENSPs and off-market retailers to become B2B parties and be permitted to use B2B communications if they acquire accreditation with AEMO. This will need to occur prior to the effective date.

10.4 Jurisdictional regulations

The Commission proposes that state and territories consider the following functions:

- access to state and territory concessions and rebates
- access to independent dispute resolution for distribution and retail services
- network reliability protection, including GSL schemes
- other GSL payments
- safety and monitoring regimes
- technical regulation, such as equipment and performance standards

The Commission also proposes that state and territories consider any changes to licensing schemes.

Many of the jurisdictional regulations will apply automatically for retail activities, given that off-market retailers will be subject to authorisation.

Jurisdictional action is especially important with regard to network reliability and GSL payments. However, obligations on networks are usually put in place though jurisdictional licensing schemes rather than as a result of registration with AEMO.

Jurisdictions may also wish to consider reviewing other jurisdictional legislation such as tenancy and strata legislation for duplication and inconsistencies with the new framework, for example state legislation on residential parks and metering obligations.

The Commission recommends that any changes to licensing schemes and other jurisdictional legislation be implemented by the effective date.

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532 Final proposed clause 11.117.12 of the NER.
533 Final proposed clause 11.117.12(a)(2) of the NER.
534 Final proposed clause 11.117.12(a)(3) of the NER.

10.5 Industry implementation

Industry will need to be prepared for the new framework to come into effect on the effective date. For new embedded networks this means they will need to comply with the new obligations in the NER and NERL.

The timing for the transition of legacy embedded networks is described in more detail in chapter 9 of this report. During the relevant timeframe, those legacy embedded networks that are required to transition must, as relevant:

- Register as ENSPs
- Prepare connection agreements
- Update their systems and business processes and undertake testing

Sellers within an embedded network that are required to transition must:

- Be authorised as off-market retailers
- Appoint metering coordinators
- Publish a standing offer
- Establish arrangements to monitor compliance with the requirements of the NERL and NERR[535]
- Update their systems and business processes, including billing processes, and undertake testing.

535 Current section 273 of the NERL.

11 GAS

11.1 Introduction

The 2017 Review highlighted that embedded gas networks are not subject to regulation under a national framework. To the extent they are regulated, this is under jurisdictional frameworks applying to gas pipelines. Without providing a detailed assessment of the jurisdictional frameworks, at a high level the Commission considered that there could be benefit in harmonising the national frameworks for both gas and electricity embedded networks, and recommended that the COAG Energy Council consider this.[536]

In the draft report for this review, the Commission sought further examples from stakeholders of embedded gas networks, particularly where gas is sold on a metered basis. The Commission has been provided with limited examples of metered gas embedded networks, and none in residential apartments. Consequently, there is currently very little information available to identify how many customers are served by embedded gas networks. Some examples have previously been provided to the Commission of where gas is provided on an unmetered basis, but again it is difficult to estimate the number of customers that are impacted.

The Commission also sought views from both jurisdictions and stakeholders on whether they see a benefit in developing a national framework for embedded gas networks in the NGL and NGR, and what the framework should cover. Finally, the Commission noted it would conduct further research on the current embedded gas network exemption frameworks.

This chapter sets out:

- a summary of submissions to the Draft Report
- a summary of the current arrangements that apply to embedded gas networks, informed by legal advice obtained by the Commission
- the Commission's final analysis and findings.

11.2 Submissions to the Draft Report

A number of stakeholders considered that an explicit regulatory framework for embedded gas networks should be introduced. EWON, AGL and Jemena expressed support for considering a national framework for embedded gas networks.[537]Momentum considered that the application of a similar framework to that proposed for electricity would be a reasonable starting point.[538] Simply Energy considered the proposed electricity framework should be scalable to include other energy services, although electricity should be the priority.[539]

536 AEMC, *Review of regulatory arrangements for embedded networks*, final report, November 2017, p. 67.
537 Submissions to the draft report: EWON, p. 3; AGL, p. 6; Jemena, p. 1.
538 Momentum's submission to the draft report, p. 3.
539 Simply Energy's submission to the draft report, p. 4.

AGIG, while agreeing a national framework may be beneficial, considered that gas was sufficiently different as to warrant its own framework rather than adapting the framework for electricity.[540]

EnergyAustralia was more circumspect about the need for a regulatory framework for gas and whether there would be clear benefits, suggesting that "there appear to be considerable technical and cost barriers to introducing additional customer protections, as well as problems in defining an embedded gas network".[541]

Momentum contended that where unmetered gas is delivered for cooking, this cost is often minimal.[542] The AER, while not expressing a view on the need for a national framework for embedded gas networks, noted that often gas is sold to customers in embedded networks for limited purposes, and that this type of sale should continue to be eligible for exemption.[543]

A number of stakeholders considered that the more fundamental issue is bulk hot water rather than the on-selling of gas per se. EWON noted that in NSW the number of complaints about the billing of common hot water systems is disproportionally high.[544] Such complaints are frequently complex and difficult to resolve. Complaints relate to high bills, estimated readings, faulty meters, access issues, affordability problems and large back bills.

Alinta considered that bulk hot water is not contestable and that, among other things, associated energy costs should be regulated for residential customers.[545]

Momentum commented that bulk hot water reticulated to each unit and metered with hot water consumption meters probably does not fall under the jurisdiction of national energy regulation, being hot water and an after the meter value added service.[546] Momentum also stated that the service is not price regulated in most jurisdictions "and is often delivered at a service efficiency of less than fifty per cent which imposes significant costs to small customers", and that these services should be the next priority for the AEMC.

Similarly, Energy Options Australia argued that the bulk cooling or heating of water is a service, not a source of energy. They considered that the "application of standardised conversion factors would be extremely complex and impractical due to the various energy sources and type of heating...or cooling service".[547]

11.3 Current arrangements

This section focusses on the current arrangements for embedded gas networks. The current national retail exemption framework as set out in chapter 2 of this report applies to the on-selling of gas as well as electricity, and includes deemed exemptions for persons who sell

540 AGIG's submission to the draft report, p. 1.
541 EnergyAustralia's submission to the draft report, p. 4.
542 Momentum's submission to the draft report, p. 3.
543 AER's submission to the draft report, p. 4.
544 EWON's submission to the draft report, p. 3.
545 Alinta's submission to the draft report, p. 10.
546 Momentum's submission to the draft report, pp. 3-4.
547 Energy Options Australia's submission to the draft report, p. 3.

unmetered gas where gas is used for limited purposes.[548] As explained in section 11.4.1, the arrangements for gas sales will be captured in the new exemptions framework.

In contrast, the regulatory framework for embedded gas networks differs from embedded electricity networks and the AER's network exemption guideline explicitly excludes gas distribution.[549]

Following the publication of the draft report for this review, the AEMC commissioned a legal review by Johnson Winter & Slattery (JWS) of the regulatory frameworks for embedded gas networks, including the definition of distribution pipelines under the National Gas Law (NGL), National Gas Rules (NGR), NERL and NERR, and the key areas in respect of which the relevant pipelines are regulated. The legal review also provided an outline of how each state and territory in Australia regulates distribution pipelines. The overview and findings of the legal review is available on the AEMC's website. This section provides a summary of those findings.

The overarching conclusion of the legal review is that many embedded gas networks are likely to be outside the scope of the national regime that is governed by the NGL and NGR. This is because embedded gas networks may not meet the definition of "pipeline" in the NGL.[550] Although the application of the definition to embedded gas networks is unclear and has not been tested in the courts, the legal advice obtained by the AEMC suggests that embedded gas networks do not fall within the definition of pipeline. Further, the NERL and NERR rely on the "pipeline" definition in the NGL and, as such, an embedded gas network that is not a pipeline will also be outside the scope of the NERL and NERR.

Many obligations in the NGL and NGR are imposed on "service providers", where the definition of a service provider is linked to the ownership, control or operation of a pipeline. Consequently, where an embedded gas network does not fall within the definition of a pipeline, the entity that owns, controls or operates that embedded gas network also will not fall within the scope of the NGL, NGR, NERL or NERR.

More generally, gas transmission and distribution pipelines operate under licences granted by jurisdictions.[551] Although aspects of the operation of pipelines are regulated under the NGL, NGR, NERL and NERR, including economic regulation and participation in gas markets, the obligations and requirements in the national framework hinge on either jurisdictional licensing schemes or where a pipeline is "covered" following a decision by the relevant jurisdictional minister.[552] Unlike in electricity, there is no separate national registration process that applies to entities that own, operate or control a gas pipeline.

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548 AER (Retail) Exempt Selling Guidelines Version 5, March 2016, p. 8.

549 AER, Electricity Network Service Provider Registration Exemption Guideline Version 6, March 2018, p. 9.

550 A pipe or system of pipes that is downstream of a point on a pipeline from which a person takes natural gas for consumption purposes is not a "pipeline" under the NGL. This is likely to place many embedded gas networks outside the scope of the national regime. An embedded gas network where gas is taken for haulage and not for the purpose of consumption may still be a "pipeline" under the NGL.

551 Pipelines that cross multiple jurisdictions are licensed by the Commonwealth.

552 Where requested, the National Competition Council must make a recommendation as to whether a pipeline should be covered and therefore subject to access regulation. Coverage criteria relate to whether access to the pipeline would improve competition in any other market. Ultimately it is up to the relevant jurisdictional minister to decide or, in the case of pipelines that cross multiple jurisdictions, the Commonwealth minister. For further information see the AEMC website: https://www.aemc.gov.au/regulation/energy-rules/national-gas-rules/regulatory-classification-gas-pipelines.

There is at present, no consistent legislative approach between the various jurisdictions to the way in which embedded gas networks are treated. There are varying approaches to issues such as whether:

- any form of embedded gas network is recognised
- an embedded gas network falls within a jurisdiction's definition of a distribution network and is therefore regulated as such
- the operator of a recognised embedded gas network needs a licence/authorisation or exemption
- there is a class exemption for any form of embedded gas network
- metering codes/standards apply to meters in exempt embedded gas networks
- Retail Market Procedures or equivalent provide for exempt embedded gas network operators
- prices are capped for embedded gas network customers
- the ombudsman is available to the customers of embedded gas network operators
- the ombudsman is available to customers of exempt sellers under the NERL
- concessions are available to embedded gas network customers, or to what extent.

Further, it is not always clear whether, or how, embedded gas networks are captured within each jurisdictional regulatory frameworks.

11.4 Final analysis and findings

This section sets out:

- how the revised exemption framework will apply to gas on-sellers
- analysis and recommendations in relation to embedded gas networks
- our response in relation to bulk hot water.

11.4.1 Exemption framework for gas on-sellers

The current national retail authorisation and exemption framework applies to energy sellers, being sellers of electricity, gas or both. The current exemption framework contains retailer exemption classes that cover both deemed and registrable exemptions. As such, gas as well as electricity sellers will be captured within the new off-market retailer authorisation and exemptions framework set out in chapter 3.

As part of the changes, some gas related sales will be caught in the form of a registrable retailer exemption class and deemed classes where those categories or activities relate to energy. Any selling activity that would, under the current framework, entitle a seller to a deemed exemption specific to, or capturing gas sales will be included as a registrable type of exemption in the NERR under the new framework, which will mean that those activities will require registration as an exempt retailer. Specifically, the deemed exemption relating to

persons selling unmetered gas to individual premises where gas is used for limited purposes will therefore be a form of sale requiring the seller to become a registered exempt seller[553]

Arrangements for the sale of gas (as covered by exempt selling classes for energy) in legacy embedded gas networks and transitional arrangements for exempt sellers in legacy embedded networks are discussed further in chapter 9.

11.4.2 Framework for embedded gas networks

The Commission has found that the current regulatory frameworks for gas pipelines, both nationally and jurisdictionally, lack clarity in respect of their application to embedded gas networks. It is not clear whether, and if so how, embedded gas networks are regulated in each jurisdiction and nationally, and whether an exemption framework applies. This lack of clarity appears to have come about because little or no explicit consideration has been given to arrangements for embedded gas networks in developing regulatory frameworks for gas pipelines.

While some stakeholders considered that a similar framework to electricity should be extended to embedded gas networks, little evidence was provided on the scale of the problem, including how many customers are connected to embedded gas networks. Rather, some stakeholders noted that costs to customers in embedded gas networks are often minimal, particularly where gas is used for limited purposes, and others questioned whether the cost of regulation would outweigh the benefits in the context of gas. A number of stakeholders also considered the differences between gas and electricity mean that, if implemented, a different framework would be required.

The Commission agrees that, in principle, a common national approach to regulating embedded gas networks that is harmonised with the electricity framework would have benefits. However, in practice there are a number of challenges to achieving this outcome.

First, to the extent that embedded gas networks are regulated, this is done at a jurisdictional level. Therefore jurisdictions would need to agree to shift this aspect of responsibility into the national framework. While the electricity arrangements may provide a starting point, there are reasons why the approach to gas may need to differ from electricity, both due to differences in the nature of the overarching regulatory arrangements (as elaborated on below) and potentially for technical reasons, as noted by stakeholders.

Second, unlike in electricity, there is no obligation to register under the national framework in order to own, control or operate a pipeline. In electricity, the national regulatory arrangements are given effect through national registration requirements and network service providers must register with AEMO in order to own, operate or control an electricity transmission or distribution system.[554] In gas, only jurisdictional licensing is required in order to own, operate or control a gas pipeline. While participation in gas markets does require registration with AEMO, for pipelines this is driven by the possession of a jurisdictional licence

553 AER (Retail) Exempt Selling Guideline, version 5, dated March 2018, page 28, Class D5

554 Clause 2.5.1(a) of the NER.

- there is no equivalent separate national registration architecture on which to build a national exemption framework.

