AEMC

RULE

Australian Energy Market Commission

DRAFT RULE DETERMINATION

NATIONAL ELECTRICITY AMENDMENT (CONNECTION TO DEDICATED CONNECTION ASSETS) RULE

PROPONENT
AEMO

26 NOVEMBER 2020

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

Reference: ERC0294

CITATION

AEMC, Connection to dedicated connection assets, Draft rule determination, 26 November 2020

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 Commission) has made a more preferable draft rule that will amend the National Electricity Rules (NER) to create a new framework for 'designated network assets'. This framework will replace the current arrangements for large dedicated connection assets (DCAs).

2 Unlike DCAs, designated network assets will form part of the transmission network operated by a Primary Transmission Network Service Provider (TNSP). As such, each facility connected to a designated network asset will have its own transmission network connection point (TNCP). This will allow all key NER requirements to be applied directly to individual connected parties, which is not possible under the current framework for DCAs.

3 The Commission considers that these new arrangements will allow for the more effective management of power system security and better facilitate the sharing of parts of the transmission system funded by connecting parties, while maintaining the incentives to invest.

Background

4 The framework for DCAs was established through the AEMC's 2017 *Transmission Connection and Planning Arrangements* (TCAPA) Rule. The framework applies throughout the national electricity market (NEM) except in Victoria, which is subject to different transmission arrangements.

5 A DCA is the collection of components that are used to connect an identified user group – one or more connecting parties – to the transmission network at a single TNCP. Once commissioned, the Primary TNSP can isolate a DCA from the transmission network through disconnection at that TNCP. DCAs can be provided on a competitive basis by any party (e.g. the Primary TNSP, a generator, a government or a firm looking to invest in renewable energy) that then registers as a DCA Service Provider (DCASP).

6 A DCASP must classify its DCA as either large (30km or longer) or small (shorter than 30km). Because DCAs are privately owned and operated connection assets that do not form part of a Primary TNSP's transmission network, they are not subject to the NEM's open access regime. Rather, the DCASP for a large DCA must have an access policy in place to provide a framework for applicants who want to obtain access to large DCA services. There is no requirement for DCASPs to offer third-party access to small DCAs.

7 The connection of an identified user group to the transmission network will generally require a combination of a DCA and an Identified User Shared Asset (IUSA). An IUSA describes those components required to connect a party to the transmission network, e.g. parts of a substation. An IUSA forms part of the shared network as the electricity flows cannot be isolated from the shared network. As such, IUSAs must be operated and maintained by the Primary TNSP, but the design, construction and ownership of IUSAs can be undertaken on a competitive basis.

The rule change request

8 The Commission received a rule change request from the Australian Energy Market Operator (AEMO) on 3 January 2020 that seeks to clarify the application of key NER requirements where multiple proponents are connected to the same DCA.

9 In AEMO's view, the DCA framework works well where there is a single proponent in the connecting identified user group, but is inappropriate where there are multiple proponents. This is because many NER obligations and processes are unable to work where a one-to-many relationship is required at a single connection point.

10 The rule change request seeks to address this issue by providing for there to be a separate connection point for each facility, located at the point where the facility connects to a DCA. This approach would allow existing NEM arrangements for metering, settlement, losses and performance standards to be applied to individual proponents connected to the same DCA.

11 As part of the rule change request, AEMO provided a proposed rule. The proposed rule amends the NER definition of 'transmission network connection point' to include references to the point where a facility would be connected to the DCA. It appears that the point where the DCA would connect to the transmission network would continue to also be a TNCP.

12 However, as DCAs are not part of the transmission network, the Commission – in common with many stakeholders – is concerned that establishing TNCPs on a DCA would blur the boundary between network and connection assets. This could make it difficult to establish which party – the Primary TNSP or DCASP – has responsibility for the TNCPs on a DCA and who should have a contractual relationship with connecting parties.

The strawman model

13 Despite these concerns, both the Commission and the majority of stakeholders support the intent of the rule change request. Consequently, the Commission developed a 'strawman' model to address the issues associated with the establishment of TNCPs on a DCA.

14 The key feature of the strawman model was the establishment of a new category of connection point, referred to as a 'DCA connection point'. A DCA connection point would be established at the point where a facility connects to a DCA, while the single TNCP where the DCA connects to the Primary TNSP's transmission network would be maintained.

15 This would have allowed for:

- each connecting party to have its own individual connection point
- the application of key NER requirements at a connecting party's individual connection point
- a clear distinction between the Primary TNSP's transmission network and the DCASP's connection assets
- continuation of the existing contestability arrangements as established under the TCAPA Rule.

16 Under this framework, a connecting party would have negotiated a connection with the DCASP under a new DCA connection process. As a result, parties connecting to shareable

DCAs would not have had a direct contractual relationship with the Primary TNSP. However, the new connection process would have provided for the Primary TNSP and AEMO to be sufficiently involved so as to mitigate any unintended impacts on the shared network.

Assessment of the strawman model

17 From submissions and further discussions with stakeholders, the Commission understands that a greater number of DCAs than seen to date are under development, and that these are likely to be more substantial in terms of their size (i.e. connected generation capacity) and length.

18 The Commission agrees with AEMO that the current frameworks are likely to represent a barrier to the sharing of DCAs, and the DCAs currently under development suggest that there is likely to be greater interest in sharing DCAs than was anticipated at the time the TCAPA Rule was made.

19 However, DCAs of this nature will represent material additions to the transmission system, and thus become increasingly important from a power system security perspective. For this reason, the Commission considers that the Primary TNSP should no longer be able to disconnect an entire shared DCA at the TNCP. To do so would have the potential to cause reliability and security issues, and would be likely to discourage generators to share DCAs.

20 Under the strawman model, the Primary TNSP would instead have a right to issue instructions to the DCASP to disconnect an individual connected party if that party poses a risk to power system security. The disconnection of one party would not affect other parties connected to the DCA.

21 To give effect to this approach would require incorporating DCAs and DCASPs into the sections of the rules governing power system security, i.e. primarily Chapter 4 of the NER. These are substantial and highly complex sections of the NER.

22 To extend these rules would essentially mean creating a new, parallel regime for power system security in addition to that which already exists for the transmission network and TNSPs. This would significantly increase the complexity of the NER and would impose significant new obligations on DCASPs.

23 This complexity could be multiplied were one shared DCA to connect to another shared DCA. This situation does not arise under the current framework where few regulatory obligations apply to DCAs, but would have needed to be addressed under the strawman model. This could have resulted in complex contractual relationships between Primary TNSPs, connected parties and multiple DCASPs.

24 For these reasons, the Commission considers that neither the proposed rule or the strawman model are likely to achieve the National Electricity Objective (NEO) which guides the Commission's decision-making.

The more preferable draft rule

25 In light of the issues identified with the proposed rule and the strawman model, the

Commission has concluded that the most proportionate approach to allowing for the sharing of new parts of the transmission system funded by connecting parties is to treat these as part of the transmission network. In particular, it will be more efficient to manage power system security through the existing arrangements for transmission networks than it will be to create bespoke, duplicative arrangements for DCAs.

26 Consequently, the more preferable draft rule establishes arrangements for 'designated network assets' which, unlike DCAs, form part of the transmission network. The concept of DCAs is retained, but only connections with power lines less than 30km in length are defined as a DCA (i.e. what would be a small DCA under the current arrangements).

27 Because designated network assets will form part of a Primary TNSP's transmission network, connection points established on them will be TNCPs, in the same way that they would be anywhere else on the transmission network. This allows for the direct application of existing regulatory and market arrangements for metering, settlement, losses and performance standards to each connecting party, with only a small number of minor modifications.

28 Importantly, designated network assets are not subject to the open access regime that applies elsewhere on the transmission network. Rather, Primary TNSPs must put in place access policies to protect the access rights of participants funding the provision of designated network assets, similar to the arrangements that exist for large DCAs under the current arrangements.

29 In the absence of broader access reform across the shared network as a whole, it will only be possible to provide these access protections on radial transmission assets, consistent with large DCAs under the current arrangements. The more preferable draft rule therefore limits designated network assets to radial configurations, between TNCPs with connected parties' facilities and a single 'boundary point' where the designated network asset meets the wider transmission network.

30 Unlike large DCAs, the provision of designated network assets is not fully contestable. Operation and maintenance of these assets must be undertaken by the relevant Primary TNSP, as these assets form part of its transmission network.

31 However, any party is able to design, construct and own a designated network asset on a competitive basis. The contestability arrangements are based on those that currently apply for IUSAs, but the more preferable draft rule removes two restrictions that currently act to limit the scope for competition in the form of a monetary threshold and a third-party ownership restriction.

Benefits of the more preferable draft rule

32 The Commission considers that the more preferable draft rule is likely to better contribute to the achievement of the NEO than both the current arrangements and the proposed rule, in that it will promote the more efficient investment in, and use of, the transmission system by better facilitating the sharing of assets by connected parties. It is also likely to have benefits in relation to improved reliability and security outcomes.

33 Through the establishment of TNCPs for each connecting party, the existing NEM

arrangements are used to allow each connecting party to be settled individually and for performance standards to be agreed and enforced at the facility level. The use of existing arrangements in this way will allow for the better sharing of assets while minimising the amount of additional complexity introduced into the regulatory frameworks.

34 The application of a special access regime through the access policies to be put in place will protect connecting parties' investments in designated network assets, while facilitating efficient entry and third-party access. This will avoid the free-rider issue that arises elsewhere in the shared transmission network, where participants are reluctant to fund network assets as there is no guarantee of their ability to use them or otherwise earn a return on them.

35 The Commission recognises that the contestability arrangements for designated network assets represent a reduction in the number of services subject to competition as compared to the existing DCA framework. This is an inevitable consequence of facilitating the creation of TNCPs by treating the assets in question as part of the transmission network. The Commission considers the greatest benefits from allowing for competition in the provision of transmission network services are likely to arise during construction, which will remain a contestable activity.

Renewable energy zones

36 This rule change comes at a time when there is significant interest in connecting new generating plant to the transmission system in the NEM, particularly renewable generation and storage, and therefore also interest in the regulatory frameworks required to facilitate this.

37 In particular, the Energy Security Board (ESB) has instigated a work program to develop arrangements to support the development and operation of 'Renewable Energy Zones' (REZs). A number of jurisdictional governments are promoting the establishment of REZs in their respective jurisdictions.

38 Many of these REZs appear likely to be of a size, with many gigawatts of generation capacity to be connected, that will require to them to be an integral part of the transmission network. As such, the access arrangements included in the more preferable draft rule - which are based around a radial network configuration - might not be suitable in these circumstances. The ESB will consult shortly on measures to support REZ implementation, including access arrangements, and the Commission has worked closely with the ESB on these matters.

39 However, the Commission considers that the arrangements for designated network assets will still be important in the context of REZs. Firstly, they could be used to facilitate smaller REZs. The more preferable draft rule will provide a framework for the independent development and operation of multiple generation and storage projects by different developers in such a REZ, which does not currently exist. Secondly, the arrangements could be used to support radial 'spokes' to collect generation and feed this into larger REZs.

40 Further, one of the advantages of treating designated network assets as part of the transmission network is that, depending on the access arrangements developed for REZs and indeed those applied to the transmission network more broadly, there is the potential for the

designated network asset and REZ frameworks to converge over time. This would allow for the transmission system to be developed in a holistic and more efficient manner than would be possible were DCAs to be maintained as a class of asset separate to the transmission network.

Implementation and timing

41 Before the new framework for designated network assets can be implemented in full, a number of activities will need to be undertaken, most notably the development of access policies by Primary TNSPs and the approval of these by the Australian Energy Regulator (AER). For this reason, the substantive provisions of the rule will commence six months after the making of the final determination.

42 The Commission assessed the feasibility of a staged implementation, but considers it impractical to require Primary TNSPs to respond to connection enquiries or connection applications before the access policies are finalised. However, the Commission recognises that a number of stakeholders have highlighted the importance of the timely implementation of this rule change and would welcome stakeholder views in this regard.

43 The Commission also recognises the more general concerns that have been raised recently with regard to the timeliness of the connections process. The more preferable draft rule is designed to enhance the efficiency of this process, in particular to make it much more straightforward to share what would currently be large DCAs than would be the case today. To the extent there would be any impact on the time taken to negotiate a connection, the Commission's intent is for this to be positive in its effect. The Commission is therefore also particularly keen to hear from stakeholders on this point.

Consultation on draft determination

44 The Commission invites submissions on the more preferable draft rule and this draft rule determination by **28 January 2021**.

CONTENTS

1 INTRODUCTION

1.1 The rule change request

On 3 January 2020, the Australian Energy Market Commission (AEMC or Commission) received a rule change request from the Australian Energy Market Operator (AEMO) seeking to clarify the application of key National Electricity Rules (NER) requirements where multiple proponents are connected to the same dedicated connection asset (DCA).

A DCA connects an 'identified user group', which can include one or more generators and/or large loads, to a transmission network at a single connection point. In AEMO's view's, the DCA framework works well where there is a single proponent in the connecting identified user group, but is inappropriate where there are multiple proponents. This is because many NER obligations and processes are unable to work where a one-to-many relationship is required at a single connection point.[1]

The rule change request seeks to address this issue by providing for there to be a separate connection point for each facility located at the point where the facility connects to a DCA, but to do so in a way that maintains the original policy intent of the DCA framework.[2]

1.2 Current arrangements

The DCA framework was established through the AEMC's 2017 *Transmission Connection and Planning Arrangements* (TCAPA) Rule. This section firstly provides some background to transmission connections in the National Electricity Market (NEM), before then setting out the changes to connection arrangements made in TCAPA, including the introduction of DCAs.

1.2.1 The framework for transmission connections

The shared transmission network

The 'shared' transmission network describes the transmission network owned, operated or controlled by the incumbent TNSP within a region, i.e. the 'Primary TNSP'.[3] It facilitates the secure and integrated operation of the electricity power system and flows of electricity between parties that produce electricity (generators) and those that consume electricity (consumers). The shared transmission network is a meshed network, making it almost impossible to separate those assets that provide services to a particular party from those that provide services to all users of the network.

Connections

Generators, large load customers, market network service providers (MNSPs) and distribution systems need to connect to the shared transmission network in order to facilitate the flow of electricity to and from their facility or network to the transmission system. The need for, and

1 Rule change request, p. 6.
2 Rule change request, pp. 1, 7.
3 The incumbent TNSPs in the jurisdictions of the NEM are: Powerlink (Queensland), TransGrid (NSW), ElectraNet (South Australia), TasNetworks (Tasmania), and AEMO and declared transmission system operators (DTSOs) (Victoria).

ongoing use of, assets that are used to facilitate connections to the network can be attributed to the party that uses them to connect. The assets that are required to enable the connection of a party to the shared network are broadly described as 'connection assets'.

The terms and conditions of a connection are negotiated between the connecting party and the Primary TNSP through a connection process. If the negotiating parties come to an agreement, the terms and conditions of an individual connection are specified in a connection agreement between the Primary TNSP and the connecting party.

It should be noted that in Victoria, the functions undertaken by the Primary TNSPs elsewhere are split between AEMO and declared transmission system operators (DTSOs).

BOX 1: TRANSMISSION CONNECTIONS IN VICTORIA

Victoria is the only jurisdiction in the NEM where AEMO has declared network functions.[1] AEMO is accountable for the provision of the shared network, procuring services from DTSOs (such as AusNet Services). In Victoria, the regulatory and legislative framework for how parties connect to the transmission network is different - it is regulated by provisions in the NEL and certain provisions of Chapters 5 and 8 of the NER. This means that the process for how parties connect to the transmission network is different to other jurisdictions, which only follow the process set out in Chapter 5 of the NER.

Generally, AEMO is responsible for assessing all new generator, load, MNSP, embedded network and Distribution Network Service Provider (DNSP) connections against the NER requirements, but is *not* responsible for providing the assets associated with connection. For generators and large loads, normally the assets associated with connection are provided by a supplier of the connecting party's choice.

As a result, the following process applies to transmission connections in Victoria:

- If a connection requires an augmentation to the declared shared network, e.g. the construction of a new substation, AEMO will determine whether the augmentation is contestable, non-contestable, or some combination of both.
- If AEMO determines that the augmentation is contestable, then the connection applicant can either:
  - nominate a DTSO of its choice to build, own and operate the contestable assets (essentially it would conduct a private tender to determine who it wishes to appoint to provide these services), or
  - ask AEMO to select the DTSO, with AEMO running a competitive tender process to select the most appropriate party.
- If AEMO determines that an augmentation is not contestable, the services will be provided by the incumbent DTSO, e.g. AusNet Services. Typically, these are the interface works because they are considered 'not separable' from the incumbent's network.
- Regardless of whether the augmentation is contestable or not, AEMO provides the equivalent of a 'functional specification' that the provider of the assets must use.

As a result of these differences, the contractual agreements for a connection in Victoria also differ from other jurisdictions.

Note: [1] See Part 5, Division 2 of the NEL on AEMO's declared network functions. For a comprehensive overview of the process for transmission connections in Victoria, see AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, chapter 6.

The process for transmission connections

Part B of Chapter 5 of the NER sets out the connection process. It regulates aspects of the technical and contractual arrangements needed to connect, and sets out the obligations on parties throughout the connection process. The connection process broadly occurs as follows:[4]

- The connection applicant submits a *connection enquiry* to the TNSP.
- The TNSP formulates a *response to the connection enquiry*, with the TNSP informing the connection applicant about the relevant information it must provide, the amount of the application fee and providing a preliminary program, including proposed milestones for the connection.
- The connection applicant makes an *application for connection* to the TNSP's network and pays the application fee.
- The TNSP makes an *offer to connect* to the connection applicant, including the commercial terms and engineering requirements for the connection.
- The *finalisation of the connection agreement* is dependent upon the connection applicant's acceptance of the connection offer and establishing a connection agreement between the connection applicant and the TNSP.

This process is a staged negotiation with defined time frames for key steps in the process. The process is relatively prescriptive with regard to the TNSP's and the connection applicant's responsibilities. In practice, it is an iterative process whereby parties exchange information in order to come to an agreement on new connections and modifications to existing connections.

The negotiation of performance standards for a specific connection also occurs through the described connection process. Accordingly, the process for negotiating the services and assets that are required for connection to the shared transmission network occurs between the TNSP and a connection applicant concurrently with the process of negotiating performance standards for connecting equipment.[5] Chapter 5 of the NER contains access standards for the required level of performance for the equipment that an applicant seeks to connect to the transmission system, e.g. a generating plant.

4 See clauses 5.3.2 to 5.3.7 of the NER.

5 AEMO has an advisory function on some matters during the connection process, see clause 5.3.4A and the definition of 'AEMO advisory matter' in Chapter 10 of the NER.

The agreed levels of these access standards form part of the connecting party's connection agreement and become the relevant performance standards for the plant.[6] 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.

Further, as part of the connection process, the Primary TNSP undertakes a system strength impact assessment for each proposed new connection (or proposed alteration) of a generating system. Depending on this assessment, the connection agreement between a generator and TNSP may also include a requirement for a generator to pay for system strength connection works or implement a system strength remediation scheme in order to remedy or avoid any adverse impacts on system strength.[7] The AEMC is currently considering the frameworks for system strength through the rule change request *Efficient management of system strength on the power system* (ERC0300).[8]

1.2.2 The AEMC's 2017 *Transmission Connections and Planning Arrangements* Rule

The current framework for transmission connections was established through the AEMC's 2017 TCAPA Rule, which:

1. clarified many aspects of the connection process and the framework for economic regulation of services required to connect to the shared transmission network, and
2. made as many connection services as possible contestable, while making it clear that the Primary TNSP remains accountable for outcomes on the 'shared' transmission network, including the operation and maintenance of that network and access to it.

In particular, the 2017 TCAPA Rule clarified the types of connection assets involved in connection to the transmission network by defining two types of assets that provide the services required to connect a party to the shared transmission network - DCAs and identified user shared assets (IUSA):

- A **DCA** is the collection of components that are used to connect an identified user group - one or more connecting parties - to the shared transmission network at a single transmission connection point (TNCP) and which, once commissioned, can be isolated from electricity flows on the shared transmission network. For example, the power line that connects parts of a substation to a generating system could be a DCA. For the purposes of registration, a DCA is defined as a transmission system. AEMO is responsible for assessing an application and registering a network service provider (NSP) who

6 See clause 5.3.4A(i) of the NER.

7 See Section 5.3.4B of the NER on system strength remediation for new connections.

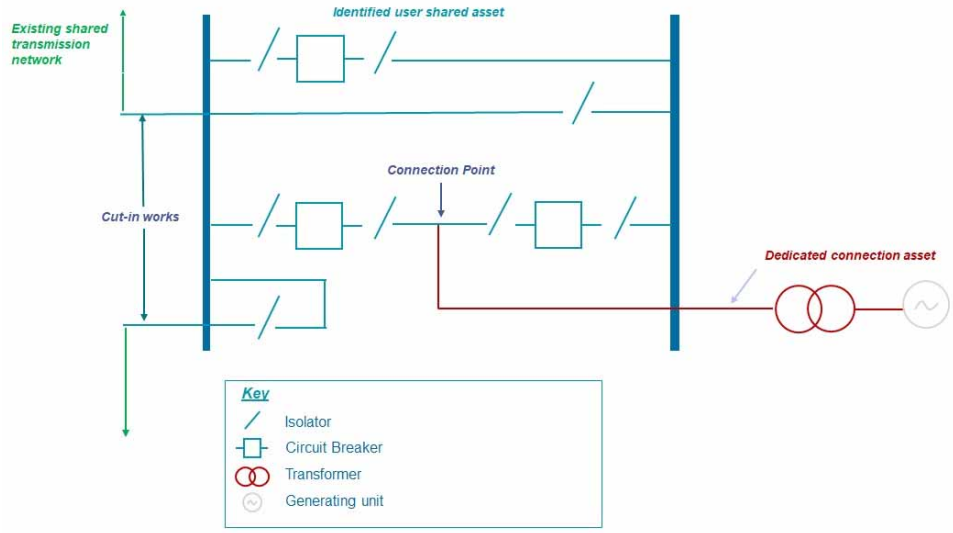
8 For further information, visit the project page on the AEMC's website: https://www.aemc.gov.au/rule-changes/efficient-management-system-strength-power-system.

classifies its transmission system as a DCA.[9] The party who owns, operates or controls a DCA is defined as a DCASP, which is a sub-category of a TNSP. The primary TNSP or a third party can be the DCASP.[10]

- An **IUSA** is the collection of components that are used to connect a connecting party to the shared transmission network. Once commissioned, an IUSA forms part of the shared transmission network as electricity flows cannot be isolated from the shared network. An example of an IUSA would be parts of a substation.[11]

A combination of both a DCA and an IUSA is generally necessary to connect a generator or load customer to the transmission network. However, the relative size of these different asset types can vary widely depending on the configuration of a connecting party's particular connection. Figure 1.1 provides a simplified illustration of the interlinkages between the shared network, IUSA and DCA, as introduced through the 2017 TCAPA Rule:

Figure 1.1: Illustration of key concepts: shared network, IUSA and DCA



Source: AEMC.

9 DCAs are deemed to be transmission systems only for the purposes of requiring registration (or be exempted by the AER from the requirement to register) under Chapter 2 of the NER. DCAs do otherwise not meet the relevant requirements under the NER for a transmission system.

10 For a detailed overview of the arrangements for DCAs and the rationale behind the changes to the transmission connections framework that were introduced, see AEMC, *Transmission connection and planning arrangements,* Rule determination, 23 May 2017, chapter 4 and appendix D.

11 For a detailed overview of the arrangements for IUSAs and the rationale behind the changes to the transmission connections framework that were introduced, see AEMC, *Transmission connection and planning arrangements,* Rule determination, 23 May 2017, chapter 4 and appendix B.

Contestability of connection services

Chapter 6A of the NER covers the economic regulation of the provision of prescribed transmission services. Access and connection to negotiated transmission services (and contestable transmission services) is governed by Chapter 5 of the NER:

- *Prescribed transmission services*: the costs for providing prescribed transmission services are recovered from transmission network users, with the revenue that a Primary TNSP can recover for these services regulated by the AER pursuant to the transmission determinations made for each Primary TNSP that provides these services under Chapter 6A of the NER.
- *Negotiated transmission services*: there is no regulation of the revenue that a Primary TNSP can earn for the provision of negotiated transmission services. The terms and conditions, including the price, of the provision of these services are negotiated between the Primary TNSP and the party who wishes to receive these services under a framework set out in Chapters 5 of the NER.
- *Non-regulated transmission services*: These services can be provided by any party, including by the Primary TNSP, outside the NER and are as such unregulated.

Under the NER, connecting parties are responsible for costs associated with any new apparatus, equipment, plant and buildings to enable their connection to the transmission network. Connecting parties must pay for the connection assets, regardless of how they are provided. Accordingly, the connection services that are required to connect a party to the transmission system, e.g. the services provided through an IUSA or a DCA, are negotiated or non-regulated transmission services. They are not a prescribed transmission service, and as such, they are not paid for by consumers via transmission use of system (TUOS) charges.

The 2017 TCAPA Rule clarified how services for DCAs and IUSAs are regulated.[12] Clause 5.2A.4 of the NER sets out a summary of these different services and how they are regulated.

Contestability of services for DCAs

All aspects of a DCA are fully contestable. That means that all services provided for a new DCA, including its design, construction, ownership, operation and maintenance, are non-regulated transmission services. A connecting party can either provide the services itself, or choose its preferred service provider (e.g. the Primary TNSP, a generator, a government or a firm looking to invest in renewable energy) to construct, own and operate these assets on commercial terms. Consequently, there is:

- no obligation on any party, including the Primary TNSP, to offer these services, and
- no regulated framework for the setting of price and non-price terms and conditions for the provision of these services.

12 See AEMC, *Transmission Connection and Planning Arrangements,* Rule determination, 23 May 2017, sections 4.2.1 and 4.4.1.

Contestability of services for IUSA

Services provided by IUSAs are classified as either a non-contestable service that the Primary TNSP has an obligation to provide and must negotiate to do so as a negotiated transmission service, or as a contestable service that can be provided by any party on commercial terms.

Non-contestable services: functional specification, cut-in works, operation and maintenance

The services of setting the functional specification, providing cut-in works, and the operation and maintenance of an IUSA must be provided by the Primary TNSP as a negotiated transmission service. The Primary TNSP is accountable for any outcomes on the shared network, including IUSAs.

Contestable services: detailed design, construction and ownership

The Primary TNSP must provide the services of detailed design, construction and ownership of an IUSA as a negotiated transmission service only if it reasonably expects the capital cost of all the components that make up the IUSA to be $10 million or less ('monetary' limb of the contestability threshold). If the capital cost is reasonably expected to exceed $10 million, then the design, construction and ownership of these assets are non-regulated transmission services and can be provided on a contestable basis to the extent that the components satisfy the following two criteria ('separability' limb of the contestability threshold):

- the components being constructed are new or a complete replacement of existing components (and do not involve the reconfiguration of existing components), and
- the detailed design and construction of the relevant component of the IUSA is separable as the new assets will be distinct and definable from the existing transmission network.

The Primary TNSP must determine whether each component of the IUSA meets these two criteria. If the two criteria are not met, the Primary TNSP is required to provide these services as negotiated transmission services.[13] If the two criteria are met, the arrangements for the provision of non-regulated transmission services are agreed between the connecting party and its chosen service provider on a purely commercial basis.

Subject to meeting the above two criteria, parties other than the Primary TNSP may own an IUSA. If this is the case, the NER requires a third party owner of an IUSA to enter into a network operating agreement (NOA) with the Primary TNSP.[14] The NOA must provide for the Primary TNSP to have control of the asset and provide subsequent parties with access to the transmission system via that asset. Further, a person that is engaged in the activity of owning, controlling or operating a generating system or load that is connected to an IUSA is prohibited from owning that IUSA (the so-called 'ownership' restriction).[15]

13 In the event that there is disagreement on whether a particular component meets or does not meet these criteria, either party can engage an independent engineer to provide technical advice on the matter, see rule 5.4 of the NER.

14 Clause 5.2A.7 of the NER.

15 Clause 5.2A.7(e) of the NER.

Third party access

Under the NEM access regime all registered participants should have the opportunity to negotiate and form a connection to a network and have access to the network services provided by the networks forming part of the national grid in accordance with the NER.[16]

Consequently, a Primary TNSP has to consider and respond to an applicant's connection enquiry. Provided that the connection applicant proceeds with the connection process and formulates a connection application (and pays the fees related to that), the Primary TNSP has to make an offer to connect. However, that being said, a connection to a Primary TNSP's network does not mean a connected party has firm access to the shared transmission network, as a connected party can still be affected by congestion on the transmission network.

Third party access to a DCA

Upon registration, a DCASP must classify its DCA as either 'large' (30km or longer) or 'small' (shorter than 30km). DCAs are always privately owned and operated connection assets that do not form part of the Primary TNSP's network, and as such, are not subject to the NEM's open access regime discussed above. However, the 2017 TCAPA Rule set up a framework by which parties can negotiate access to the services provided by a large DCA. Small DCAs are not subject to this third party access regime. The DCASP of a large DCA is required to prepare, maintain and publish an access policy for its large DCA on its website to provide a framework for applicants who want to obtain access to large DCA services. A DCASP (including any Primary TNSP that owns such assets) must lodge its access policy with the AER within 30 days of an asset being classified as a large DCA. The AER is required to approve an access policy if it is reasonably satisfied that it complies with the requirements for an access policy set out in the NER.[17] A DCASP must comply with its access policy once the AER has approved it. In addition, the NER set out a number of principles that a DCASP for a large DCA is subject to when negotiating access with another party.[18] Further, a DCASP must report to the AER all requests for connection and access to a large DCA when such requests are made and when an agreement for access is entered into, in the manner and form notified by the AER.[19]

Parties have access to the commercial arbitration process set out under Chapter 5 of the NER for any disputes in relation to the provision of large DCA services.[20]

All other arrangements regarding a third party's connection to the DCA will need to be negotiated and addressed between the relevant parties on a commercial basis.

16 Clause 5.1A.2(a) of the NER.
17 Clauses 5.2A.8(b) and 5.2A.8(c) of the NER.
18 Clause 5.2A.6(c) and Schedule 5.12 of the NER.
19 Clause 5.2A.8(k) of the NER.
20 Clause 5.2A.8(b)(5) of the NER.

Access to services provided by an IUSA

Once commissioned, a subsequent party can seek to connect to an existing IUSA, for example multiple DCAs could be connected to one IUSA. As an IUSA forms part of the shared network, the connection framework set out in Chapter 5 of the NER applies. In other words, the IUSA is subject to the NEM's open access regime.

Further, the 2017 TCAPA Rule set out a number of principles to provide guidance to connecting parties about how the costs of services for IUSA are set, and how those costs are adjusted when there are subsequent connections to those assets where those services have been provided as part of a negotiated transmission service.[21] In cases where connection services are provided as non-regulated transmission services (e.g. the construction of contestable components of an IUSA), no cost-sharing provisions apply.

1.3 Rationale for the rule change request

As noted, the DCA framework is based on the concept that a DCA connects an identified user group, which can be comprised of one or more generators or load customers, to a transmission network. AEMO considers that the DCA framework works where there is a single proponent in the identified user group.[22]

However, AEMO considers the DCA framework under the existing NER to be 'unintentionally unworkable' in cases where multiple generators or market customers seek to connect to the same DCA, as the NER does not identify how key requirements would apply to more than one proponent in an identified user group connected to the same DCA.[23]

The existing DCA framework requires a single (and, where there are multiple connecting proponents, shared) TNCP for the identified user group connecting to the 'shared' transmission network. This consequently requires there to be a single:[24]

- performance standard to apply at the TNCP, reflecting the overall performance of all connected assets
- metering installation to record energy flows, with the meter data used for market settlement, including the application of transmission loss factors and the calculation of other fees and charges, such as transmission use of system (TUOS) charges.

In practice, this means that there is only one financially responsible market participant (FRMP) at the single TNCP, and this FRMP must comply with the relevant NER requirements. As DCA connections are largely unregulated, the contractual agreement between the party responsible for operating and maintaining a DCA, the DCASP, and a connecting party (i.e. a

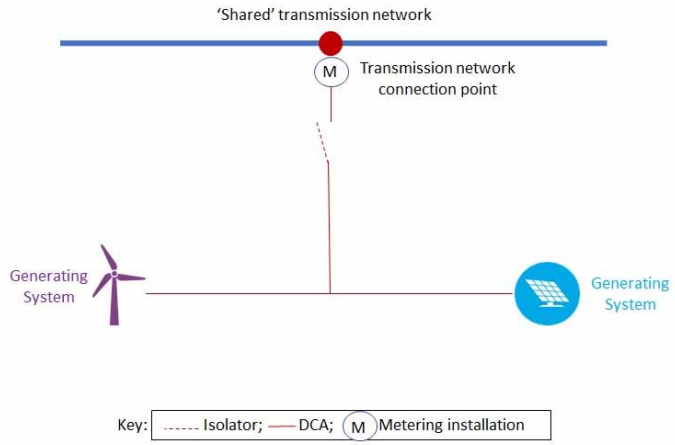
21 See AEMC, *Transmission Connection and Planning Arrangements,* Rule determination, 2017, section 4.2.3 and appendix B.
22 Rule change request, p. 6.
23 Rule change request, p. 2.
24 Rule change request, p. 6.

generator or customer) would need to assign responsibilities and obligations to the contractual parties.[25]

While AEMO considers that the DCA framework works where there is only a single proponent in the connecting identified user group, it considers it to be ambiguous where there are multiple proponents connecting via the same DCA to the Primary TNSP's 'shared' network. AEMO is concerned that many of the relevant NER processes, procedures and systems would not work effectively where one FRMP essentially acts as an 'intermediary' for a number of proponents at one TNCP.

Figure 1.2 illustrates the current DCA arrangements in the case of multiple generators being connected to the same DCA.