To bring embedded gas networks under a national framework would therefore require creating a new national registration process for all gas pipelines. This latter approach would impose new requirements on all existing and future pipelines, not just embedded gas networks, and would essentially duplicate the existing jurisdictional requirements.

In addition, obligations and requirements on pipelines under the NGL/NGR and NERL/NERR are currently imposed via different mechanisms. While participation in jurisdictional gas retail markets hinges on the jurisdictional licensing schemes,[555] the definition of "distributor" and "distribution pipeline" under the NERL relates to whether a pipeline is covered. Creating a national registration process would therefore require widespread and significant changes across the gas legislative/rules frameworks.

In the absence of any further evidence on the scale of any problem with embedded gas networks, the Commission considers that the costs of implementing a national approach are likely to be significantly in excess of any benefits.

For this reason, the Commission considers it appropriate that embedded gas networks be dealt with at a jurisdictional level. The Commission therefore recommends that jurisdictions review their legislative frameworks for pipelines in the context of embedded gas networks. To aid in this review, the Commission has provided additional advice to jurisdictions.

While the scale of the problem is not apparent, the Commission recommends that, at a minimum, jurisdictions review whether their frameworks provide a minimum level of protection to customers of embedded gas networks. This includes:

- whether prices should be capped for embedded gas network customers
- allowing customers of both embedded gas network operators and exempt sellers access to the ombudsman
- enabling customers of embedded gas networks to receive all applicable concessions.

The Commission also recommends that, in implementing any changes to provide such consumer protections, jurisdictions should aim to provide embedded gas network owners and operators greater certainty as to whether, and if so how, they fit into the regulatory framework.

The Commission further considers that it would be preferable for such changes to be considered and implemented as consistently as possible across jurisdictions, to the extent allowed by the disparate approaches to pipeline regulation and licensing that exist across jurisdictions. The Commission would be happy to provide further assistance as jurisdictions conduct their reviews.

555 To participate in retail gas markets as a network operator, an entity must hold a jurisdictional licence. See for example 135AB of the NGR.

11.4.3 Bulk hot water

The recommendations set out above apply to the reticulation of gas through embedded networks. Many apartment buildings, in particular, can additionally or alternatively have common systems to heat water in a centralised water plant and then distribute the hot water through the building to each unit instead of having individual heaters.

The Commission acknowledges the issues raised in submissions relating to the distribution and sale of hot water by embedded network operators, in particular that the value of this is likely to be significantly greater than the value of gas consumed by a typical customer in an apartment building.

The Commission further agrees that the arrangements for bulk hot water warrant careful consideration, but notes that some of the issues arising are different to both electricity and gas embedded networks. Most notably, it is not clear if the sale of bulk hot water constitutes a sale of energy and, therefore, if it is covered by the regulatory framework under the energy laws and rules.[556]

The challenges associated with bulk hot water are explored in the AEMC's *2019 Retail Competition Review*, to be published on 28 June 2019.

556 In the retail exemption guidelines, the AER indicates that it does not consider the sale of bulk hot water to be a 'sale of energy' under the NERL and the NERR.

ABBREVIATIONS

ACL	Australian Competition Law
AEMA	Australian Energy Market Agreement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
COAG	Council of Australian Governments
Commission	See AEMC
DLF	Distribution loss factor
DNSP	Distribution network service provider
DUoS	Distribution use of system charges
ENM	Embedded network manager
ENO	Exempt network operator
ENSP	Embedded network service provider
EWOV	Energy and Water Ombudsman Victoria
FRMP	Financially responsible market participant
GSL	Guaranteed service level
IEC	Information Exchange Committee
LNSP	Local network service provider
MAIFI	Momentary average interruption frequency index
MSATS	Market settlement and transfer solutions
MW	Mega Watt
MWh	Mega Watt hours
NECA	National Electricity Code Administrator
NECF	National Energy Consumer Framework
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National electricity objective
NER	National Electricity Rules
NERL	National Energy Retail Law
NERO	National energy retail objective
NERR	National Energy Retail Rules
NGL	National Gas Law
NGO	National gas objective
NGR	National Gas Rules
NMI	National Metering Identifier
NUoS	Network use of system charges

RoLR	Retailer of last resort
SAIDI	System average interruption duration index
SAIFI	System average interruption frequency index
SAPS	Stand-alone power systems
STPIS	Service target performance incentive scheme
TUoS	Transmission use of system charges

A OVERVIEW OF ROLES AND RESPONSIBILITIES OF THE EMBEDDED NETWORK SERVICE PROVIDER AND THE EXEMPT NETWORK OPERATOR

This Appendix summarises the key obligations applicable to the embedded network service provider, exempt network operator and exempt embedded network service provider under the proposed framework. [557]

Embedded Network Service Provider (ENSP)

A person who engages in the activity of owning, controlling or operating an embedded network and who is registered by AEMO as an ENSP.

The ENSP is a network service provider that classifies its distribution system as an embedded network and is accepted as such by AEMO. A distribution system can only be classified as an embedded network if it satisfies the conditions in the Rules, which cover being connected to another distribution system or transmission system, not being subject to a distribution determination (or owned, operated or controlled by someone who is), specifying the embedded network's embedded network area, nominating a local embedded network retailer (which can be a NEM retailer or an off-market retailer) and where it is an off-market retailer, ensuring it has access to the systems needed to perform that role, and in the case of a brownfields conversion, having the AER's consent.

The entity that registers as an ENSP may also register as an off-market retailer.

Exempt Network Operator (ENO)

A person who owns, operates or controls a transmission or distribution system (which may or may not be an embedded network) under a network exemption granted by the AER either as an individual exemption or by registration in an exemption class (including those subject to legacy exemptions who are able to continue operating their networks as exempt system operators).

The term ESO is to be introduced to refer to a person who is exempt from the requirement to register as a network service provider. ESOs will be listed in the Public Register of Exempt System Operators.

Exempt Embedded Network Service Provider (exempt ENSP)

The exempt ENSP is a person who engages in the activity of owning, controlling or operating a distribution system that has obtained a network exemption from the AER.

As introduced as part of the Embedded Network rule change in 2015, the AER may still require the exempt ENSP to appoint an Embedded Network Manager (ENM).

Relationship between ENSP, ENO and exempt ENSP

557 Please refer to the draft rules and law change drafting instructions for more detailed information.

The ENSP registers the embedded network (distribution system) that it owns, controls or operates with AEMO.

On the other hand, the ENO owns, controls or operates a distribution or transmission system under an exemption registered by the AER. The exempt ENSP is a subset of an ESO that engages in the activity of owning, controlling or operating a distribution system by means of an embedded network under an exemption registered by the AER.

Table A.1: **Responsibilities of ENSPs and ENOs**

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
Registration and authorisation regime for embedded networks		
An entity that owns, operates or controls facilities for the conveyance of electricity within a site or building needs to determine if the facilities are classified under the NER as a distribution system.	An entity that owns, operates or controls a distribution system must register as an ENSP or be exempt. The NER specifies some networks that are not distribution systems under the Rules and so do not require registration. This covers metering installations, micro EG connections, plug in and rack mounted equipment including electric vehicle charging, standard NBN equipment, temporary networks on building sites and electric traction systems for rail. The NER also specifies that such facilities in a site or building are to be classified as connection assets where all customers are directly connected or no sale of electricity or network services is occurring. Connection assets on their own do not constitute a distribution system	NEL, section 2, definition of distribution system; NER Chapter 10, definitions of distribution system, connection asset and embedded connection asset
Entities that own, control or operate an embedded network are required to register as either an ENSP or become an ESO.	Embedded networks (a distribution system classified as an embedded network under the NER) and ENSPs are required to be registered with AEMO under the national regulatory framework. The AER can grant an exemption from the requirement to register as a network service provider with AEMO. If granted such an exemption, the entity's details will be published in the Public Register of Exempt System Operators. An embedded network and an exempt embedded network are both types of distribution systems within the meaning of the NEL. Similarly, an ENSP and an exempt ENSP both own, control or operate a distribution system, and are a subset of distribution system operator under the NEL and the NER.	NEL Part 2 - Participation in the NEM, Division 1A and 1B; NER Chapter 2 and Chapter 10

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
	Some embedded networks that would previously have qualified for a deemed or registrable network exemption will be: (a) required to register as an ENSP, or (b) apply to be granted a network exemption from the AER or register as an ENO.	
Registering with AEMO as an ENSP is subject to application requirements	A person who classifies its distribution system as an embedded network must register as an ENSP with AEMO. An ENSP may, from time to time, by application amend its registration details with AEMO including the embedded network area for which it is the ENSP. In order to register with AEMO an ENSP must classify its distribution system as an embedded network for a particular embedded network area, provide a description of the embedded network area and nominate a retailer (either a NEM retailer or off-market retailer, with their consent) who will be the local embedded network retailer for the respective embedded network. In the case of the off-market retailer, the DNSP must ensure the retailer has access to the systems required to fulfil this role. In the case of a brownfields conversion, the AER's consent is required (similar to current arrangements for brownfields conversions). The AER will publish guidelines for the grant of consent. AEMO must publish a register that includes for each embedded network, the identity of the ENSP and a description of the embedded network area.	NER Chapter 2, Part A, clauses 2.5.1 and 2.5.4
Entities otherwise required to register as an ENSP can be granted an exemption from this requirement if they register an intermediary to act in their place	If more than one person owns, controls or operates an embedded network that is to be registered under the NER, only one of them need register as an ENSP. The other entities may appoint the ENSP as its intermediary and apply to AEMO for an exemption from the requirement to register. The intermediary will be the registered participant under the Rules for the embedded network, with the intermediary and	NER Chapter 2, clause 2.9.3

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
	the applicant being jointly and severally liable for acts, omissions, statements, representations and notices of the intermediary in its capacity as a registered participant under the Rules.	
Exemption granted from the AER before being registered as an ENO	The NEL provides the framework for granting network exemptions. The exemption framework is specified in detail under the NER, listing the activities for which the AER may determine registrable exemption classes. The AER will determine the classes as part of creating and publishing the AER Network Exemption Guidelines. The AER may also grant individual exemptions for embedded networks but only where customers in the network still get access to retail competition and other consumer protections, where benefits outweigh costs and where there are special circumstances to warrant the grant of the exemption. Prior to granting a network exemption or determining classes, the AER is required to consult with relevant jurisdictional authorities. Further, with regard to transmission system exemptions, the AER has the ability to grant an individual or class of transmission systems exemptions as was already the case.	NEL Part 2, Division 1A; NER Chapter 2, Part B
AER Exempt Network Guideline are to apply to ENSP and ENO applications	The AER must develop and maintain the AER Exempt Network Guideline in accordance with the Rules consultation process, specifying the procedural requirements for making network exemptions, the conditions applying to a network exemption (which include what rules do or do not apply to classes of network exemptions), and processes for obtaining relief from network exemption conditions as applicable to embedded networks, distribution systems and transmission systems.	NEL Part 2, Division 1, section 13G; NER Chapter 2, Part B, clause 2.13.2
Exemption conditions for ENOs are to be	The AER may impose exemption conditions on specific ENOs, or classes of ENOs.	NEL Part 2, Division

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
determined by the AER	The AER's investigation and enforcement powers in the NEL will be extended to apply to exemption conditions, with breaches of exemption conditions enforceable as civil penalties.	1A, section 13A; NER Chapter 2, Part B, clauses 2.13.2 and 2.15
AER may grant relief or a derogation from exemption conditions	The AER may decide to grant a derogation or relief from exemption conditions to an ENO or class of ENOs where the criteria for the grant of relief in the Rules and the AER's Network Exemption Guideline are satisfied.	NEL Part 2, Division 1A, section 13B; NER Chapter 2, Part B, clauses 2.15.4
AER may revoke or vary a network exemption	The AER may decide to vary or revoke a network exemption for an ENO, with the consent of or at the request of the ENO, if the AER is satisfied that an ENO fails to comply with the relevant exemption conditions. The revocation process needs to follow the process set out in the NEL.	NEL Part 2, Division 1A, section 13C, 13D and 13E
AER's ability to monitor, investigate and enforce exemption conditions will apply to ENSPs and ENOs	ENSPs and ENOs are now subject to the AER's general information gathering powers and compliance regime. Any breaches of exemption conditions are enforceable by the AER as part of their monitoring, investigation and enforcement procedures, with breaches of network exemptions enforceable under the law.	NEL Part 6, Divisions 1, 1A, 2 and 6
AER is to increase transparency by maintaining a public register of ENOs	The AER will be required to maintain a public register of ENOs where it registers: • the names and business addresses of ENOs • a list of the classes of persons to whom a network exemption is available upon registration • the names and business addresses of ENOs who have registered with the AER as belonging to a class of persons subject to a network exemption •	NEL Part 2, Division 1A, section 13F; NER Chapter 2, clause 2.13.3