Figure 1.2: Current arrangements: connection of multiple proponents to the same DCA



Source: AEMC.

Against this background, AEMO has identified issues related to

- a single TNCP, and
- the DCA access framework.

1.3.1 Issues with a single TNCP

AEMO has identified operational implications with the current DCA framework, relating to DCAs having a single connection point to the shared transmission network. The NER and the relevant processes, procedures and systems build on the assumption that responsibilities and

25 The Commission understands that, if the DCASP and connecting generator/customer are different parties, under the current arrangements, the generator/customer would normally be the FRMP (as opposed to the DCASP). This is due to the fact that the generator/customer would be the responsible party for negotiating and complying with the performance standards for the connected facility.

obligations can be allocated to a single FRMP at one connection point with a metering installation. AEMO has identified issues that emerge from the one-to-many relationship between one connection point and a single FRMP and potentially many parties connected to a DCA, including:[26]

- **Performance standards**: AEMO considers that it is unclear how a TNSP would negotiate individual performance standards for each proponent with a generating system or load if there is only one FRMP at the TNCP. While a shared performance standard could be negotiated, it would be very difficult to identify individual plant non-performance and make an assessment whether this is causing any material impacts on the power system. A potential breach of performance standards may result in a disconnection at the single TNCP, which would affect multiple proponents and their facilities. AEMO's ability to monitor and the AER's ability to enforce compliance of performance standards is compromised and unnecessarily difficult.
- **Metering installation**: As the NER only requires a single metering installation at the TNCP (instead of individual metering installations for each connecting party), AEMO is unable to require each connecting generating system or load to have a NEM compliant metering installation. Consequently, parties' energy flows cannot be reliably established, creating difficulties for AEMO in terms of the settlement of individual registered participants for which individual metering data is required, e.g. TUOS calculations, non-energy cost recoveries and participant fees.
- **Transmission loss factors**: AEMO notes that it would be unable to determine a transmission loss factor for individual proponents where multiple proponents are connected to a single DCA. Instead, the loss factor calculation would be based on the combined energy profile of the identified user group at the TNCP. This may be a particular issue where there is plant with different fuel sources and technologies connected to the single TNCP.

AEMO argues that the above issues need to be resolved in order to meet the policy intent of the AEMC's 2017 TCAPA Rule in terms of clarifying the framework for connections to the transmission system and contributing to a more efficient utilisation of connection assets.

1.3.2 Issues with the DCA access framework

AEMO also questions in its rule change request whether having an access framework applying to large DCAs only remains appropriate, based on the submissions of various stakeholders to the AEMC's 2019 *Coordination of Generation and Transmission Investment (COGATI) Renewable Energy Zones* discussion paper.[27] AEMO suggests that, in the context of its proposal to modify the DCA framework to encourage better utilisation of DCAs, it may be appropriate to revisit the differentiation between small and large DCAs, including the difference in approach to access.[28]

---

26 Rule change request, pp. 6-7.

27 See e.g. the submissions to the *COGATI Renewable Energy Zones* discussion paper from the Clean Energy Council, p. 2 and TransGrid, p. 5.

28 Rule change request, p. 7.

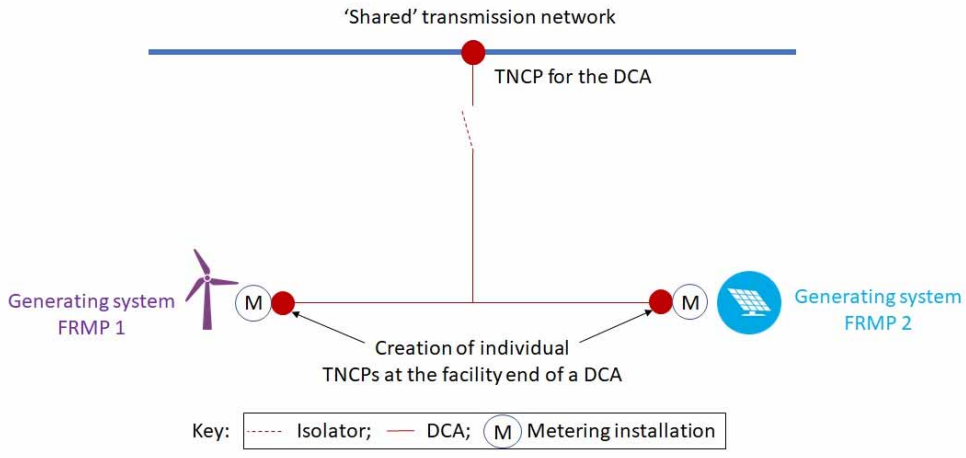
1.4 Solution proposed in the rule change request

In the rule change request, AEMO has put forward a proposed solution that seeks to resolve the issues it raised in relation to the connection of multiple parties to the same DCA.

AEMO proposes that the NER be amended so that each individual proponent in an identified user group would have a separate TNCP (and associated metering installation), which would be located at the point where each facility connects to the DCA. This approach would allow existing NEM arrangements - registration, metering, performance standards, settlement, non-energy cost recoveries, participant fees and loss factors - to be applied to individual proponents connected to the same DCA.[29]

As part of the rule change request, AEMO has provided a proposed rule. The proposed rule amends the NER definitions of 'connection point' and 'transmission network connection point' to include references to the point where each facility would be connected to the DCA.[30] AEMO notes that the DCA would itself also continue to have a connection point to the 'shared' transmission network,[31] and refers to this as a 'DCA connection point' - but the proposed rule does not introduce this as a separately defined new term. Figure 1.3 illustrates AEMO's proposed solution under a scenario with multiple FRMPs connected.

Figure 1.3: AEMO's proposed solution: DCA with multiple FRMPs connected at individual TNCPs



Source: AEMC.

29 Rule change request, pp. 7-9.
30 Rule change request, p. 12.
31 Rule change request, p. 7.

To ensure consistency with the policy intent of the 2017 TCAPA Rule, AEMO notes that its intention is to allow the following arrangements to continue to apply under a new framework for DCAs:[32]

- A DCA can be electrically isolated from the 'shared' transmission network
- The quality of supply between the Primary TNSP and DCASP is consistent with network performance requirements under Chapter 5 of the NER
- A DCASP must continue to provide negotiated connection asset performance to an identified user group
- One DCA cannot connect to another DCA.

1.5 The rule making process

On 5 March 2020, the Commission published a notice advising of its commencement of the rule making process and consultation in respect of the rule change request.[33] A consultation paper identifying specific issues for consultation was also published. Submissions closed on 2 April 2020.[34]

The Commission received 17 submissions as part of the first round of consultation. The Commission has considered all issues raised by stakeholders in submissions. Issues raised in submissions are discussed and responded to throughout this draft rule determination.

Further, the AEMC held two stakeholder webinars following receipt of submissions to discuss the Commission's emerging thinking. The first stakeholder webinar was held on 7 July 2020 and the second was held on 6 October 2020.[35]

1.6 Related work - Renewable energy zones

This rule change request has been proposed at a time when there is significant interest in connecting new generating plant to the transmission system in the NEM, particularly renewable generation and storage. The central scenario in the 2020 Integrated System Plan projects that by 2040 there will be:[36]

- An additional 31,140MW of variable renewable generation connected to the transmission system
- An additional 11,737MW of storage.

Having an effective transmission connections framework will therefore be of critical importance to allow this plant to be efficiently connected to the transmission network. However, there will insufficient capacity on the transmission network itself in the right locations to support this forecast generation.

32 Rule change request, p. 7.
33 This notice was published under s.95 of the National Electricity Law (NEL).
34 The consultation paper is available on the AEMC's website.
35 The slides presented at the AEMC's stakeholder webinars are available on the AEMC's website.
36 AEMO, *2020 Integrated System Plan*, 30 July 2020.

Consequently, the Energy Security Board (ESB) has instigated a work program to develop arrangements to support the establishment of 'Renewable Energy Zones' (REZs). REZs are a means of giving effect to orderly renewables development, reducing risk associated with network congestion, low marginal loss factors and technical difficulties.

This work program is being developed in two stages and, in August 2020, the ESB published a step 1 consultation paper. This proposed that REZs should be subject to a special planning regime based on the actionable Integrated System Plan (ISP) rules that includes measures to take into account evidence supplied by generation developers and the views of local communities. These REZ planning arrangements should also ensure that the REZs leverage and contribute to the efficient design of the broader power system.[37]

The step 2 consultation paper will consider measures to support REZ implementation, in particular arrangements for access by generators to the transmission network in REZs. The ESB anticipates publishing this paper in December 2020.

The Commission considers the transmission connections framework and the proposed REZ arrangements to be complementary, but notes that there are important inter-linkages between them. Consequently, the Commission has worked closely with the ESB during the development of this draft rule determination and of the ESB consultation papers.

1.7 Consultation on draft rule determination

The Commission invites submissions on this draft rule determination by **28 January 2021**.

Any person or body may request that the Commission hold a hearing in relation to the draft rule determination. Any request for a hearing must be made in writing and must be received by the Commission no later than **3 December 2020**.

Submissions and requests for a hearing should quote project number ERC0294 and may be lodged online at www.aemc.gov.au.

37 ESB, *Renewable Energy Zones - Planning*, Consultation Paper, 11 August 2020, p. 2.

2 DRAFT RULE DETERMINATION

2.1 The Commission's draft rule determination

The Commission's draft rule determination is to make a more preferable draft rule. The more preferable draft rule introduces a new framework for 'designated network assets', as opposed to the more limited amendments to the DCA framework contained in the proposed rule.

The more preferable draft rule made by the Commission is published with this draft rule determination.

The key features of the more preferable draft rule are:

- **Replacement of the concept of 'large DCAs' with a framework for 'designated network assets'** that treats material additions to the transmission system (i.e. those including transmission lines with a total route length of 30km or longer) as part of the transmission network, rather than as connection assets. The framework also allows connecting parties to treat new transmission infrastructure as being a designated network asset in order to better facilitate the sharing of such assets even if not required to.
- **Removal of the registered participant category of Dedicated Connection Asset Service Provider (DCASP)** and only 'small DCAs' (with a total route length of less than 30km) continue to be captured under the concept of 'DCAs' moving forward. Small DCAs remain fully contestable connection assets but the party who owns or operates them is not required to register in respect of the small DCA.
- **Establishment of individual TNCPs** where each facility connects to a designated network asset. This allows for the application of key NER requirements, e.g. settlement, establishment of performance standards and calculation of loss factors at a TNCP on a designated network asset, consistent with other connections to a Primary TNSP's transmission network.
- **Operation and maintenance of designated network assets by the relevant Primary TNSP**, which provides a single point of accountability for power system security and also ensures the Primary TNSP has visibility of all material network augmentations for network planning and operation purposes.
- **Introduction of a new concept 'funded network assets'** as an umbrella term to cover different types of market-participant funded assets that form part of the Primary TNSP's network and can be contestably built and owned: designated network assets and IUSAs.
- **Application of contestability arrangements to designated network assets similar to those currently applying for IUSAs.** As designated network assets form part of Primary TNSPs' networks, operation and maintenance of these assets is the responsibility of the relevant Primary TNSP. However, designated network assets will be able to be contestably designed, constructed and owned, as is the case for IUSAs.
- **Removal of the ownership restrictions on funded network assets** such that a party whose facility is connected to an IUSA or a designated network asset is not prevented from also owning that IUSA or designated network asset.

- **Application of a special third-party access regime** to provide appropriate access protections for incumbent connected parties. Accordingly, designated network assets are not subject to the NEM open access regime. To enable the application of such a special access regime, designated network assets are limited to being radial assets from the existing transmission network. If a designated network asset was looped or meshed with the wider transmission network, power from generators located outside of the designated network asset would flow across it. This would impact the amount of power transfer capability on the designated network asset and thus affect the ability of connected parties to access the asset.

A summary of the Commission's reasons for making this draft rule determination are set out in section 2.4. Further details of the more preferable draft rule, and the Commission's reasons for making it, are provided in chapters 3 to 7 of this draft rule determination.

This chapter outlines:

- the rule making test for changes to the NER and the more preferable rule test
- the Commission's assessment framework for considering the rule change request
- the Commission's assessment of both the proposed rule and the more preferable draft rule against the national electricity objective (NEO)
- the Commission's considerations with regard to the form of regulation factors and the revenue and pricing principles
- the Commission's considerations in deciding whether to make a uniform or differential rule in accordance with the Northern Territory legislation adopting the NEL.[38]

Further information on the legal requirements for making this draft rule determination is set out in Appendix A.

2.2 Rule making test

2.2.1 Achieving the NEO

Under the NEL, the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the NEO.[39] This is the decision-making framework that the Commission must apply.

The NEO is:[40]

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

38 National Electricity (Northern Territory)(National Uniform Legislation) Act 2015.
39 Section 88 of the NEL.
40 Section 7 of the NEL.

2.2.2 Making a more preferable rule

Under section 91A of the NEL, the Commission may make a rule that is different (including materially different) to a proposed rule (a more preferable rule) if it is satisfied that, having regard to the issue or issues raised in the rule change request, the more preferable rule will or is likely to better contribute to the achievement of the NEO.

In this instance, the Commission has made a more preferable draft rule. The reasons are summarised below in section 2.4 and detailed further in chapters 3 to 7.

2.2.3 Making a differential rule

Under the Northern Territory legislation adopting the NEL, the Commission may make a differential rule if, having regard to any relevant Ministerial Council on Energy (MCE) statement of policy principles, a different rule will, or is likely to, better contribute to the achievement of the NEO than a uniform rule. A differential rule is a rule that:

- varies in its term as between:
  - the national electricity system, and
  - one or more, or all, of the local electricity systems, or
- does not have effect with respect to one or more of those systems

but is not a jurisdictional derogation, participant derogation or rule that has effect with respect to an adoptive jurisdiction for the purpose of section 91(8) of the NEL.

As the proposed rule related to parts of the NER that apply in the Northern Territory, the Commission has assessed the draft rule against additional elements required by the Northern Territory legislation.[41]

The Commission has determined not to make a differential rule. However, as Chapters 5 and 10 of the NER apply in the Northern Territory, the amendments made by this rule change will have some application in the Northern Territory. The Northern Territory modification regulations modify the application of these chapters in the Northern Territory, and therefore, further changes may be required to those regulations as a result of this rule change. The Commission will liaise with the Northern Territory in this regard.

2.2.4 Other requirements under the NEL

In making this draft rule determination, the Commission has also had regard to:

- **The form of regulation factors**: Under section 88A of the NEL, the Commission must take into account the form of regulation factors when making a Rule that specifies an 'electricity network service' as a 'negotiated network service'.[42] Under the more preferable draft rule, a Primary TNSP will be required to provide the services of setting the functional specification and control, operation and maintenance of a designated network

41 From 1 July 2016, the NER, as amended from time to time, apply in the NT, subject to derogations set out in regulations made udner NT legislation adopting the NEL. Under those regulations, only certain parts of the NER have been adopted in the NT (see the AEMC website for the NER that applies in the NT, National Electricity (Northern Territory) (National Uniform Legislation) Act 2015).

42 The form of regulation factors are set out in section 2F of the NEL.

asset that forms part of its network as a negotiated transmission service. The Commission considers that this is appropriate and consistent with the form of regulation factors relating to the extent of countervailing market power possessed by a prospective network service user.[43]

- **The revenue and pricing principles**: Under section 88B of the NEL, the Commission must take into account the revenue and pricing principles if the Rule being made relates to transmission system revenue and pricing, i.e. items 15 to 24 of Schedule 1 to the NEL. In broad terms, the principles relate only to services that are directly regulated by the AER, and so are therefore not very relevant to the more preferable draft rule (which, in general, relates to negotiated transmission services and services not subject to any form of economic regulation). However, the draft rule makes very minor amendments to the process for the calculation of TUOS charges (which recover revenues directly regulated by the AER), to allow these to be levied directly on customers connected to designated network assets. The Commission does not consider that these amendments have any material impact on the consistency of the NER with the revenue and pricing principles.[44]

Appendix A provides further detail on both of these requirements.

2.3 Assessment framework

In assessing the rule change request against the NEO, the Commission has considered the following principles:

- **Transparency and regulatory certainty:** Clarifying how NEM arrangements, e.g. negotiation and application of performance standards, settlement and metering as well as calculation of loss factors, should work would allow proponents and NSPs to negotiate connection agreements more efficiently. This in turn would result in reduced negotiation costs for proponents and NSPs. The Commission has considered whether more prescription in the NER would lead to more clarity, increased efficiency of negotiations and reduced costs, or whether more prescription is likely to increase the administrative burden for contracting parties.
- **Efficient provision of electricity services:** Promoting efficient investment in, and operation of, electricity generation and transmission services, the extent to which current inefficient processes can be improved and the role of competition in driving efficient outcomes. In particular, the Commission has considered how best to encourage the efficient provision of transmission services and the utilisation of transmission assets, which would ultimately lead to lower electricity costs for consumers.
- **Clear, singular accountability:** Enhancing the accountability of connecting parties to facilitate the safer and more reliable operation of the electricity system. The Commission has considered how the rule change can best allow for the application of individual performance standards for each connected facility, which may enhance proponents' accountability for the safe operation of their facilities, while enabling NSPs and AEMO to

43 Section 2F(d) of the NEL.
44 The revenue and pricing principles are set out in section 7A of the NEL.

identify non-compliance and help the AER to enforce compliance with performance standards. This would also reduce the risk for other proponents being held accountable for the non-performance of another party in case of non-compliance with performance standards at a single connection point.

2.4 Summary of reasons

2.4.1 Reasons for not making the proposed rule

The Commission has concluded that the proposed rule would not achieve the NEO. The proposed rule would introduce a number of risks by:

- blurring the distinction between network and connection assets
- introducing ambiguity in relation to the allocation of responsibilities for the negotiation of performance standards and system strength
- driving increased complexity in the management of power system security.

Blurring the distinction between network and connection assets

The Commission considers that the proposed rule would create a risk for market participants by establishing a separate TNCP and metering installation for each connecting party at the facility end of the DCA, whilst also maintaining the TNCP at the point where the DCA connects to the Primary TNSP's shared network.

The TNCP is a fundamental concept under the rules, referring to a connection point on a transmission network. As DCAs are not part of the transmission network, establishing TNCPs on a DCA would blur the boundary between network and connection assets. As a result, it would be unclear whether a connecting party at a TNCP on a DCA would have a contractual relationship with the Primary TNSP or the DCASP, or both. Further, the relationship between the Primary TNCP and the DCASP would need to be clarified.

By introducing TNCPs on a DCA, it would be difficult to clearly allocate responsibilities between the Primary TNSP and the DCASP. Currently, the Primary TNSP's responsibility does not extend beyond the single TNCP where the DCA is connected to the Primary TNSP's network. Where 'nested' TNCPs were established at the facility end of a DCA, it would become increasingly difficult to establish who holds responsibility for the TNCPs on a DCA - the Primary TNSP or the DCASP.

Unclear responsibility for negotiating performance standards and system strength

Likewise, it would be unclear who would be responsible for negotiating performance standards for facilities connected to the TNCPs at the facility ends of DCAs, and how responsibilities for system strength would be allocated to the Primary TNSP, the DCASP and the connecting parties.

The proposed rule does not specify who the relevant NSP would be, in terms of whom the connecting party would negotiate with for the purpose of establishing performance standards, and how Chapters 4 and 5 of the NER would apply in the case of connection of a party to a DCA at a TNCP. Accordingly, it is not clear who the relevant parties would be, not

only for negotiating, but also for monitoring and enforcing compliance with performance standards.

A related issue is the impact a connected facility may have on the system strength of the power system. The Primary TNSP is required to maintain system strength at the level determined by AEMO. New connecting generators have an obligation to 'do no harm' to the level of system strength necessary to maintain the security of the power system.

To fulfil its obligation to maintain system strength, the Primary TNSP undertakes a system strength impact assessment for each proposed new connection (or proposed alteration) of a generating system. Depending on this assessment, the connection agreement between a generator and TNSP may also include the requirement for a generator to pay for the necessary transmission system works or implement a system strength remediation scheme in order to remedy or avoid any adverse impacts on system strength. As a result, similar issues arise with regard to the allocation of the responsibility for system strength, in terms of who should be the relevant NSP - the Primary TNSP or the DCASP - for assessing the impact of a proposed new connection or modification of a generating facility on system strength.

Increased complexity in the management of power system security

Based on information from stakeholders and the Commission's own analysis, it appears that large DCAs under development are increasingly likely to represent very material additions to the transmission system. A number of DCAs appear likely to be much longer than 30km in total route length and to have multiple parties connected, with significant amounts of generation or load capacity.

Additions to the power system of this nature are likely to have material impacts on power system security. Although the rule change did not include detailed changes relating to the management of power system security, it was predicated on the basis that the Primary TNSP should no longer be able to disconnect an entire DCA at the TNCP that connects the DCA to the transmission network. The Commission agrees, that as the amount of generation and/or load connected to DCAs increases, to disconnect entire DCAs would no longer be appropriate, as to do so would be more likely to cause security and reliability issues.

An implication of the framework contemplated in the proposed rule is therefore that a number of power system security responsibilities would need to be placed on the DCASP. At the very least, the DCASP would need to have some involvement in monitoring and enforcing facilities' compliance with performance standards at individual TNCPs. At most, the DCASP would have full responsibility for the management of power system security on its DCA, and would need to assume the full suite of responsibilities assigned to System Operators in Chapter 4 of the NER.

Whichever exact approach was taken, this would very significantly increase the complexity of the framework for power system security in the NEM, and place a number of new responsibilities on DCASPs. This increased complexity would introduce additional costs and could lead to increased risks of adverse power system security outcomes.

2.4.2 The Commission's more preferable rule

The Commission's view is that, having regard to the issues raised in the rule change request, the more preferable draft rule will, or is likely to, better contribute to the achievement of the NEO than the proposed rule, in that it would allow for:

- the application of key NER requirements to individual parties in instances where multiple parties seek to connect
- reduced complexity by strengthening the role of the Primary TNSP (and not allocating significant additional responsibilities to the DCASP) and ensuring each connecting party has a direct contractual relationship with the Primary TNSP
- the continued application of a special third-party access regime for transmission assets funded by market participants
- contestability with regard to design, construction and ownership, whilst requiring the Primary TNSP to control, operate and maintain material additions to the network.

Each of these is discussed in turn.

Application of key NER requirements

A key feature of the framework for 'designated network assets' established in the draft rule is that transmission infrastructure that would currently be classed as a large DCA would instead be treated as part of a Primary TNSP's transmission network. An implication of this approach is that each connected party would have its own individual TNCP, which would provide for the application of existing key regulatory arrangements under the Rules in their current form (or with only minor modifications). This would include a metering installation, so that each facility could be settled individually, and associated arrangements such as those for losses and the recovery of TUOS charges.

Treating the designated network asset as part of the Primary TNSP's transmission network would also place clear responsibility on the Primary TNSP for negotiating, monitoring and enforcing compliance with performance standards, as well as allowing for application of the existing arrangements for system strength.

Reduced complexity and direct relationship with the Primary TNSP

Similarly, given that a designated network asset would be part of the relevant Primary TNSP's network, the Primary TNSP would be responsible for control, operation and maintenance of a designated network asset, and there would be no need to extend significant portions of the Rules (such as Chapter 4) to the DCASP. This would provide for a single point of accountability for power system security and also ensure the Primary TNSP has visibility of material augmentations for network planning purposes, which would allow for the most efficient development of the transmission network over time.

Further, every connecting party would have a direct contractual relationship with the Primary TNSP in the form of a connection agreement, which would be negotiated in line with the standard connection process under existing rule 5.3 of the NER.

Continuing application of a special third-party access regime

Acknowledging that proponents consider the existing access regime for large DCAs to be a major benefit of the current framework, the Commission's draft rule seeks to maintain the application of a special third-party access regime for parts of the transmission system funded by market participants. Accordingly, designated network assets would not be subject to the NEM open access regime.

To facilitate the application of a special third-party access regime, designated network assets will need to be limited to radial extensions of the existing transmission network. If a designated network asset was looped or meshed with the wider transmission network, power from generators located outside of the designated network asset would flow across it, impacting the amount of power transfer capability on the designated network asset and making it impossible to robustly maintain access protections for connected parties.

Limited reduction in contestability

Although the Primary TNSP would be required to operate and maintain a designated network asset as a negotiated transmission service, as these assets would form part of the Primary TNSP's network, the draft rule still provides the for contestable design, construction and ownership of a designated network asset. It does so by applying the existing contestability arrangements for third party IUSAs (with minor modifications) to the new framework for designated network assets.

This approach maximises contestability while still allowing for the other benefits of the draft rule, such as the management of power system security by the Primary TNSP, to be realised. The Commission considers that the greatest benefits from allowing for competition in transmission network services are likely to arise during construction, and construction would be a contestable activity.

3 ANALYSIS OF THE PROPOSED RULE

This chapter outlines:

- the rule proponent's proposed solution
- stakeholder views on the proposed rule
- the Commission's analysis of the proposed rule and the strawman model it developed to address issues identified with the proposed rule
- the Commission's conclusions on the proposed rule and its strawman model.

3.1 Solution proposed in the rule change request

In the rule change request, AEMO (as rule proponent) proposed a solution that sought to resolve the issues associated with connecting multiple facilities to the same DCA by providing that each facility would have a separate connection point and metering installation located at the point where it connects to the DCA.[45]

The rule change request also raised the issue of whether having an access framework applying to large DCAs only remains appropriate, but the proposed rule did not contain any changes to the NER in this regard.[46]

3.1.1 Proposed establishment of additional TNCPs and application of key NER requirements

Proposed establishment of additional TNCPs

To allow key NER requirements to be applied to each facility, the proponent proposed the establishment of individual connection points at the point where the facility connects to a DCA. The single connection point where the DCA connects to the Primary TNSPs network would also be maintained.

Accordingly, the proposed rule proposed to amend the definition of 'connection point' under Chapter 10 of the NER as follows:[47]

> ***connection point***
>
> In relation to a *declared shared network* and a *distribution network* (other than an *embedded network*), the agreed point of supply established between a *Network Service Provider*(s) and another *Registered Participant*, *Non-Registered Customer* or *franchise customer* and includes a *parent connection point*.
>
> In relation to other transmission networks:
>
> (a) ~~the point at which power flows to or from the~~ in relation to a person ~~or identified user group~~ connected to the *transmission network* by a *dedicated connection asset*, the point at which power flows to or from the person can be isolated from the

45 Rule change request, p. 7.
46 Rule change request, p. 7.
47 Rule change request, p. 12.

dedicated connection asset ~~*transmission network*~~.

(b) otherwise, the point at which power flows to or from the person connected to *transmission network* can be isolated from the *transmission network*.

If there is more than one such point, the *Network Service Provider* and that person ~~or identified user group~~ will agree which point is the connection point in their connection agreement.

In relation to an *embedded network*, the *child connection point*, unless otherwise specified.

The proposed rule also suggested corresponding changes to the definitions of 'identified user group' and 'transmission network connection point'.[48] Importantly, this implies that there would be multiple, 'nested' TNCPs - one where each user's facility is connected to the DCA, and also where the DCA connects to the Primary TNSP's transmission network.

identified user group

One or more persons (other than a *Network Service Provider* who is not a *Market Network Service Provider*) who, from time to time, are *connected* to a *transmission network* by ~~at~~ the same ~~single~~ dedicated connection asset ~~connection point~~.

transmission network connection point

A *connection point* on a *transmission network* or on a *dedicated connection asset*.

The proposed rule would mean that each registered participant connected to a DCA would have its own individual TNCP. However, the rule change request does not provide further detail on what the implications would be as a result of creating TNCPs located on a DCA - and away from the transmission network - and what contractual relationships should be put in place, e.g. how the relationship between a Primary TNSP and a connecting party on the DCA would be defined, as well as the relationship between the Primary TNSP and the DCASP.

The rule change request refers to the concept of a 'DCA connection point' in relation to the connection of the DCA to the transmission network,[49] and appears to contemplate that this 'DCA connection point' would also remain a TNCP, given that the proposed rule does not introduce a separately defined new term.[50]

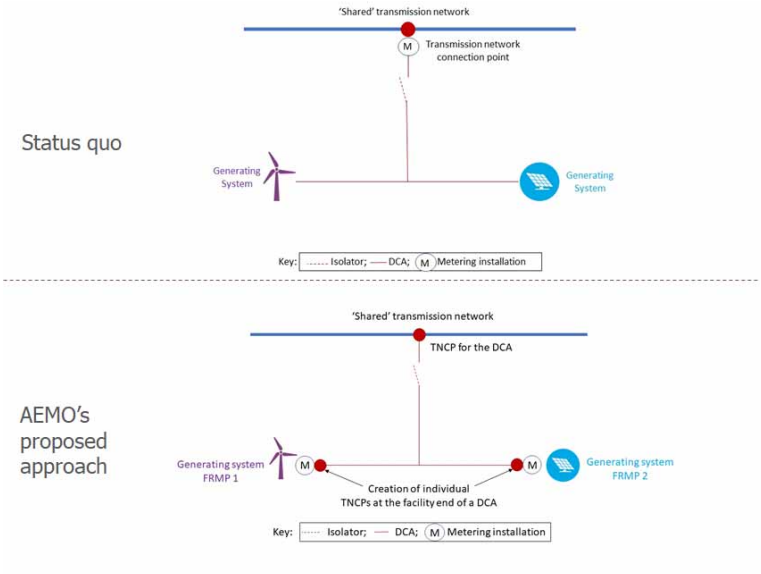
Figure 3.1 illustrates AEMO's proposed solution against the status quo.

48 The proposed rule further includes an amendment to the NER Chapter 10 definition of *transmission network* by replacing the words 'identified shared user asset' with the words 'identified user shared asset'. As this is only the correction of a minor error, this change will not be discussed further. See rule change request, p. 12.

49 Rule change request, e.g. pp. 7, 9.

50 Rule change request, p. 12.

Figure 3.1: Status quo and AEMO's proposed solution



Source: AEMC.

In the consultation paper published to facilitate consultation on the rule change request, the Commission sought stakeholder feedback regarding the implications of creating additional TNCPs for each connected facility with regard to the application of existing NER arrangements for:

- negotiation and enforcement of system and performance standards and system strength
- metering and TUOS recovery
- determination of transmission losses.

System and performance standards

In the rule change request, the proponent highlighted the issue of shared performance standards as a significant barrier to the efficient utilisation of DCAs.

Although a shared performance standard could be negotiated, the connection of subsequent parties would require re-opening the existing connection agreement and performance standards, and participants are likely, in general, to be reluctant to do this. The proponent further suggested that monitoring and enforcing compliance with performance standards would become compromised and unnecessarily complicated, as it would be very difficult to identify individual plant non-performance or whether it is causing a material impact to the power system.[51] A breach of a negotiated shared performance standard could result in a potential disconnection of the single TNCP, affecting multiple facilities.

51 Rule change request, p. 6

However, the rule change request did not provide further detail with regards to how Chapters 4 and 5 of the NER should apply under a revised framework for DCAs: whether a connecting party should have a connection agreement with the DCASP or the Primary TNSP, or both, and, if a connecting party has a connection agreement with the DCASP *or* the Primary TNSP, how the other NSP should be involved in the process of negotiating a connection agreement.

The rule change request also did not raise the issue of system strength in the context of DCAs. However, the negotiation of performance standards is inextricably linked to the assessment of the impact of a new connection on system strength, as the NSP undertakes a system strength assessment during the process of negotiating performance standards. Consequently, this issue was something the Commission was keen to seek views on through the consultation paper.

Metering and TUOS recovery

In the rule change request, the proponent set out the problems it perceived in relation to having a single metering installation where multiple parties are connected to the same DCA. As the NER requires only the one metering installation at the TNCP, connected parties would be metered collectively rather than each connected party having its own meter.

The proponent suggested that this would increase uncertainty in the settlement arrangements of connected parties, as an individual registered participant's energy flows could not be established. This would increase the risk of disputes (although these would need to be resolved under contractual arrangements) and impact any NER arrangements that require the use of individual metering data, e.g. TUOS calculations, non-energy cost recoveries and participant fees.[52]

The proponent further noted that, based on the proposed approach to establish additional TNCPs with a metering installation at the point where a facility connects to a DCA, a metering installation would not be required by AEMO at the TNCP where the DCA connects to the shared network. Calculation of settlement, non-energy cost recoveries, fees and charges and loss factors would occur at the TNCPs of the individual facilities. However, the AEMC was asked to consider whether a metering installation would be required at the TNCP to the shared network for any other purposes.[53]

Transmission losses

The rule change request states that AEMO is currently unable to determine loss factors for individual DCA connected parties that reflect their actual transmission losses to the Regional Reference Node (RRN). Under the current arrangements, AEMO would determine one loss factor at the TNCP, and all parties connected to the same DCA would be settled using this single loss factor value. As there is no methodology for determining or applying loss factors for individual plant in an identified user group, the loss factor calculation would be based on the combined energy profile of the identified user group that is connected to the DCA. This

52 Rule change request, p. 6.

53 Rule change request, p. 7.

may be particularly relevant for proponents in an identified user group that includes plant with different fuel sources and technologies.[54]

3.1.2 Issues with the DCA access framework

The proponent also raised the issue in its rule change request of whether having an access framework applying only to large DCAs remains appropriate, based on the submissions of various stakeholders to the AEMC's 2019 *Coordination of Generation and Transmission Investment (COGATI) Renewable Energy Zones* discussion paper.[55] The proponent suggested that, in the context of its proposal to modify the DCA framework to encourage better utilisation of DCAs, it may be appropriate to revisit the differentiation between small and large DCAs, including the difference in approach to access.[56] However, the proposed rule did not contain any changes in this regard.

3.2 Stakeholder views

The Commission received 17 submissions in response to the consultation paper. The vast majority of stakeholders submitting supported the intent of the rule change in terms of creating individual connection points at the point where a facility connects to a DCA.

However, a number of stakeholders expressed concern with the specific proposal to class these connection points as TNCPs. There were also mixed views with regard to exactly how to apply some of the key NER requirements at individual connection points: how loss factors should be calculated and applied, the arrangements for performance standards in terms of who should be the responsible NSP (i.e. the Primary TNSP, the DCASP or both) for negotiating and monitoring compliance with performance standards and, related to this issue, also the arrangements for system strength.

Further, regarding the proponent's suggestion that the AEMC review the existing 30km access threshold, stakeholders generally supported a broad requirement to offer access to enable a better utilisation of DCAs, but many suggested that the rights of first-movers must be appropriately protected.

3.2.1 Establishment of additional TNCPs

The majority of submissions raised concerns in response to the questions posed in the consultation paper relating to the creation of additional TNCPs for each DCA connected facility and the 'nesting' of TNCPs behind each other.

In general, submissions suggested that the connection point that connects a DCA to the transmission network should remain a TNCP and questioned the purpose and feasibility of creating additional TNCPs for each DCA connected proponent.[57] TNSPs, in particular, highlighted the fact that the TNCP that connects the DCA to the shared transmission network

54 Rule change request, pp. 6-7.

55 See e.g. the submissions to the AEMC's *COGATI Renewable Energy Zones* discussion paper from the Clean Energy Council, p. 2 and TransGrid, p. 5.

56 Rule change request, p. 7.

57 Submissions to the consultation paper: AGL, p. 2; CEC, p. 2; ENA, p. 4; Mondo, p. 1; Origin, p. 2; TasNetworks, p. 1.

defines an important point where responsibilities change and pointed to a continuing need to provide a clear allocation of responsibilities between the TNSP and the DCASP. Stakeholders further suggested that the proposal to create additional TNCPs on the DCA could risk extending the shared network into the DCA, and blurring the boundary between transmission network and connection assets. This would have a number of consequences, e.g. the application of the NEM open access regime extending to DCAs and effectively overriding the changes introduced as part of the AEMC's 2017 TCAPA Rule.[58]

A number of submissions therefore suggested that a new category of a 'DCA connection point' or a 'child connection point' should be defined in the Rules to enable all required NEM processes, e.g. registration, settlement, negotiation and enforcement of performance standards, and calculation of loss factors and TUOS charges, to be applied at this point.[59] These stakeholders considered that this would solve the issues identified in the rule change request, but without causing the problems that might flow from treating these connection points as TNCPs.

3.2.2 Application of existing NER requirements

System and performance standards

All stakeholders that commented on the issue of performance standards agreed that the current arrangements for DCAs give rise to issues in terms of negotiating, monitoring and enforcing performance standards.[60]

Regarding the question of whether performance standards should be negotiated between a connection applicant and the DCASP or the Primary TNSP, or whether both NSPs should be involved in the negotiation of performance standards, stakeholders expressed different views.

Neoen and Mondo both considered that individual performance standards should be agreed with the Primary TNSP, in consultation with the DCASP. Neoen suggested that performance standards should be negotiated by the Primary TNSP, in consultation with the DCASP, at individual connection points on the DCA.[61] In contrast, Mondo submitted that individual performance standards should apply at the TNCP (the connection point between the DCA and the shared transmission network), rather than at individual DCA connection points, '*as the matters dealt with in a performance standard are more relevant to the Primary TNSP*'.[62]

Other stakeholders proposed that a connection applicant should negotiate performance standards with the DCASP to apply at individual connection points on the DCA, with the Primary TNSP having a consultative role, similar to that of AEMO in the current arrangements for AEMO advisory matters.[63] More specifically, two distinct models were proposed:

58 Submissions to the consultation paper: ENA, pp. 3-4; CEC, p. 2; Origin, p. 2; TasNetworks, p. 1.

59 Submissions to the consultation paper: Acciona, pp. 1-2; AGL, p. 2; ENA, p. 3; InterGen, p. 4; Mondo, p. 2; TasNetworks pp. 1, 3.

60 Submissions to the consultation paper: Acciona, p. 2; Australian Energy Council, p. 2; CEFC, p. 1; EA, p. 5; ENA, p. 4; Genex, p. 3; InterGen, p. 3; Neoen, p. 3; SA Department for Energy and Mining, p. 1; TasNetworks, p. 4.

61 Neoen submission to the consultation paper, p. 3.

62 See Mondo submission to the consultation paper, p. 2.

63 See the definition of 'AEMO advisory matter' in Chapter 10 of the NER.

- *A 'DNSP-type' model:* performance standards would be negotiated between a connecting party and the DCASP, with the TNSP being consulted to ensure a new, or a modification of an existing, connection has no adverse impacts on the integrity of the shared transmission network.[64]
- *An 'embedded network-type' model:* a connection applicant would negotiate performance standards with the DCASP as part of its connection agreement. The connection agreement between the DCASP and the TNSP would then contain provisions regarding requirements for connection agreements between the DCASP and connection applicants, including performance standards.[65] Additional regulatory provisions could require the Primary TNSP to be consulted on any new, or modifications of existing connections and to provide the Primary TNSP with rights regarding the inspection and testing of connection equipment.[66]

In addition to individual performance standards to apply at individual connection points, TNSPs submitted that the DCASP should be responsible for a 'coordinated' or 'blended' performance standard, representing an over-arching technical performance standard that would consist of all individual performance standards (i.e. the performance standards that apply at the facility ends of a DCA), to apply at the TNCP where the DCA connects to the transmission network. TNSPs argued that this would provide the relevant Primary TNSP with oversight and input to ensure and maintain the integrity of the shared network. Further, TNSPs argued that such a solution would be analogous to the current arrangements where TNSPs undertake studies for Distribution Network Service Providers (DNSPs) to quantify and mitigate impacts to the shared transmission network from sizeable generation connections to the distribution network.[67]

System Strength

Stakeholders expressed different views as to whether the DCASP or the Primary TNSP should be the responsible NSP under the 'minimum system strength' framework. EA and TasNetworks submitted that the TNSP should remain the responsible party for ensuring minimum system strength requirements are met, as it is unlikely that a DCASP (if it is not the Primary TNSP) would have the resources or technical facilities to comply with system security obligations.[68]

Regarding the application of the 'do no harm' framework in the context of DCAs, some stakeholders submitted that, as part of the negotiation of a connection agreement and performance standards, the impact of a new generator connection on system strength should be assessed and new connecting generators should be required to undertake remediation works to mitigate any negative impacts a new DCA connection would have on system security and incumbent DCA connected parties.[69] ENA and InterGen, however, stated that a

64 Submissions to the consultation paper: EA, p. 5; ENA; p. 5; Genex, p. 3; TasNetworks, p. 4.

65 Building on the framework the AEMC proposed in its final report *Updating the regulatory frameworks for embedded networks*, final report, June 2019.

66 Submissions to the consultation paper: AGL, p. 2; InterGen, pp. 4-5.

67 Submissions to the consultation paper: ENA, p. 6; TasNetworks, p. 4.

68 Submissions to the consultation paper: EA, p. 5; TasNetworks, p. 4.

69 Submissions to the consultation paper: Genex, p. 3; InterGen, p. 5; Mondo, p. 3; Neoen, p. 3.

DCASP, if it is not the Primary TNSP, is unlikely to have the capability to undertake system strength assessments and may require the TNSP to provide assistance.[70]

To 'ensure the optimal economic outcome results', TasNetworks further suggested that a new connecting generator should be required to consult the Primary TNSP and the DCASP, as it may be more efficient if the connecting generator pays the Primary TNSP for a network augmentation outside the DCA rather than the DCASP for a solution within the DCA.[71]

Metering and TUOS recovery

Only TNSPs commented on the issue of metering and recovery of TUOS charges from DCA connected parties. TasNetworks submitted that TUOS should be calculated based on the metered energy at a TNCP where a DCA connects to the Primary TNSP's network, with the DCASP being responsible for levying appropriate charges to loads connected to the DCA.[72] Likewise, ENA commented that a metering installation would be necessary at the TNCP for the purposes of charging TUOS to the DCASP.[73]

Transmission losses

Stakeholders generally agreed with the position in rule change request that loss factors for DCA connected parties should be calculated individually for each party at a new metered connection point at the remote end of the DCA. A single loss factor for all parties that are connected to a DCA would not accurately reflect each individual proponent's energy flow patterns.

However, stakeholders' views diverged about the appropriate method to be used for determining loss factors for DCA connected parties, as well as which party should perform the calculation of loss factors. Stakeholders suggested the following alternatives:

- *AEMO to calculate transmission loss factors (TLFs):* Individual TLFs for DCA connected generators could be calculated by AEMO in line with the existing marginal methodology but applied at a proponent's individually metered connection point. Stakeholders advocating this approach considered that this solution would maximise dispatch efficiency.[74]
- *AEMO to calculate two-part loss factors*: EA proposed that AEMO should calculate a 'two-part loss factor', comprised of a TLF to the TNCP where a DCA connects to the transmission network and another loss factor from the TNCP to a facility's connection point. EA considered that this would allow for an appropriate allocation of residues accruing on DCAs.[75]
- *DCASP to calculate an average DCA loss factor to account for losses on the DCA in combination with individual TLFs*: Mondo suggested a similar two-part solution whereby

70 Submissions to the consultation paper: ENA, pp. 5-6; InterGen, p. 5.
71 TasNetworks submission to the consultation paper, p. 4.
72 TasNetworks submission to the consultation paper: p. 3.
73 ENA submission to the consultation paper: p. 4.
74 Submissions to the consultation paper: Acciona, p. 3; EA, p. 4; ENA, p. 6; Genex, pp. 3-4; Neoen, p. 3; TasNetworks, p. 4.
75 EA submission to the consultation paper, pp. 4-5.

the DCASP would calculate an average loss factor for the losses on the DCA, similar to a distribution loss factor. However, instead of AEMO calculating a single TLF value for the losses between the RRN and the TNCP, Mondo suggested AEMO could calculate individual TLFs for DCA connected parties, which would more accurately reflect each individual participant's energy flow patterns.[76] Mondo referred to NER clause 3.6.2(b)(2)(i), which enables AEMO to calculate separate TLFs at a single connection point under some circumstances, e.g. in the context of TLFs for pumped hydro generators which have variable generation and load connected at a single connection point.

- *Use a TLF set to 1.0 for DCA connected parties*: InterGen considered that the implementation costs of reallocating the part of the settlement residue that arises from losses on DCAs to the parties connected to the DCA or calculating an average DCA loss factor are likely to exceed the benefits. InterGen therefore suggested using a DCA loss factor that is set to 1.0 (which would mean that losses on the DCA would not be allocated to DCA connected parties), arguing that due to the short length of almost all DCAs losses are reasonably low and could therefore be ignored.[77]

3.2.3 Access regime

While many stakeholders expressed support for a framework that allows for spare capacity on DCAs to be made available to third parties, they also emphasised that this should not occur to the detriment of already connected parties.[78]

ENA, TasNetworks and Mondo suggested that a better utilisation and sharing of connection assets could be achieved through requiring all DCAs to have an access policy.[79] However, a number of stakeholders pointed to an administrative burden resulting from extending the requirement to have a third party access policy to small DCAs.[80]

In InterGen's view, if the DCA third party access regime was to be extended to small DCAs, third party access to small DCAs should only be permitted with the prior agreement of all existing connected parties.[81] Enel Green Power expressed broader concerns with the current DCA third party access regime, asking the AEMC to investigate whether it could be acting as a barrier to investment in the construction of large DCAs by disincentivising first movers.[82]

A number of stakeholders pointed to the interactions of the DCA rule change with the ESB's work on REZs and requested a coordinated and integrated approach be taken.[83]

A number of stakeholders commented on an alternative approach discussed in the rule change request of limiting DCAs to one party only. TNSPs and NSP affiliates did not support

76 Mondo submission to the consultation paper, pp. 3-4.
77 InterGen submission to the consultation paper, pp. 5-6.
78 Submissions to the consultation paper: AGL, pp. 2-3; Australian Energy Council, p. 2; CEFC, p. 2; Genex, p. 4.
79 Submissions to the consultation paper: Mondo, p. 4; TasNetworks, p. 5.
80 Submissions to the consultation paper: Acciona, p. 3; EA, p. 2; Enel Green Power, p. 1; InterGen, p. 2; Neoen, p. 3; TasNetworks, p. 5.
81 InterGen, submission to the consultation paper, p. 2.
82 Enel Green Power, submission to the consultation paper, pp. 1-2.
83 Submissions to the consultation paper: AGL, p. 2; Australian Energy Council, p. 1; CEC, pp. 1, 3; CEFC, p. 2; Enel Green Power, p. 2; Origin, p. 1; TasNetworks, p. 5.

this alternative, arguing that this would impose an entry barrier for new developments, prevent the efficient use of connection assets and contradict the DCA access framework.[84] In contrast, some developers submitted that potential merits may exist on a case-by-case basis in limiting access to a single party, however allowing that multiple generating systems (and other facilities) owned and operated by the same party could be connected to the same DCA.[85]

3.3 Analysis

The proposed rule is predicated on the establishment of TNCPs at the facility ends of DCAs to provide connected parties with individual connection points. As noted by many stakeholders, the TNCP is a fundamental concept under the rules, referring to a connection point on a transmission network.

As DCAs are not part of the transmission network, the Commission is concerned that establishing TNCPs on a DCA would blur the boundary between network and connection assets. It is not clear, under this approach, whether a connecting party at a TNCP on a DCA should have a contractual relationship with the Primary TNSP or the DCASP, or both. Further, the relationship between the Primary TNCP and the DCASP would need to be clarified.

By introducing TNCPs on a DCA, it would be difficult to clearly allocate or determine responsibilities between the Primary TNSP and the DCASP. Currently, the Primary TNSP's responsibility does not extend beyond the single TNCP where the DCA is connected to the Primary TNSP's network. The establishment of 'nested' TNCPs on DCAs, located behind a TNCP on the transmission network could complicate or confuse the frameworks and make it difficult to establish which party has responsibility for the TNCPs on a DCA - the Primary TNSP or the DCASP.

Having said this, both the Commission and the majority of stakeholders support the intent of the rule change request. Consequently, the Commission undertook to develop a 'strawman' model to address the issues related to 'nested' TNCPs and further develop the arrangements set out in the proposed rule.

The Commission presented this 'strawman' model at a stakeholder webinar on 7 July 2020.[86] More than 60 participants attended the stakeholder webinar and provided feedback during the webinar and in follow-up discussions.

3.3.1 The 'strawman' model

The key feature of the 'strawman' model was the establishment of a new category of connection point, referred to as 'DCA connection points'. DCA connection points would be established at the point where a facility connects to a DCA, i.e. the facility end of a DCA, whilst maintaining the single TNCP where the DCA connects to the Primary TNSP's transmission network.

84 Submissions to the consultation paper: ENA, p. 7; Mondo, p. 4.
85 Submissions to the consultation paper: InterGen, p. 1; Neoen, p. 3.
86 The webinar slides are available on the AEMC's website.

This would have allowed for:

- each connecting party to have its own individual connection point
- the application of key NER requirements at a connecting party's individual connection point
- a clear distinction between the Primary TNSP's network and connection assets
- continuation of the existing contestability arrangements as established under the AEMC's 2017 TCAPA Rule.

Implications of creating DCA connection points for the connection process

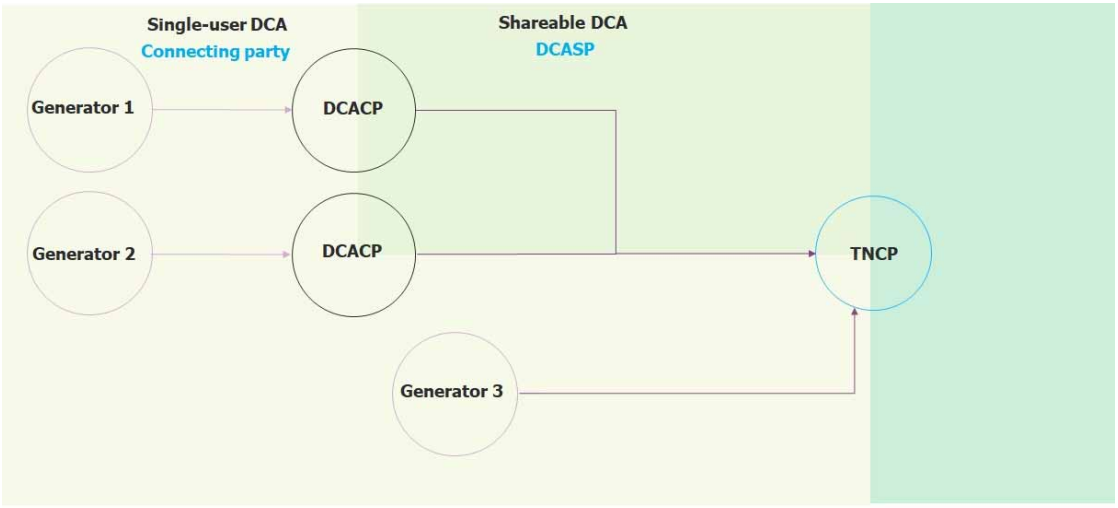
The establishment of individual DCA connection points would have ensured that each connecting party would have its own connection point with a metering installation, where individual performance standards could apply and settlement would occur.

However, the introduction of DCA connection points at the facility end of a DCA then led to a need to define the connection assets between a facility and its DCA connection point. Under the existing arrangements for DCAs, a connecting party connects its facility to the single TNCP either via a large or small DCA. There is currently no concept of connection assets used to connect *to* a DCA, i.e. the DCA is the connection asset itself. To address this issue, under the strawman model, small and large DCAs would have been replaced by 'single-user DCAs' and 'shareable DCAs', based on the existing 30km route length threshold:

- **'Single-user DCA'**: the asset enabling the connection of a connecting party's facility to its connection point. A 'single-user DCA' would have facilitated either the:
  - connection of a facility directly to a TNCP at an IUSA (if a facility is located less than 30km away from the existing transmission network), or
  - connection of a facility to a DCA connection point on a 'shareable DCA'.
- **'Shareable DCA'**: the asset connecting to a TNCP at an IUSA (if a facility is located 30km or more away from the existing transmission network). A party would connect to a shareable DCA at its individual DCA connection point (via its single-user DCA).

Figure 3.2 shows the potential DCA connection configurations based on the combination of 'shareable DCAs' and 'single-user DCAs'.

Figure 3.2: DCA connection configurations under the 'strawman' model



Source: AEMC.

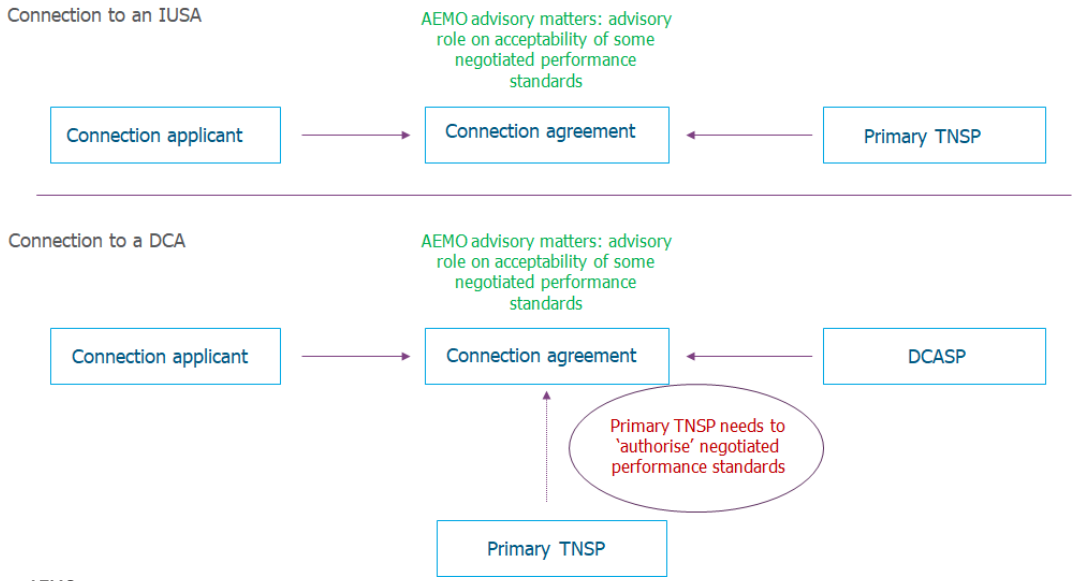
Consequently, the creation of DCA connection points would have had implications for the connection process and different parties would have negotiated a connection agreement, depending on the specific connection configuration.

- **Connection directly to a TNCP at an IUSA (via a single-user DCA)**: A connecting party would have entered into a connection agreement with the Primary TNSP, with the connection process under Rule 5.3 applying
- **Party connecting to a DCA connection point on a shareable DCA (via a single-user DCA)**: A connecting party would have negotiated a connection with the DCASP under a new DCA connection process. As a result, a connecting party would not have had a direct contractual relationship with the Primary TNSP. However, this new connection process would have provided for AEMO and the Primary TNSP to be sufficiently involved so as to mitigate any unintended impacts on the shared network.[87]

Figure 3.3 illustrates the implications of creating DCA connection points on the connection process and connection agreements:

87 As part of the first connection, simultaneous to the process between the first connecting party and the DCASP, the DCASP would also negotiate a connection agreement with the Primary TNSP under Rule 5.3, leading to the establishment of the DCA and the TNCP.

Figure 3.3: Possible connection agreements and contracting parties



Source: AEMC.

Modified application of key NER arrangements at individual DCA connection points

Under the strawman model, existing NEM arrangements (with some amendments) would have been applied for settlement (including metering, transmission losses and TUOS recovery) and system and performance standards, as well as system strength.

Settlement

The establishment of individual DCA connection points would have allowed for individual settlement of DCA connected facilities, consistent with the current arrangements for settlement in the NEM. A FRMP would have been assigned at every DCA connection point, but not at the TNCP (i.e. where the shareable DCA connects to the transmission network).

In addition to metering installations at DCA connection points, a metering installation would have been required at the TNCP to:

- **Facilitate TUOS charging**: Primary TNSPs would have levied TUOS charges on the DCASP, who would have passed the charges through to load customers connected to the DCA.
- **Calculate losses**: AEMO would have calculated a combined loss factor, based on (1) an individual TLF (between the RRN and the TNCP where the DCA connects to the Primary TNSP's transmission network), and (2) a separate average and site specific DCA loss factor to account for the losses between the TNCP and individual DCA connection point.

Performance standards and system strength

At DCA connection points, connected parties would have been responsible for compliance with performance standards negotiated as part of their connection agreement with the DCASP under the existing NER Schedules 5.2 (*Conditions for connection of generators*) and 5.3 (*Conditions for connection of customers*).

The DCASP would have been responsible for compliance with the system standards specified in Schedule 5.1a of the NER across the DCA and at the TNCP. As the TNCP at which a DCA connects to the transmission network could potentially be shared by other transmission network users, these other users should reasonably expect that the performance of the transmission network would normally operate within the specifications of the system standards at their TNCP. Consequently, there could be no relaxation of the system standards at the TNCP, and a DCASP would have been responsible to ensure that its DCA operated within those standards at the TNCP.

However, the Commission considered that there may have been a case for allowing for variance at the DCA connection points, i.e. the point where a facility would have connected to a shareable DCA, and the Commission engaged GHD Advisory to consider this matter. Such scope for relaxation was identified with regard to certain aspects in respect of allocation methods as defined in Schedule 5.1. Clauses within this schedule specify the method that an NSP is required to use when allocating technical requirements for connected generators and loads. In some situations, altering the allocation method may deliver an economic benefit to the connecting generator or load while not impacting the performance seen at the TNCP.

Based on GHD's advice, the Commission considered that there may have been potential for the DCASP to be allowed to apply alternate allocation methods to the methods specified in Schedule 5.1 to determine the technical requirements for generators and loads at their respective DCA connection points, subject to agreement with connecting parties. However, this would be the case only if any relaxation would not pose any risks to the security and reliability of the broader shared network and without changing the application of Schedules 5.2 and 5.3.[88] Once an allocation approach had been agreed with the first connecting party this would have restricted the allocation approach that could be adopted for future connections to the DCA.

Regarding the arrangements for system strength, the Commission considered the existing minimum level of system strength framework would continue to apply to Primary TNSPs in its current form, with the Primary TNSP remaining the relevant system strength service provider for a region.

88 An example of how the standards might be relaxed is that the DCASP might use a different allocation method for harmonics between its connecting parties compared to what might be applied by the Primary TNSP. Because the DCASP has a limited user group connected to its DCA, and the potential to generate harmonics by each of those connecting party could be well understood by the DCASP, it may be possible to allocate harmonics in a bespoke manner such that certain parties may be allocated proportionally more than others depending on the nature of their facility and when they committed to proceed with their connection to the DCA.

The 'do no harm' framework that applies during the connection process could have been accommodated within the strawman model in two different ways:[89]

- *Option 1: The generator responsible for 'do no harm' at its DCA connection point and the DCASP responsible for assessing a new connection*. This would be consistent with the current arrangements. However, in practice, only the Primary TNSP may have the capability to undertake an assessment and, in any event, would need to determine the effects of a new DCA connection on system strength on the shared network. The DCASP could also only assess a connection within the limits of the DCA, which may not be of much value. As the Primary TNSP would not have a direct relationship with a connecting party, the DCASP would need to provide the Primary TNSP with all the necessary information to undertake an assessment and if the Primary TNSP's assessment would show that remediation works are necessary, this would need to be reflected in the connection agreement between the DCASP and the connecting party.
- *Option 2: The DCASP responsible to 'do no harm' at the TNCP and the Primary TNSP assesses obligations on the DCASP when there is a new connection to a DCA*. Because the DCASP has a direct relationship with the Primary TNSP at the TNCP, and the impact of a new connection on the shared network is of interest in the context of system strength, responsibility to comply with 'do no harm' could be allocated to the DCASP rather than an individual generator. This would mean the Primary TNSP is the only party that would need to perform a system strength assessment, based on the data it receives from the DCASP. A model whereby the DCASP would be responsible for 'do no harm' could also potentially enable more coordinated system strength remediation and potentially lower costs for new connecting generators.

3.3.2 Stakeholder feedback on the strawman model

The strawman model was presented at a webinar in July 2020, and stakeholders attending the webinar appeared generally supportive of it. However, following the webinar, AEMC staff engaged in further discussions with a number of stakeholders. These discussions provided three main insights:

- Planned DCAs are likely to be increasingly material in terms of their size and length
- Many stakeholders have a preference for the Primary TNSP to operate (and potentially also own) DCAs
- The importance of a direct contractual relationship between the Primary TNSP and connected parties.

DCAs growing in size and length

Discussions with stakeholders suggested that a greater number of DCAs than seen to date are under development (currently planned or already being built), and that these are likely to be much more substantial in terms of their size (in terms of the connected generation

89 The 'do no harm' framework is a colloquial reference to the framework introduced by the AEMC in 2017 under the *Managing power system fault levels rule* (ERC0211) which introduced a requirement on new connecting generators in relation to their impact on the power system. The final rule is available here: *https://www.aemc.gov.au/rule-changes/managing-power-system-fault-levels*.

capacity) and length. These connection assets will become 'material' additions to the existing transmission system, and thus become increasingly important from a power system security point of view.

Further, some stakeholders raised scenarios whereby there may be a need to connect a new shareable DCA to an existing shareable DCA. For example, a connection applicant seeking to connect a facility to an existing shareable DCA, where this facility would be located more than 30km from the existing shareable DCA, might seek to establish its own shareable DCA.

Existing and planned DCAs mostly operated by the Primary TNSP

A number of stakeholders indicated that connecting parties are often not attracted to owning and operating transmission assets, whether these are small or large DCAs, as this is not their core business, and they are not interested in the complexity, cost and risk of owning and managing non-core infrastructure such as transmission lines. In contrast, this would form the core business of the Primary TNSP.

Further, contracting with a third party other than the Primary TNSP would complicate the contractual arrangements, as the connecting party would have to deal with multiple parties. However, it was suggested that the 'threat' of contestability may be useful in providing the connecting party with a level of countervailing market power in its negotiations with the Primary TNSP.

Contractual arrangements between the TNSP and a connecting party

Some stakeholders expressed concerns with a particular element of the strawman model: the absence of a direct connection agreement between the Primary TNSP and the connecting party. In the absence of a connection agreement, another contractual agreement between the Primary TNSP and a connecting party may be required to:

- Agree on limitations on their liability to each other
- Provide for a mechanism for implementing any agreement about notification and coordination of outages and planned works
- Implement jurisdictional specific system protection schemes to ensure the 'do no harm' requirement is met, and power system security is maintained (in accordance with Chapter 4 of the NER).

It seems unlikely that these issues would be addressed in a contractual agreement between a Primary TNSP and a connecting party on a purely voluntary basis, i.e. outside the connection agreement, as the parties would not have the same incentive to come to an agreement. A potential solution could be to introduce a requirement in the NER for the three parties to enter into a tripartite contractual relationship to mitigate Primary TNSPs' concerns. We note that such a tripartite arrangement could resemble connection arrangements in Victoria.[90]

90 Victoria is an 'adoptive jurisdiction', where the functions discharged by TNSPs in other regions are divided between AEMO and a number of DTSOs.

3.3.3 Further analysis and development of the strawman model

In light of this stakeholder input, particularly that relating to the likely more material and complex development of DCAs over time, the Commission undertook further analysis and development of the strawman model. In particular, the Commission considered two key issues:

- power system security
- expansion of the transmission system.

Power system security

In alternating current (AC) networks, the laws of physics determine the flows of electricity, and they cannot readily be redirected. Therefore, if two sets of transmission assets form parallel paths, power will flow as if all the assets are a single network.

Consequently, all elements of an interconnected AC electricity system are inter-related from a power system security point of view.[91] Faults in one part of the system will have instantaneous consequences in other parts of the system.

It was for this reason that the current arrangements for DCAs were established, such that DCAs are only connected to the transmission network at a single connection point, with the Primary TNSP having the ability to disconnect them at that point in the event that a DCA represents a threat to the security of the power system.

However, the current rule change is, in part, predicated on DCAs playing an increasingly important part in the development of the overall power system, with multiple generators likely to be connected to some DCAs. As a result of this, the size of the capacity (in terms of MW connected) of DCAs will be increasing, and for this reason, the Commission considers the Primary TNSP should no longer be able to disconnect an entire DCA at the TNCP. To do so would have the potential to cause reliability and security issues, and would be likely to disincentivise generators to seek to connect to a third-party DCA.

Instead, under the strawman model, the Primary TNSP would have a right to issue instructions to the DCASP to disconnect an individual connected party under certain circumstances, e.g. if that party poses a risk to power system security. The disconnection of one party would not affect other parties connected to the DCA.

To give effect to this approach would require incorporating DCAs and DCASPs into the sections of the rules governing power system security, i.e. primarily Chapter 4 of the NER. These are substantial and highly complex sections of the NER. Our assessment of the extent to which DCAs and DCASPs would need to be covered (and a review of the relevant sections by our technical consultant GHD) revealed that, with only a few exceptions, the rules governing power system security must apply to DCAs, and thus DCASPs, to ensure power system security.

To extend these rules would have essentially meant creating a new, parallel regime for power system security in addition to the regime that already exists for the transmission network and

91 In contrast, DC systems are controllable in terms of the electric current flowing in a constant direction.

for TNSPs. This would have significantly increased the complexity of the NER and would have imposed significant new obligations on DCASPs, similar to those applying to System Operators in Chapter 4 of the NER. This complexity would have been multiplied if, as discussed below, the rules were required to accommodate 'nested' DCAs and DCASPs.

Transmission system expansion

As noted, stakeholders questioned how the strawman model would facilitate connections where a proposed facility is to be located more than 30km from an existing shareable DCA. The options would be to:

- allow for 'nested' DCAs, i.e. the connection of a shareable DCA to a shareable DCA
- require a DCASP to extend its DCA
- require the connecting party to directly connect to the transmission network.

However, the Commission did not consider it feasible to require parties to connect to the transmission network through their own shareable DCAs, i.e. to duplicate an existing shareable DCA. In some circumstances this simply may not be possible, e.g. if the transmission infrastructure would traverse a national park, in which case it may be unlikely or hard to obtain planning approval for a second transmission line. Further, such a duplication of connection assets would contradict the purpose of this rule change, i.e. to facilitate a better and more efficient utilisation of connection assets.

The Commission therefore gave consideration to the other two options.

'Nested' DCAs

Accommodating 'nested' DCAs would have resulted in a significant degree of complexity, in that a DCASP would have had to have entered into a connection agreement with another DCASP to connect a shareable DCA to another shareable DCA at a DCA connection point. Consequently, the Primary TNSP would have only had a direct contractual relationship with the first-level DCASP (whose DCA is directly connected to its network at a TNCP), but not with the second-level DCASP (whose DCA is connected to a DCA connection point on the first-level DCA).

Under these arrangements, the first-level DCASP would be the liable party for anything that happened at the TNCP, i.e. if the operation of any equipment connected anywhere in the 'nested' DCA resulted in damage at the TNCP or had a negative impact on the shared network, as only the DCASP that had a connection agreement with the Primary TNSP would be responsible.

A possible solution to mitigate such concerns and restore some level of oversight to the Primary TNSP would be to provide for contractual arrangements between four parties, comprising the Primary TNSP, first-level DCASP, second-level DCASP and the connecting party. However, it would likely be difficult, if not impractical, to set up requirements for contractual requirements among four parties or more. Furthermore, if there was no limit on shareable DCAs being 'daisy chained' together, there could potentially be even more than four parties involved.

Overall, allowing for 'nested' shareable DCAs would have required significant modifications to reflect the existence of an additional DCASP, especially with regard to the negotiation of a connection agreement and performance standards, the proposed framework for system strength, the responsibilities of a DCASP in terms of power system security and post-connection agreement matters as well as the application of a DCA access framework (i.e. what would happen if different access frameworks would apply to the 'nested' DCAs?).