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
	• the Public Register of ENOs may include additional information relating to ENOs and associated matters the AER considers as relevant.	
Market and system integration		
ENSPs and ENOs are to enable retailers to have NMIs established for child connection points	Chapter 7 of the NER will in general apply to embedded networks, Off-market retailers will be caught as a registered participant and also treated as a Financially Responsible Market Participant at child connection points for metering purposes. ENSP's will be treated as the Local Network Service Provider (LNSP) in chapter 7 when the provision relates specifically to a child connection point within an embedded network. The relevant NEM retailer or off-market retailer within the embedded network is required to apply to the ENSP for a NMI. Accordingly, the ENSP, must assign a unique NMI for each metering installation on its network. ENOs are still required to act as, or engage an ENM for their embedded network (unless exempted under the NER from being required to appoint an ENM). For exempt embedded networks, the ENM remains responsible for applying to and register with AEMO for a NMI for a metering installation at the child connection points within its embedded network. Further, any off-market child connection points switching from an exempt seller to a market retail contract within an ENOs embedded network, will enliven the ENM conditions which will require the ENO to register as an ENSP. The ENM must maintain and provide information about the types of configuration of metering installations at the connection points within an embedded network to an off-market retailers' metering co-ordinator (where the child connection point is an off-market connection point).	NER Chapter 7, clauses 7.1.2, 7.4.4 and 7.5A.2; Chapter 2, clause 2.15.3

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
	To mirror the new arrangements for embedded networks, AEMO's procedure for de-registration of metering providers, metering data providers and ENMs will need to be updated so that in the event AEMO suspends an ENM, or allows an ENM to continue to operate under constraints, only the ENSP or exempt ENSP is notified.	
ENSPs will be required to ensure its local embedded network retailer can comply with Chapter 7	As off-market retailers are not registered under the NER, the ENSP must ensure that where the local embedded network retailer is an off-market retailer, it has access to the information and systems required to comply with Chapter 7 in relation to the embedded network.	NER Chapter 7, clause 7.1.2(d)
ENSPs and ENOs will be required to provide retailers with NMI data when requested	The ENSP, or the ENM acting for an exempt ENSP, must disclose NMI information at the request of the retailer (including an off-market retailer) and within 1 business day of the date of the request, provide the retailer with the NMI and NMI checksum for premises identifies in the request. For NMI standing data requests by the retailer, the ENSP, or the ENM acting for an exempt ENSP, must within 2 business days of the date of the request provide the retailer with the NMI standing data for premises identified in the request.	NER Chapter 7, Part E, clause 7.13.3
Application of distribution loss factors	ENSPs are required to apply distribution loss factors (DLFs) as part of the settlement process of energy flows within the embedded network: • ENSPs must comply with the methodology developed and published by the AER for determining DLFs • absent that, DLFs are to be calculated for connection points assigned to a single transmission network connection point (retail customer loads) based on the methodology published by a LNSP • or are to be calculated as agreed by an ENSP and a distribution customer with a large load (as approved by the AER).	NER Chapter 3, clauses 3.6.2B, 3.6.3(g1)(1) and 3.6.3(g1)(2)

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
	For connection points assigned to transmission network connection points (larger loads), the DLF is the one which would apply to the child connection point if connected directly to the LNSPs distribution system, or the DLF applicable at the parent connection point for the embedded network.	
Network billing		
A shadow network charges procedure will apply for network billing arrangements between retailers and ENSPs and exempt ENSPs for on-market embedded customers	Network billing and payment rules will apply to ENSPs and exempt ENSPs, like direct billing and network charges for embedded network customers of NEM retailers • Direct billing arrangements are permitted by ENSPs and exempt ENSPs • Network charges are to be calculated for embedded customers of NEM retailers using the 'shadow network charges procedure'. AEMO is to develop, publish and maintain the 'shadow network charges procedure' which specifies: • the methodology to be used to determine network charges payable by NEM retailers to ENSPs and exempt ENSPs for network charges relating to on-market child connection points within their embedded networks • arrangements for billing and settlement of the network charges (billing and settlement communications between retailers, ENSPs and ENMs in accordance with applicable B2B Procedures, and application of standardised data and file formats for those communications).	NER Chapter 6B, Part A, Division 2, clause 6B.A1.3
ENSPs and ENOs must give AEMO information for the shadow network charges database	AEMO will establish, maintain and publish a database (shadow network charges database) that provides information about the network charges payable by retailers. ENSPs and ESOs will be required to give information to AEMO for the database.	NER Chapter 6B, clauses 6B.A1.4

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
ENSP and exempt ENSPs to calculate and provide statement of network changes and payment to retailers	Obligation of ENSPs and exempt ENSPs to calculate network charges for on-market embedded customers in accordance with the shadow network charges procedure, and provide a statement of network charges to a retailer (NEM retailer and off-market retailer)	NER Chapter 6B, clauses 6B.A2.4 and 6B.A2.5
Matters incidental to billing and payment apply to ENSPs and exempt ENSPs	Matters incidental to billing and payment will apply to ENSPs and exempt ENSPs under the proposed framework, including: • provisions on adjustment of network charges to recover for any error of metering data or any other factor that affects the calculation of charges • tariff reassignments on request of the retailer • dispute mechanism for stated amount of charges • any changes to network charges must be provided as reasonably practical to the retailer.	NER Chapter 6B, Part A, Division 3
Credit support for late payments	Provisions on credit support required for late payment will extend to ENSPs.	NER Chapter 6B, Part B
Connection and network charging framework for retail customers		
Requirement to provide connection services in embedded network area for retail customers	An ENSP is required to provide connection services for premises for retail customers where the premises are located in its embedded network area. ENSPs must comply with the provisions on deemed standard connection contracts for existing connections.	NERL Part 3, Division 2, section 66; NER Chapter 5A
Preventing or hindering access	A civil penalty will apply to ENSPs, persons party to an agreement with an ENSP for the provision of an electricity network service or an associate to one of these persons engaging in conduct for the purpose of preventing or hindering access to an electricity network service.	NEL Part 11, section 157(1A)

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
Obligation to provide a model standing offer for basic connection services	ENSPs must have and publish on their website a model standing offer for basic connection services. They can either adopt the AER published model standing offer(s) for basic connection services or submit their own for the approval by the AER.	NER Chapter 5A, Part B, Division 1, clauses 5A.B.1 and 5A.B.8
Provide customers with the option to negotiate a connection contract	ENSPs will have to provide customers with the option of a negotiated connection, and must negotiate a connection contract in accordance with the negotiation framework set out in the NER.	NER Chapter 5A, Part C, clause 5A.C.3
Requirements to publish information on website	ENSPs have to comply with the requirements to publish information on their website, including information on their basic connection offers, an explanation of the connection applicant's right to negotiate a negotiated connection contract, a description of the negotiation process, and contact details for the local embedded network retailer as well as inform customers about their right to choose a retailer. If embedded generation projects are located within an ENSP's embedded network , the ENSP must maintain a register of completed embedded generation projects. The register must be updated by 1 December each year.	NER Chapter 5A, Part D, Division 1, clauses 5A.D.1 and 5A.D.1A
Application of embedded network connection charge principles	ENSPs must adhere to the embedded network connection charge principles outlined in the NER when setting connection charges for connection services.	NER Chapter 5A, Part E
AER to develop and publish an embedded network connection policy	ENSPs must comply with the AER's embedded network connection policy in relation to • the specified circumstances under which a customer has to pay connection charges for a connection service to an ENSP • the basis for determining connection charges • the types of model standing offers that an ENSP can adopt •	NER Chapter 5A, clause 5A.E.3A

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
	• specification of the circumstances when a retail customer is required to make a capital contribution towards the cost of network augmentation.	
Dispute resolution procedures for connection agreements will be extended to embedded networks	Dispute resolution procedures regarding basic connection services, negotiated connection contracts or connection charges will also apply to disputes between ENSPs and retail customers and real estate developers within embedded networks.	NER Chapter 5A, Part G
Connection of registered generators and large loads		
ENSPs will be required to comply with obligations in Chapter 5 that support the effective operation of that Chapter	ESNPs will have obligations to comply with applicable performance standards and cooperate with others under Chapter 5 in relation to matters such as planning, design and testing.	NER Chapter 5, clause 5.2.3B
The connection of a registered generator or large load to the ENSPs network will require performance standards and assessment of the need for system strength works	ENSPs will not have an obligation to connect a registered generator or large load, but if it does, it will need to put in place performance standards and assess the need for system strength works and consult with AEMO and other affected networks.	NER Chapter 5, clause 5.3C
Updating consumer protections in the NERL and NERR		
Obligations with regard to life support customers	ENSPs must comply with the additional requirements for embedded networks under the distributor obligations when advised by a customer that a person residing or intending to reside at the customer's premises requires life support equipment. The ENSP has to advise those customers that an embedded network planned interruption to supply could occur and notify distributors and the NEM retailer at any parent connection point within an embedded network. NEM retailers, off-market retailers and distributors, including ENSPs, for life-support customers must give those customers notice of interruptions as soon as practicable, and in any event within 1 business day.	NERR Part 7, rules 124(4)(b)(viii), (d) and 124B(1)(e)

OBLIGATION UNDER PROPOSED FRAMEWORK	DETAILS	PROPOSED CHANGES
Notification about interruption of supply	An ENSP must, by any appropriate means, notify each affected customer on its embedded network of an embedded network interruption as soon as practicable after receipt of a notice of the interruption under NERR 99B by the DNSP or, in any event within 1 business day. Interruptions to be notified include: • interruptions of supply of energy in an embedded network due to a retailer planned interruption • distributor planned interruption at or above the parent connection point.	NERR Part 4, Division 6, rules 88 and 90A
ENSP obliged to provide electricity consumption information to the AER	An ENSP must, for the purpose of electricity consumption benchmarks, provide information to the AER in a manner and form requested by the AER.	NERR Part 11, rule 171
Customer access to jurisdictional ombudsman schemes	Customers in a registered embedded network operated by an ENSP will have access to the relevant jurisdictional energy ombudsman to make complaints.	NERL Part 4 - Small customer complaints and dispute resolution

B OVERVIEW OF ROLES AND RESPONSIBILITIES OF THE OFF-MARKET RETAILER AND EXEMPT SELLER

Off-market retailer

Under the proposed framework, an off-market retailer has a limited authorisation from the AER to on-sell electricity, purchased at a parent connection point, to customers at child connection points in an embedded network.

The off-market retailer will be required to appoint a metering coordinator, and obliged to make an offer to all the customers in the embedded network for which it is registered with AEMO as the local embedded network retailer.

The entity that registers as an off-market retailer may also be an ENSP.

Exempt seller

The exempt seller is a person who is exempted by the AER from the requirement to hold a retailer authorisation. An exempt seller has registered with the AER for a selling exemption and on-sells energy (gas or electricity or both) purchased at a parent connection point to exempt customers in an exempt embedded network.

Table B.1: **Responsibilities of the off-market retailer and exempt seller**

OBLIGATION UNDER PROPOSED FRAME-WORK	DETAILS	PROPOSED CHANGES
Registration and authorisation regime for embedded networks		
An on-seller of energy to customers in an embedded network will need to be either a NEM retailer, an off-market retailer that can only sell to customers in embedded networks, or an exempt seller (unless it is an excluded activity as described below)	A person that is engaged or intending to engage in the activity of selling electricity for premises connected to the interconnected national electricity system (which includes embedded networks) will need to obtain a retailer authorisation or be an exempt seller under the NERL. Retailers that do not purchase electricity from the spot market, but from a NEM retailer, and on-sell energy in an embedded network to a person who takes a supply of electricity at an off-market child connection point, will be required to comply with the obligations of off-market retailers, and be authorised by the AER under the NERR as an off-market retailer. NEM retailers generally can sell to embedded network customers without needing an off-market retailer authorisation. Provisions in the NERL that relate to a 'retailer' will extend to both NEM retailers and off-market retailers unless expressly excluded.	NEL section 2, definition of 'interconnected national electricity system', NERL Part 5, section 89; NERR rule 3C
The rules are to provide for different classes of retailer authorisation which an entity can apply for, including a general NEM retailer authorisation and an off-market retailer authorisation	The AER can grant one or more classes of retailer authorisations (based on different criteria) in respect of sale of electricity, or sale of gas to a class of persons or premises, where applied for by entities, including: • a general authorisation for electricity and gas sellers; or •	NERL Part 5, sections 88(4), (5) and 89(1A); NERR Part 1, Division 1A, rule 3B.1

OBLIGATION UNDER PROPOSED FRAME-WORK	DETAILS	PROPOSED CHANGES
	• an off-market retailer authorisation for sellers of electricity specifically within embedded networks.	
Three activities are excluded from the regime and require neither an authorisation nor an exemption	Neither an authorisation nor an exemption is required for: • selling energy to a related body corporate • temporary selling of electricity on a construction site • government departments and agencies selling energy as part of their ancillary functions.	NERL section 88(1)(c) and (1A); NERR rule 148A
AER is to specify entry criteria and conditions for retailer authorisations which may differ depending on the type of retailer authorisation being sought, and possibly determined on a case-by-case basis	In its AER Retailer Authorisation Guidelines, the AER has discretion to specify entry criteria applicable to off-market retailers. If the AER grants an application, it may impose conditions that apply as pre-conditions or ongoing obligations which a retailer must comply with to retain its retailer authorisation. The AER may amend or revoke any conditions, providing it flexibility to better manage retailer authorisations.	NERL Part 5, Division 1, sections 90 and 93
Off-market retailers are to comply with the obligations of off-market retailers under the NER	Off-market retailers have obligations under Chapter 7 of the NER and are subject to the dispute resolution and confidentiality obligations in Chapter 8.	NERR Part 1, Division 1A, rule 3C(4)(b) NER Chapter 7, clause 7.1.2 NER Chapter 8, clauses 8.2.1 and 8.6.1A
The ENSP must ensure that its nominated off-market retailer has access to the systems needed to comply with Chapter 7 of the NER	Off-market retailers have obligations under Chapter 7 of the NER but are not registered under the NER. If the local embedded network retailer nominated by an ENSP is an off-market retailer,	NER Chapter 2, clause 2.5.4(d)(5); NER Chapter 7, clause 7.1.2(d).