Requirement for DCASPs to extend their DCA

Requiring DCASPs to extend their DCAs to connect new parties would have imposed a very significant new regulatory obligation on DCASPs in relation to what are contestable assets that are currently subject to few regulatory requirements.

Putting in place such an obligation may have the potential to reduce contestability in terms of the preparedness of parties to become a DCASP for a shareable DCA if they had to accept an obligation to extend their DCAs on request in this way. Further, even if competitive providers were comfortable taking on this obligation, it is likely that Primary TNSPs would be better positioned to discharge such an obligation, given their core businesses are the operation and provision of network assets. As such, the Commission considered that imposing an obligation of this nature would be likely to call into question the entire rationale for the competitive provision of DCAs.

3.4 Conclusion

Based on its analysis and informed by stakeholder feedback, the Commission has concluded that neither the proposed rule or the strawman model are likely to achieve the NEO. Arrangements of this nature would be very complex, particularly with respect to the management of power system security. Further, to be fully robust to all conceivable future connection configurations would multiply this complexity, possibly even rendering the arrangements unworkable.

Fundamentally, this conclusion is driven by consideration of DCAs that are likely to be increasingly material in terms of their length and size, i.e. connected generation capacity. In this way, some DCAs are likely to increasingly resemble transmission networks in their own right, rather than connection assets (which have historically been built principally to connect only one party). As such, it will be more appropriate to manage power system security for these additions to the transmission system through the existing arrangements for transmission networks than it would be through creating bespoke, duplicative arrangements for large DCAs.

In this sense, the drivers for treating parts of the transmission system as 'network' are broader than just whether or not they are paid for by consumers. Having reached this conclusion, the Commission determined to develop a more preferable rule based around an approach of treating all material additions to the transmission system as part of a Primary TNSP's transmission network. Further detail on the more preferable draft rule is provided in the next chapter.

4 THE MORE PREFERABLE DRAFT RULE

This chapter provides:

- an overview of the more preferable draft rule
- an introduction to the new framework for 'designated network assets'
- an assessment of the more preferable draft rule in comparison to the status quo, the proposed rule and the strawman model outlined in the previous chapter
- an outline of the Commission's proposed approach to the implementation of the rule.

Further details on the matters introduced in this chapter are provided in chapters 5 to 8.

4.1 Overview of the more preferable draft rule

As set out in the previous chapter, the Commission has concluded that all material additions to the transmission system should be treated as part of a Primary TNSP's transmission network. This allows for the most effective management of power system security and supports the efficient development of the network over time.

Under the rules, a 'transmission system' comprises "a transmission network, together with the connection assets associated with the transmission network […]".[92] In relation to transmission systems, connection assets are defined as comprising DCAs (i.e. those assets that facilitate the connection of a generator or load customer) or network connection assets (i.e. those assets that provide connection services between NSPs, excluding Market Network Service Providers).[93]

The focus of this rule change is on connection assets in the form of DCAs. DCAs are paid for by the respective connecting party and the services that they provide are, in broad terms, unregulated, i.e. they can be provided on a fully contestable basis.[94] This means that DCAs can be built, owned and operated by any party, including by the Primary TNSP. It also means that DCASPs have few obligations under the rules, including in relation to power system security or network performance requirements.

Primary TNSPs, while responsible for power system security on their transmission networks, are not accountable for system security outcomes on DCAs connected to their networks. Rather, they have the ability to disconnect DCAs in response to any issues arising.

Going forward, the Commission does not consider it appropriate for Primary TNSPs to be able to disconnect entire large DCAs, and therefore all generators and loads connected. Since the introduction of the TCAPA arrangements, there has been increased interest in the sharing of DCAs, and the Commission agrees with the proponent that maintaining the ability of Primary TNSPs to disconnect entire large DCAs is likely to act as a disincentive to sharing.

92 See definition of 'transmission system' in Chapter 10 of the NER.
93 Note that a different definition applies in Victoria as an adoptive jurisdiction.
94 Note that DCAs are subject to a registration requirement and large DCAs are subject to an access policy.

Further, and more generally, as DCAs increase in size and complexity, more robust arrangements for the management of power system security on these parts of the transmission system are required. Treating material additions to the transmission system as part of the transmission network, rather than as connection assets, ensures these are built and operated to the standard required for the 'network', thereby allowing for a more holistic development and safe and reliable operation of the transmission network as a whole.

Although operated in an integrated manner, transmission networks are composed of a variety of assets, that can be broadly categorised into two groups:

- **Consumer-funded assets**: Assets that are paid for by consumers through prescribed TUOS charges, with the TNSP providing the respective transmission services as a prescribed transmission service. These assets account for the majority of those forming most transmission networks.
- **Market participant-funded assets**: Assets that are paid for by market participants as a negotiated transmission service, including IUSAs and funded augmentations.

To give effect to the Commission's preferred approach will therefore require treating certain assets that would, under the current rules, be connection assets as a type of market participant-funded network asset instead.

4.1.1 New concept of 'designated network asset' to replace 'large DCAs'

The more preferable draft rule is based around the concept of 'designated network assets', which is used to incorporate these material additions to the transmission system into the transmission network. As these assets would continue to be funded by market participants, they would not provide prescribed transmission services, in contrast to the majority of a Primary TNSP's network.[95]

One or more generators or large load customers could be connected to a designated network asset. To reflect this, the draft rule links the concept of an 'identified user group' to the concept of 'designated network asset'. As a result, an 'identified user group' refers to one or more persons that are connected to a designated network asset.[96]

Consequently, the concept of a DCA continues to apply to connection assets that facilitate the connection of a person to the transmission network at its own TNCP.[97] As now, a DCA would only be used for the purpose of forming a connection to a transmission network at a single TNCP. That is, a DCA could not connect to another DCA.

The Commission notes that providing any clear and unambiguous definition of what constitutes a 'material addition' to the transmission system is likely to involve a degree of arbitrariness. However, the Commission considers it unlikely that anything that would be currently be covered by the definition of small DCA would be of sufficient size and complexity to be of concern.

---

95 See limb (d)(1) of the definition of 'designated network asset' under Schedule 4 of the Draft National Electricity Amendment (Connection to dedicated connection assets) Rule 2021 (**Amending Rule**).

96 See definition of 'identified user group' under Schedule 4 of the Amending Rule.

97 See definition of 'dedicated connection asset' under Schedule 4 of the Amending Rule.

On that basis, to distinguish between the concepts of a 'DCA' and a 'designated network asset', the Commission proposes to use the existing 30km total route length threshold (with regard to any power lines that form the asset) that is used to differentiate between small DCAs and large DCAs. In essence, designated network assets replace large DCAs as a concept in the rules. DCAs comprise only those assets that are a small DCA in the current rules, resulting in the following outcomes:[98]

- **Dedicated connection asset**: assets including power lines that have a route length of less than 30km. However, a DCA can be a designated network asset if the owner decides to voluntarily opt-in the new framework and has chosen to enter into a NOA with the Primary TNSP.[99]
- **Designated network asset**: assets including power lines that have a route length of 30km or more, or less than 30km where the owner of those assets has chosen to have them treated as designated network asset.

4.1.2 Introduction of a new concept of 'funded network asset'

As noted, under the more preferable draft rule, the assets forming a designated network asset are not provided by the Primary TNSP as a prescribed transmission service, as they are not subject to revenue regulation or funded by consumers through prescribed TUOS charges.[100] Instead, the Primary TNSP is required to provide specific services in relation to these assets that form part of its network as a negotiated transmission service (the proposed contestability arrangements are described in further detail under section 4.2.3 and chapter 7).

In this way, designated network assets represent another type of market participant-funded asset. To ensure consistency and provide a simple way of collectively referring to these different types of market participant-funded asset, the draft rule introduces the term 'funded network asset'. Funded network assets are those parts of a transmission network that comprise:[101]

- a designated network asset
- an IUSA.[102]

However, the creation of an umbrella term of funded network asset does not imply that these assets are all be subject to the open access regime under Chapter 5 of the NER. While IUSAs are subject to open access, a special access regime applies to designated network assets.

Consistent with the existing third party access arrangements for large DCAs, the special access regime provides a framework for new users to be granted assess to the assets while

98 See definitions of 'dedicated connection asset' and 'designated network asset' under Schedule 4 of the Amending Rule.

99 See limb (c)(2) of the definition of 'designated network asset' under Schedule 4 of the Amending Rule.

100 That is, the designated network asset is not economically regulated under Chapter 6A of the NER.

101 See definition of 'funded network asset' under Schedule 4 of the Amending Rule.

102 The AEMC acknowledges the similarity between the concepts of 'funded network asset' and 'funded augmentation' and has considered whether funded augmentations should also be included under the umbrella term of funded network assets, but notes specific arrangements apply to funded augmentations under Rule 5.18. If funded augmentations were captured under the concept of funded network assets, they would become subject to the same contestability arrangements as IUSAs and designated network assets. The Commission would welcome stakeholder views on this matter.

protecting the standard of access enjoyed by existing users (as described in further detail under section 4.2.2 and chapter 6).

4.2 The new framework for designated network assets

When designing the new framework for designated network assets, the Commission was guided by the following questions:

- **Type of connection points**: Establishment of TNCPs or a different type of connection point?
- **Access regime**: Open access or a special access regime?
- **Contestability arrangements**: Full or limited contestability?

In answering these questions, the Commission gave consideration to the following objectives, which the new framework for designated network assets is intended to achieve:

- minimising additional complexity, by facilitating the application of current NEM arrangements as far as possible (or with minor modifications where required)
- providing for access protections, so as to avoid the free-rider issues that stifle market-participant funded augmentation under open access
- maintaining contestability to the greatest extent possible.

The following sections provide an overview of the Commission's design decisions when developing the framework for designated network assets in light of these defined policy objectives.

4.2.1 Type of connection points

A logical outworking of treating designated network assets as part of the transmission network is that the connection points established where connection assets connect to the designated network assets can be TNCPs, in the same way that they would be anywhere else on a transmission network.

The establishment of TNCPs minimises complexity by facilitating the application of key NER requirements to parties connected to a designated network asset at their individual TNCPs consistent with the existing NER framework. This would include metering and settlement, as well as provisions for the negotiation and application of performance standards and the arrangements for system strength.

The Commission considered whether any changes to the existing NER arrangements are necessary in the context of TNCPs on a designated network asset and concluded that the following minor amendments are required. The more preferable draft rule introduces:

- **Arrangements for recovery of TUOS charges**: TUOS charges are levied on load customers at TNCPs, consistent with the existing NEM arrangements. TNSPs' Cost Reflective Network Pricing (CRNP) models therefore need to include designated network

assets, but at zero cost to ensure that a customer connected to a designated network asset is not be charged TUOS for an asset it was already funding.[103]

- **Arrangements for loss factors**: A TLF is calculated for each facility connected to a designated network asset, consistent with the current NEM arrangements. However, the more preferable draft rule includes a new mechanism to calculate the losses from the RRN to the boundary point[104] and a new mechanism to calculate the settlement residues accruing from losses on designated network assets and distribute these to the parties funding the assets.[105]

Chapter 5 provides further detail on the proposed application of key NER arrangements at TNCPs on designated network assets.

4.2.2 Access regime

Currently, the 'shared' transmission network is subject to an open access regime. This presents a free-rider problem, in that generators are reluctant to fund network capacity when there is no guarantee of their ability to use this capacity and when their competitors can use these assets without having contributed to the cost of them.

An attraction of the current DCA arrangements to connecting parties is the assurance that they can use the assets they have funded without other subsequently connecting parties having an impact on their use of these assets, i.e. in terms of their power transfer capability to the TNCP where the DCA connects to the 'shared' transmission network. Although, under the current DCA access regime, a DCASP is required to offer access to third parties seeking access to its large DCA, the negotiating and cost-sharing principles for access to large DCA services regulate this such that the subsequent connection is not to the detriment of the existing user (and will be at the third party's expense).[106]

Replacing the concept of large DCAs with designated network assets, which form part of a transmission network, would imply that these assets, which are to be funded by market participants, would be subject to open access. However, this is the problem that discourages investment by market participants in the 'shared' network, and which the access reforms proposed under the Commission's transmission access reform project aim to resolve through the establishment of financial transmission rights (FTRs).[107]

To address this issue in the context of the current rule change, the more preferable draft rule provides that open access does not apply to designated network assets. Instead, a special third party access regime, similar to the existing third party access regime that currently applies to large DCAs, specifically applies to designated network assets.[108]

---

103 See S6A.3.2 under Schedule 3 of the Amending Rule.

104 See clause 3.6.2B under Schedule 1 of the Amending Rule.

105 See clause 5.2A.7(e)(7)(ii) under Schedule 2 of the Amending Rule.

106 See Schedules 5.11 and 5.12 of the NER.

107 Further information on this project is available on the AEMC's website here https://www.aemc.gov.au/market-reviews-advice/coordination-generation-and-transmission-investment-implementation-access-and.

108 See clause 5.2A.8 under Schedule 2 of the Amending Rule.

However, as a consequence of them forming part of Primary TNSPs' transmission networks, access to designated network assets would be managed by the relevant Primary TNSP. The more preferable draft rule introduces a requirement on the Primary TNSPs to put access policies in place for designated network assets that would adequately protect the access of connecting parties that fund these assets.

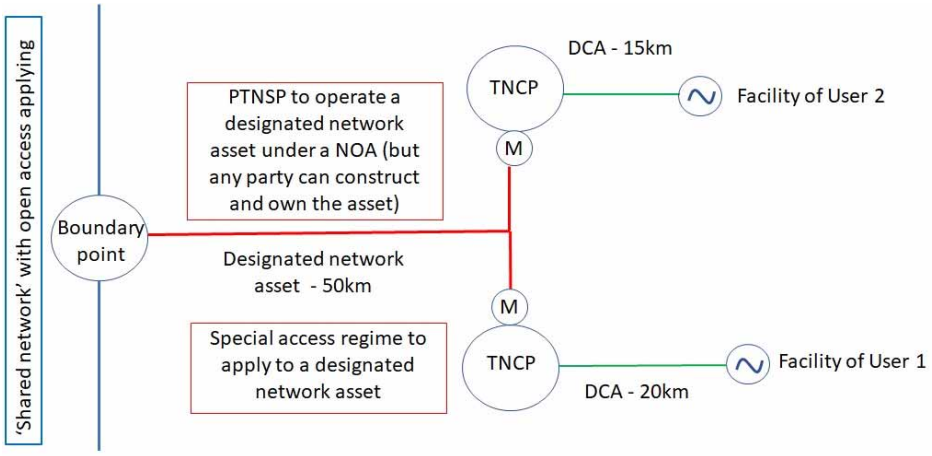
Until such time as broader access reforms are applied across the shared network as a whole, the Commission considers that the type of special access protections contemplated will only be workable on radial transmission elements. If a designated network asset was looped or meshed into the wider network, electricity flows associated with generators connected outside of the designated network asset would flow across it. This would impact the amount of power transfer capacity on the designated network asset available to connected parties and make it impossible to robustly protect their access to the designated network asset. Therefore, the more preferable draft rule limits designated network assets to being radial assets.[109]

The more preferable draft rule also introduces the concept of a 'boundary point' to delineate between the application of different access regimes on specific parts of a Primary TNSP's network.[110] That is, the concept is used to define the boundary between those assets that form part of the IUSA (which is subject to open access) and those assets which form part of the designated network asset (which is subject to the special access regime). Figure 4.1 illustrates the proposed application of a special access regime on a designated network assets based on the definition of a 'boundary point':

109 See limb (c)(2) of the definition of 'designated network asset' under Schedule 4 of the Amending Rule.

110 See definition of 'boundary point' under Schedule 4 of the Amending Rule.

Figure 4.1: Framework for designated network assets with a special access regime



Source: AEMC.

The framework is further intended to be consistent with the long-term access reforms proposed under the transmission access reform project, in that the special access regime for designated network assets could be transitioned into those broader network access reforms. While the transmission access reform project is currently only focused on the application of access reforms on the parts of the network that are funded by consumers, the establishment of a mechanism to provide FTRs across the shared network could allow for an integrated access regime to be established that also applied to designated network assets. This would complement the transmission access reforms allowing for the allocation of FTRs (or the proceeds of the sale of those rights) to participants in return for making an investment in the network.

The establishment of a mechanism to provide FTRs across the shared network would allow for the restriction on designated network assets only being radial elements of the network to be removed, and the resulting arrangements would resemble those described in the Commission's 2019 discussion paper on renewable energy zones (REZs).[111]

However, it is important to note that the effective operation of the framework for designated network assets introduced by the more preferable draft rule is in no way dependent on the introduction of broader access reform. While the application of a special access regime would be restricted to only radial elements of the transmission network in the absence of broader reform, this is consistent with the existing arrangements for large DCAs.

111 AEMC, *Renewable Energy Zones*, discussion paper, 14 October 2019, Chapter 4.

Consideration of how to establish REZs based around meshed sections of the transmission network is currently being undertaken by the ESB. REZs being promoted by jurisdictional governments appear likely to be of a size that will require to them to be an integral part of the transmission network - for example, the New South Wales Government is prioritising the delivery of a 3GW REZ in the Central-West Orana region and an 8GW REZ in New England.[112] The ESB anticipates releasing a consultation paper in December 2020 that discusses the resulting issues, including potential access arrangements in meshed network configurations.

Chapter 6 provides further detail on the proposed third party access regime for designated network assets.

4.2.3 Contestability arrangements

The AEMC's 2017 TCAPA Rule introduced a clear distinction between contestable and non-contestable transmission services relating to assets relevant to the connection of a connecting party:[113]

- **Contestable**: Any party, including the Primary TNSP, can provide that service as a non-regulated transmission service on request from a connection applicant.
- **Non-contestable**: The Primary TNSP has the exclusive right to provide that service and must negotiate under Rule 5.3 of the NER to do so as a negotiated transmission service on request from a connection applicant.

Depending on the type of asset, i.e. network or connection asset, the respective transmission services that are required to facilitate a connection, e.g. construction, ownership and operation of an asset, can either be provided on a contestable or non-contestable basis.

Currently, the provision of all services in relation to a DCA can be provided on a fully contestable basis, that is to say that any party (including the Primary TNSP) can design, construct, own and operate/maintain a DCA on an unregulated basis.

In contrast, for an IUSA, only the services of detailed design, construction and ownership are contestable services. The services of setting the functional specification, carrying out cut-in works, and operation and maintenance are non-contestable transmission services. Accordingly, the Primary TNSP has to provide these services on a negotiated basis. This is due to the fact that an IUSA forms part of the Primary TNSP's network (i.e. it cannot be isolated from the electricity flows on the shared transmission network) and the Primary TNSP is accountable for outcomes on the shared transmission network.[114] Allowing for contestability in the operation and maintenance of an IUSA would not be consistent with maintaining this single point of accountability for outcomes on the shared transmission network.

One of the key drivers for establishing the designated network asset framework under the more preferable draft rule is to allow power system security to be managed in the same way as for other elements of transmission networks. The Primary TNSP will be accountable for

112 NSW Department of Planning, Industry and Environment, *NSW Electricity Infrastructure Roadmap*, Overview, November 2020, p. 26.

113 Clause 5.2A.4 of the NER.

114 AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, p. iv.

outcomes on these assets, and this necessarily will require Primary TNSPs to be responsible for the operation and maintenance of them.

This represents a change to the current contestability arrangements for large DCAs that were established by the TCAPA Rule, where all services are fully contestable. However, the Commission considers that this change is justified by the likely increased complexity of DCAs, which was not foreseen at the time the TCAPA Rule was made. The change is also required in order to facilitate an effective solution to the issues raised by the rule change request; that is the ability for different parties to effectively and efficiently share the assets in question. For the avoidance of doubt, DCAs - that is assets that would be currently classed as small DCAs - would remain fully contestable.

The current contestability arrangements for IUSAs provide an existing framework that can be used to facilitate contestability in the detailed design, construction and ownership of designated network assets, whilst providing for operation and maintenance (and the setting of the functional specification) to be undertaken by the Primary TNSP.

Examining the application of these arrangements to designated network assets has prompted the Commission to consider whether any enhancements or simplifications could be made to them for IUSAs as well, in order to better contribute to the achievement of the NEO. The Commission concluded that certain amendments should be made and therefore, the more preferable draft rule:

- **Contestability threshold**: removes the current $10 million monetary limb from the current contestability threshold for IUSAs and only maintains the 'separability' limb.[115]
- **Ownership restriction**: removes the ownership restriction that currently prevents a person who owns a third party IUSA from owning, operating or controlling a generating system or facility that utilises electrical energy that is connected to that third party IUSA.[116]

Under the more preferable draft rule, these changes apply to designated network assets and IUSAs alike. As the different types of assets will be captured under the umbrella term of 'funded network assets' and form part of the Primary TNSP's network, the Commission's intention is to align the arrangements for designated network assets and IUSAs as far as possible to facilitate connection arrangements for connecting parties that are as clear and consistent across different asset types as possible.

Chapter 7 provides further detail on the proposed contestability and contractual arrangements under the new framework for designated network assets.

4.3 Assessment of the more preferable draft rule

Compared to the status quo, the proposed rule, and the 'strawman' model developed by the Commission (as discussed in more detail in chapter 3), the Commission considers that the more preferable draft rule, on balance provides significant benefits and, having regard to the

115 Clause 5.2A.4(c) of the NER.
116 Clause 5.2A.7(e) of the NER.

issues raised in the rule change request, will, or is likely to, better contribute to the achievement of the NEO for the following reasons:

- **Application of key NER requirements**: Through the establishment of individual TNCPs for each connecting party, the existing regulatory and market arrangements for the negotiation and application of performance standards, system strength and the settlement-related provisions for metering, losses and TUOS recovery can be applied in their current form (or with only minor modifications).[117] This contributes to the objective of designing a framework with minimal additional complexity. Further, this objective is supported through allocating responsibility for operation and maintenance of the assets to the Primary TNSP. This prevents the need to extend the application of significant portions of the Rules to the DCASP and, potentially, introduce complex contractual arrangements between connecting parties, DCASPs and the relevant Primary TNSP.
- **Continued application of access protections**: A special access regime protects connecting parties' investments in designated assets and addresses the free-rider issue that would otherwise have arisen if open access was applied to these assets in the same way as the rest of the shared transmission network. In this regard, the designated network assets framework is consistent with the existing arrangements for large DCAs. Further, the new framework is capable of being transitioned into broader access reforms when these are implemented.
- **Limited reduction in contestability**: The framework for designated network assets facilitates contestable design, construction and ownership of funded network assets by applying a regime based on the existing arrangements for third party IUSAs. While this represents a reduction in the number of services subject to contestability, it is an inevitable consequence of the creation of individual TNCPs for each facility connected to a designated network asset and, on balance, the Commission considers that it is justified. The removal of the existing ownership restriction and the monetary limb of the contestability threshold is consistent with the objective of allowing for maintaining contestability to the greatest extent possible.[118]

4.4 Approach to the implementation of the rule

The Commission proposes that the substantive parts of the rule should commence **six months** after the final rule is made.

The savings and transitional provisions would commence on or about the day the final rule is made. These provisions require a number of activities to be undertaken in order to implement the new framework, most notably: the development of access policies by Primary TNSPs, and the AER's approval of those, the revision of Primary TNSP's standard contractual documents (e.g. NOA) as well as activities by the AER and AEMO to update procedures to remove the DCASP concept. It is the need to complete these activities which drives the six month timeframe for the commencement of the substantive provisions of the rule.

117 The more preferable draft rule introduces minor modifications to the arrangements for losses and TUOS recovery. The changes are further discussed in chapter 5.

118 The proposed removal of the ownership restriction and the monetary limb of the contestability threshold are further discussed in chapter 7.

Chapter 8 provides further detail on the proposed approach to the implementation of the rule, as well as grandfathering arrangements.

5 TRANSMISSION NETWORK CONNECTION POINTS

This chapter provides further detail on the more preferable draft rule with respect to the establishment of individual TNCPs on a designated network asset. It explains how:

- key NER requirements are applied at TNCPs on transmission networks under the existing rules framework
- these requirements are applied at individual TNCPs at the point where a facility connects to a designated network asset under the more preferable draft rule
- how the more preferable draft rule will better contribute to the achievement of the NEO in this regard.

5.1 Current arrangements for TNCPs

This section describes the current arrangements for:

- system and performance standards
- system strength
- metering
- recovery of TUOS charges
- transmission losses.

Each of the following sub-sections explains how these arrangements are applied to the transmission network and also to DCAs.

5.1.1 Current arrangements for technical requirements and performance standards

Current arrangements for technical requirements and performance standards on the transmission network

Depending on the registration category, different conditions apply for the connection of a registered participant. Generators, customers and NSPs need to plan and design the equipment that they operate to comply with different sets of technical requirements as defined under the Rules. The following schedules in the NER contain relevant technical and performance requirements for registered participants:

- Schedule 5.1 - *Network Performance Requirements to be Provided or Co-ordinated by Network Service Providers*
- Schedule 5.2 - *Conditions for Connection of Generators*
- Schedule 5.3 - *Conditions for Connection of Customers*
- Schedule 5.3a - *Conditions for connection of Market Network Services*

In addition to the specific conditions that apply to the connection of different categories of registered participants, Schedule 5.1a of the NER defines system standards that are necessary or desirable for the safe and reliable operation of the facilities of all registered participants and equipment. A registered participant cannot rely on system standards being fully complied with at a connection point under all circumstances. However, a registered

participant can expect to be informed of circumstances where the standard of supply at its connection points will not conform to the system standards. To achieve the system standards, technical requirements are placed on NSPs defining how they plan, design and operate their networks to deliver the system standards (through Schedules 5.1 and 5.3a).

Conditions for the connection of generators and large load customers

Chapter 5 of the NER provides the framework for connecting a generating system or large load customer to the grid. Generators and customers must plan, design and operate their facilities to comply with the performance standards applicable to their facilities, their connection agreement with the relevant NSP (i.e. a TNSP or distribution network service provider (DNSP)) and the system standards.

As part of negotiating a connection agreement with the relevant NSP, the NSP (who is advised on some matters by AEMO)[119] and the connection applicant agree on the level of performance for the equipment the applicant is seeking to connect to the power system. A key component of a connection agreement is the agreed performance standards that will apply to the connected equipment of a registered participant. For each technical requirement, the negotiation occurs within a range bounded by an automatic access standard (where a connection cannot be denied 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. The negotiated performance standards become the relevant performance standards for a plant that is connected at a specific connection point.[120]

The connection point is where performance standards are established and monitored. Under the NER, a connecting party is responsible for complying with the performance standards for its facility. Further, under the NEL and NER, the AER is responsible for monitoring and enforcing compliance by registered participants, including in relation to compliance with their performance standards.[121]

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.[122]

Negotiation of performance standards for generators and customers

Rule 5.3 specifies the process for establishing a connection for a generator or large load customer to a transmission network, as well as for a network to network connection. It sets out the steps to be followed when negotiating a connection, including the negotiation of performance standards for a specific plant,[123] based on the technical requirements specified in the Rules.[124]

119 See definition of 'AEMO advisory matter' in Chapter 10 of the NER.
120 See clauses 5.3.4A(i) and the definition of 'performance standard' in Chapter 10 of the NER.
121 Part 3, section 15 of the NEL.
122 Rule 4.15(f)-(q) of the NER.
123 In relation to a connection point, plant includes all equipment involved in generating, utilising or transmitting electrical energy.
124 As specified under Schedules 5.2-5.3a of the NER.

In its response to a connection applicant's connection enquiry, the relevant TNSP provides certain information to the connection applicant, including written details of each of the technical requirements relevant to the proposed plant.[125] As part of its application for connection, for any technical requirement where the facility will not meet the automatic access standard, the applicant must submit a proposal for a negotiated access standard.[126]

When proposing a negotiated access standard, a connection applicant is required to provide to the TNSP and AEMO reasons and evidence as to why the proposed negotiated access standard is appropriate (including power system conditions at the location of the proposed connection, commercial and technical feasibility of complying with the automatic access standard, and impact on quality of supply for other network users).[127] This initiates the following negotiation process under the NER:[128]

- Following the receipt of a proposed negotiated access standard in an application for connection, a TNSP must consult AEMO as soon as practicable in relation to AEMO advisory matters.[129]
- Within 20 business days following receipt of the proposed negotiated access standard and all information the connection applicant is required to provide, AEMO must advise the TNSP, in respect of the AEMO advisory matters, whether the proposed negotiated performance standard should be accepted or rejected.[130]
- Within 30 business days following receipt of the proposed negotiated access standard and all information the connection applicant is required to provide, the TNSP must accept or reject a proposed negotiated access standard (the TNSP must reject it if AEMO has advised the TNSP to reject the negotiated access standard).[131]
- If the TNSP rejects a proposed negotiated access standard, the TNSP must ask the connection applicant for additional evidence to be able to continue assessing the proposed negotiated access standard (if applicable), provide the connection applicant with detailed reasons for the rejection, including the reasons and recommendation provided by AEMO, and advise the connection applicant of a negotiated performance standard that the TNSP considers would meet the relevant requirements.[132]
- The connection applicant may, based on the TNSP's proposal for a negotiated access standard, either accept it, reject it, propose an alternative negotiated access standard to be further evaluated or elect to adopt the automatic access standard.[133]

If the connection applicant proposes an alternative negotiated access standard, the negotiating process set out above would start again. In practice, this is an iterative process

125 Clause 5.3.3 of the NER.
126 Clause 5.3.4A of the NER.
127 Clauses 5.3.4A(b1) and 5.3.4A(b2) of the NER.
128 Clause 5.3.4A of the NER.
129 Clause 5.3.4A(c) of the NER.
130 Clause 5.3.4A(d) of the NER.
131 Clause 5.3.4A(e) and (f) of the NER.
132 Clause 5.3.4A(g) of the NER.
133 Clause 5.3.4A(h) of the NER.

for the negotiation of multiple access standards, some of which will be more quickly negotiated and resolved than others.

After a successful negotiation, the TNSP makes an offer to connect to the connection applicant, which includes the automatic (or negotiated) access standard for each technical requirement. Upon the connection applicant's acceptance of the TNSP's connection offer, the agreed access standards form part of the terms and conditions of the connection agreement and are taken to be the performance standards applicable to the connected plant for the relevant technical requirements.[134]

Monitoring and enforcement of performance standards

The process for monitoring compliance with and enforcement of registered participants' performance standards is set out under Chapter 4 of the NER. It sets out compliance obligations of registered participants and what happens in the event of a likely or actual breach of performance standards.[135] Under the NEL, the AER is responsible for monitoring compliance with, and enforcement of, registered participants' obligations, including technical performance requirements for generators, large load customers and NSPs.

Current arrangements for technical requirements and performance standards on DCAs

Under the current arrangements, a DCA is connected to a transmission network at a single connection point. As a result, there can be only one FRMP and a single set of performance standards applying at the TNCP, even if multiple parties are connected to the same DCA.

Consequently, were multiple parties to connect to the same DCA, in practice they would be required to nominate one FRMP. The FRMP and the Primary TNSP would need to coordinate and negotiate a shared performance standard to apply at the TNCP, reflecting an overall performance standard for all connected facilities.[136] Where subsequent parties seek to connect to a DCA, the connection agreement and the overall performance standards would need to be reopened and revised.

The Commission is not aware of any DCA that serves as a connection asset for multiple parties. [137] As such, there is no precedent for multiple parties connecting to one DCA under the framework established through the 2017 TCAPA Rule.

Further, under the current Rules, the DCASP is not an NSP for the purposes of the connection process, including the negotiation of performance standards under Chapter 5 of the NER. Likewise, the DCASP is not an NSP for the purposes of network performance and system standard requirements under Chapters 4 and 5 of the NER.

134 See clause 5.3.7(b) of the NER.

135 Rule 4.15(f)-(q) of the NER.

136 The AEMC is not aware of multiple parties being connected to the same DCA due to these issues.

137 The Commission is aware that a number of connection assets that connect multiple parties to the shared network and pre-date the 2017 TCAPA Rule exist, for example Powerlink's connection assets in the Surat Basin, connecting multiple load facilities with different ownership to the transmission network.

5.1.2 Current arrangements for system strength

Current arrangements for system strength on the transmission network

An issue related to the specification of technical requirements for connections to the shared network is the impact a connected generator may have on the system strength of the power system. System strength is a quality of the power system that is related to the overall stability of the voltage waveform, including its ability to return to a stable state after disturbance events like faults.[138] Essential levels of system strength are required to maintain a secure power system.

The AEMC's *Managing power system fault levels* Rule (the system strength rule)[139] established two frameworks to address system strength issues, as discussed below.[140]

The 'minimum level of system strength' framework – to address the decline in the amount of system strength in a region

AEMO determines[141] the system strength requirements for each region by defining fault level nodes in a region, which are locations on the transmission network, and defining the minimum three phase fault level for each fault level node.[142]

Based on its determination of system strength requirements for each region, AEMO undertakes an assessment of any fault level shortfall. If AEMO assesses that there is, or is likely to be a fault level shortfall, it publishes a notice and provides this to the System Strength Service Provider for its respective region. Following the receipt of such a notice, the relevant System Strength Service Provider must make system strength services available to AEMO to address the shortfall (within the timeframe specified in the notice).[143]

The relevant System Strength Service Provider can either develop a non-network solution, for example contracting with synchronous generators, or a network solution, for example installing a fault level source (such as a synchronous condensor) on the network, or a combination of both. Once the TNSP has procured the necessary system strength services, AEMO obtains operational control over them to manage the security of the power system in a region.

As the obligation to make system strength services available is a regulatory obligation imposed on the relevant TNSP, the provision of system strength services is a prescribed transmission service. The TNSP is entitled to seek a revenue allowance that includes forecast operating or capital expenditure for its efficient costs of meeting these requirements.