OBLIGATION UNDER PROPOSED FRAME-WORK	DETAILS	PROPOSED CHANGES
	the ENSP must ensure the retailer has access to the information and systems required to comply with Chapter 7.	
An off-market retailer can be a local embedded network retailer for an embedded network when nominated and registered as such by an ENSP with AEMO	As part of an ENSP's registration under the NER, an ENSP must nominate either an on-market or an off-market retailer (with its consent) as the local embedded network retailer of the respective embedded network. An off-market retailer authorised by AEMO in relation to a particular embedded network can only on-sell electricity in relation to that embedded network (and not outside of the embedded network).	NER Chapter 2, clause 2.5.4(d)(5), NERR Part 1, Division 1A, rule 3C(2) and (3)
Off-market retailers that are the designated retailer for an embedded network must make an offer to their small customers	An off-market retailer in its capacity as a designated retailer (where registered as the local embedded network retailer by an ENSP for an embedded network area) is required to make a standing offer to the small customers within the embedded network area.	NERL section 2 definition of 'designated retailer', Part 2, Division 3, section 22
An entity can, if not registered as a NEM retailer or an off-market retailer, be registered as an exempt seller	The AER will be able to grant an exemption from the requirement to hold a retailer authorisation. The holder of a corresponding exemption is classified as an exempt seller. The AER may determine persons or a class of persons to whom an exemption from being an authorised retailer is granted. In the NERR, the AER can determine classes of exempt sellers with regard to persons that sell metered energy to holiday accommodation, selling energy as a supplementary supply under a PPA, selling unmetered gas for limited purposes, or selling electricity supplied within data centres and like premises. The AER	NERL Part 5, Division 6, sections 110 and 113(a); NERR Part 9, Division 2, rules 150 and 151

OBLIGATION UNDER PROPOSED FRAME-WORK	DETAILS	PROPOSED CHANGES
	will be able to create sub-classes that fit these broad categories as required. Those granted an exemption are to be registered on the AER's Public Register of Authorised Retailers and Exempt Sellers. The previous deemed and registrable exemption classes will no longer apply.	
An entity can, if not registered as a NEM retailer or an off-market retailer, seek an individual exemption in limited circumstances	The AER will be able to grant an individual exemption from the requirement to hold a retailer authorisation in limited circumstances. The individual exemption will only be available for the sale of energy for premises at a site or contiguous sites, any small customers have access to retail competition and consumer protections, the benefits outweigh the costs and special circumstances exist such that the grant of an individual exemption is warranted.	NERR Part 9, Division 1, rule 149
The AER can impose exemption conditions	The AER may impose conditions on an exemption or class of exemptions in accordance with the NERR and the AER Retail Exemption Guidelines. The exemption may be granted so as to commence with regard to a person or class only when specified conditions are satisfied. An exempt seller must comply with exemption conditions applicable to its exemption. Exemption conditions are enforceable by the AER, and breaches are treated as civil penalties. The AER's Retail Exemption Guideline will need to reflect changes to the exemption framework.	NERL Part 5, Division 6, sections 112 and 113(c); NERR Part 9, Division 2, rules 152 and 153

OBLIGATION UNDER PROPOSED FRAME-WORK	DETAILS	PROPOSED CHANGES
Relief from exemption conditions	The AER has the ability to provide relief from the exemption conditions that apply to an exempt seller in accordance with the AER exempt selling guidelines and where criteria for the grant of relief in the NERR are satisfied.	NERL Part 5, Division 6, sections 112A and 113(c)
AER can revoke a retailer authorisation or exemption	The AER has the power to revoke a retailer's authorisation or exemption. The grounds for revocation of a retailer's authorisation are extended to include a breach of a condition imposed under the NERL and NERR by the AER. This applies to both electricity and gas retailers. The AER can, in relation to a particular exempt seller, decide to revoke an exemption if there has been a material failure by the seller to comply with the exemption conditions applicable to its exemption, or revoke an exemption with the consent of or at the request of the exempt seller.	NERL Part 5, Division 5, Section 107 and Division 6, sections 110A, 111, 112 and 113
AER's ability to monitor compliance and enforce retailer authorisations extends to off-market retailers, exemption conditions and any breaches of the NEL, NERL and NERR	Under the proposed framework, most previously exempt on-sellers will be subject to the same regulatory framework as authorised retailers and so will be subject to the AER's monitoring, investigation, enforcement, and information gathering powers, AER reporting and subject to AER compliance procedures, guidelines and information provision requirements. Exempt sellers are not subject to the wider AER reporting and compliance procedures, but are subject to compliance audit provisions at the request of the AER. Any breaches of conditions for an exempt seller are to be enforceable by the AER.	NERL Part 12 and Part 13

OBLIGATION UNDER PROPOSED FRAME-WORK	DETAILS	PROPOSED CHANGES
AER to maintain a register of exempt network operators and exempt sellers to increase transparency	Under the Public Register of Authorised Retailers and Exempt Sellers, the AER will register the names and business addresses of persons who hold retailer authorisations and the form of energy to which the retailer authorisation applies. This applies to both retailer and exempt seller authorisations.	NERL Part 5, Division 7, section 119; NERR Part 9, Division 5, rule 164
Market and system integration		
Obligations of off-market retailers	Chapter 7 (Metering) of the NER will in general apply to embedded networks. It is proposed that off-market retailers (unlike exempt sellers) will have those obligations applicable to financially responsible market participants (FRMP) for off-market connection points.	NER Chapter 7, Part A, clauses 7.1.1 and 7.1.2
Appointment of a metering coordinator	The off-market retailer has to ensure a metering coordinator is appointed for off-market child connection points on an embedded network, the connection points have a metering installation, which is registered with AEMO, and prior to registration, a NMI has been obtained, before selling electricity to a customer. The appointment of a metering coordinator results in the need to appoint a metering provider and a metering data provider. An off-market retailer is not eligible for registration as a metering provider and metering data provider. It is through this requirement that off-market connection points will be NMI registered, and permitted flexibility to shift on-market.	NER Chapter 7, Part B, clauses 7.2.1 (d), 7.4.1(f) and 7.4.2(f) NER Chapter 2, clause 2.4A.2(a)
Updating consumer protections in the NERL and NERR		
Customer protections under the NERL and NERR	By elevating off-market retailers into the national regulatory	NERL Parts 2 and 4

OBLIGATION UNDER PROPOSED FRAME-WORK	DETAILS	PROPOSED CHANGES
extend to embedded network customers	framework and treating them as a category of authorised retailers, embedded network customers are treated as retail customers where possible.	
There are some small differences between NEM retailer and off-market retailer obligations	The differences between a NEM retailer and an off-market retailer include: • the off-market retailer will be able to vary standing offers more often than once every 6 months • the off-market retailer is exempted from publishing variations of offers via newspaper.	NERL Part 2, Division 3, section 23(8); NERR Part 1, Division 1A, rule 3D and Schedule 1
Additional provisions for retailers in embedded networks	Additional provisions for retailers in embedded networks (including off-market retailers and NEM retailers) include: • modified model terms and conditions for standard retail contracts to make reference to embedded network planned interruptions • obligation to communicate retailer planned interruptions to all retailers and distributors (i.e. other embedded network service providers) within an embedded network.	NERR Schedule 1 and Part 5, Division 3, rule 99B
Off-market retailers have an obligation to make offers to small customers, on specified terms and conditions	Off-market retailers are required to: • make offers to small customers • use model terms and conditions, with proposed amendments to the model terms and conditions for standard retail contracts accommodating embedded network arrangements for changes to tariffs and charges, provide historical billing information, life support customers and planned interruptions.	NERR Schedule 1, 6.3, 8.2, 9.4, 11A.2

OBLIGATION UNDER PROPOSED FRAME-WORK	DETAILS	PROPOSED CHANGES
AER's Retail Pricing Information Guidelines applies to off-market retailers	Current provisions relating to the AER Retail Pricing Information Guidelines for presentation of standing and market offer prices will extend to off-market retailers.	NERL Part 2, Division 11, section 61
Off-market retailers are subject to customer hardship provisions	Current provisions to be extended to off-market retailers and exempt sellers through the AER's ability to require compliance audits.	NERL Part 12
Off-market retailers are subject to energy marketing rules and customer consent requirements when transferring customers	Energy marketing rules and the need to obtain explicit informed consent of a small customer when transferring customers to a retailer from an exempt seller apply to off-market retailers and embedded network customers.	NERL Part 2, Division 5, section 38 and Division 8, section 53
Off-market retailers are subject to energy consumption information provision to small customers	Existing information provision rules in the NERR extend to off-market retailers including provisions pertaining to energy consumption information (where available), as well as information on its dispute resolution procedure through its website.	NERR rules 56, 56A, 56B
Application of retailer of last resort (RoLR) scheme	The RoLR scheme is to be modified to extend to embedded network customers. For an off-market connection point, the default RoLR is either (a) the FRMP under the NER for the parent connection point (i.e. the NEM retailer selling to the off-market retailer), or (b) if the person under (a) happens to be a failed retailer, the default RoLR for the parent connection point (the parent connection point for the embedded network connecting to a distribution system). The registration requirements for RoLR are proposed to not apply to off-market connection points.	NERL Part 6, Division 1, sections 122 and 122A

OBLIGATION UNDER PROPOSED FRAME-WORK	DETAILS	PROPOSED CHANGES
	The RoLR provisions applicable to a connection point that is supplied by a NEM retailer within an embedded network remain unchanged.	
Transfer of responsibility in the case of a RoLR event	The transfer of responsibility clauses to assume the functions and powers of the failed retailer, including the appointment of a metering coordinator and transfer of metering coordination agreements in force, are proposed to be extended to also apply to off-market RoLR provisions.	NERL Part 6, Division 5, section 140
Use of pre-payment meter at a parent connection point	Under the proposed framework, parent connection points of an embedded network are required to not use a pre-payment meter system.	NERL, Part 2, Division 10, section 56A
Access to ombudsman scheme	Under the proposed framework, small customer complaints and dispute resolution provisions leading to the application of jurisdictional ombudsman schemes will extend to off-market retailers.	NERL Part 4
Obligations with regard to life support customers	Off-market retailers and distributors (including ENSPs) for life-support customers must give to those customers notice of interruptions as soon as practicable, and in any event, within 1 business day.	NERR Part 7, rule 124B
Obligations to notify customers of retailer interruptions apply to off-market retailers	Off-market retailers will need to notify their affected customers of retailer planned interruptions, including a requirement that they provide notifications, and provide for a 24 hour telephone number for its customers.	NERR rule 56C

C FUTURE TREATMENT OF NETWORK AND RETAILER EXEMPTIONS

Table C.1: **Overview: treatment of network exemptions**

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
ND1[1]	Persons supplying metered or unmetered energy to fewer than ten small commercial/retail customers within the limits of a site that they own, occupy or operate. Not applicable if an Embedded Network Manager is appointed (see exemption class	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	ENSP registration.

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	NR1)				
ND2[1]	Persons supplying metered or unmetered energy to fewer than ten residential customers within the limits of a site that they own, occupy or operate. Not applicable if an Embedded Network Manager is appointed (see exemption class NR2)	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	ENSP registration.
ND3[1]	Persons supplying metered or	Grandfathered, subject to exemption framework under legacy network	Grandfathered, subject to exemption framework	Grandfathered, subject to exemption framework	Registrable exemption

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	unmetered energy to occupants of holiday accommodation on a short-term basis	exemption, but subject to new NEL and NERL enforcement framework.	under legacy network exemption, but subject to new NEL and NERL enforcement framework.	under legacy network exemption, but subject to new NEL and NERL enforcement framework.	
ND4	Metering installations (includes metering panels and associated sundry equipment but not including incoming sub-mains or outgoing service wiring)	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Excluded from framework.
ND5	All supply of energy via plug–in or rack	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and	Grandfathered, subject to exemption framework under legacy network	Grandfathered, subject to exemption framework under legacy network	Excluded from framework.

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	mounted equipment in any premises	NERL enforcement framework.	exemption, but subject to new NEL and NERL enforcement framework.	exemption, but subject to new NEL and NERL enforcement framework.	
	Includes NBN equipment in any premises with an input current rating not exceeding 3 amps AC	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Excluded from framework. Note per AER recommendation, reduced input current rating of NBN equipment to be excluded to 700 watts.
ND6	Persons supplying unmetered electricity to small customers in Queensland[2]	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	ESNP registration (unless falls in another exemption class).
ND8	Persons supplying metered or unmetered	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and	Grandfathered, subject to exemption framework under legacy network	Grandfathered, subject to exemption framework under legacy network	Registrable exemption class.

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	energy to a related company	NERL enforcement framework.	exemption, but subject to new NEL and NERL enforcement framework.	exemption, but subject to new NEL and NERL enforcement framework.	
ND9	Any supply of energy in conjunction with, or ancillary to, or to facilitate the provision of telecommunications services. Includes internet, telephone, mobile phone, fibre optic, hybrid fibre cable, television, radio, Wi–Fi or other communications technology	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Registrable exemption class.
ND1	Government	Grandfathered, subject to exemption	Grandfathered, subject to	Grandfathered, subject to	Registrable exemption

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
0	agencies, other than housing authorities, supplying metered or unmetered energy to non–residential customers	framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	class.
	Public and private educational institutions supplying metered or unmetered energy to non–residential customers	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	ENSP registration.
NDO 1	Off–market energy generation	micro EG connections: Grandfathered, subject to exemption	micro EG connections: Grandfathered, subject to	micro EG connections: Grandfathered, subject to	micro EG connections: excluded from

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	by equipment owned, operated or controlled by a third–party and connected to the NEM via a private electricity connection or equipment intended solely to provide emergency energy supply, or third–party renewable energy system providers	framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	framework.
		Other - Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Other - Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Other - Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Other - Registrable exemption class.
NDO 2	Sites broadcasting television or radio signals and/or mobile	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject	Grandfathered, subject to exemption framework under legacy network exemption, but subject	Registrable exemption class.

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	communications		to new NEL and NERL enforcement framework.	to new NEL and NERL enforcement framework.	
NDO 3	Electric vehicle charging stations within a private network (e.g. a privately owned charging station located in a public area, hotel, shopping centre, university, etc.)	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Charging station excluded from framework
NDO 4	Temporary supply for the construction and commissioning phase of building, civil, construction industrial, transport, mining	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Excluded from framework

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	or other projects				
NDO 5	Electric traction systems supplying passenger or freight vehicles and associated infrastructure (i.e. rail networks) but not including commercial and/or retail activities	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Excluded from framework
NDO 6	Large corporate entities	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	ESNP registration
NDO 7	Residential, commercial and	micro EG connections -Grandfathered, subject to exemption framework under	micro EG connections - Grandfathered, subject to	micro EG connections - Grandfathered, subject to	micro EG connections - excluded from

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	industrial sites where demand–side participation equipment and facilities are installed, including the owners and operators of the equipment and facilities	legacy network exemption, but subject to new NEL and NERL enforcement framework.	exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	framework
		Generation and inverter connections - Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Generation and inverter connections - Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Generation and inverter connections - Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Generation and inverter connections - registrable exemption class
		Other – Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Other – Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Other – Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	ESNP registration

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
NR1[1]	Persons supplying metered or unmetered energy to ten or more small commercial/retail customers within the limits of a site that they own, occupy or operate. Additionally, persons that have appointed an Embedded Network Manager who would otherwise meet the ND1 class activity	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Exempt networks registered during this period must register as an ESNP by no later than 2 years after the Effective Date	Exempt networks registered during this period must register as an ESNP by no later than 9 years after the Effective Date	ENSP registration

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	description.				
NR2[1]	Persons supplying metered or unmetered energy to ten or more residential customers within the limits of a site that they own, occupy or operate. Additionally, persons that have appointed an Embedded Network Manager who would otherwise meet the ND2 class activity	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Exempt networks registered during this period must register as an ESNP by no later than 2 years after the Effective Date	Exempt networks registered during this period must register as an ESNP by no later than 9 years after the Effective Date	ENSP registration

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	description				
NR3[1]	Retirement villages supplying metered or unmetered energy to residential customers within the limits of a site that they own, occupy or operate	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Exempt networks registered during this period must register as an ESNP by no later than 2 years after the Effective Date	Exempt networks registered during this period must register as an ESNP by no later than 9 years after the Effective Date	ENSP registration
NR4[1]	Persons supplying metered or unmetered energy in caravan parks, holiday parks, residential land lease parks and manufactured home estates to	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Exempt networks registered during this period must register as an ESNP by no later than 2 years after the Effective Date	Exempt networks registered during this period must register as an ESNP by no later than 9 years after the Effective Date	ENSP registration

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	residents who principally reside there				
NR5[1]	Persons supplying metered energy to large customers	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Exempt networks registered during this period must register as an ESNP by no later than 2 years after the Effective Date	Exempt networks registered during this period must register as an ESNP by no later than 9 years after the Effective Date	ENSP registration
NR6[1]	Persons supplying metered or unmetered energy to small customers at a site or premises adjacent to a site that they own, occupy or operate	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Exempt networks registered during this period must register as an ESNP by no later than 2 years after the Effective Date	Exempt networks registered during this period must register as an ESNP by no later than 9 years after the Effective Date	ENSP registration
NR7[1]	Persons supplying unmetered	Grandfathered, subject to exemption framework under legacy network	Grandfathered, subject to exemption framework	Grandfathered, subject to exemption framework	ESNP registration

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	energy to small commercial/retail customers at a site that they own, occupy or operate (closed to new applicants)	exemption, but subject to new NEL and NERL enforcement framework.	under legacy network exemption, but subject to new NEL and NERL enforcement framework.	under legacy network exemption, but subject to new NEL and NERL enforcement framework.	
NRO 1	Off-market energy generation by equipment owned, operated or controlled by a third-party and connected to the NEM via a private network connection	micro EG connections - subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	micro EG connections - subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	micro EG connections - subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	micro EG connections - excluded from framework
		Other - subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Other - subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Other - subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	other - registrable exemption class under new framework

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
NRO 2	On-market energy generation by equipment owned, operated or controlled by a third-party and connected to the NEM via a private network connection	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Registered generation connected to NEM requires a ENSP registration
	Energy generation (including inverter) installations intended to supply network support or demand management services to the	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Non-registered generation connected to network - registrable exemption class

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	NEM				
NRO 3[1]	Ongoing supply to a mining or primary production facility and associated residential, commercial, industrial, processing and ancillary support facilities in areas with restricted access to NEM supply All bona fide installations, subject to demonstrable circumstances of	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Exempt networks registered during this period must register as an ESNP by no later than 2 years after the Effective Date	Exempt networks registered during this period must register as an ESNP by no later than 9 years after the Effective Date	ENSP registration

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
	remoteness from existing NEM supply infrastructure				
NRO 4[1]	Industrial, commercial and 'mixed-use' facilities but not including residential or energy generation activity. Includes the metered or unmetered supply of energy under an agreed commercial scheme negotiated with large customers	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Exempt networks registered during this period must register as an ESNP by no later than 2 years after the Effective Date	Exempt networks registered during this period must register as an ESNP by no later than 9 years after the Effective Date	ENSP registration

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
NRO 5[1]	Metered energy onselling to customers in networks with metering infrastructure enabling access to full retail competition in a jurisdiction (closed to new applicants)	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	ENSP registration
NRO 6	Large (30 km or greater) Dedicated Connection Assets (see definition in Glossary) All dedicated connection assets	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Registrable exemption

CLASS	DESCRIPTION	EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020		EMBEDDED NETWORKS ESTABLISHED AFTER 1 JANUARY 2020 UP TO THE EFFECTIVE DATE	EMBEDDED NETWORKS ESTABLISHED AFTER EFFECTIVE DATE
		PRE 1 DEC 2017 NETWORK	POST 1 DEC 2017 TO 31 DEC 2019 NETWORK		
NRO 7	Small (under 30 km) Dedicated Connection Assets (see definition in Glossary)	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Registrable exemption
NRI	Specific exemption of a network not otherwise described	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	Grandfathered, subject to exemption framework under legacy network exemption, but subject to new NEL and NERL enforcement framework.	AER may issue individual exemptions

Source: AEMC.

Note: [1] Installations where all customers are directly connected or there is no selling of energy may be reclassified as connection assets from the commencement date. Conversion of connection assets to an embedded network will require consent from the AER and the network will require to register as an ENSP.

Note: [2] This former exemption class may be implemented by a jurisdiction by way of a jurisdictional derogation of the proposed law and rule changes.

Table C.2: **Overview: treatment of retailer exemptions**

CLASS	CLASS DESCRIPTION	SELLING IN AN EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020 (INCLUDING WHERE LATER REGISTERED AS ENSP)		SELLING IN AN EMBEDDED NETWORK ESTABLISHED BETWEEN 1 JANUARY 2020 AND THE EFFECTIVE DATE	SELLING IN A NEW EMBEDDED NETWORK AFTER THE EFFECTIVE DATE
		Pre 1 Dec 2017 network	**1 Dec 2017 to 31 December 2019 network**		
D1	Persons selling metered energy to fewer than ten small commercial/retail customers within the limits of a site that they own, occupy or operate.	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Authorisation as a retailer required (off-market)
D2	Persons selling metered energy to fewer than ten residential customers within the limits of a site that they own, occupy or operate.	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Authorisation as a retailer required (off-market)
D3	Persons selling metered energy to	Grandfathered and subject to framework	Grandfathered and subject to framework	Grandfathered and subject to framework	Registrable exemption

CLASS	CLASS DESCRIPTION	SELLING IN AN EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020 (INCLUDING WHERE LATER REGISTERED AS ENSP)		SELLING IN AN EMBEDDED NETWORK ESTABLISHED BETWEEN 1 JANUARY 2020 AND THE EFFECTIVE DATE	SELLING IN A NEW EMBEDDED NETWORK AFTER THE EFFECTIVE DATE
	occupants of holiday accommodation on a short-term basis.	under legacy retail exemption	under legacy retail exemption	under legacy retail exemption	
D4[3]	Persons temporarily selling energy on construction sites.	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Excluded from framework
D5	Persons selling unmetered gas to individual premises where gas is used for limited purposes.	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Registrable exemption
D6	Persons[2] selling unmetered electricity to residential customers in Queensland.	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Authorisation as a retailer required (off-market)
D7	This class has been deleted.	(-)	(-)	(-)	
D8[3]	Persons selling energy to a related company.	Grandfathered and subject to framework	Grandfathered and subject to framework	Grandfathered and subject to framework	Excluded from framework

CLASS	CLASS DESCRIPTION	SELLING IN AN EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020 (INCLUDING WHERE LATER REGISTERED AS ENSP)		SELLING IN AN EMBEDDED NETWORK ESTABLISHED BETWEEN 1 JANUARY 2020 AND THE EFFECTIVE DATE	SELLING IN A NEW EMBEDDED NETWORK AFTER THE EFFECTIVE DATE
		under legacy retail exemption	under legacy retail exemption	under legacy retail exemption	
D9	Persons selling energy to customers in conjunction with, or ancillary to, the provision of telecommunications/ information services.	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Registrable exemption
D10[3]	Government and similar agencies, including their sub-contractors, selling metered energy to non-residential customers.	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Excluded from framework
D10[3]	Universities selling metered energy to non-residential customers.	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Excluded from framework
R1	Persons selling	Exempt sellers in these	Exempt sellers in these	Exempt sellers in these	Authorisation as a

CLASS	CLASS DESCRIPTION	SELLING IN AN EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020 (INCLUDING WHERE LATER REGISTERED AS ENSP)		SELLING IN AN EMBEDDED NETWORK ESTABLISHED BETWEEN 1 JANUARY 2020 AND THE EFFECTIVE DATE	SELLING IN A NEW EMBEDDED NETWORK AFTER THE EFFECTIVE DATE
	metered energy to ten or more small commercial/retail customers within the limits of a site that they own, occupy or operate.	networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date[1]	networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date	networks must obtain authorisation as off-market sellers by no later than 9 months after the Effective Date	retailer required (off-market)
R2	Persons selling metered energy to ten or more residential customers within the limits of a site that they own, occupy or operate.	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date[1]	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 9 months after the Effective Date	Authorisation as a retailer required (off-market)
R3	Retirement villages selling metered energy to residential customers within the limits of a site that they own, occupy or operate.	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date[1]	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 9 months after the Effective Date	Authorisation as a retailer required (off-market)

CLASS	CLASS DESCRIPTION	SELLING IN AN EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020 (INCLUDING WHERE LATER REGISTERED AS ENSP)		SELLING IN AN EMBEDDED NETWORK ESTABLISHED BETWEEN 1 JANUARY 2020 AND THE EFFECTIVE DATE	SELLING IN A NEW EMBEDDED NETWORK AFTER THE EFFECTIVE DATE
R4	Persons selling metered energy in caravan parks, residential parks and manufactured home estates to residents who principally reside there (ie *long term residents*)	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date[1]	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 9 months after the Effective Date	Authorisation as a retailer required (off-market)
R5	Persons selling metered energy to large customers.	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date[1]	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 9 months after the Effective Date	Authorisation as a retailer required (off-market)
R6	Persons selling metered energy to small customers at a site or premises adjacent to a site that they own, occupy or operate	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date[1]	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 9 months after the Effective Date	Authorisation as a retailer required (off-market)

CLASS	CLASS DESCRIPTION	SELLING IN AN EMBEDDED NETWORK ESTABLISHED BEFORE THE 1 JANUARY 2020 (INCLUDING WHERE LATER REGISTERED AS ENSP)		SELLING IN AN EMBEDDED NETWORK ESTABLISHED BETWEEN 1 JANUARY 2020 AND THE EFFECTIVE DATE	SELLING IN A NEW EMBEDDED NETWORK AFTER THE EFFECTIVE DATE
R7	Persons selling unmetered energy to small commercial/retail customers at a site that they own, occupy or operate.	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date[1]	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 2 years after the Effective Date	Exempt sellers in these networks must obtain authorisation as off-market sellers by no later than 9 months after the Effective Date	Authorisation as a retailer required (off-market)
R8	Persons selling electricity as a supplementary supply through power purchase agreements (PPAs) to customers who are connected to the national electricity grid	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Grandfathered and subject to framework under legacy retail exemption	Registrable exemption

Source: AEMC.