The 'do no harm' framework – to address the impact of a new generator connection on system

---

138 AEMC, *Investigation into effectiveness of system strength frameworks in the NEM*, Final report, 15 October 2020, p. i.

139 AEMC, *Managing power system fault levels*, Final rule, September 2017.

140 Note that the Commission has recently made recommendations to reform these arrangements, although these recommendations have yet to be implemented. See: AEMC, *Investigation into effectiveness of system strength frameworks in the NEM*, Final report, 15 October 2020.

141 Based on AEMO's *System strength requirements methodology*, see under https://www.aemo.com.au/-/media/Files/Electricity/NEM/Security_and_Reliability/System-Security-Market-Frameworks-Review/2018/System_Strength_Requirements_Methodology_PUBLISHED.pdf.

142 Clause 5.20C.1(b) of the NER.

143 Clauses 5.20C.2 and 5.20C.3 of the NER.

strength in a network

New connecting generators have an obligation to 'do no harm' to the security of the power system. This means new connecting generators should not adversely impact on the ability to maintain system stability or on a nearby generating system's ability to maintain stable operation. This requirement applies regardless of whether AEMO has declared a system strength shortfall in the region under the 'minimum level of system strength' framework.

AEMO publishes system strength impact assessment guidelines that set out a methodology to be used by NSPs when assessing the impact on system strength of a new connection (or proposed alteration) of a generating system.[144] Depending on this assessment, the connection agreement between a generator and NSP may also include the requirement for a generator to pay for the necessary system strength connection works or implement a system strength remediation scheme in order to remedy or avoid any adverse impacts on system strength.[145] It should be noted that the obligation on a new connecting generator only applies at the time the connection is negotiated, based on the information available at the time. The System Strength Service Provider is then responsible for maintaining system strength on an ongoing basis (as described through the 'minimum system strength' framework above).

In the context of a connection to the transmission network, as part of the connection process, the Primary TNSP undertakes a system strength assessment of a proposed connection to its network. Based on a generator's connection enquiry, the Primary TNSP would make a preliminary assessment and undertake a full assessment after receipt of an application to connect (unless the preliminary assessment indicates that the full assessment is not needed).[146] The Primary TNSP provides the connection applicant with the results of the preliminary and full assessment following consultation with AEMO.[147]

If the full assessment indicates that a new connection or alteration of an existing connection will have an adverse system strength impact, the TNSP must undertake system strength connection works at the cost of the connection applicant, unless the adverse system strength impact will be avoided or remedied by a system strength remediation scheme implemented by the connecting party in accordance with its connection agreement.[148]

The connection applicant would include a proposal for a system strength remediation scheme in its application to connect and has to provide the TNSP and AEMO with all relevant information to assess the proposed system strength remediation scheme.[149]

Following the receipt of a proposal for a system strength remediation scheme, the Primary TNSP needs to consult with AEMO and:

- AEMO must use reasonable endeavours to respond to the TNSP within 20 business days

144 Clause 4.6.6 of the NER.
145 Clause 5.3.4B of the NER.
146 Clause 5.3.4B(a) of the NER.
147 Clause 5.3.4B(b) of the NER.
148 Clauses 5.3.4B(e) and (f) of the NER.
149 Clauses 5.3.4B(g) and (h) of the NER.

- the TNSP must, within 10 business days following the receipt of a response from AEMO, accept or reject the proposal.

If a proposal for a system strength remediation scheme is rejected and cannot be resolved by negotiation between the connection applicant and the TNSP the dispute can be dealt with under commercial arbitration.[150]

Current arrangements for system strength on DCAs

In the context of DCAs, the party that has a connection agreement with the Primary TNSP at the TNCP, where the DCA connects to the shared network, is the responsible party for complying with the 'do no harm' obligation. However, to the extent that the FRMP and the DCASP are different parties (and the DCASP is not the Primary TNSP) it may not be clear which party should be entering into the connection agreement and therefore responsible for complying with the 'do no harm' requirements.

With regard to the 'minimum system strength requirements' framework, AEMO determines the system strength requirements for each region based on the defined fault level nodes, which are locations on the transmission network. As DCAs are connection assets and not part of the transmission network, they currently sit outside of the existing 'minimum system strength requirements framework'.[151]

5.1.3 Current metering arrangements

Current metering arrangements on the transmission network

Chapter 7 of the NER specifies the metering arrangements in the NEM. The AEMC's 2015 *Expanding competition in metering and related services* Rule changed who has overall responsibility for the provision of metering services by establishing a new type of registered participant - a Metering Coordinator (MC). The Rule introduced the universal requirement to appoint an MC, who is the responsible person for metering services in relation to a connection point.

However, different arrangements apply in terms of who can be an MC for different types of connection points, such as metering at a connection point on the distribution network and at a connection point on the transmission network.[152]

For a connection point on the transmission network (a TNCP), the MC must be either the:

- Local network service provider (LNSP), i.e. the TNSP, or
- The FRMP itself, i.e. the market generator or customer.[153]

The FRMP must appoint the MC and the FRMP may request the TNSP to act as the MC at a TNCP.[154]

150 Clause 5.3.4B(p)(1) and in accordance with Rule 5.5 of the NER.

151 Although, a system strength node could be declared at the TNCP to which the DCA connects to the transmission network.

152 For a connection point on the distribution network, any person can become an MC, subject to meeting the registration requirements. The FRMP for a connection point appoints an MC (who, if the FRMP is a market customer, cannot be the market customer itself). See clause 7.6.2(a)(2) of the NER.

153 Clause 7.6.3 of the NER.

154 Clause 7.6.2(a)(1) of the NER.

The AEMC's 2015 *Expanding competition in metering and related services* Rule did not, in practice, change the pre-existing arrangements regarding who can be the responsible person for metering at a TNCP (to fulfil the functions of an MC at a TNCP). For the reasons set out below, the Commission considered that the complexity and cost of permitting parties other than the TNSP or the FRMP to provide MC services at TNCPs would likely outweigh the benefits:

- The technology required for metering installations at TNCPs is highly specialised and often integrated into a substation with other TNSP assets that are used to operate the transmission network.
- There are relatively few TNCPs and, given the specialised nature of the metering required at these connection points, the market for metering services is likely be small.
- The primary purpose of the AEMC's 2015 *Expanding competition in metering and related services* Rule was to promote competition in metering services in the small customer market. Although, prior to the Rule change, the FRMP could already elect to be the responsible person to provide metering services, at the majority of TNCPs it generally used to be, and continues to be, the TNSP that performs this role.[155]

The following sections provide a summary of the responsibilities of the different parties that play a role in the context of metering under the NER: the TNSP, the FRMP, the MC and AEMO.

Obligation of the TNSP to act as an MC if requested by the FRMP

At a TNCP, only the TNSP or the FRMP may be appointed to be the MC. In practice, we understand that, at TNCPs where distribution networks connect to the transmission network, the MC is generally the TNSP and not the FRMP (the local retailer). Similarly, where there is no FRMP at a TNCP (for instance, at connection points between transmission networks), the TNSP will be the MC.

The FRMP at a TNCP may request in writing an offer from the TNSP to act as the MC in respect of a TNCP. If the TNSP receives such a request, the TNSP:

- must offer to act as the MC in respect of that TNCP
- provide the FRMP with the name of the Metering Provider and the Metering Data Provider (MDP) that would be appointed under clauses 7.3.2(a)(1) and 7.3.2(d), if requested by the FRMP
- provide the FRMP with the terms and conditions (including as to price) relating to that offer no later than 15 business days after the TNSP receives a written request from the FRMP.[156]

Where the MC at a TNCP is the TNSP, AEMO is responsible for the collection, processing and delivery of metering data to the metering database and for the appointment of the MDP.[157] Where there is a FRMP, AEMO must allow the FRMP to appoint an MDP of its choice, subject to that MDP being able to meets AEMO's requirements in relation to any special site or

155 See: AEMC, *Expanding competition in metering and related services,* Final determination, 26 November 2015, p. 127.
156 Clause 7.6.3(c) of the NER.
157 Clause 7.5.1(a) of the NER.

technology related conditions.[158] Where the FRMP does not appoint an MDP, AEMO must appoint the MDP.[159] We understand that, in practice, at TNCPs where there is no FRMP, AEMO will also appoint the MDP.

It should be noted that under the NER, AEMO can exempt a TNSP from satisfying one or more of the registration requirements when the TNSP is registering as an MC for TNCPs on its transmission network.[160] This exemption power is appropriate because:

- a TNSP that becomes the MC for a TNCP in its network is only responsible for the provision, installation and maintenance of the metering installation, with AEMO being responsible for collection of metering data from that metering installation, the processing of that data and the delivery of the processed data,[161] and
- the TNSP would already need to be a registered participant by virtue of being registered as a TNSP.

Obligation of the FRMP to establish metering installations

Under the Rules, a FRMP has several obligations relating to the establishment of metering installations. Prior to participating in the market, the FRMP at a connection point must ensure that:[162]

- an MC is appointed in respect of its connection point (whether this is a connection point on a distribution network or transmission network)
- the connection point has a metering installation and the metering installation is registered with AEMO, and
- prior to registration, the FRMP has obtained a National Metering Identifier (NMI) from the LNSP for the connection point.[163]

The LNSP, i.e. TNSP on the transmission network must issue a unique NMI for each metering installation on its network to the FRMP at a specific connection point and register the NMI with AEMO.[164]

Metering Coordinator: coordination and provision of metering services

The MC's key responsibilities are detailed in clause 7.3.1 of the NER, including provision, installation and maintenance of a metering installation; collection, processing, retention and delivery of metering data; and management of access to and security of the metering installation.

Generally, for connection points on a distribution network and for TNCPs where the FRMP is the MC, the MC at a connection point must appoint:[165]

158 Clause 7.5.1(b)(1) of the NER.
159 Clause 7.5.1(b)(2) of the NER.
160 Clause 2.4A.1(b) of the NER.
161 See these responsibilities in clauses 7.5.1(a) and 7.2.1(c) of the NER.
162 Clause 7.2.1 of the NER.
163 Clause 7.8.2(c)(1) of the NER.
164 Clauses 7.8.2(d)(1) and (2) of the NER.
165 Clause 7.3.2(a)-(d) of the NER.

- A Metering Provider for the provision, installation and maintenance of the metering installation, and
- An MDP for the collection, processing and delivery of metering data.

However, where a FRMP is the MC at a TNCP it must:

- appoint an MDP of its choice, but it can only appoint an MDP who can fully accommodate any special site or technology related conditions described in a document published by AEMO under clause 7.8.12(c)(1)[166]; and
- clarify any matters with AEMO in order to choose an MDP for that metering installation that is mutually suitable to all parties.[167]

As noted, the above provisions only apply to a connection point where the MC is not the TNSP, i.e. TNCPs where the MC is the FRMP. As discussed above, clause 7.5.1(a), specifies that where the TNSP is the MC at a TNCP, then AEMO is responsible for the collection, processing and delivery of the processed data to the metering database and the provision of metering data in accordance with the Rules and procedures authorised under the Rules.

Table 5.1 summarises the current metering arrangements in relation to TNCPs.

Table 5.1: Summary of current metering arrangements in relation to TNCPs

	TRANSMISSION NETWORK CONNECTION POINTS
FRMP	Appoints an MC for its TNCP • TNCP has a metering installation that is registered with AEMO • obtains a NMI
Metering Coordinator	Must be • TNSP or • FRMP itself
Metering Provider and Metering Data Provider	At a TNCP where FRMP is the MC, it can appoint an MDP of choice, but only if the MDP can accommodate any special site or technology related conditions described in a document published by AEMO
	At a TNCP where TNSP is the MC, AEMO is responsible for the collection, processing and delivery of metering data to the metering database, and appoints the MDP of the FRMP's choice (if the FRMP so chooses), subject to the MDP being able to accommodate any special site or technology related

166 Clause 7.5.1(d) of the NER.

167 Based on clause 7.8.12(a)(1) on 'Special site or technology related conditions', AEMO can determine that special arrangements are required to support the integrity of the collection and processing of metering data from nominated metering installations. These conditions include a connection point or proposed connection point on a transmission network, where the metering data collection and/or processing arrangements from metering installations require a single MDP.

	TRANSMISSION NETWORK CONNECTION POINTS
	conditions described in a document published by AEMO
LNSP	TNSP must issue a NMI for each metering installation on its network and register the NMI with AEMO

Source: AEMC.

Current metering arrangements for DCAs

Under the current DCA arrangements, a DCA is connected at a single TNCP, with one FRMP and metering installation. The FRMP at the TNCP and the TNSP will have the responsibilities described above under Chapter 7 of the NER in relation to metering at a TNCP on the transmission network. Given the single connection point to the transmission network, only one MC at the TNCP would need to be appointed.

If multiple parties were to be connected to the same DCA under the current framework, the contractual agreement between a DCASP and the connecting parties would determine what type of metering arrangements would apply at the facilities connected to the DCA.

5.1.4 Current arrangements for recovery of TUOS charges

Current arrangements for recovery of TUOS charges on the transmission network

All parties connected to a transmission network by connection assets pay for connection services provided by these connection assets. These transmission services are regulated as negotiated transmission services or prescribed transmission services.

Negotiated transmission services are usually provided to a single customer or small group of customers that directly connect to the transmission network, for example generators and large load customers. The cost for these services is negotiated between the TNSP and the connecting party in accordance with the negotiating principles for negotiated transmission services contained in Schedule 5.11 of the NER.[168]

Prescribed transmission services are subject to revenue regulation under the NER, and TNSPs provide these services under their revenue allowance set by the AER in accordance with Chapter 6A of the NER. Prescribed transmission services include shared transmission services to large load customers, as well as connection services provided to DNSPs. TUOS charges are the prices set by a TNSP for recovering the costs for shared transmission services (prescribed TUOS services) and are paid for by connecting parties that generally take load from the network.

The prices for shared transmission services are determined by a TNSP for specific customer connection points on the TNSP's network (i.e. TNCPs). A transmission network user will pay a TNSP TUOS charges for shared transmission services in accordance with the Rules.

168 Clause 5.2A.6 of the NER.

Each TNSP is required to develop a pricing methodology (approved by the AER), based on the principles for the allocation of the annual service revenue requirement to connection points.[169] A TNSP's pricing methodology determines the exact pricing structure for the recovery of costs for prescribed TUOS services. Based on its pricing methodology, a TNSP translates its revenue allowance into prices for customers. TUOS charges are generally composed of a 50 per cent allocation to each of a locational component and a non-locational component as follows:[170]

- *A locational component*: Locational charges reflect the cost of utilising the network at various locations, i.e. specific connection points. Prices are based on a measure set by the TNSP, for example agreed contract maximum demand ($/MW per month) or average maximum demand over the 10 peak demand days in the previous year.
- *A non-locational component*: Non-locational charges are set on 'postage stamp' basis, i.e. are the same for all connection points on the network and all customers and are not related to location.[171]

Billing arrangements for prescribed TUOS charges

The process and requirements for billing TUOS charges is set out under rule 6A.27 of the Rules. These billing arrangements provide that, where charges are determined for prescribed transmission services from metering data, these charges will be based on kW or kWh obtained from the metering data managed by AEMO.[172]

On this basis, the TNSP issues bills to transmission network users for prescribed transmission services at a specific connection point. At a minimum, the bill must contain the information set out in clause 6A.27.2 of the NER. In practice, the Commission understand that TNSPs issue bills on a monthly basis or as specified in the transmission connection agreement.[173] The transmission network user must pay TUOS charges by the date specified in the bill.[174]

Current arrangements for recovery of TUOS charges in the context of DCAs

Under the current arrangements for DCAs, TUOS charges would only be recovered at a TNCP if a large load customer were connected at a TNCP via a DCA. Based on the metered energy at the TNCP, the TNSP would charge a large load customer TUOS, based on the arrangements described above. AEMO's registration and exemption list currently lists one load customer that is connected via a small DCA to the shared transmission network.[175]

In situations where multiple parties are connected to the same DCA, the Commission understand that the TNSP would charge the TUOS to the FRMP at the TNCP, based on the

169 Clause 6A.23.3 of the NER.

170 Clause 6A.23.3(a)(2) allows for an alternative allocation to each component, locational and non-locational, based on a reasonable estimate based on a reasonable estimate of future network utilisation and the likely need for future transmission investment, with the objective of providing more efficient locational signals to market participants, intending participants and end users.

171 There is another revenue requirement, the common service revenue requirement, which is also levied on a postage-stamp basis and includes network switching and operations, administration and management, network planning and development and general overheads.

172 Clause 6A.27.1 of the NER.

173 See for example, TransGrid Pricing Methodology – 2018/19 – 2022/23, p. 17.

174 Clause 6A.27.3 of the NER.

175 AEMO's registration and exemption list at 10 October 2020. The relevant small DCA is owned and operated by TransGrid.

metered energy at the TNCP. On this basis, the FRMP at the TNCP would subsequently pass on TUOS charges to individual load customers connected to the DCA, with the method determining the amount a connected party must pay specified through their contractual agreement.

5.1.5 Current arrangements for determining losses

Current arrangements for determining losses on the transmission network

Losses (in the form of heat) occur when electricity is transported across a transmission network. TLFs are calculated to reflect this loss of energy. Settlement of parties connected to the shared transmission network accounts for these losses by adjusting a party's metered energy at the TNCP by a TLF. Under the current arrangements, TLFs in the NEM are calculated on a marginal basis.[176]

The 'marginal' methodology to determine transmission losses is used in the NEM because marginal pricing leads to the most efficient outcomes when it is accurately applied. The marginal approach to calculate transmission losses is also consistent with how other aspects of dispatch and pricing currently operate in the NEM.

However, the marginal approach, by design, over-recovers total settlements used to pay generators.[177] This systemic over-recovery is the source of intra-regional settlement residues (IRSRs). IRSRs are currently allocated to transmission customers through reduced TUOS charges.

Further, the current methodology produces inaccuracies as a result of AEMO being required to calculate TLFs based on an annual forecast and the use of static loss factors (fixed on an annual basis instead of dynamically varying every trading interval). The application of ex-ante static annual TLFs results in technical errors, describing the difference between the estimated losses calculated with TLFs and the actual losses that occur in the transmission network.

Current arrangements for determining losses on DCAs

In relation to a DCA, AEMO currently calculates one TLF for the TNCP (the connection point of the DCA to the transmission network), which is applied to all the metered energy for the DCA. In the absence of a regulatory framework for determining loss factors for DCA connected parties, the DCASP that is responsible for the TNCP would need to have settlement arrangements in place, including for the allocation of losses, through its contractual agreements with connecting parties.

5.2 Arrangements for TNCPs under the more preferable draft rule

Chapter 4 set out the objectives that underpin the design of the new framework for designated network assets. One of the objectives of the new framework for designated network assets is to minimise complexity. The more preferable draft rule achieves this

176 For further background on transmission losses in the NEM see: AEMC, *Transmission loss factors*, Rule determination, 27 February 2020.

177 AEMC, *Transmission loss factors*, Rule determination, 27 February 2020, p. 2.

objective through the establishment of TNCPs at the points where facilities connect to a designated network asset.

To provide for simplicity and consistency with the arrangements for connections at a TNCP anywhere on a TNSP's transmission network, the Commission's approach has been to apply the current NEM arrangements in their existing form in the context of connections to a TNCP on a designated network asset, unless there are good reasons not to do so.

The following sections provide further detail on the implications of establishing TNCPs on designated transmission assets for the application of the current arrangements for:

- system and performance standards
- system strength
- metering
- recovery of TUOS charges
- transmission losses.

The Commission's analysis of the five areas listed above has only identified two aspects of the new framework for designated network assets where variation from the current arrangements is necessary. These are the arrangements for:

- **TUOS recovery**: Designated network assets will be included at zero cost in TNSPs' Cost Reflective Network Pricing (CRNP) models. This will allow TUOS charges to be levied directly on customers connected to a designated network asset but also ensure that they not be charged TUOS for an asset they were already funding.[178]
- **Transmission loss factors:** A mechanism will be established to separately calculate the settlement residues accruing from losses on designated network assets and distribute these to the parties funding the assets.[179]

As noted previously, DCAs will continue to be a feature of the NER framework, constituting what are currently small DCAs. Such DCAs will continue to be connected to the Primary TNSP's transmission network by means of an IUSA (or a designated network asset) at a single TNCP where key arrangements listed above would apply.

Under the new framework, DCAs will facilitate the connection of a person to a transmission network.[180] The concept of identified user group would no longer apply in the context of DCAs, but only in the context of designated network assets.[181] This will not prevent multiple facilities connecting via a DCA at the same TNCP if the facilities are owned and operated by the same or a related entity, i.e. by the same person, or where different parties can otherwise agree to share a connection point. In this case, the parties involved would need to commercially address the issues that arise in this context, for example application of an overall performance standard at the TNCP, one FRMP and one set of loss factors only, etc.

178 See clause 6A.23.3(c) under Schedule 3 of the Amending Rule.
179 See clause 5.2A.7(e)(7)(ii)under Schedule 2 of the Amending Rule.
180 See definition of 'dedicated connection asset' under Schedule 4 of the Amending Rule.
181 See definitions of 'designated network asset' and 'identified user group' under Schedule 4 of the Amending Rule.

However, the assets that would otherwise comprise a DCA (i.e. including a power line less than 30km in total route length) could also be voluntarily 'opted-in' to the arrangements for designated network assets in order to better facilitate the sharing of assets by unrelated connecting parties.[182] This would, however, require the application of the contestability arrangements for designated network assets as described in chapter 7.

5.2.1 System and performance standards

Under the more preferable draft rule, the current arrangements for the application of and compliance with system and performance standards (as described in section 5.1.1) will apply to designated network assets.

Accordingly, generators and customers connected to a designated network asset, and a TNSP operating a designated network asset, are required to plan and design their equipment so that they operate to comply with the existing sets of technical requirements set out in the Rules.

System standards to apply across a designated network asset

The same technical requirements that apply across the Primary TNSP's transmission network will also apply across a designated network asset, given that this will form part of the transmission network and therefore be operated by the Primary TNSP.

Accordingly, the Primary TNSP will be responsible for compliance with the system standards under S5.1a (*System standards*) across a designated network asset that it operates. In line with the current arrangements, a connecting party at a TNCP should be able to reasonably expect that the TNSP would operate a designated network asset consistent with the system standards. Likewise, a connecting party could reasonably expect the same level of performance at its TNCP as at any other TNCP across the TNSP's transmission network.

As designated network assets will form part of a Primary TNSP's transmission network, the Primary TNSP must comply with the technical requirements defined in Schedule 5.1 (*Network Performance Requirements to be Provided or Co-ordinated by Network Service Providers*), in terms of how it plans, designs and operates its network to deliver the system standards. The Commission does not consider that there should be any potential for variation in terms of the application of the system standards and compliance with Schedule 5.1 on designated network assets.

This position differs from that being considered by the Commission while it was developing the strawman model described in chapter 3. Under that model, based on analysis undertaken by GHD, there could have been potential for variation of the system standards specified in Schedule 5.1a of the NER at the DCA connection points, i.e. the point where a facility would connect to a shareable DCA.

Under the designated network assets framework set out in the more preferable draft rule, such variation would not be permitted. It would not be consistent with the framework's objectives of consistency and minimised complexity to allow for a different system standard

182 See limb (c)(2) in the definition of 'designated network asset' under Schedule 4 of the Amending Rule.

to apply on a designated network asset. Although designated network assets will be radial in nature, the Commission does not consider it would be desirable for different system standards to apply to different assets that form part the Primary TNSP's network.

Performance standards to apply at TNCPs on a designated network asset

Under the more preferable draft rule, a party seeking to connect at a TNCP on a designated network asset will negotiate a connection agreement with the Primary TNSP. As part of that connection agreement, the Primary TNSP and the connecting party will negotiate performance standards in accordance with the process in Rule 5.3 of the NER. Depending on whether the connecting party is a generator or large load customer, for the purposes of negotiating performance standards for the connecting plant, the existing Schedules 5.2 or 5.3 (as applicable) will apply in their current form.

Similar to the Commission's approach to system and network performance standards, the conditions for a generator or a customer connection to a designated network asset should not vary from the conditions for a generator or customer connecting to other parts of the transmission network. The connection process and requirements under the current connection framework must be consistent across a TNSP's network, including for designated network assets. Further, the Commission does not consider any changes are necessary as:

- these schedules specify performance standards that impact on network security and stability and, as such, should not be of a lower standard simply because the connection to the transmission network is to a radial designated network asset
- the performance standards in these schedules are subject to negotiation between an automatic access standard and a minimum access standard, albeit that the facility should achieve a performance as close to the automatic access standard as possible.

Based on the application of the connection process under rule 5.3 in combination with the application of Schedules 5.2 and 5.3, AEMO would be involved and provide input into the process of negotiating a connection on a designated network asset in the same way that it does for a connection to any other part of a transmission network.

Further, the current arrangements for monitoring compliance with and enforcement of performance standards under Chapter 4 of the NER will extend to TNCPs on designated network assets.

5.2.2 System strength

Under the more preferable draft rule, the current arrangements for system strength (as described in section 5.1.2) will apply to designated network assets without modification.[183]

Application of the 'minimum level of system strength' framework

By making assets that would currently be classed as large DCAs a type of network assets, they become part of a TNSP's transmission network under the more preferable draft rule. As

183 However, it should be noted that these arrangements may be subject to change, depending on the implementation of the recommendations of the Commission's *Investigation into system strength frameworks in the NEM Review* (EPR0076) and the progression of the *Efficient management of system strength on the power system* rule change proposal (ERC0300).

previously discussed, the rationale for this change is that these designated network assets are likely to represent material extensions to the network in terms of their length and size (generation capacity connected).

As such, the Commission considers it is appropriate that these assets are also covered under the existing 'minimum system strength requirements' framework. This contrasts with DCAs, which do not form part of the TNSP's network and as such sit outside of the 'minimum system strength requirements' framework.

Application of the 'do no harm' framework

Similarly, the existing 'do no harm' framework will apply to connections made to designated network assets. The Primary TNSP would undertake system strength assessments and provide the results of these assessments (following consultation with AEMO) to connection applicants in the same way that it is required to for connections elsewhere on its transmission network.

Where an assessment indicates that a new connection or alteration of existing connection will have an adverse system strength impact, the Primary TNSP must undertake system strength connection works at the cost of the connection applicant, unless the adverse system strength impact will be avoided or remedied by a system strength remediation scheme implemented by the connecting party.

The Commission is aware that as a result of the application of the 'do no harm' framework, remediation works to address the system strength impacts of non-synchronous generators often take the form of building, maintaining and operating individual synchronous condensers. The responsibility under 'do no harm' lies with the individual generator, which is likely to result in a situation of multiple synchronous condensers being installed across the power system. This in turn can increase the costs for connection of new generators and can cause increased operational complexity, which may itself potentially create, rather than mitigate, system security risks.

Nothing in the Rules prevents generators agreeing on coordinated system strength remediation works. However, practically this would require coordination between competitors and also is subject to timing issues in terms of the necessary coordination having to occur at the same time, i.e. coordinating generators would need to negotiate their individual connection agreements with the Primary TNSP at the same time in order to coordinate remediation works. Therefore, in practice, coordinated system strength works are unlikely to occur (at least between unrelated parties).

The introduction of the designated network assets, and the application of the current 'do no harm' arrangements to generators connecting to designated network assets, would not address these problems, but solving these issues and risks are out of scope of this rule change. The Commission's *Investigation into system strength frameworks in the NEM Review*, as well as the *Efficient management of system strength on the power system* rule change proposal both consider potential solutions to these problems.

5.2.3 Metering

The existing metering arrangements (as described in section 5.1.3) would be applied in the context of designated network assets without modification.

Under the more preferable draft rule, each connecting party will be the FRMP at its individual TNCP. As such, the existing metering arrangements for connection points on the transmission network extend to TNCPs on a designated network asset in their current form:

- The FRMP at the TNCP (a generator or market customer) must appoint an MC at the TNCP, ensuring that the TNCP has a metering installation which is registered with AEMO, and apply to the Primary TNSP for a NMI.
- Consistent with the current arrangements, at a TNCP, only the Primary TNSP or the FRMP itself may be appointed as MC.
    - At a TNCP where the FRMP itself is the MC, it can appoint an MDP of choice, but only if the MDP can accommodate any special site or technology related conditions described in a document published by AEMO.
    - At a TNCP where the Primary TNSP is the MC, AEMO is responsible for the collection, processing and delivery of metering data to the metering database, and will appoint an MDP of the FRMP's choice, providing the MDP can accommodate the special site or technology related conditions.
- The Primary TNSP must issue a unique NMI for each metering installation on its network to the FRMP and register the NMI with AEMO.

Further, a Primary TNSP will be required to provide for a metering installation[184] at a boundary point for the calculation of losses over a designated network asset.[185]

5.2.4 Recovery of TUOS charges

The current NEM arrangements for the recovery of TUOS charges (as described in section 5.1.4) will apply to TNCPs on designated network assets, with only very minor modifications being made through the more preferable draft rule.

The more preferable draft rule introduces a requirement for TUOS charges to be levied on loads at TNCPs, with designated network assets included in TNSPs' CRNP models but at zero cost.[186] This allows TUOS charges to be levied directly on customers connected to a designated network asset but also ensure that they are not charged TUOS for an asset that has not been paid for by consumers through prescribed TUOS charges. As mentioned under section 5.1.4, TUOS charges are the prices set by a TNSP for recovering the costs for shared transmission services (prescribed TUOS services) and are paid for by connecting parties that generally take load from the network. As a designated network asset does not form part of the shared network and the Primary TNSP does not provide any prescribed services in the

184 We note that the metering installation could be a physical meter or a virtual meter in accordance with AEMO's *Special site or technology related conditions within the NEM* guideline.

185 See clause 7.5B.1(a) under Schedule 3 of the Amending Rule.

186 See clause S6A.3.2 under Schedule 3 of the Amending Rule.

context of a designated network asset, the Primary TNSP should also not levy TUOS charges on an asset that is not funded through prescribed TUOS charges.

As market metering would exist at each TNCP, in line with the existing NEM arrangements for TUOS recovery, the Primary TNSP would be able to determine TUOS charges at an individual TNCP based on kW or kWh obtained from the metering data managed by AEMO and issue a bill to the connecting party at a specific TNCP.

The TNSP's Annual Service Revenue Requirement (ASRR) for prescribed TUOS charges sets the amount that a TNSP can recover from customers through prescribed TUOS charges. Clause 6A.23.3(a)(1) requires that 50 per cent of the ASRR for prescribed TUOS services is to be allocated between the locational and the non-locational component (unless different allocation shares can be justified).

To determine the prices for the recovery of the locational component of prescribed TUOS services, TNSPs use the CRNP methodology. The CRNP determines the locational component of prescribed TUOS services on the basis of the estimated proportionate use of the relevant transmission system assets by each customer at a connection point.

While this is appropriate for TNCPs on the shared network, which is funded by all customers, the situation is different for designated network assets, i.e. assets that are entirely funded by an identified user group. Based on the fact that a connecting party has funded the asset in its entirety (or partly if more than one party is connected), a connecting party should not be required to pay for its use of the asset.

However, the Commission considers that this situation is easily resolved by TNSPs including designated network assets in their CRNP models but at zero cost. This means that these assets would not attract a share of the TUOS ASRR when the locational components are calculated. In this way, a connected party would still need to pay for its estimated proportional use of other transmission assets that form part of the TNSP's network, but not for its use of the designated network asset.

The Commission does not consider that any changes would be required with regard to the determination of the prices for the recovery of the non-locational component of prescribed TUOS services, which are set on a 'postage stamp' basis.

To give effect to the above, the more preferable draft rule amends Chapter 6A of the NER as follows:

- Clause 6A.23.3(c) – reflect that a customer's proportionate use of the "relevant transmission assets" would exclude designated network assets. A TNSP would then calculate the locational component of prescribed TUOS services based on the CRNP methodology with allocating zero cost to a customer's proportionate use of a designated network asset.[187]
- Schedule 6A.3 – reflect that the "locational network asset costs" of a designated network asset is zero.[188]

187 See clause 6A.23.3(c) under Schedule 3 of the Amending Rule.

188 See clauses S6A.3.2(1) and (4) and S6A.3.3(1) under Schedule 3 of the Amending Rule.

The approach to representing designated network assets in TNSPs' CRNP methodologies may need to be reflected in TNSPs' pricing methodologies. However, we understand that this approach is consistent with that which would be taken to funded network augmentations currently. On that basis, the Commission does not consider that it would be necessary to provide a mechanism for pricing methodologies to be updated in advance of each TNSP's next revenue reset.

5.2.5 Loss factors

The current arrangements for the calculation of TLFs at TNCPs (as described in section 5.1.5) will apply to designated network assets without modification. A single TLF, calculated on a marginal basis, would be used in dispatch and settlement, consistent with the current arrangements for losses at TNCPs.

However, the more preferable draft rule introduces an additional mechanism to calculate the settlement residues accruing from losses on designated network assets, that is between users' TNCPs and the boundary point between the designated network asset and the rest of the transmission network. These residues are then distributed to the parties funding the assets.

Calculation of transmission losses for designated network asset connected parties

Under the framework for designated network assets, each party will be connected at its individual TNCP with a metering installation. The MC at a TNCP could be the Primary TNSP or the FRMP.

As the designated network asset will form part of the Primary TNSP's transmission network, the Commission considers the current approach for determining network losses at TNCPs can apply without modification. This operates as follows:

- By 1 April each year, AEMO calculates intra-regional loss factors (on a marginal basis) for each of the load and generation TNCPs (as a single value which is applied to all metered data and used in dispatch and settlement) which apply the following financial year.[189]
- AEMO carries out settlement, making use of these intra-regional loss factors.[190]
- In settlement, marginal loss factors are used to adjust prices paid for electricity sold by generators and purchased by customers. The use of the marginal methodology tends to recover more from customers than what is required to pay generators for the electricity generated. In addition, some metering inaccuracies arise in the measurement of electrical flows. The difference arising results in intra-regional (within a region) settlements residues (which are usually positive but can sometimes be negative).
- Intra-regional settlement residues are paid to the appropriate TNSP for the associated region and are used to reduce TUOS charges that are ultimately paid by electricity customers.[191]

189 Clause 3.6.2(f) of the NER.
190 Clause 3.15.6 of the NER.
191 Clauses 3.6.5(a)(3) and (4B) of the NER.

Maintaining the current approach for the allocation of settlement residues would mean the parties funding the designated network asset (which will include generators) will not receive the residues, which instead would simply be allocated to transmission customers within a region by offsetting prescribed TUOS charges.

The Commission understands that residues associated with losses within the designated network asset may be material in some cases, and will generally be higher the longer the length of the asset. Additionally, residues arising from the losses calculation can sometimes be negative due to an overestimate of inter-regional residues (intra-regional residues equal total residues less estimated inter-regional residues) or because a single loss factor applies for a whole year but actual losses in any trading interval could be materially higher.

As market participants will have funded a designated network asset (and not customers within a region through prescribed TUOS charges) the more preferable draft rule includes a mechanism to isolate the settlement residues that accrue on a designated network asset. These residues could then be allocated to the connecting parties rather than being used to offset TUOS charges within that region.

Given the costs associated with its operation (including the need to have a meter at the boundary point), the Commission has considered whether this mechanism should be mandated to apply to all designated network assets or whether to allow users to opt-in its application. Given the possibility of negative residues and the likely difficulty in gaining agreement where there is more than one user, the Commission's more preferable draft rule applies the residues mechanism to all designated network assets, but it would be interested in stakeholder views on this matter.

Mechanism to isolate the settlement residues that accrue on a designated network asset

Under the more preferable draft rule, AEMO calculates an actual transmission loss factor (by using the marginal methodology) at a TNCP located on a designated network asset (for use in dispatch and settlement), as it would for all other TNCPs. However, in order to isolate the settlement residues that accrue on a designated network asset, AEMO is also be required to separately calculate a loss factor at the boundary point.[192]

For this purpose, the Commission considers it is not necessary for a revenue meter to be located at the boundary point. AEMO could instead use the T-Price system (which is the automated load flow program used by AEMO for calculating loss factors) to calculate the flow into the boundary point, internal to the algorithm. On this basis, AEMO determines and publishes the boundary point loss factor by 1 April each year, which is the same time it calculates the intra-regional loss factors.[193]

The Commission understands that, in most cases, the choice of location for the boundary point will be where there is an existing substation, in which case there is likely to be a meter in place. If there is no meter, the Primary TNSP would be able to use AEMO's *Special site or technology related conditions within the NEM* guideline for the purposes of calculating the

192 See clause 3.6.2B(c) under Schedule 1 of the Amending Rule.

193 See clause 3.6.2B(d) under Schedule 1 of the Amending Rule.

energy at the boundary point and therefore the settlement residues for the designated network asset.

Mechanism for the Primary TNSP to allocate residue to those who funded the designated network asset

Under the existing arrangements, AEMO calculates the residues in each region separately (but not for each transmission network within a region where there is more than one TNSP) and distributes these to Primary TNSPs in their role as Co-ordinating Network Service Provider.[194]

Accordingly, it is necessary for the Primary TNSP to separate out the residues associated with designated network assets from this broader pool of regional residues. The Primary TNSP then distributes the residues to the funding parties of a designated network asset through its connection agreement(s) with them.[195]

Where the Primary TNSP is not the designated network asset owner, the Primary TNSP will allocate settlement residues as a condition of its NOA with the designated network asset owner.[196] The extent to which the residues were used to offset payments made by connecting parties to the designated network asset owner would depend on the agreement in place between them.

For the purpose of allocating the residues, the Primary TNSP is required to develop an agreed 'residue allocation methodology' under its standard NOA for the purpose of distributing any residues accruing on a designated network asset to designated network asset owners. Therefore, this is included as a requirement of the NOA.[197] The Primary TNSP will receive compensation for the administration of these monetary flows, consistent with Principle 2 of S5.12 (i.e. as a negotiated service).[198]

5.3 Conclusion

Having regard to the issues raised in the rule change request, the Commission considers the more preferable draft rule will, or is likely to, better contribute to the achievement the NEO than the current arrangements and the rule change proposal for the following reasons:

- Having each generator and customer connected through an individual TNCP to the network will contribute to the efficient operation of electricity services and allow AEMO to safely and reliably operate the electricity system, and for TNSPs to plan the development of their transmission networks, and material additions to those, in a coordinated and holistic manner.
- Through the establishment of individual TNCPs on designated network assets, the existing arrangements for the application of system and performance standards, system strength, and metering can apply in their current form. This enables consistency in the

194 The Co-ordinating TNSP for each relevant region (excluding Victoria as an adoptive jurisdiction) is also the Primary TNSP.
195 See clause 5.2A.7(e)(7)(ii) under Schedule 2 of the Amending Rule.
196 See for further detail in this regard the section on the proposed contractual arrangements under chapter 7.
197 See Schedule 5.6, Part B, paragraph (h) under Schedule 2 of the Amending Rule.
198 See Principle 2 of S5.12 under Schedule 2 of the Amending Rule.

application of key NER requirements to connecting parties across the transmission network and will minimise any additional complexity that would otherwise arise if different arrangements were to apply at different locations.

- The minor amendments made with regard to the arrangements for the recovery of TUOS charges and loss factors aim to facilitate efficient investment in designated network assets, being consistent with the current principles that:
  - charges for network assets should be cost-reflective
  - residues should be distributed to parties funding the assets over which they accrue.

6 ACCESS FRAMEWORK FOR DESIGNATED NETWORK ASSETS

This chapter provides further detail on the more preferable draft rule with respect to the access framework for designated network assets. It explains:

- the current arrangements for access to the shared transmission network and to large DCAs
- the arrangements for access to designated network assets in the more preferable draft rule
- how the more preferable rule draft rule will better contribute to the achievement of the NEO in this regard.

6.1 Current access arrangements

6.1.1 Current arrangements for access to the shared transmission network

Under the current NER framework, all registered participants should have the opportunity to negotiate and form a connection to a network, and have access to the network services provided by the networks forming part of the national grid.[199]

Consequently, in relation to transmission networks, a TNSP must consider and respond to a connection enquiry made by a connection applicant. Provided that the applicant proceeds with the connection process and formulates a connection application (and pays the fees related to that), the TNSP has an obligation to make an offer to connect. This includes a connection at an existing IUSA, which forms part of the Primary TNSP's transmission network.

Currently, generators have a right to negotiate a connection to the transmission network, but no right to be dispatched and so earn revenue from the wholesale spot market. Since a generator's revenue from the wholesale market is determined by how much it is physically dispatched for, when it is not dispatched due to congestion, it receives no revenue.

The service that a connecting generator is negotiating with a TNSP is power *injection capacity* at the TNCP, not *network transfer capability*, i.e. the ongoing use of the shared transmission network to be able to access the wholesale market. These arrangements have come to be referred to as 'open access'.

Dispatch and settlement arrangements once connected

Once connected, a generator's network transfer capability on the shared network is determined dynamically through the dispatch process. The NEM dispatch engine dispatches generators such that load and generation are balanced. It also dispatches generators in a manner that seeks to maximise the value of trade given the physical limitations of the power system. The NEM dispatch engine is able to achieve this through determining the implicit 'locational marginal price' (LMP) of generation in each location.

199 Clause 5.1A.2(a) of the NER.

The LMP is calculated by working out the cost (as proxied by the offer prices of local generators) of supplying an additional MW of electricity at a given transmission node. Generators are dispatched by the NEM dispatch engine if they place offers at or below the LMP of their transmission node. Generators with offers above the LMP are not dispatched. This is because these offers are above the marginal cost of supply and so would not result in the value of trade being maximised.

Generators are paid for the production of energy by market customers. This occurs through the central settlement process that is operated by AEMO. Under the current settlement arrangements, all market customers and generators are charged or paid the regional reference price (RRP) for the amount of electricity they consume or produce, respectively.

The RRP is determined just like any other LMP – it represents the cost of supplying an extra MW of demand (as determined by generators' offer prices) at the regional reference node (RRN). Generators that are not dispatched in a given settlement period do not generate electricity and so do not receive payment. That is, these generators do not receive access to the RRP. Thus, revenue is a direct function of physical dispatch.

Dispatch and settlement when the shared network is congested

The NEM dispatch engine factors in physical limitations that are known as 'constraints' and reflect, for example, the amount of electricity that can flow between points on the power system while preserving its integrity, safety and security.

If there are no constraints on the transmission network within a region, a generator's LMP would be the same as the RRP. When there is no congestion, the supply of one more unit at the regional reference node could come from the local generator if it has the lowest marginal offer. This means that the price at the RRN must be the same as the price at the generator's local node (if losses are disregarded).

However, when congestion arises, LMPs diverge from the RRP to reflect the transmission constraints that are occurring at a particular time. For example, if there is a constraint on the network, a more expensive generator may need to be dispatched on the RRN side of the constraint in order to supply consumers. This will increase the RRP. The displacement that occurs will be at the expense of lower cost generators located behind the constraint.

Incentives created by the current arrangements

As a result of the current access arrangements, market participants are unlikely to underwrite transmission assets on the shared network. For instance, if a generator were to fund the provision of additional assets to relieve a network constraint, it would be unable to reliably capture the financial benefits associated with that investment. Such an upgrade would not benefit only the funding generator, rather it would improve access for all generators.

This lack of incentive to fund network augmentation exists because access to the network is determined dynamically through dispatch, as discussed above. Generators are not guaranteed a return on any investment in shared transmission assets because they cannot guarantee that they will be dispatched, or receive priority, and so earn additional revenue through the wholesale spot market.

6.1.2 Current arrangements for access on DCA

The AEMC's 2017 TCAPA Rule set up a framework for third party access to large DCAs. Large DCAs are those DCAs where the total route length for any power lines forming part of the DCA is 30km or longer.[200] Small DCAs are not subject to this framework.

Access policy

Under the DCA access arrangements, a person who is registered in respect to a large DCA (i.e. the DCASP) is required to have in place an access policy to provide a framework for applicants who want to obtain access to large DCA services.

The DCASP for a large DCA is required to prepare, maintain and publish an access policy for its large DCA on its website to provide guidance to applicants who want to obtain access to the large DCA. The Rules specify the information that this policy is required to contain.[201]

A DCASP (including any Primary TNSP that owns or operates such assets) must submit its access policy to the AER within 30 days of an asset being classified as a large DCA.[202] The AER is required to approve an access policy if it is reasonably satisfied that it complies with the requirements for an access policy set out in the NER.[203] A DCASP must comply with its access policy once the AER has approved it.[204]

Following approval of its access policy, a DCASP must report to the AER all requests for connection and access to a large DCA when such requests are made and when an agreement for access is entered into, in the manner and form notified by the AER.[205]

Negotiating principles

When negotiating access to the services provided by a large DCA with a third party, a DCASP for a large DCA is subject to several negotiating principles, which aim to protect the interests of the DCASP and existing connecting parties.[206]

The negotiating principles in Schedule 5.12 (*Negotiating principles for large DCA services*) of the NER set out who should pay for the costs of any upgrades or alterations to the asset that are necessary to facilitate access to large DCA services. This is to ensure that a new connection to a DCA does not occur to the detriment of existing parties, including the DCASP and connected generators or customers. The negotiating principles define the rights of existing connected parties and the DCASP as well as obligations of new connecting parties, as follows:

- An applicant for large DCA services should pay for the cost of any enlargement or increase in capacity of, or alterations to, the DCA that are required to provide it with large

200 See definition of 'large dedicated connection asset' in Chapter 10 of the NER.
201 Clause 5.2A.8(b) of the NER.
202 Clause 5.2A.8(d) of the NER.
203 Clause 5.2A.8(f) of the NER.
204 Since the connections elements of the TCAPA Rule commenced on 1 July 2018, no large DCA has been registered. Therefore, to date, no large DCA access policy has been submitted to the AER for approval.
205 Clause 5.2A.8(k) of the NER.
206 Clause 5.2A.6(c) and Schedule 5.12 of the NER.

DCA services. This may include the moving of metering and other related equipment necessary to enable the applicant's connection.[207]

- The connection of an applicant to the DCA and access to large DCA services must not adversely affect the access standards, including performance standards and power transfer capability, of an existing connecting party at the time of the access application by the applicant.[208]
- The connection of an applicant to the DCA and access to large DCA services must not adversely affect contractual obligations of an existing connecting party with the relevant DCASP.[209]
- An applicant must compensate the DCASP and any existing connecting party for any lost revenue incurred during an upgrade of, or alterations to, an existing large DCA, including moving metering and other related equipment to enable the connection and operation of an applicant's facility and access to large DCA services.[210]
- The connection of an applicant to a large DCA and access to large DCA services must not:[211]
  - prevent an existing connecting party from obtaining a sufficient amount of large DCA services to meet that person's reasonably anticipated requirements, measured at the time of the access application
  - result in the applicant becoming the owner (or one of the owners) of any part of the existing large DCA or upgrade of that asset without the consent of the existing owner
  - require an existing connecting party or the owner of the large DCA to bear all or some of the costs of an upgrade of the large DCA
  - require an existing connecting party to the large DCA to bear all or some of the costs of an interconnection to the large DCA or maintaining an interconnection.[212]

Pricing and cost sharing provisions for large DCA services

Principle 1 of Schedule 5.12 (*Negotiating principles for large DCA services*) applies a number of principles contained in Schedule 5.11 (*Negotiating principles for negotiated transmission services*) for the purposes of regulating the pricing and cost sharing for third parties seeking access to large DCA services.

As a result, these negotiating principles apply in the same way they would for services provided as negotiated transmission services, although the services provided by DCAs are otherwise non-regulated.

Of particular relevance are Principles 2 and 5-7 of S5.11 on pricing and cost-sharing:[213]

---

207 Principle 2 of Schedule 5.12 of the NER.

208 Principle 3 of Schedule 5.12 of the NER.

209 Principle 4 of Schedule 5.12 of the NER.

210 Principle 5 of Schedule 5.12 of the NER.

211 Principle 6 of Schedule 5.12 of the NER.

212 The term 'interconnection' refers to connection in the context of a 'connection asset'.

213 Principles 3 and 4 of S5.11 have proven to be difficult to apply in instances where no shared transmission service, i.e. only a large DCA service, is being provided.

- Principle 2 of S5.11 requires that the price for a large DCA service should be at least equal to the avoided cost of providing it but no more than the cost of providing it on a stand-alone basis.
- Principle 5 of S5.11 requires that the price for a large DCA service must be the same for all transmission network users unless there is a material difference in the costs of providing the large DCA service to different transmission network users.
- Principle 6 of S5.11 requires the price for a large DCA service should be subject to adjustment over time to the extent that the assets used to provide that service are subsequently used to provide services to another person, in which case such adjustment should reflect the extent to which the costs of that asset is being recovered through charges to that other person.
- Principle 7 of S5.11 requires the price for a large DCA service should be such as to enable the DCASP to recover the efficient costs of complying with all regulatory obligations or requirements associated with the provision of the large DCA service.

Dispute resolution

Parties have access to the commercial arbitration process set out under rule 5.5 of the NER for any disputes in relation to the provision of large DCA services.[214] All other arrangements regarding a third party's connection to the DCA would need to be negotiated and addressed between the relevant parties on a commercial basis.

6.2 Access regime for designated network assets

Chapter 4 of this draft rule determination sets out the objectives that underpin the design of the new framework for designated network assets. One of these objectives is to provide for access protections to avoid the free-rider issues that stifle market-participant funded augmentation of the transmission network under open access.

Accordingly, a feature of the designated network assets framework is a 'special' access regime for designated network assets that aims to facilitate third party access but to ensure that it does not occur to the detriment of existing users or the Primary TNSP.

To achieve this, the more preferable draft rule carries over many aspects of the existing large DCA access framework into the new arrangements for services provided by designated network assets ('DNA services'), as follows:

- **Principles-based approach**: Specific negotiating principles apply for DNA services that regulate the rights and obligations of existing connected parties, the Primary TNSP and new connecting parties.[215]
- **Access policy based on the negotiating principles**: The Primary TNSP must develop an access policy based on the negotiating principles, which must be approved by the AER.[216]

214 Clause 5.2A.8(b)(5) and definition of 'large DCA services access dispute' under Chapter 10 of the NER.
215 Schedule 5.12 under Schedule 2 of the Amending Rule.
216 Clause 5.2A.8 under Schedule 2 of the Amending Rule.

- **Dispute resolution mechanism**: Disputes relating to DNA services are subject to commercial arbitration under rule 5.5 of the NER, in line with the existing arrangements.

To enable the application of such a special access regime, designated network assets need to be limited to radial configurations from the existing transmission network. This is because, if a designated network asset was looped or meshed, power from generators located outside of the designated network asset would flow across it. This would impact the amount of power transfer capability available to parties connected to the designated network asset.

The more preferable draft rule does not result in any changes to the access arrangements for small DCAs (although these simply become 'DCAs'), which are not subject to any prescribed access regime. To the extent that third party access to a DCA is provided, this would be purely dependent on contractual negotiations between the parties involved.

However, under the new framework, assets including power lines less than 30km would not have to be DCAs. If the owner so chose, they could instead be voluntarily 'opted-in' to the new framework for designated network assets.[217] This would then trigger the application of the access regime for designated network assets.

6.2.1 Principles-based approach to protect funding parties' access

The third-party access regime for designated network assets introduced by the more preferable draft rule is based on a number of negotiating principles that are similar, in large part, to those that apply in the current arrangements for large DCAs.

These negotiating principles for DNA services are contained in a new S5.12 *Negotiating principles for DNA services.* The Commission has taken the opportunity to integrate the principles incorporated by reference from S5.11 in the current arrangements directly into this new S5.12, to the extent it considers these to be relevant.

The principles aim to appropriately protect the rights of applicants, existing connected parties and Primary TNSPs alike. As discussed in the following section, given that designated network assets form part of the transmission network, Primary TNSPs are responsible for administering access, including having an access policy in place.

Access policies and access negotiations will be underpinned by the principles in the new S5.12, which are as follows:[218]

1. The price for a DNA service should be at least equal to the avoided cost of providing it but no more than the cost of providing it on a stand-alone basis.
2. The price for a DNA service should be such as to enable the Primary TNSP to recover the efficient costs of complying with all regulatory obligations or requirements associated with the provision of the DNA service.
3. An applicant for DNA services should pay for the cost of any enlargement or increase in capacity of, or alterations to, a designated network asset that are required to provide it

217 See limb (c)(2) in the definition of 'designated network asset' under Schedule 4 of the Amending Rule.
218 See Schedule 5.12 under Schedule 2 of the Amending Rule.

with DNA services. This may include the moving of metering and other related equipment necessary to enable the applicant's connection.

4. The connection of an applicant to a designated network asset and access to DNA services must not adversely affect the access standards, including performance standards and power transfer capability, of an existing connecting party at the time of the access application by the applicant.
5. The connection of an applicant to a designated network asset and access to DNA services must not adversely affect contractual obligations of an existing connecting party with the relevant Primary TNSP.
6. To the extent that the applicant's subsequent connection adversely impacts the access standards, performance standards, power transfer capability or contractual obligations of an existing connecting party, then an applicant for DNA services to an existing designated network asset must provide reasonable compensation to an existing connecting party to that designated network asset.
7. An applicant must compensate the owner of the designated network asset, the Primary TNSP and any existing connecting party for any lost revenue incurred during an upgrade of, or alterations to, an existing designated asset, including moving metering and other related equipment to enable the connection and operation of the applicant's facility and access to DNA services.
8. The connection of an applicant to a designated network asset and access to DNA services must not:
    - prevent an existing connecting party from obtaining a sufficient amount of DNA services to meet that person's reasonably anticipated requirements, measured at the time of the access application by the applicant
    - result in the applicant becoming the owner (or one of the owners) of any part of the designated network asset or upgrade of that asset without the consent of the existing owner
    - require an existing connecting party or the owner of the designated network asset to bear all or some of the costs of an upgrade of the designated network asset or maintaining an upgrade
    - require an existing connecting party to the designated network asset to bear all or some of the costs of a connection to the designated network asset or maintaining a connection.

As can be seen, the principles have, in large part, been carried over from the existing schedules 5.11 and 5.12, with the main difference being the addition of principle 6. Primary TNSPs' access policies will be underpinned by principles 4 and 5, in that the connection of a subsequent applicant to a designated network asset must not adversely affect the contractual obligations of existing parties or their access standards, performance standards and power transfer capability to the boundary point.

However, principle 6 recognises that there may be occasions, following the connection of a subsequent party, when the achievement of these outcomes may not have been foreseen by the Primary TNSP at the time of connection. In particular, the access provided to each

generator by way of the power transfer capability of the designated network asset may be affected by unforeseen impacts.

Therefore, to the extent that the power transfer capability of an existing party is adversely affected by a subsequent party, principle 6 requires that reasonable compensation must be provided. In this regard, it builds on the approach taken by the current principle 5 which relates to the payment of compensation for any lost revenue during an upgrade of, or alterations to, an existing designated network asset (and which forms principle 7 in the new framework).

Examples of such situations might involve intermittent renewable generation, particularly where this has been supplemented by storage. Given the diversity in their output, such generators may be able to share transmission capacity, but there may be rare occasions when there is an impact on the power transfer capability of the designated network asset that was not foreseen at the time of connection. Connecting parties may wish to enter into agreements to formalise the sharing of access (for instance, if they are likely to generate at different times), and nothing in the principles precludes this.

6.2.2 Administration of access and access policies

As noted, given that designated network assets are part of the transmission network, it will be the Primary TNSP that is responsible for administering access to all designated network assets that form part of its transmission network.

To discharge this responsibility, each Primary TNSP must develop a standard access policy that will apply to all designated network assets that form part of its network,[219] consistent with the negotiating principles under the new Schedule 5.12 on *Negotiating principles for DNA services*. This standard access policy for designated network assets must be published on the Primary TNSP's website.[220]

This approach differs from the current arrangements for large DCAs, where the DCASP develops an access policy for each large DCA once that large DCA has been established. However, the draft rule allows a Primary TNSP's access policy to apply different terms to different DNA services or to different components of a designated network asset.[221]

When a connection enquiry is submitted that relates to part of its transmission network that is a designated network asset, the Primary TNSP would be required to provide the applicant with a description of the tenure arrangements and main components of the designated network asset and the facilities connected to it.[222] At that time, the Primary TNSP would also advise the applicant of the specific terms of the access policy that apply to that part of the designated network asset.[223]

219 This needs to occur prior to the commencement date of the rule, as discussed in more detail in chapter 8.
220 Clause 5.2A.8(b) under Schedule 2 of the Amending Rule.
221 Clause 5.2A.8(b) under Schedule 2 of the Amending Rule.
222 Clause 5.3.3(5C) under Schedule 2 of the Amending Rule.
223 Clause 5.3.3(5B) under Schedule 2 of the Amending Rule.

Standard access policy for designated network assets

A Primary TNSP's standard access policy for designated network assets must include the following information:[224]

- the pricing principles and the key terms which are proposed to apply to the provision of DNA services where such principles and terms are consistent with Schedule 5.12
- the extent to which the connection processes in Rule 5.3 are supplemented or modified by the access policy
- advice on the availability of commercial arbitration under Rule 5.5 in the case of a dispute
- the processes and mechanisms that the Primary TNSP will implement to protect the rights of existing users of a designated network asset (which may contemplate cost sharing from subsequent applicants who are seeking DNA services from that asset)
- the process by which a Primary TNSP will notify existing persons who have a connection agreement in respect of that designated network asset of new applicants who are seeking DNA services from that asset.

The first three of these requirements represent provisions either carried over directly from the existing rules relating to DCASP access policies or adapted to reflect the fact that the connection process will now be undertaken by the Primary TNSP (rather than the DCASP) and will therefore be based on the connection process set out in Rule 5.3.

The latter two requirements similarly stem from this change in the party administering access. Under the DCA framework, it was anticipated that the party administering access - the DCASP - and the first connected party would likely be the same entity or would be related parties. This will not be the case for designated network assets, where the Primary TNSP will take on the role previously performed by the DCASP.

Consequently, the more preferable draft rule includes an additional requirement on the Primary TNSP to include in its access policy, information about the process the Primary TNSP has to notify foundation connected parties when new applicants seek to connect.[225] It similarly requires the Primary TNSP to include information about the processes and mechanisms the Primary TNSP will implement in relation to the protection of users' rights and the sharing of costs, given that it may not otherwise have the same incentives to do so as a DCASP integrated with a connected party.[226]

The Commission considers that the Primary TNSP's costs of developing its access policy would be recouped over time through the charges it levies for the administration of access to designated network assets. This would be supported by principle 2 of the new S5.12, that the price for a DNA service should be such as to enable the Primary TNSP to recover the efficient costs of complying with all regulatory obligations or requirements associated with the provision of the DNA service.

224 Clause 5.2A.8(c)(1)-(5) under Schedule 2 of the Amending Rule.
225 Clause 5.2A.8(c)(5) under Schedule 2 of the Amending Rule.
226 Clause 5.2A.8(c)(4) under Schedule 2 of the Amending Rule.

Process for preparing, publishing and approval of an access policy

Within 4 months of the final rule being made, each Primary TNSP must submit its access policy to the AER for approval, after having developed and consulted on it publicly for at least 30 days.[227] Consistent with the current arrangements for large DCA access policies, the AER has the function of approving a Primary TNSP's access policy and variations to it, and enforcing compliance with an access policy.[228]

Prior to submitting its access policy for AER approval, the Primary TNSP needs to consult on its access policy for at least 30 days.[229] Once it has received submissions on the access policy, the Primary TNSP must prepare and publish a report that summarises the submissions received, sets out its response to the submissions and describes the amendments made to the access policy in response to submissions.[230]

The Primary TNSP must submit its access policy, as amended following consultation, to the AER for approval (along with the submissions received).[231] The AER is not required to consult on a Primary TNSP's access policy. Within 60 days of receiving an access policy, the AER must approve an access policy if it is reasonably satisfied that it is consistent with the minimum requirements for an access policy.[232] This will provide time for the AER to discuss and clarify any remaining open questions with the Primary TNSP.

If the AER does not approve an access policy submitted to it, the AER must notify the Primary TNSP of the changes required for it to be approved. If the AER and the Primary TNSP are unable to agree on the terms of the access policy within 60 days of notification, the AER has the power to make changes to a Primary TNSP's access policy to ensure an access policy is consistent with the minimum requirements for an access policy.[233]

The AER must give a copy of its decision to either approve or reject the access policy submitted by a Primary TNSP and:

- if the AER approves an access policy submitted by a Primary TNSP, it must provide the Primary TNSP with a copy of the decision stating that the AER made no changes to the access policy,[234] or
- if the AER does not approve an access policy submitted by a Primary TNSP and proposes an alternative access policy, it must provide the Primary TNSP with a copy of that decision, outlining the changes, and reasons for those changes, to the access policy.[235]

227 See clause 5.2A.8(e) under Schedule 2 of the Amending Rule and clause 11.xxx.5(b) under Schedule 5 of the Amending Rule.

228 Clause 5.2A.8(d) under Schedule 2 of the Amending Rule.

229 Clause 5.2A.8(e)(1) under Schedule 2 of the Amending Rule.

230 Clause 5.2A.8(e)(2)(i)-(iii) under Schedule 2 of the Amending Rule.

231 Clause 5.2A.8(g) under Schedule 2 of the Amending Rule and clause 11.xxx.5(c) under Schedule 5 of the Amending Rule.

232 Clause 5.2A.8(i) under Schedule 2 of the Amending Rule.

233 Clause 5.2A.8(i) under Schedule 2 of the Amending Rule. This aligns with the existing arrangements for large DCAs where, if a large DCA access policy is not approved within 6 months of the AER's notification of required changes, the AER may itself propose an access policy, see existing clause 5.2A.8(f) of the NER.

234 Clause 5.2A.8(k)(1) under Schedule 2 of the Amending Rule.

235 Clause 5.2A.8(k)(2) under Schedule 2 of the Amending Rule.

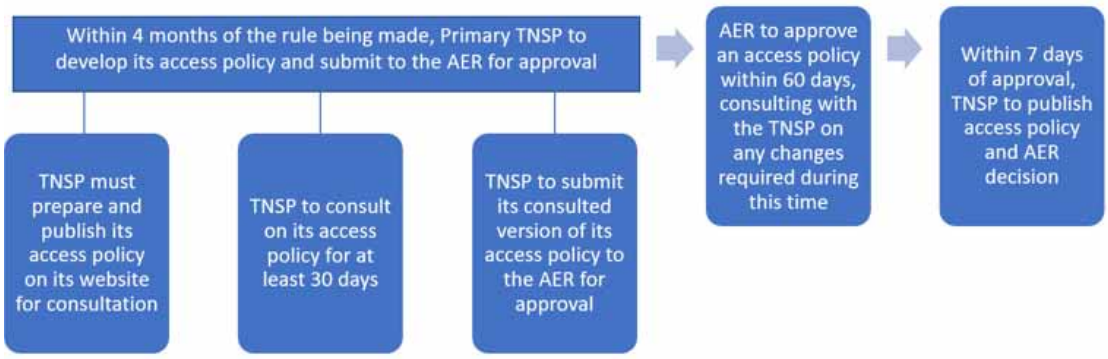
Within 7 days after the AER provides the Primary TNSP with it decision, the Primary TNSP must publish the following documents on its website:[236]

- a copy of the approved access policy
- a copy of the AER's decision for that access policy
- a copy of the submissions between the Primary TNSP and the AER on the access policy (as relevant).

A Primary TNSP's access policy (or variation thereof) takes effect on a date fixed in the AER's decision document to approve it.[237]

Figure 6.1 illustrates the standard process for developing, approving and publishing an access policy for a designated network asset.

Figure 6.1: Process for developing, approving and publishing access policies



Source: AEMC.

Ongoing process for varying an access policy

The more preferable draft rule provides that the Primary TNSP is responsible for maintaining, and seeking approval for variations to, its access policy for designated network assets.[238]

To vary its access policy, the Primary TNSP would be required to follow the process for consultation and approval set out above. The process would start with the Primary TNSP announcing the proposed changes and consulting on them.[239] By following the standard process, including consultation and AER approval, the process is likely to take between 4 and 5 months for any changes coming into effect (as the timetable would start when the Primary TNSP proposes the specific changes, rather than with the time required to develop the access policy).

236 Clause 5.2A.8(l)(1)-(3) under Schedule 2 of the Amending Rule and clause 11.xxx.5(d) under Schedule 5 of the Amending Rule.
237 Clause 5.2A.8(m) under Schedule 2 of the Amending Rule.
238 Clause 5.2A.8(h) under Schedule 2 of the Amending Rule.
239 Clause 5.2A.8(e) under Schedule 2 of the Amending Rule.

The Primary TNSP can make minor and administrative amendments (e.g. correction of minor or typographical errors) to the access policy without consultation.[240] However, any substantive changes that would affect any obligations of connected parties or the Primary TNSP itself would require the Primary TNSP to follow the standard process outlined above.

6.2.3 Dispute resolution mechanism

The more preferable draft rule provides that disputes relating to DNA services are subject to commercial arbitration under Rule 5.5 of the NER. This is consistent with the current approach for large DCA services, although the 'provider' of the service (as defined in Rule 5.5) that is party to the dispute would now be the Primary TNSP, as opposed to the DCASP, and the services provided are DNA services, as opposed to large DCA services.

The only other substantive amendments to Rule 5.5 are to note that:

- the terms and conditions of access in relation to DNA services include those determined under Chapters 4 and 5 of the
- Rules, in addition to the access policy[241]
- the commercial arbitrator must have regard to the legitimate business interests of both the Primary TNSP and any owner of the designated network asset, given the potential for these to be different parties.[242]

6.3 Conclusion

Having regard to the issues raised in the rule change request, the Commission considers the more preferable draft rule will, or is likely to, better contribute to the achievement the NEO than the current arrangements and the rule change proposal for the following reasons:

- The application of a special access regime for designated network assets will promote the efficient use of, and investment in, the transmission system by facilitating the sharing of transmission assets through third party access by new entrants, but in a way that is not detrimental to the interests of existing users.
- The protections provided under the regime will allow participants to invest with confidence with regard to their ability to earn a return on their investments, and avoid the free-rider issues that stifle market-participant funded augmentation under the open access regime that applies elsewhere on the transmission network.
- These outcomes are supported by provisions in the more preferable draft rule requiring the Primary TNSP to develop a standard access policy to give effect to the negotiating principles for access to large DNA services. In doing so, the Primary TNSP will be required to give specific consideration to matters, including the protection of users' access rights and the sharing of costs. This will increase transparency and certainty, allowing parties funding transmission assets and access seekers alike to make informed investment decisions.

240 Clause 5.2A.8(f) under Schedule 2 of the Amending Rule.
241 Clause 5.5.1(c)(1) under Schedule 2 of the Amending Rule
242 Clause 5.5.5(c)(3) under Schedule 2 of the Amending Rule.

7 CONTESTABILITY AND CONTRACTUAL ARRANGEMENTS

This chapter provides further detail on the more preferable draft rule with respect to the contestability and contractual arrangements for designated network assets. It sets out:

- the existing contestability and contractual arrangements for the provision of transmission services related to a connection
- the contestability arrangements for designated network assets
- the contractual arrangements to support these contestability arrangements
- how the more preferable draft rule will better contribute to the achievement of the NEO in this regard.

7.1 Current contestability and contractual arrangements

The current framework for transmission connections was established through the 2017 TCAPA Rule. It clarified the regulation of transmission services required to facilitate a connection, in part by classifying these as contestable and non-contestable services.[243] Clause 5.2A.4 of the NER specifies these different services for DCAs and IUSAs, and sets out how they are regulated.