[1] The exempt seller may become an off-market retailer. An off-market retailer selling in a pre-1 December 2017 exempt network will be exempt from the obligation to appoint a metering coordinator under Chapter 7 of the NER, but subject to AER Pricing schedule applicable to off-market retailers selling to legacy embedded networks.

[2] This former exemption class may be implemented by a jurisdiction by way of a jurisdictional derogation of the proposed law and rule changes.

[3] Some former classes will no longer require either an exemption or authorisation under the NERR under the new framework following the Effective Date.

D JURISDICTIONAL ARRANGEMENTS

D.1 Introduction

To provide a complete set of consumer protection and safety regulations to consumers in embedded networks, state and territory energy regulatory functions need to be considered. Under the Australian Energy Market Arrangement (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.[558]

In the 2017 Review, the Commission made a number of recommendations to be progressed by jurisdictional governments relating to improving access to energy ombudsman schemes, improving awareness and access to concessions and reviewing jurisdictional safety and reliability schemes.[559] It also made a number of other recommendations relating to non-energy specific regulation, including that jurisdictions should consider whether there is sufficient provision for the disclosure of the cost, benefits and risks of embedded networks in state-based laws at the time of purchase or lease of a property.[560]

The energy related jurisdictional consumer protections and safety regulations for which the application to embedded networks needs to be considered include:

- Access to state and territory concessions and rebates
- Access to independent dispute resolution for both distribution and retail services
- Retail price controls
- Reliability requirements
- Safety requirements and monitoring regimes
- Technical regulation such as equipment and performance standards
- Ability to access land required for the supply of electricity
- Other Guaranteed Service Level (GSL) payments.

The Commission's high-level analysis of jurisdictional consumer protections and safety regulations and their application to new embedded networks is detailed in the following sections. Under the new framework, some of these jurisdictional protections may now automatically apply to customers in new embedded networks (subject to the wording of the relevant jurisdictional instrument), as the customers will be supplied by an authorised retailer and a registered distributor.

As these are jurisdictional functions, jurisdictions will determine which consumer protections and safety regulations should be extended to new embedded networks, and whether it will be via amendments to existing regulatory instruments, or new regulatory instruments. However, the Commission has engaged with jurisdictional regulators on the issues that the Commission has identified should be considered by jurisdictions in order to provide equivalent

558 Annexure 2, Australian Energy Market Agreement.
559 AEMC, *Review of regulatory arrangements for embedded networks*, final report, 28 November 2017, p. ii.
560 AEMC, *Review of regulatory arrangements for embedded networks*, final report, 28 November 2017, p. vi.

consumer protections and safety regulations to customers in embedded networks, where practicable and proportionate.

D.2 Current arrangements

Current arrangements for each jurisdictional function, both in the NEM and in current embedded networks, are discussed below.

D.2.1 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. The concession and rebate schemes differ in each jurisdiction, with different types of rebates available in each jurisdiction as well as differing eligibility criteria. However, in each jurisdiction, all residential customers are informed of the availability of energy rebates and payment assistance by their NERL authorised retailer, and can contact their retailer to determine if they meet the requirements to receive a concession.

Access to concessions and rebates for customers in embedded networks also differs by jurisdiction, and in some jurisdictions access is also dependent on the type of embedded network the customer resides in. For example, in NSW embedded network customers who are either long term residents of an on-supplied retirement village, on-supplied residential community or on-supplied strata scheme may be able to access the same state government energy rebates as standard customers by applying to the NSW Department of Planning and Environment.[561] In South Australia, there are specific rebates for customers living in a residential park or caravan park (which is a single combined concession for energy, water and sewerage) and specific arrangements for customers living in retirement villages to receive electricity concessions. From the Commission's high-level analysis it is unclear if customers living in on-supplied strata schemes in South Australia would be able to access energy concessions, as they are generally paid through an authorised retailer.[562]

In addition to concessions and rebates, customers who meet certain conditions and are experiencing severe financial hardship may be eligible to access emergency assistance towards the costs of their energy bills. These emergency assistance schemes differ in each jurisdiction, but generally offer one-off emergency assistance where an unforeseen emergency or unexpected hardship has occurred. Some of these schemes may cover customers in embedded networks, while others are restricted to customers on authorised retailers' hardship programs.

For customers in embedded networks, under the AER's Retail Exemption Guideline, exempt sellers must inform customers within embedded networks of the availability of relevant government or non-government energy rebates, concessions and relief schemes. In addition, where a customer is eligible to receive a government or non-government energy rebate, concession or assistance under a relief scheme, the exempt seller must not hinder the

561 NSW Government, *NSW Social programs for energy code*, 11 December 2017, p. 14.

562 South Australian government website: https://www.sa.gov.au/topics/care-and-support/financial-support/concessions/energy-bill-concessions, accessed on 4 June 2019.

customer's attempt to establish eligibility, and if required under the scheme must make the claim on behalf of the exempt customer and apply any successful claims to the customer's bill.[563]

D.2.2 Access to independent dispute resolution

Energy ombudsmen provide independent dispute resolution services for disputes relating to energy. Registered distributors and authorised retailers are required to be members of jurisdictional energy ombudsman schemes under the NERL.[564] Small customers can access jurisdictional energy ombudsmen to resolve disputes and complaints with their retailer and/or distributor, with the retailer or distributor bound by the ombudsman's decision.

Under Condition 17 of the AER's Retail Exemption Guideline, an exempt seller must, if permitted by the energy ombudsman scheme, be a member of, or subject to, an energy ombudsman scheme for each jurisdiction where it sells energy to exempt customers. In addition, under the AER's Network Exemption Guideline, exempt network service providers must, if permitted by an energy ombudsman scheme, be a member, or subject to, the energy ombudsman scheme in the state or territory in which the exempt network is located, and comply with the requirements of that scheme.[565]

In the 2017 Review, the Commission considered that access to independent dispute resolution was a priority to address. The AER and jurisdictional energy ombudsmen have been working collaboratively to extend scheme membership to embedded networks. The membership schemes and fee structures for energy ombudsmen were based on a relatively small number of authorised retailers and distributors, therefore, the inclusion of exempt sellers and exempt network service providers increases the members in each energy ombudsman's scheme exponentially. Energy ombudsmen in NSW, South Australia and Victoria have made changes to the membership scheme and fee structure, and are now accepting exempt sellers and exempt network service providers as members.

D.2.3 Retail price controls

Retail energy price controls are utilised where competition is "not yet effective for a market, group of users or a region".[566] Retail energy price controls are jurisdictional functions, however, they can be transferred to the AER and the AEMC at the discretion of each jurisdiction.[567] For example, the AER's retail exempt selling guideline, applicable to exempt sellers, contains a pricing condition.

The pricing condition contained in the AER's Retail Exemption Guideline is that customers supplied by the exempt seller must not be charged tariffs higher than the standing offer price that would be charged by the relevant local area retailer for new connections. Additionally under the pricing condition, notice must be given of any change in the customer's tariff, no

563 AER, *(Retail) Exempt Selling Guideline*, version 5, March 2018, pp. 34, 38, 41.
564 Section 86 of the NERL.
565 AER, *Electricity Network Service Provider - Registration Exemption guideline,* version 6, March 2018, p. 39.
566 Australian Energy Market Agreement s. 14.15.
567 Australian Energy Market Agreement s. 14.15(b).

additional charges that could not be charged by the local area retailer are allowed, and any late payment fees must be limited to recovering reasonably incurred costs as a result of the customer's late payment.[568]

Although the effectiveness of price controls based on standing offers has been questioned in recent years, with the Commission's *2018 Retail Energy Competition Review* finding the average standing offer to be as much as $832 more annually than the best market offer,[569] the AER has the discretion to lower the price cap through its retail exemption guideline if it considers this appropriate.

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 standard supply customers. Any embedded networks would be restricted from charging more than those regulated retail prices under the pricing condition in the AER's Retail Exemption Guideline, as the regulated retail prices would be the standing offer prices in those jurisdictions.[570]

On 1 July 2019 the Default Market Offer (DMO) will be introduced by the Commonwealth Government. The DMO will only have effect in NSW, South Australia and South-East Queensland, as retail prices in Tasmania, the ACT and regional Queensland are already subject to regulation. Similarly, from 1 July 2019, a default offer will also be available for small customers in Victoria, with the Essential Services Commission Victoria releasing its Final Advice on the Victorian Default Offer (VDO) to the Victorian Government on 30 May 2019.

D.2.4 Reliability

Reliability of electricity supply is a key factor considered in the national energy objectives, with network reliability standards a jurisdictional regulatory function.[571]

The levels of reliability that must be provided by transmission and distribution networks are contained in jurisdictional licence conditions or in state codes or regulations, and are generally measured by the System Average Interruption Duration Index (SAIDI) and the System Average Interruption Frequency Index (SAIFI).

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 DSNP's network are subject to, by way of jurisdictional legislation or codes, Guaranteed Service Levels (GSLs) covering areas such as reliability, customer service and

568 AER, *(Retail) Exempt Selling Guideline*, version 5, March 2018, Condition 7 - Pricing, p. 37.

569 AEMC, *2018 Retail energy competition review,* final report, p. viii.

570 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 Minister 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.

571 Annexure 2, Australian Energy Market Agreement.

connection and disconnection. Each jurisdiction prescribes GSLs, generally for each distribution business.[572]

In addition to the jurisdictionally set service reliability standards, under one of the AER's incentive schemes there are reliability performance targets for DNSPs. These are the performance targets set under the service target performance incentive scheme (STPIS).[573]

For current embedded networks, reliability is only mentioned in the AER's Network Exemption Guideline in relation to small generator installations. Under this condition, all systems are required to be reviewed by AEMO so that necessary performance standards can be applied, reducing the risk of impacts to reliability.[574]

Reliability of supply for embedded networks and GSL payments are discussed in further detail in Appendix E.

D.2.5 Safety of electricity supply

The safety of electricity networks and electrical installations is governed by jurisdictional instruments. 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.

In some jurisdictions the safety obligations imposed on licensed DNSPs are not extended to ENSPs, with some jurisdictions having different safety legislation for DNSPs than for other parties working on electrical infrastructure or 'electrical installations'. Other jurisdictions have one set of legislative instruments applying to electricity safety in general.

For example, from the Commission's high-level analysis it appears that the *Electrical Safety Act 2002 (Qld)*, and the *Electrical Safety Regulation 2013 (Qld)*, which provide the legislative framework for electrical safety in Queensland, would apply to embedded networks, however, there are differences in obligations depending on whether the person is an 'electrical entity' (including a distribution entity) and whether the network is an 'electrical installation'. If an embedded network is classified as an electrical installation (as the ENSP is currently not classified as a distribution entity) there will therefore be differences in the safety requirements for DNSPs and ENSPs.

Under the AER's Network Exemption Guideline general requirements, exempt networks must be installed, operated and maintained in accordance with all applicable requirements for the safety of persons and property within the jurisdiction in which the embedded network is located. This includes relevant industry codes, guidelines or other instruments applicable to a

572 Chapter 5 in the NER details some power system performance and supply standards (technical requirements), as well as conditions for connection, but these do not cover reliability.

573 Section 2.1(a) of the AER's *Electricity distribution network service providers - Service target performance incentive scheme* (November 2009).

574 AER, *Electricity Network Service Provider - Registration Exemption Guideline,* version 6, March 2018, p. 50.

network service provider providing similar services. Larger networks are required to obey any of the local safety requirements to have and maintain a safety management plan.[575]

D.2.6 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.[576]

Australian Standard 3000 (AS 3000), the Wiring Rules, are incorporated in certain jurisdictional technical standards in part, providing fundamental safety principles for safe electrical installation. The Wiring Rules generally apply to work carried out by licensed electrical practitioners on electrical installations, which would include embedded networks.[577]

Technical standards are also regulated by Service and Installation Rules (or similar) in each jurisdiction. The Service and Installation Rules are primarily designed to regulate the relationship between a licensed distributor and its grid connected customers. Further, the rules are designed to provide reasonable technical requirements that meet legislative and other regulatory requirements for connection to DNSP networks, and compatible requirements of the electrical installation which is to be connected to the DNSP's network. For example, the *Victorian Service and Installation Rules* apply to all installations connected, or to be connected, to Victorian electricity distribution networks, and all installations must comply with the Rules as a condition to acquiring and maintaining an electricity supply. The Rules cover areas such as supply application, connection and disconnection, supply types, use and protection, connection to the low voltage network, low voltage metering, and high voltage electrical installations.[578]

D.2.7 Ability to access land required for the supply of electricity

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. ENSPs do not generally have the power to acquire or access land, unless they have negotiated such rights under contracts.

Land access rights are contained under different legislative instruments in each jurisdiction. For example, in NSW network operators have land access rights under Part 5 of the *Electricity Supply Act 1995 (NSW)*, including powers to acquire land, enter and access premises,

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

576 For example, in NSW the *Electricity Supply Act 1995 (NSW)*, the *Electricity Supply (Safety and Network Management) Regulation 2014 (NSW)* and licence conditions provide technical regulations and design and performance standards.

577 AS/NZS 3000: 2018, Electrical Installations.

578 The Victorian Service and Installation Rules Management Committee, *Victorian Electricity Distributors Service and Installation Rules 2014*, incorporating amendment 1.

undertake works and vegetation management, and take bushfire prevention measures.[579] DNSPs in Queensland have similar rights under Part 4 of the *Electricity Act 1994 (Qld)*.

In most jurisdictions, it is likely that for embedded networks, rights of entry and management are largely regulated by contract and community by-laws. Jurisdictional laws governing different supply arrangements (for example body corporate or residential land lease or retirement villages) may provide some land access rights, however, the Commission has not conducted a review into these arrangements.

D.2.8 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 detail in Appendix E, other jurisdictional GSLs include:

- Notice of planned interruption
- Timeliness of new connections
- Missed scheduled appointments
- Timely repair of faulty streetlights
- Wrongful disconnection
- Reconnection
- Time to respond to complaints
- Time to respond to notification of a problem
- Hot water complaints.

D.3 Analysis and recommendations

The Commission's high level analysis on each of the jurisdictional consumer protections and safety arrangements and the application to new embedded networks is detailed below. The Commission has not undertaken detailed analysis of all jurisdictional regulatory instruments and it is not a comprehensive analysis of the jurisdictional consumer protections and safety regulations.

The Commission considers that current jurisdictional consumer protections that cover standard supply customers should, in many cases, be extended to customers in new embedded networks. For example, if the customer chooses a NEM retailer, then all retailer consumer protections including access to state-based concessions and rebates, and access to any jurisdictional retail price controls, should automatically apply. Depending on how key terms (such as 'distributor' and 'system') are defined in the jurisdictional instruments, some consumer protections and safety regulations will not automatically apply, and the jurisdictional regulatory instrument(s) will require amendment to apply to embedded networks. For some consumer protection or safety regulations, it may not be proportionate to apply equivalent obligations on ENSPs or on off-market retailers.

579 *Electricity Supply Act 1995 (NSW),* Part 5.

D.3.1 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 an authorised retailer (or exempt seller in some cases) and be listed as the account holder. Customers in embedded networks covered by the recommended framework will be supplied by either a NEM retailer or an off-market retailer, both of which will be authorised retailers. Therefore, customers should be able to access rebates and concessions in the same way that standard supply customers would be able to. Jurisdictional regulators would need to review the relevant regulatory instruments to determine if any amendments would be required to include off-market retailers in the definition of 'retailer'. Further, there may be some instances where alternative arrangements for payment of a concession or rebate are still required.

Under the new framework, both NEM retailers and off-market retailers will be required to have a hardship program. This should assist customers in new embedded networks in accessing those jurisdictional emergency energy assistance schemes in which participation in a retailers' hardship program is a prerequisite.

D.3.2 Access to energy ombudsman schemes for independent dispute resolution

The Commission is of the view that access to energy ombudsman schemes for independent dispute resolution for both distribution and retail issues should be extended to customers in new embedded networks.

Customers in embedded networks covered by the recommended framework will be supplied by a registered ENSP and an authorised retailer (either a NEM retailer or an off-market retailer), who are required to inform customers that they have a right to refer disputes and complaints to energy ombudsman under the NERR.

Jurisdictions will need to review their energy ombudsman schemes to determine whether any other changes are needed to extend coverage to embedded networks, and to require registered ENSPs and off-market retailers to become members. Once the scheme is extended to ENSPs and off-market retailers, the decisions made by the respective energy ombudsman would be binding in the same way as they would for standard supply customers.

As noted in the current arrangements section, the AER and jurisdictional energy ombudsmen have been working to extend scheme membership to embedded networks, with some energy ombudsmen schemes requiring exempt network service providers and exempt sellers to become members from 1 July 2018 or 1 January 2019. This extends access to independent dispute resolution to exempt embedded networks in those jurisdictions.

D.3.3 Retail price controls

In the 2017 Review, the Commission was of the view that improving access to competition and other consumer protections rather than reforming price regulation in embedded networks was the most appropriate approach.[580] Consequently, changes detailed in the rest of this report have been proposed to better enable customers in embedded networks to access retail competition, and to extend the consumer protections within the NERL and NERR to customers within embedded networks.[581]

The changes proposed in the report will assist customers in accessing retail competition and other consumer protections, as customers in new embedded networks will have a NMI and will be able to access retail offers from NEM retailers, as well as off-market retailers selling in the embedded network they reside in.[582]

The Commission continues to be of the view that price conditions are appropriate for child connection points in legacy embedded networks, in particular where workable competition may not emerge due to impediments to transitioning to the new framework. As discussed in chapter 4, the Commission is proposing changes to clarify the AER's power in this regard.

D.3.4 Reliability

One of the key findings of the 2017 review of the regulatory arrangements for embedded networks, was that an embedded network customer should be able to expect similar access to competition and consumer protections as a standard customer. To implement this principle implies the application of reliability standards to embedded networks to drive equivalent outcomes. However, the form of the reliability standards that would apply to embedded networks may need to differ from those that apply to a DNSP as both national and jurisdictional reliability standards use averages over thousands (and potentially hundreds of thousands) of customers.

Additionally, consideration will need to be given as to how customers at child connection points in embedded networks should be treated in regards to outages on the distribution network's feeder supplying the embedded network resulting in outages for customers within the embedded network. Currently, only one customer, the customer at the parent connection point, is included in any calculations for DNSPs' reliability standards.

The Commission's analysis of reliability standards for embedded networks is covered in more detail in Appendix E.

D.3.5 Safety of electricity supply

As detailed in the current arrangements section of this Appendix, 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

580 AEMC, *Review of the regulatory arrangements for embedded networks*, final report, 28 November 2018, p. 137.

581 See chapter 4 of this report.

582 Off-market retailers will be required to provide a standing offer for premises they are the designated retailer for, and may also choose to provide market offers to consumers.

parties working on electrical infrastructure or 'electrical installations', other jurisdictions have one set of legislative instruments applying to electricity safety in general.

Accordingly, from the Commission's analysis it is not clearly apparent that all issues related to worker and public safety in embedded networks have been fully addressed under the current regime in some jurisdictions. Where they have been addressed, it is not clear that they have been addressed in a proportionate manner.

Extending the jurisdictional safety Acts, Regulations, guidelines and licence conditions which apply to DNSPs to ENSPs in their entirety may not be proportionate, and could place onerous obligations on smaller embedded networks. Jurisdictions would need to analyse the safety obligations in their jurisdiction, and the appropriateness of applying them to embedded networks, to determine if current obligations can be extended either in full or with amendment, or whether alternative safety obligations may be more appropriate.

D.3.6 Technical regulation such as equipment and performance standards

The Commission's analysis suggests that the 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 not extend to ENSPs and embedded networks in most jurisdictions. Although the Australian Standard 3000 (AS 3000), the Wiring Rules, would likely apply in embedded networks, most other technical regulations and design and performance standards such as Service and Installation Rules (or similar) do not.

The Service and Installation Rules would apply to the connection between the embedded network and the DNSP's network, however, the Commission's analysis suggests equivalent rules would not apply within embedded networks.

Customers would have some protections under the Wiring Rules. However, the calculation methods governing supply sizes in AS 3000 do not fully reflect the complexity of embedded networks and therefore capacity shortfalls or excesses may result. Rectification of capacity issues may prove to be expensive and it is not clear how the costs would be shared between the supplier and the customer.

Analysis of the technical obligations such as equipment and performance standards in each jurisdiction, and the appropriateness of the application to embedded networks, will be required to determine if current obligations can be extended either in full or with amendment, or whether alternative technical standards may be more appropriate. The size and complexity of the embedded network may be a consideration when determining the approach.

D.3.7 Ability to access land required for the supply of electricity

Initial analysis suggest that ENSPs or exempt network service providers would have no power to acquire or access land, unless they have negotiated such rights under contracts, or access rights are contained in jurisdictional laws governing different supply arrangements. The Commission has not conducted a review into these arrangements.

It is, however, unlikely that an ENSP would need all of the powers available to DNSPs relating to land access. Jurisdictions should review the land access rights conferred on DNSPs to determine if it would be appropriate for any of those rights to be extended to ENSPs to install, maintain and operate embedded networks.

D.3.8 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 may be able to be applied to registered embedded networks with minor alterations. 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. Customers in registered embedded networks will be supplied by either a NEM retailer or an off-market retailer, both of which will be required to comply with the obligations under the NERL and NERR relating to the retail GSL categories. Similarly, ENSPs may need to comply with obligations in the NERL and NERR relating to the distribution GSL categories, if required by the jurisdictional regulator.

GSLs in each jurisdiction, and their extension to customers within embedded networks, are discussed in more detail in Appendix E.

E RELIABILITY AND OTHER JURISDICTIONAL GSLS

E.1 Introduction

In the 2017 Review, the Commission made a number of recommendations for other parties to progress. One of the recommendations was for jurisdictions to review their safety and reliability regimes to determine whether the regimes remained appropriate.[583] A number of submissions to the review raised reliability in embedded networks as an issue to be considered further.

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. Network reliability standards are a jurisdictional regulatory function, with the levels of reliability that must be maintained by distribution networks contained in jurisdictional licence conditions, and/or in state codes and regulations.[584] For distribution, levels of reliability are generally measured by the System Average Interruption Duration Index (SAIDI) and the System Average Interruption Frequency Index (SAIFI).

Customers (small customers only, in some jurisdictions) who are connected directly to the DSNP's network are subject to 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.

In addition to the jurisdictionally set service reliability standards, under one of the AER's incentive schemes there are reliability performance targets for DNSPs. These are the performance targets set under the service target performance incentive scheme (STPIS).[585]

One of the key findings of the 2017 Review was that an embedded network customer should be able to expect similar access to competition and consumer protections as a standard supply customer. To implement this principle implies the application of reliability standards to embedded networks to drive equivalent outcomes. However, the form of the reliability measures that would apply to embedded networks may need to differ from those that apply to a DNSP, as both national and jurisdictional reliability measures use averages over thousands (and potentially hundreds of thousands) of customers.

Currently, it appears that few or no reliability standards or performance incentives apply within embedded networks. Embedded network operators would only be subject to reliability obligations in the unlikely event that the relevant contracts include a provision to that effect. Additionally, although in most jurisdictions there are mandatory technical standards prescribing minimum technical requirements for embedded networks at the time they are installed, there are no ongoing standards for reliability.

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583 AEMC, *Review of the regulatory frameworks for embedded networks*, final report, 28 November 2017, pp. vi, 112.

584 Chapter 5 in the NER details some power system performance and supply standards (technical requirements), as well as conditions for connection, but these do not cover reliability.

585 Section 2.1(a) of the AER's *Electricity distribution network service providers — Service target performance incentive scheme*, version 2.0 (November 2018).

Embedded network customers receive a lesser level of reliability consumer protections than those customers connected to a DNSP's distribution network as they are not covered by clearly defined jurisdictional reliability standards or eligible for GSL payments, either from the DNSP to whose network the embedded network is connected for an interruption of the supply to the embedded network, or from the ENM for interruptions within the embedded network itself. At the upper end of the estimates, there are hundreds of thousands of embedded network customers not eligible for GSL payments if GSL thresholds are exceeded, who would be entitled to a payment if they were standard supply customers.

When a DNSP's performance against reliability standards is determined, embedded network customers are not included in the calculations to determine SAIDI and SAIFI – rather the embedded network is considered just to be a single customer at the parent connection point.

Additionally, there are no standards for supply restoration for customers within embedded networks if the outage is within the embedded network. Customers have limited to no recourse should the embedded network manager not restore supply in a timely manner following an interruption.

This Appendix details the current arrangements for reliability standards and reliability and other jurisdictional GSLs, and provides the Commission's analysis and recommendations for the application of reliability standards and jurisdictional GSLs to customers within embedded networks.

E.2 Current arrangements

E.2.1 Reliability guaranteed service levels

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 DSNP's network are subject to, by way of local legislation or codes, GSLs covering areas such as reliability, customer service and connection and disconnection. Each jurisdiction prescribes GSLs, generally for each distribution business.

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 $605 depending on the jurisdiction) in recognition that the GSL has been breached. The GSL payments are not intended to be reflective of the costs the customers may have incurred as a result of the interruption(s), but rather are some financial recognition of the outage(s).

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 some jurisdictions the same threshold is used across the jurisdiction, whereas in others, 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), geographic areas, or by distributor.

Customers who are supplied electricity at a child connection point in an embedded network are not entitled to GSL payments.

E.2.2 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.

Requirements for determining SAIDI and SAIFI targets, and the entity responsible for determining them, differ by jurisdiction. Some jurisdictions include reliability measures in addition to SAIDI and SAFI, for example, in Victoria, DNSPs are also required to report on the Customer Average Interruption Duration Index (CAIDI) and the Momentary Average Interruption Frequency Index (MAIFI).

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, and the ACT does not break down targets into categories.

SAIDI and SAIFI calculations would currently include embedded networks, but only as single customers at each parent connection point — they do not account for each individual customer in embedded networks.

E.2.3 National reliability targets within economic regulation — STPIS

The AER is responsible for designing the STPIS under Chapter 6 of the NER. The primary purpose of the STPIS is to encourage distributors to maintain existing levels of reliability and make improvements where customers are willing to pay for that improvement. The STPIS is applied in the Australian Capital Territory, New South Wales, Queensland, South Australia, Tasmania and Victoria.

Under the STPIS scheme, 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).