7.1.1 Contestability of services for DCAs

Currently, all activities associated with the provision of DCAs are fully contestable, including design, construction, ownership, and operation and maintenance. A connecting party can either provide the services itself, or choose its preferred service provider (e.g. the Primary TNSP, a generator, a government or a firm looking to invest in renewable energy) to construct, own and operate these assets on commercial terms. Consequently, there is:

- no obligation on any party, including the Primary TNSP, to offer these services, and
- no regulated framework for the setting of price and non-price terms and conditions for the provision of these services.

7.1.2 Contestability of services for IUSAs and required contractual arrangements

Services provided by IUSAs are classified as either a non-contestable service that the Primary TNSP has an obligation to provide and must negotiate to do so as a negotiated transmission service, or as a contestable service that can be provided by any party on commercial terms.

The services of *detailed design, construction and ownership* are contestable transmission services. The services of setting the functional specification, providing cut-in works as well as operation and maintenance are non-contestable transmission services.

243 See: AEMC, *Transmission connection and planning arrangements,* Rule determination, 23 May 2017, sections 4.2.1 and 4.4.1.

Table 7.1 provides an overview of the transmission service classification and contestability set out in clause 5.2A.4 of the NER. Each of these services are discussed in further detail in the sub-sections that follow.

Table 7.1: Transmission service classification and contestability for IUSAs

ASSET	SERVICE	EXAMPLE OF SERVICE	CLASSIFI-CATION
Transmission network including IUSA	Functional specification	Specification of: • preferred equipment supplier • preferred equipment • land/access requirements • design specifications • single line diagram • remote monitoring and communication requirement • protection, control and metering requirements • minimum operating conditions • supervisory control and data acquisition system interface requirements • equipment ratings • equipment protection ratings • spare part itineraries	Non-contestable
IUSA	Detailed design	Provision of: • site plan • asset layout and configuration • the specification of vendor equipment • civil, structural, mechanical and electrical detailed design • issued for construction drawings • as built drawings • tender specifications • cable schedules • protection settings • applicable technical studies • earthing design • the design of lightning protection	Contestable

ASSET	SERVICE	EXAMPLE OF SERVICE	CLASSIFI-CATION
		• the design of insulation co-ordination consistent with the functional specification.	
Transmission network	Cut-in works	Interface works which cut into the existing shared transmission network, these may include tower realignment, protection control and communication requirements	Non-contestable
Contestable IUSA components	Construction/ownership of contestable IUSA components	Construction and/or ownership of a substation	Contestable
Non-contestable IUSA components	Construction/ownership of non-contestable IUSA components	Installation and ownership of supervisory control and data acquisition systems and cabling forming part of the Primary TNSP's control system	Non-contestable
IUSA owned by the Primary TNSP	Control, maintenance and operation	Primary TNSP provides operation and maintenance services	Non-contestable
Third party IUSA	Control, operation and maintenance under a NOA	See Clause 5.2A.7	Non-contestable
DCA	All development aspects	Design, construction, maintenance and ownership of a power line connecting a facility	Contestable

Source: Clause 5.2A.4 of the NER.

Functional specification and cut-in works - non-contestable

The current arrangements for IUSAs require that any services associated with setting the functional specification and providing cut-in works must be provided by the Primary TNSP as negotiated transmission services.[244] This is because the Primary TNSP is best placed to provide the cut-in (or interface) works required to facilitate the connection of new assets to its transmission network, as it can manage the provision of these works in a way that will not affect the service that end-use customers receive.

Functional specification refers to setting the minimum technical parameters for a connection to the network, which enables the Primary TNSP to manage the safety, reliability and security of its transmission network. The purpose of a functional specification is for the Primary TNSP to set out the minimum service requirements that an IUSA must meet. It is not intended to

244 Nothing in the Rules prevents the Primary TNSP from using sub-contractors to provide these services.

define specific assets, but rather the services and level of performance that an IUSA needs to deliver and the network conditions that it will need to withstand.

By the means of functional specification, the Primary TNSP can specify its preferred equipment and preferred equipment suppliers, but the connecting party is not required to take up these options. However, doing so may result in lower operation and maintenance costs, for example if the Primary TNSP considered that the proposed suppliers or proposed equipment were less risky than the connecting party selecting other equipment or equipment suppliers.

Detailed design and construction - contestable

In the final determination for the TCAPA Rule, the Commission presented analysis suggesting that construction costs are the largest driver of overall connection costs, and that contestability in both the detailed design and construction of IUSAs has significant potential to reduce these costs.[245] Likewise, competition for the provision of detailed design services has the potential encourage innovation in the way IUSAs are built to meet the Primary TNSP's functional specification.

Arrangements for the provision of these services are to be agreed between the connecting party and its chosen service provider on a purely commercial basis. The NER do not provide any specification regarding these commercial arrangements. However, the Rules do specify that a connection applicant's detailed design for contestable components of an IUSA must be consistent with the Primary TNSP's functional specification,[246] and must not unreasonably inhibit the capacity of future expansion of the IUSA or preclude the possibility of future connections.[247]

Before commissioning, the Primary TNSP must ensure that contestable IUSA components are built to the standards specified in the functional specification. The connection applicant must provide access to the Primary TNSP to make inspections, and agree to such tests, as is reasonably required for that purpose. The connection applicant must pay the reasonable costs of inspections and tests for the IUSA which are reasonably required by the Primary TNSP.[248]

Ownership - contestable

Ownership of an IUSA is a non-regulated transmission service. Under the NER, an IUSA forms part of the Primary TNSP's transmission network rather than being a transmission system itself (unlike DCAs, which are defined as transmission systems for the purposes of registration under Chapter 2 of the NER). As a consequence, the owner of an IUSA is not required to be registered (or exempt) with respect to that asset. However, a party (other than the Primary TNSP) who owns an IUSA (referred to as a 'third party IUSA') is subject to the following:

245 AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, p. 147.
246 Clause 5.3.4(b1)(1) of the NER.
247 Clause 5.3.4(b1)(2) of the NER.
248 Clause 5.7.8 of the NER.

- **Ownership restriction**: A person who owns a third party IUSA must not own, operate or control a generating system or facility that uses electrical energy (i.e. load) that is connected to that IUSA, or be a related entity of a person who owns, operates or controls a generating system or load connected to that third party IUSA.[249]
- **Requirement to have a NOA**: A person must not commission, or permit the commissioning of, a third party IUSA unless there is a NOA between the owner of that third party IUSA and the Primary TNSP.[250]

Ownership restriction

In the final determination for the TCAPA Rule, the Commission noted that it considered that allowing a generator or load, or a related entity of that generator or load, to own a transmission asset which connects it to the shared transmission network could raise competition concerns. For example, a generator who owned an IUSA may have the ability to exert influence over the Primary TNSP's granting of access to that asset to competing generators by contractual means (i.e. outside the NER framework), which could not be tested or be required to be made public due to the confidential and private nature of such contracts.[251]

The rationale underlying this obligation was to preserve competitive neutrality and the principles of an open access framework by limiting any incentive a generator or load connected to an IUSA, or a related entity of that generator or load, may have to prevent or frustrate another party's access to the transmission network through ownership of an IUSA.

Requirement to have a NOA

As an IUSA is not a transmission system in or of itself, there is consequently no requirement for the owner of that asset to register (or be exempted) in respect of that asset, since a third party IUSA forms part of the Primary TNSP's transmission network, for which the Primary TNSP is already registered.[252]

As a party other than the Primary TNSP may still own an IUSA, any third party (i.e. any party other than the Primary TNSP) who owns an IUSA must have a NOA with the Primary TNSP.[253] The NOA needs to be in place before commissioning of the IUSA. Under the NOA, the operation, maintenance and control of that IUSA is provided by the Primary TNSP. This enables the Primary TNSP to continue to have control over its whole transmission network, including the contestable components of the IUSA that form part of its network.

Accordingly, third party ownership of an IUSA is passive in nature. A third party owner does not have any role in making decisions about operation, maintenance or control of the asset, as these responsibilities lie with the Primary TNSP. For example, under the NER, a contestable owner is not required to agree to the replacement of assets before this is

249 Clause 5.2A.7(e) of the NER.
250 Clause 5.2A.7(a) of the NER.
251 AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, pp. 155-156.
252 See definition of 'transmission network' under Chapter 10 of the NER.
253 Clauses 5.2A.7(a)-(d) of the NER.

undertaken by the Primary TNSP. Further, the Primary TNSP administers access to the IUSA in line with the open access regime and the connections process under Rule 5.3 of the NER.

Operation and maintenance - non-contestable

The NER provide that the Primary TNSP must operate and maintain an IUSA (whether this is a third party IUSA or owned by the Primary TNSP).

Operation and maintenance of third party IUSAs - requirement to have a NOA

If the owner of the IUSA is not the Primary TNSP, that third party owner is required to have a NOA with the Primary TNSP, negotiated in accordance with the principles set out in Schedule 5.11 (*Negotiating principles for negotiated transmission services*) of the NER.[254] The term of the NOA must be for a time which is at least equal to the term of the longest connection agreement of a member of the initial identified user group for the third party IUSA.[255] The NOA also needs to include the terms and conditions set out in Part B of Schedule 5.6 (*Terms and Conditions of Connection agreements and network operating agreements*) of the NER and provide for the Primary TNSP to:[256]

- have operation and control of the third party IUSA (including the rights and obligations to maintain the asset) for an agreed charge or based on an agreed charging methodology
- have an option to purchase the third party IUSA at fair market value at the expiry or early termination of the NOA
- alter, replace or augment the third party IUSA
- have the right to connect other persons to the third party IUSA in accordance with the NER
- have unrestricted use of, and access to, the third party IUSA
- treat the third party IUSA as forming party of the Primary TNSP's transmission network in all material respects and provide transmission services to any transmission network user[257] in accordance with the NER.

These conditions aim to ensure the Primary TNSP can operate and maintain an asset that it did not design or build. By setting the functional specification and being responsible for operation and maintenance of any IUSA, the Primary TNSP can ensure that an IUSA interfaces safely, reliably and securely with the rest of the transmission network.

The Rules require a connection agreement and a NOA to be in place, with the latter only being required if the IUSA is contestably owned. The Rules do not contain any further specification regarding any other contractual arrangements that may be needed, e.g. in the context of contestable construction of the IUSA or with regard to the relationship between the owner of the IUSA and a connecting party.

---

254 Clause 5.2A.7(b)(3) of the NER.

255 Clause 5.2A.7(c) of the NER.

256 Clause 5.2A.7(d) of the NER.

257 'Transmission network user' is defined under Chapter 10 of the NER "In relation to a transmission network, a Transmission Customer and: (a) a Generator whose generating unit; (b) a Network Service Provider whose network; (c) to the extent that a Dedicated Connection Asset Service Provider is not also one of the persons listed above, a Dedicated Connection Asset Service Provider whose dedicated connection asset, is connected to the transmission network."

Recovery of the costs related to operation and maintenance of an IUSA

Depending on whether an IUSA is owned by the Primary TNSP or by a third party, differences exist in relation to who pays the costs for operation and maintenance services for the assets.

TNSPs' standard generator connection agreements generally refer to charges for services to be provided by the TNSP, so called 'entry services'.[258] These 'entry services' broadly refer to:[259]

1. the provision of capability at the connection points to enable transmission network users to:
   - deliver electricity to the TNSP's transmission network at the connection point
   - take delivery of electricity from the TNSP's transmission network at the connection point up to the agreed maximum capability
2. the management, maintenance and operation of the TNSP's assets (and any third party IUSA) associated with each connection point to provide the capability under (1).[260]

The Rules require that, under a NOA, the owner of a third party IUSA must provide for the Primary TNSP to have operation and control of that IUSA (including rights to maintain that asset) for an agreed charge or based on an agreed charging methodology.[261]

The cost-sharing provisions under Schedule 5.11 (*Negotiating principles for negotiated transmission services*) of the NER allow for an adjustment of costs related to the provision of a negotiated service, e.g. operation and maintenance through the Primary TNSP, if the asset is used to provide services to another network user. The adjustment of costs for operation and maintenance paid for by the first connecting party (in the case of a TNSP owned IUSA) or the IUSA owner (in the case of a third party IUSA) should reflect the extent to which the costs of that asset is being recovered through charges to a subsequent network user.[262]

The Rules do not provide a cost-sharing framework for contestable services. At the time of the TCAPA final rule determination, the Commission's view was that, as the basis for determining the price of a non-regulated, (i.e. contestable) service is not regulated by the NER, it would also not be appropriate for the NER to contain obligations on parties regarding the provision of contestable services.[263]

---

258 For a load connection the charges for services to be provided by the TNSP are referred to as 'exit services'.

259 See, for example, the standard transmission connection agreements from ElectraNet (Schedule 3, item 2), TasNetworks (Schedule 2) and TransGrid (clause 2.3).

260 A connecting party would, by means of the connection agreement with the Primary TNSP, also agree to pay other charges for services provided by the Primary TNSP, e.g. metering services.

261 Clause 5.2A.7(d)(1) of the NER.

262 Principle 6 of Schedule 5.11 of the NER.

263 The Commission acknowledged that the lack of a cost sharing framework could lead to some unintended outcomes, e.g. create a first mover disadvantage, provide an incentive for connecting parties to connect to existing substations that were constructed contestably by a third party, or create an incentive for parties to build IUSAs that are not contestable. However, the Commission considered the complexity of the issues that would need to be resolved in the context of developing a cost sharing framework for contestable services would outweigh the benefits. For a detailed discussion of the issues identified see: AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, pp. 177-180.

Contestability threshold

'Monetary' and 'separability' limb of the contestability threshold

In the context of IUSAs, a contestability threshold of $10 million exists.[264] This means that the Primary TNSP *must* provide the services of detailed design, construction and ownership as a negotiated transmission service only if the capital cost of all components of the IUSA is reasonably expected to be $10 million or less. If the capital cost of all components of the IUSA is reasonably expected to be greater than $10 million, the services of detailed design, construction and ownership of each component of the IUSA are non-regulated transmission services and can be provided on a contestable basis to the extent the relevant component satisfies the following criteria:

- the components being constructed are new or a complete replacement of existing assets (and do not involved the reconfiguration of existing assets)
- the detailed design and construction of the relevant component of the IUSA is separable in that the new component will be distinct and definable from the existing transmission network.

The Primary TNSP must determine whether each component of the IUSA meets these two criteria. In the event that the parties do not agree on whether the asset meets or does not meet the criteria, the Rules provide for either party to engage an independent engineer to provide technical advice on the matter.[265] Further, if parties do not agree with the Primary TNSP's assessment, the possibility exists to raise a formal dispute under the commercial arbitration provisions set out in the NER.[266]

Rationale for the contestability threshold under the 2017 TCAPA Rule

In the final determination for the TCAPA Rule, the Commission noted that, in some circumstances, it is neither feasible nor practicable for the services of detailed design, construction and ownership to be provided on a contestable basis:[267]

- **Interface issues may arise at existing substations** if a connection to the transmission network occurs via an existing substation rather than building a new substation. At the time, stakeholders suggested that connecting parties are increasingly seeking connection to the transmission network via an existing substation, as opposed to building a new substation. However, the construction of new assets within an existing substation is complicated as this may mean interfacing with live transmission equipment that forms part of the shared transmission network. Such an approach would increase risks for the Primary TNSP, which is accountable for outcomes on that network. The presence of both a contestably-appointed service provider and the Primary TNSP would be an unnecessary duplication of resources, potentially resulting in increased costs.

264 Clause 5.2A.4 of the NER.
265 Clause 5.4.1(b)(3) of the NER.
266 Clause 5.1.2(f)(3) of the NER.
267 AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, pp. 163-164.

- **The costs and benefits of having some services opened to contestability may be relatively low** in some cases, such as connection to an existing substation, i.e. a brownfield connection. The costs of establishing a new IUSA at that substation would be relatively low compared to establishing a new substation, i.e. a greenfield connection. On this basis, the Commission considered it unlikely that many providers would have a strong incentive to provide the detailed design, construction and ownership for these assets, and that there may be limited benefits in allowing contestability in the provision of these services for these types of assets.
- **If equipment is embedded deep in the meshed network**, e.g. communications equipment may need to be upgraded or installed at a location that is located some distance away from the point where a party is connecting. Such equipment needs to be able to interface with existing communications equipment, and needs to be installed in a controlled environment because it has implications for the safe, reliable and secure supply of electricity to end-use consumers. Access to the site at which that equipment is located may also be an issue, as could compatability with that equipment if the upgrade or replacement is being undertaken by a party other than the party who originally arranged its installation.

Further, both the 'monetary' limb and 'separability' limb are consistent with the existing Victorian arrangements, which also use a $10 million threshold and 'separable augmentation' criterion for contestability.[268]

7.2 Contestability arrangements for designated network assets

Chapter 4 of this draft rule determination sets out the objectives that underpin the design of the new framework for designated network assets. One of the objectives was maintaining contestability as far as possible.

As designated network assets form part of the transmission network, changes are required to the current contestability arrangements for the provision of transmission services. Making them part of the network requires the Primary TNSP to be the party responsible for the functional specification and operation and maintenance of the assets, as the Primary TNSP is accountable for outcomes on the shared network. This means that it is not possible to make the provision of designated network assets subject to full contestability.

This is a change to the existing arrangements for large DCAs, established by the TCAPA Rule. Whilst currently all DCAs – small and large, i.e. with a length of less than 30km and with a length of 30km and more – are fully contestable assets, under the more preferable draft rule only small DCAs would continue to be DCAs and as such be fully contestable.

This outcome is an inevitable consequence of facilitating the creation of TNCPs by treating the assets in questions as part of the transmission network and, on balance, the Commission considers that it is justified by the changing nature of DCAs. At the time the TCAPA Rule was made, DCAs were mainly used to connect one party to the shared transmission network, but connecting parties now show greater interest in sharing DCAs. Further, DCAs are also

268 AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, p. 165.

anticipated to become increasingly complex and material in terms of their length and size, i.e. amount of generation capacity connected, and consequently their complete disconnection could have significant effects on power system security.

However, under the more preferable draft rule, designated network assets are able to be designed, constructed and owned on a competitive basis. These contestability arrangements are based on those that currently apply for IUSAs, but the more preferable draft rule removes the two restrictions previously discussed that currently act to limit the scope for competition.

7.2.1 Contestability of services for funded network assets

Primary TNSP to set the functional specification for, and operate and maintain, funded network assets as a negotiated service

The Commission considers it essential that the Primary TNSP controls, operates and maintains all assets that form part of its network. As discussed in chapter 4, the more preferable draft rule makes it clear that the transmission network will consist both of assets paid for by consumers through prescribed TUOS charges and assets paid for by market participants, referred to as 'funded network assets'.

The current arrangements for the contestability of transmission services that apply to third party IUSAs will also apply to designated network assets through the application of these arrangements (with some amendments, as discussed below) to all funded network assets.[269]

As a result, the services of functional specification and operation and maintenance (including control and data acquisition systems) of funded network assets must always be provided by the Primary TNSP as a negotiated service. The services of detailed design, construction and ownership could be provided by any party on a contestable basis (including by the Primary TNSP), provided it meets the 'separability' limb of the contestability threshold.[270]

If a funded network asset is owned by a party other than the Primary TNSP, the Primary TNSP must operate the asset under a NOA.[271]

The Commission notes the similarity between the concept of a 'funded network asset' and the existing framework for 'funded augmentations' in the rules. A funded augmentation generally relates assets paid for a market participant installed on the transmission network to relieve a constraint.

In principle, it would be possible to integrate the two concepts, so that all assets on the transmission network paid for by market participants would be treated in the same way. An implication of this approach would be to make funded augmentations subject to the same contestability arrangements as funded network assets. The Commission would welcome stakeholder views on this matter.

269 Clause 5.2A.4 under Schedule 2 of the Amending Rule.

270 Clause 5.2A.4(b) under Schedule 2 of the Amending Rule. Discussed in further detail under section 7.2.2.

271 Section 7.3 provides further detail on the proposed contractual arrangements to support the contestability arrangements.

Continued application of the existing cost-sharing arrangements for negotiated services

Under the more preferable draft rule, the current arrangements for the sharing of costs associated with the provision of negotiated transmission services will apply in their current form to all funded network assets, including to designated network assets. Accordingly, the Rules will continue to provide for cost sharing and pricing principles with regard to the costs resulting from the provision of negotiated transmission services.[272]

The Commission considers the complexities related to the design and application of a cost-sharing framework for costs resulting from the provision of contestable services still apply, as identified in the TCAPA Rule determination.[273] As such, the Commission does not consider that the Rules should provide for a cost-sharing framework in relation to the contestable components of funded network assets.[274]

7.2.2 Removing the 'monetary' limb from the contestability threshold

The more preferable draft rule removes the $10m 'monetary' limb from the current contestability threshold for IUSAs and maintains only the 'separability' limb, applying this for all funded network assets.

The Commission considers the 'separability' limb remains appropriate because it is important that the Primary TNSP continues to have singular accountability for outcomes on the shared transmission network. This requires that only assets that are separable, distinct and definable from the existing transmission network, e.g. which would not result in interface issues at existing substations, should be open for contestable provision.[275]

However, with regard to the 'monetary' limb, the more preferable draft rule departs from the position taken in the TCAPA Rule. In the Commission's view, the main justification for removing the monetary limb is that a cost-sharing framework is currently applied only for costs that occur through the provision of a negotiated transmission service.

Maintaining the monetary threshold would mean that, where the total cost is:

- $10 million or less, such that the service must be provided as a negotiated transmission service, all costs related to that asset, including the costs for detailed design, construction and ownership, could be shared when a subsequent party seeks to connect to the asset.
- greater than $10 million, such that many of the services (detailed design, construction and ownership) are non-regulated transmission services and can be provided on a contestable basis, only the costs for cut-in works, functional specification and operating and maintenance could be shared when a subsequent party seeks to connect to the asset.

The Commission sees little reason to impose a cost sharing mechanism that applies only to low cost assets but not to higher cost assets.

---

272 As specified under Schedule 5.11 of the NER.

273 For a detailed discussion of the issues identified see: AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, pp. 177-180.

274 The potential for cost-sharing mechanisms for DNA services is discussed in chapter 6.

275 Clause 5.2A.4(b) under Schedule 2 of the Amending Rule.

Further, the Commission has reconsidered a position it put forward in the TCAPA final determination – that parties are increasingly seeking to connect to the transmission network via an existing substation and that, because the costs of establishing such a connection would be relatively low compared to establishing a new substation, there are unlikely to be strong incentives on potential providers to deliver the detailed design, construction and ownership for these assets.[276]

The Commission recognises that, where contestability is unlikely and competitive pressures are low, there may be benefits to requiring Primary TNSPs to provide services as negotiated services, rather than on an unregulated basis. However, the Commission has determined, on balance, to take a different approach in this draft determination, and to allow for contestability to the extent this is likely. Stakeholder feedback on this matter would be welcome.

7.2.3 Removing the ownership restriction

The more preferable draft rule also removes the ownership restriction that currently applies in the context of third party IUSAs, and this applies to all funded network assets (i.e. both IUSAs and designated network assets).

Under the current framework for DCAs, no ownership restriction applies, i.e. a connecting party can also own the DCA. This is different to the current framework for IUSAs where an ownership restriction applies in that a connecting party (or a party related to the connecting party) cannot own the IUSA.[277]

Under the designated network assets framework created by the more preferable draft rule, ownership would be passive in nature. The Primary TNSP has full control over the asset by operating it under an NOA, including administering access to the asset through the access policy. As a result, under the these arrangements, only the funding party has a direct contractual relationship with the owner of the asset. This commercially negotiated contract would provide for and outline the build and technical envelope of the designated network asset and all associated timeframes for construction of the asset.

The costs for operation and maintenance of the designated network asset are paid for by the owner of the asset to the Primary TNSP under the NOA. The owner of the asset would be expected to pass on the costs for operation and maintenance to the funding party with which it has a contract. Any connected party, through its connection agreement with the Primary TNSP, pays charges for entry services (or exit services in the case of load) to the Primary TNSP. Accordingly, any subsequently connecting party only has a connection agreement with the Primary TNSP, who administers access to the designated network asset, but does not have a contractual relationship with the owner of the asset.

Given this passive ownership structure, with the Primary TNSP administering access to the asset, the Commission considers the risk is low of a party owning a funded network asset

276 See AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, p. 164.

277 Clause 5.2A.7(e) of the NER.

being able to exert influence over the Primary TNSP's ability to grant competing parties access to that asset.

On balance, the Commission considers that the restriction is likely to be disproportionate, and that there is therefore a good case for removing the ownership restriction for funded network assets in general. In addition, this would also create consistency between the different types of assets that are operated by the Primary TNSP – IUSAs and designated network assets – and thereby ensure less complexity and clarity for connecting parties.

Further, maintaining the ownership restriction would have the effect of de facto further reducing contestability in the provision of transmission services. Preventing the connecting party from owning the asset would effectively restrict the pool for potential designated network asset providers to TNSPs' affiliates, i.e. the 'contestable arm' of TNSPs' businesses, unless a market for funded network asset providers develops. The Commission therefore considers that removal of the restrictions is likely to materially increase the competitive pressure on Primary TNSPs for the provision of the services that are contestable.

7.3 Contractual arrangements for designated network assets

Under the more preferable draft rule, the current contractual arrangements requiring a NOA for third party IUSAs also apply to designated network assets to facilitate a model of contestable ownership and non-contestable operation and maintenance.

7.3.1 Requirement to have a NOA

To facilitate contestable asset ownership, the more preferable draft rule requires the owner of a designated network asset to have an NOA with the Primary TNSP.[278] Under this approach:

- the Primary TNSP is responsible for preparing, maintaining and publishing a standard NOA for funded network assets (or this could be multiple standard NOAs for the different types of assets - IUSAs and designated network assets - that are subsumed under the concept of funded network assets) that are owned by a party other than the Primary TNSP[279]
- if the Primary TNSP develops one standard NOA for funded network assets (and not individual ones for the different types of assets) that standard NOA would need to account for specific provisions in the case of a designated network asset, namely the requirement to develop a methodology for the allocation of settlement residues.[280]

In terms of the requirement to have a NOA for third party owned funded network assets, the NOA will be largely consistent with the existing arrangements for third party IUSAs in that it would be:

- negotiated in accordance with the negotiating principles[281]

278 Clause 5.2A.7 under Schedule 2 of the Amending Rule.
279 Clause 5.2A.2(b)(5) of the NER and Schedule 5.10 under Schedule 2 of the Amending Rule.
280 Schedule 5.6, Part B, paragraph (h) under Schedule 2 of the Amending Rule.
281 Clause 5.2A.7(c)(3) and Schedule 5.11 under Schedule 2 of the Amending Rule.

- include terms and conditions consistent with Part B of Schedule 5.6 (*Terms and conditions of connection agreements and network operating agreements*) of the NER[282]
- the term of the NOA must be for a time which is at least equal to the term of the longest connection agreement of a member of the initial identified user group for the designated network asset[283]
- the NOA must provide for the Primary TNSP to:[284]
    - have operation and control of the funded network asset (including the rights and obligations to maintain the asset) for an agreed charge or charging methodology
    - have an option to purchase the funded network asset at fair market value at the expiry or early termination of the NOA
    - alter, replace or augment the funded network asset
    - have the right to connect other persons to the funded network asset in accordance with the NER, i.e. in the case of a designated network asset in line with the special access regime for designated network assets
    - have unrestricted use of, and access to, the funded designated network asset
    - treat the funded network asset as forming part of the Primary TNSP's transmission network in all material respects.

The more preferable draft rule adds two further requirements associated with the access policy (see section 6.2.2) and the arrangements for the settlement residues accruing from the application of marginal loss factors at TNCPs (see section 5.2.5). These are that the NOA must provide for the Primary TNSP to distribute to the owner of the designated network asset, in accordance with methodologies to be developed by the Primary TNSP, any:[285]

- relevant amounts that the Primary TNSP has collected from connection applicants for connection to the designated network asset in accordance with the access policy
- settlement residues accrued on the designated network asset.

Figure 7.1 below illustrates the indicative contractual arrangements that could apply for designated network assets under the contestability provisions in the more preferable draft rule:

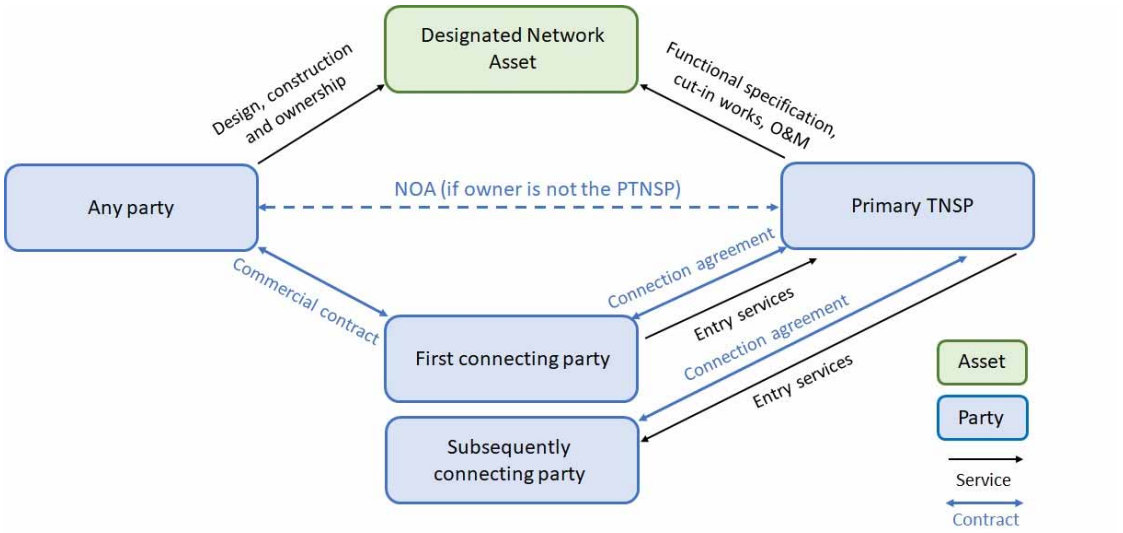
282 Clause 5.2A.7(c)(2) under Schedule 2 of the Amending Rule. These are amended to account for the differences between NOAs for IUSAs and designated network assets, e.g. to reflect the requirement for the Primary TNSP to develop and apply a methodology for distributing residues associated with the use of marginal loss factors to designated network owners (see the section on loss factors under chapter 5 for more detail).

283 Clause 5.2A.7(d) under Schedule 2 of the Amending Rule.

284 Clause 5.2A.7(e)(1)-(6) under Schedule 2 of the Amending Rule.

285 Clause 5.2A.7(e)(7) under Schedule 2 of the Amending Rule

Figure 7.1: Indicative contractual arrangements for designated network assets



Source: AEMC.

The dashed line referring to the NOA is only be in place if the owner of the designated network asset is not the Primary TNSP. That is to say that, if the Primary TNSP is also the owner of the asset, there would be no need for an NOA. It would be up to the Primary TNSP and the connecting party to determine whether a separate commercial contract would be entered into in regards to the services provided by the Primary TNSP on a contestable basis, or whether these would all be wrapped up in the connection agreement or some other contract.

7.3.2 Arrangements in the case of multiple asset owners

The framework for designated network assets allows for the 'expansion' of an existing designated network asset in cases where a party seeking connection to a designated network asset is located more than 30km away from an existing designated network asset. This would be required because assets including power lines with a total route length of 30km or more will not be permitted to be DCAs, and must instead be designated network assets.

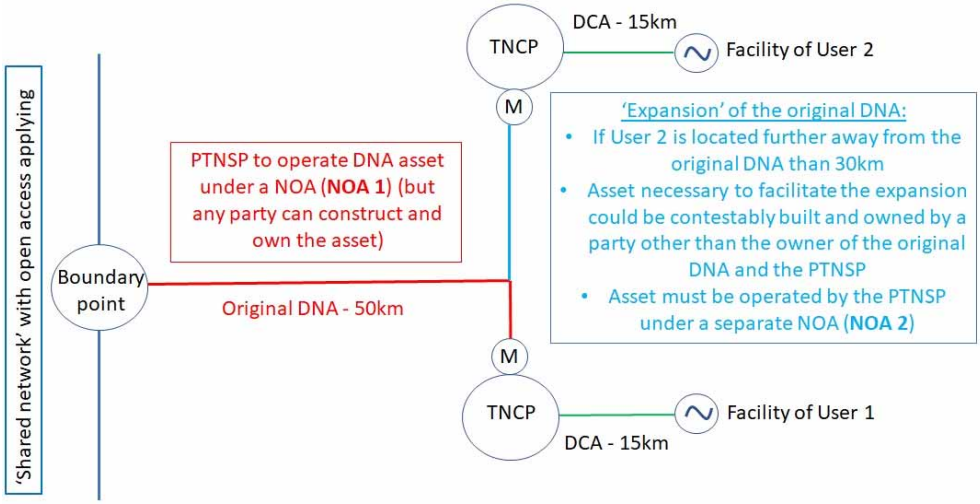
Similarly, the capacity of a designated network asset might be augmented without expanding its footprint. Such increased capacity might be provided by the installation of an additional transformer in a substation or by the duplication of an overhead line, for instance.

The standard contestability arrangements apply to expansions or augmentations of this nature. This would mean that the Primary TNSP, the original contestable asset owner, or any other party could design, construct and own the contestable components of the additional assets. Such augmentation, e.g. the installation of an additional transformer, would be

contestable to the extent that it is separable from the existing asset in line with contestability threshold.[286]

The original asset owner would already have a NOA with the Primary TNSP (i.e. NOA 1). If the assets forming the expansion or augmentation are owned by a different party, the owner of those assets is also required to enter into a NOA with the Primary TNSP (i.e. NOA 2). Figure 7.2 illustrates what such a configuration could look like.

Figure 7.2: Expansion owned by a different party than the original owner



Source: AEMC.