As for jurisdictional reliability standards, under the STPIS scheme embedded networks would be recognised as single customers of the DNSP. Each child connection point within the embedded network would not be included in STPIS calculations.

Unlike DNSPs, embedded networks are not themselves subject to economic regulation under Chapter 6 of the NER, and are not subject to STPIS.

E.2.4 Other jurisdictional GSLs

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, Table E.1 sets out other GSLs and the jurisdictions they apply in:

Table E.1: Other jurisdictional GSLs

GSL TYPE	APPLICABLE JURISDICTIONS
Notice of planned interruption	Queensland and the ACT
Timeliness of new connections	Queensland, the ACT, NSW and Victoria and South Australia
Missed scheduled appointments	Queensland, Victoria and South Australia
Timely repair of faulty streetlights	NSW, Victoria and South Australia
Wrongful disconnection	Queensland
Reconnection	Queensland
Time to respond to complaints	The ACT
Time to respond to notification of a problem	The ACT
Hot water complaints	Queensland

Source: *Electricity Distribution Network Code* (Qld), version 3, August 2018; *Consumer Protection Code* (ACT), July 2012; *Electricity Distribution Code* (Vic), August 2018; *Public Lighting Code* (Vic), version 2, December 2015; *Electricity Distribution Code* (SA), January 2018; NSW Government, Reliability and performance licence conditions for electricity distributors schedule 5 — customer service standards, p. 15.

There are currently no GSL payments for embedded network customers, unless they are supplied by an authorised retailer (on-market customers). For example, if the customer is supplied by an authorised retailer in the ACT, the GSL for time to respond to complaints may apply.

E.3 Analysis and recommendations

From our investigations, it does not appear there are any alternative frameworks providing reliability consumer protections for customers in embedded networks. While we have considered the jurisdictional energy regulations that would be expected to be relevant, we have not comprehensively examined the full breadth of jurisdictional instruments that might apply, in particular tenancy/occupancy legislation and building codes. However, if any relevant obligations exist under other legislation, it is highly unlikely that those obligations provide the same level of protection as the reliability standards that apply to customers outside of embedded networks.

Additionally, consideration will need to be given as to how customers at child connection points in embedded networks should be treated in regard to outages on the distribution network's feeder supplying the embedded network resulting in outages for customers within the embedded network. Currently, only one customer, the customer at the parent connection point, is included in any calculations for DNSPs' reliability standards. The customer at the parent connection point is the only customer that would be considered for payments under GSL schemes, and it is likely that the customer at the parent connection would not be classified as a small customer and is therefore not eligible under some jurisdictions' schemes.

It is apparent from the Commission's analysis there are two scenarios that require consideration by jurisdictions in regards to reliability:

• the application of DNSPs' reliability standards and GSL thresholds to incorporate customers in embedded networks that are impacted by interruptions to the DNSP's network

• application of reliability standards/GSL payments to the embedded network for supply interruptions *within* the embedded network.

Further analysis on including embedded network customers in DNSP reliability standards and GSLs, and the application of reliability standards and GSL payments to ENSPs is included below. It is recommended that jurisdictional governments/regulators give consideration to updating jurisdictional reliability standards to include customers of registered ENSPs.

E.3.1 Inclusion of embedded network customers in DNSP reliability standards

Supply interruption GSLs

Customers are currently only covered by GSL schemes if they have a metered connection directly to the distributor's network. Customers who are in embedded networks are impacted by unplanned interruptions on the distributor's network that cause supply interruptions to the embedded network parent connection point. That the customer is in an embedded network does not change the end result of such an outage — the customer is still without supply directly attributable to an unplanned interruption on the distribution network.

To treat customers within embedded networks in an equivalent way to standard supply customers would require that customers in embedded networks are provided with access to DNSP GSL payments if they have had unplanned supply interruptions caused by the distribution network that exceed the thresholds for interruption duration or frequency under the respective GSL schemes.

If acted upon by jurisdictional governments/regulators, the application of distribution GSL schemes to customers within embedded networks will necessitate reviews by each jurisdiction of their GSL schemes to broaden the application of the scheme.

If applied, it would require DNSPs to be able to determine the total number of customers in each embedded network, especially in those jurisdictions that require automatic payment of GSLs once thresholds have been breached. The national framework being developed for implementation in this review requires that all child connections in registered embedded networks be allocated a NMI in AEMO's MSATS system.

The allocation of NMIs would provide DNSPs with the number of customers in registered embedded networks connected to their distribution system. Further analysis will need to be undertaken by each jurisdiction to determine how GSLs can be applied to customers in regulated embedded networks within the parameters of their specific GSL scheme, and how GSL payments can be made to embedded network customers, should jurisdictions choose to extend these schemes to embedded networks.

Jurisdictional reliability standards – SAIDI and SAIFI

Similarly, current jurisdictional reliability standards do not incorporate embedded network customers (except for the parent connection point) in the calculation of SAIDI and SAIFI (and other applicable jurisdictional reliability standards) and therefore do not reflect the true number of customers impacted by supply interruptions on the DNSPs' networks.

While inclusion of embedded network customers in SAIDI and SAIFI calculations may not have such obvious benefits for these customers, it would seem appropriate that jurisdictional regulators that update jurisdictional schemes to make GSL payments available to embedded network customers (as discussed above), also make such a change to the SAIDI and SAIFI calculations.

Including embedded network customers will impact SAIDI and SAIFI results differently for each DNSP depending on whether the majority of embedded network customers are in areas of high reliability or low reliability. Feeders with poor reliability will see the SAIDI and/or SAIFI increase when embedded network customers are included. This may direct investment to areas of the network to improve reliability for customers who would otherwise have been overlooked.

As for GSL payments, the proposal under this review to require all child connections in registered embedded networks to be provided with a NMI in MSATS would likely provide DNSPs with the information required to incorporate embedded network customers in their SAIDI and SAIFI calculations.

E.3.2 Application of reliability standards to ENSPs

Application of supply interruption GSLs to ENSPs

Currently, there are no standards for supply restoration for customers within embedded networks for outages within the embedded network. Customers have limited to no recourse should the exempt network service provider not restore supply in a timely manner following an interruption, and do not receive any GSL payments or similar if supply interruption thresholds are exceeded.

To provide customers of embedded networks with equivalent consumer protections as standard supply customers, this also implies the application of some form of reliability standard to the embedded network itself. However, considering embedded networks have a much smaller number of customers connected to their networks, applying SAIDI and SAIFI in the same way as for DNSPs may not be appropriate.

The most reasonable approach to providing reliability protections within embedded networks is likely to be to develop and apply a type of GSL scheme. Given that many embedded networks will not be subject to the same number of external impacts as distribution networks (e.g. interruptions caused by weather, vegetation, vehicles crashing into distribution poles), and the cause of any fault would generally be more readily identified due to the smaller geographic area, it is likely that lower thresholds (i.e. a higher standard) should be applied to trigger GSL payments for embedded networks, both for interruption duration and frequency.

Consideration would also need to be given to the monitoring and enforcement regime that should apply to embedded networks if they are required to comply with a GSL scheme. ENSPs would need to keep auditable records on supply interruptions within the embedded network and report on the number of GSLs they have paid to customers under each of the GSL categories. The jurisdictional regulator would also require monitoring and enforcement powers.

If acted upon by jurisdictional governments/regulators, the application of distribution GSL schemes to ENSPs will necessitate reviews by each jurisdiction of their GSL schemes to broaden the application of the scheme.

E.3.3 Other jurisdictional GSLs

The Commission's high level analysis suggests that the other GSL categories apart from interruption of supply that apply in different jurisdictions may be able to be applied to registered embedded networks with minor alterations to jurisdictional instruments. 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.

Changes proposed in this review to the NERL and NERR will require ENSPs to comply with any jurisdictional GSL schemes, if required by the jurisdictional regulator. Therefore, if jurisdictions choose to amend their schemes to include ENSPs, or develop alternative GSLs schemes for ENSPs, then ENSPs will be required to comply with those schemes.

Customers in registered embedded networks will be supplied by either a NEM retailer or an off-market retailer, both of which will be required to comply with the obligations under the NERL and NERR which are the basis for the retail GSL category. Similarly, ENSPs will be required to comply with obligations in the NERL and NERR which are the basis of most distribution GSL categories.

Jurisdictional GSLs, the jurisdictions they apply in and the Commission's initial analysis on the application of these GSLs to embedded networks are included in table E.2.

Table E.2: Other jurisdictional GSLs and their application in new embedded networks

GSL TYPE	JURISDICTIONS	APPLICATION TO NEW EMBEDDED NETWORKS
Notice of planned interruption	Queensland and the ACT	This GSL relates to distributors providing 4 business days' notice for planned interruptions to supply. ENSPs will be required to comply with this notification period under the NERR. The Commission's initial analysis shows no reasons why this should not be extended to ENSPs. Amendments to the Codes in Queensland and the

GSL TYPE	JURISDICTIONS	APPLICATION TO NEW EMBEDDED NETWORKS
		ACT would be required if this GSL was to extend to ENSPs.
Timeliness of new connections	Queensland, the ACT, NSW, Victoria and South Australia	New connection GSLs differ in each jurisdiction, but this GSL generally provides payment if specified connection timeframes are not met for premises which are already physically connected to the electricity network, or if the customer remains not connected after an agreed date if the customer has met the necessary pre-conditions. The Commission's initial analysis shows no reasons why this should not be extended to ENSPs. Amendments to the Codes in Queensland, the ACT, Victoria and South Australia would be required if this GSL was to extend to ENSPs. In NSW GSLs are contained in licence conditions, therefore a different instrument would be required if this GSL was to be extended to ENSPs.
Missed scheduled appointments	Queensland, Victoria and South Australia	In these jurisdictions there are GSL payments if the DNSP does not attend a customer's premises within an agreed timeframe (i.e. they are late, or do not attend). Specifics differ between the jurisdictions, however, the Commission's initial analysis shows no reasons why this GSL should not be extended to ENSPs. Amendments to the Codes in Queensland, Victoria and South Australia would be required if this GSL was to be extended to ENSPs.
Timely repair of faulty streetlights	NSW, Victoria and South Australia	Timeframes for the repair of faulty streetlights differ in each jurisdiction for this GSL, however, DNSPs are required to repair faulty streetlights within a certain timeframe, or they will be liable to pay the first person to report the faulty streetlight (within certain conditions). The Commission's initial analysis shows no reasons why this should not be extended to ENSPs whose embedded networks contain street lights, if they continue to apply to DNSPs. However, the Commission notes that this is likely to be not a large issue for embedded networks. Amendments to the Codes in Victoria and South Australia would be required

GSL TYPE	JURISDICTIONS	APPLICATION TO NEW EMBEDDED NETWORKS
		if this GSL was to extend to ENSPs. In NSW GSLs are contained in licence conditions, therefore a different instrument would be required if this GSL was to be extended to ENSPs.
Wrongful disconnection	Queensland	Under the Queensland Electricity Distribution Code, GSL payments are due if a DNSP disconnects a customer without being entitled to, or disconnects the wrong customer. This includes if the DNSP wrongly disconnects a customer due to an error in the retailer's request, or if the retailer has not given the customer a disconnection warning notice in accordance with the electricity legislation. The Commission's initial analysis shows no reasons why this should not be extended to ENSPs. The Electricity Distribution Code would require amendment if the scheme was to be extended to ENSPs.
Reconnection	Queensland	Under the Queensland Electricity Distribution Code if a customer has been disconnected, and is entitled to be reconnected within specified timeframes, and the DNSP does not reconnect the customer within that timeframe, the DNSP must provide the customer with a GSL payment. The Commission's initial analysis shows no reasons why this should not be extended to ENSPs. The Electricity Distribution Code would require amendment to extend the scheme to ENSPs.
Time to respond to complaints	The ACT	Under the ACT Consumer Protection Code, an *obliged provider* must acknowledge complaints as soon as practicable, and respond to complaints within 20 business days. NERL retailers and electricity distributors are *obliged providers.* Off-market retailers will be NERL retailers under the proposed framework. An electricity distributor is a licensed distributor in the ACT. The Commission's initial analysis shows no reasons why this should not be extended to ENSPs, however, this would require the ACT government to include ENSPs in the definition of electricity distributors in the Consumer Protection Code.

GSL TYPE	JURISDICTIONS	APPLICATION TO NEW EMBEDDED NETWORKS
Time to respond to notification of a problem	The ACT	Under the ACT Consumer Protection Code, an *obliged provider* must respond to a problem or concern with the *obliged provider's* network within certain timeframes. For this GSL, an obliged provider is an electricity distributor, defined as licensed distributor in the ACT. The Commission's initial analysis shows no reasons why this should not be extended to ENSPs, however, this would require the ACT government to include ENSPs in the definition of electricity distributors in the Consumer Protection Code.
Hot water complaints	Queensland	The Queensland Competition Authority's draft decision for Review of Guaranteed Service Levels to apply to Energex and Ergon Energy from July 2020 recommends removing this GSL. The Commission has therefore not analysed this GSL at this stage.

Source: Electricity Distribution Network Code (Qld), version 3, August 2018; Consumer Protection Code (ACT), July 2012; Electricity Distribution Code (Vic), August 2018; Public Lighting Code (Vic), version 2, December 2015; Electricity Distribution Code (SA), January 2018; NSW Government, Reliability and performance licence conditions for electricity distributors schedule 5 — customer service standards, p. 15.