Importantly, there can only ever be one 'designated network asset' behind a boundary point. However, the framework allows for there to be multiple asset owners, so that the designated network asset can develop over time and so that contestability is facilitated at each stage of this development. By allowing Primary TNSPs to operate a designated network under one or multiple NOA(s), the Commission's intention is not to determine or prevent any specific configurations of designated network assets.[287]

7.4 Conclusion

Having regard to the issues raised in the rule change request, the Commission considers the more preferable draft rule will, or is likely to, better contribute to the achievement of the NEO than the current arrangements and the proposed rule for the following reasons:

- Operation of designated network assets - which are likely to represent complex and substantive parts of the network - by Primary TNSPs will support the reliable, safe and

286 See clause 5.2A.4(b) under Schedule 4 of the Amending Rule.

287 Noting that designated network assets are required to be radial give effect to the access protections discussed in chapter 6.

secure operation of the transmission system. TNSPs are also likely to be able to plan the development of their transmission networks, and material additions to those, in a more coordinated and holistic manner.

- To achieve the above outcomes however, requires certain services - namely setting of the functional specification and operation and maintenance - of designated network assets to be provided by Primary TNSPs as negotiated transmission services. While this represents a reduction in contestability as compared to the arrangements for large DCAs, the Commission considers that, on balance, this is warranted.
- The detailed design, construction and ownership of designated network assets can be contestable activities. Contestability in these areas could help to lower capital costs for investors and thereby promote efficient investment in electricity services. This would be supported through the changes made by the more preferable draft rule to:
  - remove the $10m 'monetary' limb from the current contestability threshold for IUSAs and only maintain the 'separability' limb for all funded network assets, and
  - remove the ownership restriction that currently applies in the context of third party IUSAs, so that no such restriction would apply to both types of funded network assets going forward.

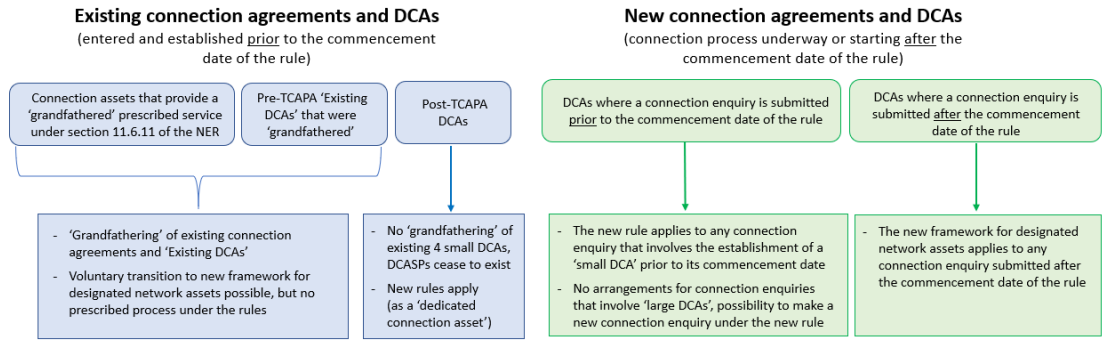
8 IMPLEMENTATION AND SAVINGS AND TRANSITIONAL PROVISIONS

This chapter outlines:

- the commencement date for the new rule and the savings and transitional provisions, including the steps that will need to be undertaken by industry and market bodies prior to the commencement of the rule
- the approach to 'grandfathering' of existing DCAs and connection agreements
- the approach to connection enquiries underway and new connections.

Figure 8.1 below provides an overview of the approach to implementation and savings and transitional arrangements.

Figure 8.1: Implementation and savings and transitional arrangements



Source: AEMC.

8.1 Commencement and implementation of the new framework

The savings and transitional provisions will commence on or about the day the final rule is made ("publication date") and the substantive parts of the rule will commence approximately **6 months** after that date ("commencement date").

The connection arrangements that were introduced under the AEMC's 2017 TCAPA Rule do not apply in Victoria, and likewise, the framework for designated network assets introduced by the more preferable draft rule will also not apply in Victoria.

Before the commencement date, several parties must undertake a number of steps to ensure readiness and compliance with the new requirements:

- Connecting parties will need to familiarise themselves with the new arrangements.
- Primary TNSPs will need to review and update their internal systems, procedures and/or standard documentation to reflect the new arrangements.

- Primary TNSPs will need to amend their standard NOA to account for the new arrangements for funded network assets owned by a party other than the Primary TNSP (or create separate standard NOAs for designated network assets and IUSAs).
- Primary TNSPs will need to develop an access policy that could apply to any designated network asset that forms part of their network. The process by which they do this will be the same as the process required on an ongoing basis, which includes public consultation and submission to the AER for approval.[288] This includes:
  - the Primary TNSP must consult on its proposed access policy for at least 30 days
  - following consultation, the Primary TNSP must prepare a report that summarises submissions, set out its response to each of those and describes the relevant amendments made in response to submissions and explanations for each of those
  - the Primary TNSP must submit the access policy, and copies of submissions received during consultation, to the AER for approval
  - the AER must approve an access policy within 60 days of receiving it and may make changes to the access policy in order to do so
  - the AER must give its decision to the Primary TNSP and the Primary TNSP must publish on its website the approved access policy, the AER's decision and where relevant, submissions between the AER and Primary TNSP.
- AEMO will need to abolish its *NEM Dedicated Connection Asset Classification Guide*,[289] regarding registration as a DCASP to reflect that only small DCAs (with a length of less than 30km) will be captured by the concept of DCAs and there will no longer be a registered participant category for DCASP.[290]
- The AER will need to amend and publish the *Electricity Network Service Provider Registration Exemption Guideline*[291] to take account of the Amending Rule.[292] Under the TCAPA Rule, DCAs were defined as 'transmission systems' for the purposes of registration, thereby triggering the requirement under section 11(2) of the NEL and clauses 2.5.1(a) and (d) of the NER to register (or be exempt) in relation to that DCA. The registered participant category of DCASP was created for this purpose. Under the more preferable draft rule, DCAs are no longer defined to be 'transmission systems' for the purposes of registration (and instead, are connection assets only) and therefore, there is no longer a requirement to register as a DCASP (or be exempt) in relation to a DCA.
- The AER will need to amend its existing procedures relating to the approval of access policies. Access policies for large DCAs would no longer exist as a result of removing the

288 Clause 11.xxx.5 under Schedule 5 of the Amending Rule and clause 5.2A.8 under Schedule 2 of the Amending Rule.

289 AEMO, NEM *Dedicated Connection Asset Classification Guide*, April 2018. Available under: https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/participate-in-the-market/information-for-current-participants/classify-a-dedicated-connection-asset.

290 The Amending Rule does not explicitly provide for this given this Guide is not required by the NER and there will be 6 months in which AEMO can assess whether its relevant guidelines are consistent with the Amending Rule.

291 Developed under clause 2.5.1(d). See AER, *Electricity Network Service Provider Registration Exemption Guideline*, March 2018. Available under: https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/network-service-provider-registration-exemption-guideline-march-2018.

292 Clause 11.xxx.6(a) under Schedule 5 of the Amending Rule.

concept of large DCAs, but the AER would be responsible for approving Primary TNSPs' access policies for designated network assets.

The amendments that the AER need to make to the *NSP Registration Exemption Guideline* are relatively minor. As such, these minor amendments will not need to occur in line with the Rules consultation procedures under rule 8.9 of the NER. Provided the AER only makes those changes necessary to give effect to the rule, the AER is not required to consult on those changes.[293]

The most significant action to be undertaken prior to commencement of the final rule will be the Primary TNSPs developing an access policy for any designated network assets that will form part of their network.

The Commission considers a timeframe of approximately 6 months between the publication date and the commencement date will allow for sufficient time for the relevant parties to undertake the above obligations and allow for a timely implementation of the *Connection to dedicated connection assets* Rule.

The obligations above need to be undertaken prior to the commencement date. The Commission acknowledges that different parties will also need to undertake a number of actions once a connection application that involves the establishment a designated network asset or a connection applicant seeks to connect to an existing designated network asset.

The Commission assessed the feasibility of a staged implementation, but considers it impractical to require Primary TNSPs to respond to connection enquiries or connection applications before the access policies are finalised. However, the Commission recognises that a number of stakeholders have highlighted the importance of the timely implementation of the final rule and welcomes stakeholder views in this regard.

8.2 Approach to 'grandfathering' existing assets and connection agreements

The proposed savings and transitional arrangements address three groups of existing assets and their respective connection agreements:

1. Connection assets that provide a 'grandfathered' prescribed service under clause 11.6.11 of the NER
2. Assets that existed prior to the introduction of the TCAPA Rule that were 'grandfathered' under the TCAPA Rule (called 'Existing DCAs' under clause 11.98.1 of the NER) and connection agreements entered into before the commencement date of the TCAPA Rule (i.e. 1 July 2018)
3. DCAs that have been established under the TCAPA Rule framework and connection agreements entered into between 1 July 2018 and the commencement date.

293 Clause 11.xxx.6(b) under Schedule 5 of the Amending Rule.

8.2.1 Connection assets that provide a 'grandfathered' prescribed service under clause 11.6.11 of the NER

Interaction between the AEMC's 2017 TCAPA Rule and clause 11.6.11 of the NER

The savings and transitional provisions under the 2017 TCAPA rule 'grandfather' connection agreements entered into prior 2006 from the application of the AEMC's 2017 TCAPA Rule.

Connection agreements entered into before 2006 are likely to cover the provision of prescribed transmission services for a connection but may also include some non-regulated transmission services. Clause 11.6.11 of the NER 'grandfathers' certain connection services (such as entry and exit services) that are being provided under certain connection agreements as prescribed transmission services.[294] Clause 11.6.11 of the NER sets out the effect of an amendment to a prescribed transmission service under such a connection agreement.

However, the TCAPA Rule introduced a requirement whereby if a transmission network user who is party to such a connection agreement requests an amendment after 1 July 2018, the date when the connections aspect of the 2017 TCAPA Rule came into effect, for the purposes of altering a service under that connection agreement (e.g. providing increased power transfer capability at the connection point), the arrangements established under TCAPA would apply to the provision of that altered service.[295] For example, if the new or altered service would involve an IUSA that met the contestability criteria set out in the 2017 TCAPA Rule,[296] then certain services for that asset would be contestable, non-regulated transmission services. Services that are provided as negotiated transmission services would be subject to the revised process and principles for the provision of negotiated transmission services under the 2017 TCAPA Rule.[297]

Therefore, the Commission concluded in the TCAPA final determination that the operation of clause 11.6.11 of the NER was separate to the changes resulting from the TCAPA rule change request.[298] Accordingly, amendments to clause 11.6.11 were not required to accommodate or reflect the TCAPA Rule. The savings and transitional amendments to the NER under the TCAPA Rule made it clear that the application of clause 11.6.11 of the NER was unchanged by the TCAPA Rule in relation to connection services provided under a connection agreement entered before 1 July 2018. That is, there was no overriding of the grandfathering arrangements under clause 11.6.11 through the TCAPA rule, as the TCAPA rule would only apply to any new or altered services.[299]

---

294 Clause 11.6.11 was implemented by two separate rule changes. The *Economic regulation of transmission services* rule change, made in 2006, introduced Chapter 6A of the NER. Clause 11.6.11 of the NER was introduced to grandfather existing connection services as prescribed transmission services to minimise the impact of that rule change on those existing arrangements. Clause 11.6.11 was amended in 2009 under the *Cost allocation arrangements for transmission services* rule change, which clarified the scope and application of the grandfathering arrangements. Further information about these rule changes is available on the AEMC website.

295 The grandfathering arrangements under clause 11.6.11 end at the commencement of the relevant TNSP's next regulatory control period if the connection agreement has been amended at the request of the transmission network user for the purposes of altering a grandfathered connection service. If the negotiation of the request does not lead to a change to the connection service, clause 11.6.11 will continue to apply.

296 Clause 5.2A.4(b) and (c) of the NER.

297 AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, pp. 69-70.

298 AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, p. 70.

One of the objectives of the AEMC's 2017 TCAPA Rule was to provide connecting parties with increased choice by allowing for a contestable provision of transmission services related to assets relevant for the connection of a connecting party.[300] With regard to DCAs, all services can be provided on a contestable basis. For IUSAs, the services of detailed design, construction and ownership were introduced to be contestable transmission services.[301] Accordingly, any party, including the Primary TNSP, can provide that service as a non-regulated transmission service on request from a connection applicant. In contrast, the services of functional specification, cut-in works as well as operation and maintenance were made non-contestable transmission services (which would be provided by the primary TNSP as a negotiated service). As such, the application of the 2017 TCAPA Rule provides the relevant transmission network user with increased level of choice.

Proposed interaction between the proposed new framework for designated network assets and clause 11.6.11 of the NER

The savings and transitional provisions in the more preferable draft rule will not override the grandfathering arrangements under clause 11.6.11 of NER.[302]

Further, the Commission does not consider it appropriate to provide for a similar application of the new arrangements for designated network assets where an existing transmission network user requests an amendment to its existing connection agreement (that was grandfathered under clause 11.6.11 of the NER) for the provision of new assets or changes to existing assets, e.g. to provide an upgraded service.

Unlike the AEMC's 2017 TCAPA Rule, the new arrangements for designated network assets may not necessarily provide a transmission network user with an increased level of choice in the case of amendments to a grandfathered connection agreement under clause 11.6.11 of the NER. Depending on the contractual arrangements of those connections, the new framework for designated network assets may provide for reduced contestability compared to the arrangements established under TCAPA, and therefore less choice. Therefore, the Commission does not consider it appropriate that the new arrangements for designated network assets should apply in the event a party requests an amendment to its connection service.[303]

8.2.2 Pre-TCAPA 'Existing DCAs'

Grandfathering of 'Existing DCAs' under the TCAPA Rule

At the time the TCAPA Rule was made there were several existing, contracted to be constructed or agreed to connect assets that would have met the definition of a DCA introduced by the TCAPA Rule. The savings and transitional amendments to the NER under

299 Clause 11.98.5(c) of the NER.

300 Clause 5.2A.4 of the NER.

301 If the contestability threshold of $10million is met. However, note that the more preferable draft rule removes the contestability threshold for funded network assets.

302 Clause 11.xxx.3(d) under Schedule 5 of the Amending Rule.

303 Clause 11.xxx.3(c) under Schedule 5 of the Amending Rule.

the TCAPA Rule set out a means by which parties that owned, operated or controlled an 'Existing DCA' were grandfathered.[304] Consequently, the arrangements established under the TCAPA Rule do not apply to these 'Existing DCAs'.

In the TCAPA final determination the Commission recognised *"that existing dedicated connection assets, or those under development, were established under the existing regulatory arrangements, under which there is potentially scope for these assets to be treated as forming part of a connecting party's facility, part of the Primary TNSP's transmission network or something separate."*[305] Although these assets were grandfathered, the Commission considered it important to have visibility of these assets. As a result, if the owner of such an 'Existing DCA' was not already registered or exempt with respect to that asset, that person was, by the commencement date of the TCAPA Rule (1 July 2018), required to:

- register as a DCASP for the existing DCA or
- seek an exemption from the requirement to register.[306]

If an Existing DCA owner was already registered (or exempt) with respect to a specific asset, it was required to provide the AER with further information on the 'Existing DCA' (e.g. identity of owner/operator, registration category of the owner/operator of the existing DCA, classification of the existing DCA as either small or large DCA, location and route of the existing DCA).

The savings and transitional provisions under the TCAPA Rule required the AER to then establish and publish a register of Existing DCA owners that notified the AER.[307]

In accordance with the AER's register of 'Existing DCAs owned, operated or controlled by registered participants', four registrations were received by the 1 May 2018 cut-off date specified in clause 11.98.2(a). The four Primary TNSPs – ElectraNet, Powerlink, TasNetworks and TransGrid – are recorded as 'Existing DCA owners'.[308]

Further, consistent with the approach taken with regard to connection assets that provide a 'grandfathered' prescribed service under clause 11.6.11 of the NER, if a transmission network user requests any changes to the respective connection agreement for the purposes of altering a connection service provided under that agreement, then the arrangements as established under the TCAPA Rule would apply to that request.[309]

Grandfathering of pre-TCAPA 'Existing DCAs' under the new regime for designated network

304 Clause 11.98.1(a) of the NER. 'Existing DCA' means a dedicated connection asset which, before the commencement date: (1) exists; or (2) is contracted to be constructed under an existing connection agreement; or (3) a TNSP has agreed to connect to a transmission network under an existing connection agreement.

305 AEMC, *Transmission Connection and Planning Arrangements*, Rule determination, 23 May 2017, p. 73.

306 Clause 11.98.2(d) of the NER.

307 Clause 11.98.2(b) of the NER.

308 ElectraNet has registered 67 'Existing DCAs', Powerlink has registered 22 'Existing DCAs', TasNetworks has registered 41 'Existing DCAs', TransGrid has registered 10 'Existing DCAs'. See under: https://www.aer.gov.au/networks-pipelines/network-exemptions/register-of-existing-dedicated-connection-assets.

309 Clause 11.98.5(b) of the NER.

assets

Consistent with the approach taken under the TCAPA Rule, the 'Existing DCAs' recorded in the AER's register at 1 July 2018 continue to be grandfathered under the savings and transitional provisions of the more preferable draft rule.[310]

Connection agreements entered into prior to the commencement date of the TCAPA Rule (i.e. 1 July 2018) will not be subject to the new rules and are 'grandfathered'.[311] Currently, if a connected party requests an amendment to a connection agreement entered into prior to 1 July 2018, then the Rules as amended by the TCAPA Rule will apply.[312]

However, the Commission does not consider it necessary for the TCAPA framework to apply to a request for an altered connection service following the introduction of this rule. Given there are no large DCAs under the current framework, and small DCAs are not being grandfathered (see discussion below in section 8.2.3), there is otherwise no regulatory need to preserve the TCAPA framework.

However, given that the package of provisions contained in the more preferable draft rule has the effect of reducing contestability and providing for the application of a specific access regime, requiring the application of the provisions contained in the more preferable draft rule when a party requests an amendment to its connection agreement could create significant issues.

For example, if a transmission network user connected through an 'Existing DCA' with a total route length of more than 30km would seek to amend its connection agreement, for example in terms of upgrading the capacity of the line, application of the more preferable draft rule would impose new obligations for the relevant transmission network user. Because currently no access regime applies to such a grandfathered 'Existing DCA', an upgrade of the asset would require the application of the new access regime for designated network assets to an 'Existing DCA'. In addition, compliance with the new provisions could require the connected party to relocate its connection point or require the asset to meet the technical requirements applying to transmission networks in order to be compliant with the new rules. The Commission considers these would be inappropriate outcomes.

Therefore, the savings and transitional provisions override existing clause 11.98.5 of the NER.[313] This clause provides the basis for the application of the arrangements established under the TCAPA Rule to apply in the event there is a request to alter the connection service. Instead, the savings and transitional provisions 'grandfather' those connection agreements entered into before the commencement of the TCAPA Rule (i.e. 1 July 2018) so that neither the TCAPA Rule nor the Rules as amended by this rule apply.[314] Therefore, in summary, if a party to a connection agreement that was entered into prior to 1 July 2018 requests an amendment to their connection service under that connection agreement, neither the TCAPA Rule or this rule would apply.

---

310 Clause 11.xxx.2(b) under Schedule 5 of the Amending Rule.

311 Clause 11.xxx.3(a) and (c) under Schedule 5 of the Amending Rule.

312 Clause 11.98.5(b) of the NER.

313 Clause 11.xxx.3(c)(1) under Schedule 5 of the Amending Rule.

314 Clause 11.xxx.3(c)(2) under Schedule 5 of the Amending Rule.

Possibility to voluntarily transition to the new framework for designated network assets

Notwithstanding, the more preferable draft rule does not preclude an 'Existing DCA' from voluntarily transitioning to the new framework for designated network assets if the Primary TNSP and the connecting party can agree to do so. However, there is no process set out for how this would occur. This is due to the fact that transitioning into the new arrangements would be likely to require moving the existing TNCP, which will in turn require re-opening the connection agreement between the connecting party and the Primary TNSP in order to agree new terms and conditions and performance standards.

Assuming both parties could agree on amendments to their existing connection agreement, the following issues may nonetheless complicate the transition of an 'Existing DCA' into the framework for designated network assets:

- The DCA would need to comply with the network performance requirements under Schedule 5.1 in order for the Primary TNSP to be able to operate the asset as part of its 'transmission network'. Consequently, it is unlikely that a Primary TNSP would agree to a transition of assets unless an existing DCA is 'upgraded' to comply with the standards, or already meets those standards.[315]
- Moving the TNCP to the facility end of the transmission line would require re-opening an existing connection agreement, including performance standards. Negotiating a new set of performance standards and the required physical changes to equipment may involve significant costs for a connecting party.
- The relevant connection services may need to be re-classified. Operation and maintenance of the asset would need to change to non-contestable operation and maintenance provided by the Primary TNSP as a negotiated transmission service under a NOA. This would further require the owner of the DCA having to negotiate a NOA to provide for operation and maintenance by the Primary TNSP. This may be easier in case the connected party and the owner of the asset are the same party, but may be more complicated if these are not the same or related parties, where a third-party owner would not have any existing contractual relationship with the Primary TNSP.

8.2.3 Post-TCAPA DCAs

Small DCAs that were established under the current arrangements are not 'grandfathered' in the savings and transitional provisions.

According to AEMO's Registration and Exemption List[316] (as at 10 October 2020) there are currently four small DCAs, which are all operated by TransGrid (i.e. TransGrid is the DCASP for these small DCAs). The obligations in the NER on a DCASP for a small DCA are relatively insubstantial. The main obligation on the owner, operator or controller of a small DCA is to register as a DCASP under Chapter 2 of the NER, classify its DCA as a small DCA with AEMO and to comply with the obligations in clause 5.2.7. Given the more preferable draft rule removes these obligations, and does not place any additional obligations on the owners or

315 Even if the Primary TNSP is the DCASP, a DCA may not necessarily be built in order to meet the requirements under Schedule 5.1 of the Rules.

316 See https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/participate-in-the-market/registration.

operators of 'dedicated connection assets' (which replace small DCAs), the Commission does not consider it necessary to grandfather the four existing DCASPs and this category of assets.

As a result, the savings and transitional provisions provide for those DCASPs that have registered with AEMO in respect of a small DCA prior to the commencement date to cease to be a DCASP in respect of that small DCA, and the small dedicated connection asset is deemed to be a 'dedicated connection asset' (as defined under the new rules), on and from the commencement date.[317]

Therefore, in summary, on and from the commencement date, the owners or operators of small DCAs will only have those obligations that apply to 'dedicated connection assets' under the more preferable draft rule.

The parties to a connection agreement, in respect of a small DCA, are subject to the Rules as amended by this rule if the connected party requests an alteration to its connection service,[318] but otherwise, the rule is not intended to alter the terms or contractual rights or obligations of the parties to such an agreement.[319]

As no large DCAs currently exist, there are no savings and transitional arrangements provided in respect of large DCAs. If any large DCAs arise before a final determination is made, the Commission will consider savings and transitional arrangements for those assets. The Commission welcomes stakeholder views and engagement by proponents on this matter to the extent any large DCAs are proposed.

8.3 New and ongoing connection enquiries

Connection enquiries made to a Primary TNSP, in respect of a small DCA, prior to the commencement date will be assessed under the framework established by this rule (that is, the NER as it will be in force on and from the commencement date).[320] In practice, this should not require a connection applicant to recommence its connection process, but may require additional or alternative information to be provided before any offer to connect could be issued.

The savings and transitional provisions do not currently provide arrangements for connection applications underway in respect of large DCAs. Some proponents may have commenced the connection process for connection to a transmission network via a large DCA, and if so, those proponents will have already made some financial investment in preparing a connection enquiry. However, the costs for making a new enquiry may be relatively small compared to the benefits of using the new framework. In some cases, it may be preferable for a connection applicant to make a new connection enquiry, if that connection applicant is interested in sharing its asset under the new framework. Given the nature of these assets and the differences in obligations between the TCAPA framework and the framework under

317 Clause 11.xxx.2(a) under Schedule 5 of the Amending Rule.
318 Clause 11.xxx.3(b) under Schedule 5 of the Amending Rule.
319 Clause 11.xxx.3(a) under Schedule 5 of the Amending Rule.
320 Clause 11.xxx.4(a) under Schedule 5 of the Amending Rule.

the more preferable draft rule, the Commission considers it is necessary to consider those on a case by case basis and welcomes engagement from proponents in this regard.

ABBREVIATIONS

AC	Alternating Current
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASRR	Annual Service Revenue Requirement
COAG Energy Council	Council of Australian Governments Energy Council
Commission	See AEMC
CRNP	Cost Reflective Network Pricing
DCA	Dedicated Connection Asset
DCASP	Dedicated Connection Asset Service Provider
DNA	Designated Network Asset
DNSP	Distribution Network Service Provider
DTSO	Declared Transmission System Operator
ESB	Energy Security Board
FRMP	Financially Responsible Market Participant
FTR	Financial Transmission Rights
KW	Kilowatt
KWh	Kilowatt Hour
IRSR	Intra-Regional Settlement Residues
IUSA	Identified User Shared Asset
LMP	Locational Marginal Pricing
LNSP	Local Network Service Provider
MC	Metering Coordinator
MCE	Ministerial Council on Energy
MDP	Metering Data Provider
MNSP	Market Network Service Provider
MW	Megawatt
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Objective
NMI	National Metering Identifier
NOA	Network Operating Agreement
NSP	Network Service Provider
PTNSP	Primary Transmission Network Service Provider
REZ	Renewable Energy Zone

RRN	Regional Reference Node
RRP	Regional Reference Price
TCAPA	Transmission Connections and Planning Arrangements
TLF	Transmission Loss Factor
TNCP	Transmission Network Connection Point
TNSP	Transmission Network Service Provider
TUOS	Transmission Use of System

A LEGAL REQUIREMENTS UNDER THE NEL

This appendix sets out the relevant legal requirements under the NEL for the Commission to make this draft rule determination.

A.1 Rule Making Test

A.1.1 Achieving the NEO

Under the NEL, the Commission may only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the national electricity objective (NEO).[321] This is the decision-making framework that the Commission must apply.

The NEO is:[322]

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

A.2 More preferable rule

Under section 91A of the NEL, the Commission may make a rule that is different (including materially different) to a proposed rule (a more preferable rule) if it is satisfied that, having regard to the issue or issues raised in the rule change request, the more preferable rule will or is likely to better contribute to the achievement of the NEO.

In this instance, the Commission has made a more preferable draft rule. The Commission's reasons for making this draft rule determination are summarised in chapter 2 and set out in further detail in chapters 3 to 8.

A.3 Power to make the rule

The Commission is satisfied that the more preferable draft rule falls within the subject matter about which the Commission may make rules. The more preferable draft rule falls within s. 34 of the NEL and as it relates to:

- the operation of the national electricity system for the purposes of the safety, reliability and security of that system
- the activities of persons (including registered participants) participating in the national electricity market or involved in the operation of the national electricity system.

Further, the more preferable draft rule falls within matters set out in schedule 1 to the NEL as it relates to:

321 Section 88 of the NEL.
322 Section 7 of the NEL.

- the registration of persons as registered participants or otherwise for the purposes of the NEL and the NER, including the deregistration of such persons or suspension of such registrations
- the exemption of persons from the requirement to be registered participants
- the operation of generating systems, transmission systems, distribution systems or other facilities
- the augmentation of transmission systems and distribution systems
- access to electricity services provided by means of transmission systems and distribution systems
- the regulation of revenues earned or that may be earned by owners, controllers or operators of transmission systems from the provision by them of services that are the subject of transmission determination
- terms and conditions for the provision of electricity network services, or any class of electricity network services (including shared transmission services)
- disputes under or in relation to the NER between persons.

A.4 Commission's considerations

In assessing the rule change request the Commission considered:

- its powers under the NEL to make the rule
- the rule change request
- submissions received during the first of consultation[323]
- the Commission's analysis as to the ways in which the proposed rule will or is likely to, contribute to the NEO
- the form of regulation factors in making a rule that specifies an electricity network service as a negotiated network service.[324]
- the revenue and pricing principles.[325]

There are no current Ministerial Council on Energy statements of policy principles.[326]

A.4.1 Form of regulation factors

Under section 88A of the NEL, the Commission must take into account the form of regulation factors when making a rule that specifies an 'electricity network service' as a 'negotiated network service'. The Commission had regard to the form of regulation factors as set out in section 2F of the NEL. In particular, the Commission considered:

323 https://www.aemc.gov.au/rule-changes/connection-dedicated-connection-assets

324 Part 1, s 2F and s 88A of the NEL.

325 Part 1, s 7A and s 88B of the NEL.

326 Under section 33 of the NEL, the AEMC must have regard to any relevant MCE statement of policy principles in making a rule. The MCE is referenced in the AEMC's governing legislation and is a legally enduring body comprising the federal, state and territory ministers responsible for energy. On 1 July 2011 the MCE was amalgamated with the Ministerial Council on Mineral and Petroleum Resources. The amalgamated Council was formerly called the COAG Energy Council and is now referred to as the ministerial forum of Energy Ministers.

- the presence and extent of any barriers to entry in a market for electricity network services[327] for example the Commission sought input from a number of generators and renewable energy developers to inform its understanding of whether the current DCA third party access regime is a barrier to investment in the construction of large DCAs by disincentivising first movers (see section 3.2.3).
- the presence and extent of any network externalities (that is, interdependencies) between an electricity network service provided by a network service provider and any other electricity network service provided by the network service provider, as well as between an electricity network service provided by a network service provider and any other service provided by the network service provider in any other market.[328] The draft rule places additional transparency requirements on TNSPs, as each Primary TNSP would be responsible for developing one access policy to apply to all designated network assets that form part of its network. This would create transparency and certainty for connecting parties to a TNSP's network via a new designated network asset and third parties considering connection to an existing designated network asset (see section 6.2.2).
- the extent to which any market power possessed by a network service provider is, or is likely to be, mitigated by any countervailing market power possessed by a network service user or prospective network service user,[329] for example under the draft rule, a Primary TNSP will be required to provide the services of functional specification and control, operation and maintenance of a designated network asset that forms part of its network as a negotiated transmission service. The Commission considers that this is appropriate and consistent with the form of regulation factor relating to the extent of countervailing market power possessed by a prospective network service user (see section 7.2).
- the presence and extent of any substitute, and the elasticity of demand, in a market for an electricity network service in which a network service provider provides that service, and in a market for electricity,[330] for example designated network assets will be able to be contestably designed, constructed and owned, as is the case for IUSAs. Only 'small DCAs' (with a total route length of less than 30km) would continue be captured under the concept of 'DCAs' moving forward and remain fully contestable connection assets (see section 7.2).
- the extent to which there is information available to a prospective network service user or network service user, and whether that information is adequate to enable the prospective network service user or network service user to negotiate on an informed basis with a network service provider for the provision of an electricity network service to them by the network service provider,[331] for example and as discussed above, under the draft rule the Primary TNSP would be responsible for developing one access policy to apply to all

327 Part 1, s 2F(a) of the NEL.
328 Part 1, s 2F(b) and (c) of the NEL.
329 Part 1, s 2F(d) of the NEL.
330 Part 1, s 2F(e) and (f) of the NEL.
331 Part 1, s 2F(g) of the NEL.

designated network assets that form part of its network which provides for additional transparency for informed negotiation (see section 6.2.2).

- The draft rule includes amendments in relation to TUOS charges, based on the Commission's proposal to setting the cost for using a designated network asset at zero when calculating the locational component of TUOS charges for a customer connected to a designated network asset. Accordingly, the Commission also had regard to the revenue and pricing principles, especially principles 15 and 16(1) of Schedule 1 to the NEL (see section 5.2.4).

A.4.2 Revenue and pricing principles

Under section 88B of the NEL, the Commission must take into account the revenue and pricing principles if the Rule being made relates to transmission system revenue and pricing, principles 15 to 24 of Schedule 1 to the NEL. In broad terms, the principles relate only to services that are directly regulated by the AER, and so are therefore not very relevant to the draft rule (which, in general, relates to negotiated transmission services and services not subject to any form of economic regulation). However, the draft rule makes very minor amendments to the process for the calculation of TUOS charges (which recover revenues directly regulated by the AER), to allow these to be levied directly on customers connected to designated network assets. The Commission does not consider that these amendments have any material impact on the consistency of the NER with the revenue and pricing principles.[332]

A.4.3 Declared network functions

The Commission may only make a rule that has effect with respect to an adoptive jurisdiction if satisfied that the proposed rule is compatible with the proper performance of Australian Energy Market Operator (AEMO)'s declared network functions.[333] The draft rule is compatible with the performance of those functions as it leaves those functions unchanged.

A.4.4 Application to Northern Territory

Under the Northern Territory legislation adopting the NEL, the Commission may make a differential rule if, having regard to any relevant Ministerial Council on Energy (MCE) statement of policy principles, a different rule will, or is likely to, better contribute to the achievement of the NEO than a uniform rule. A differential rule is a rule that:

- varies in its term as between:
  - the national electricity system, and
  - one or more, or all, of the local electricity systems, or
- does not have effect with respect to one or more of those systems

but is not a jurisdictional derogation, participant derogation or rule that has effect with respect to an adoptive jurisdiction for the purpose of section 91(8) of the NEL.

---

332 The revenue and pricing principles are set out in section 7A of the NEL.

333 Section 91(8) of the NEL.

As the proposed rule related to parts of the NER that apply in the Northern Territory (i.e. Chapters 5 and 10), the Commission has assessed the more preferable draft rule against additional elements required by the Northern Territory legislation.[334]

The Commission has determined not to make a differential rule. However, as Chapters 5 and 10 of the NER apply in the Northern Territory, the amendments made by this rule change will have some application in the Northern Territory. The Northern Territory modification regulations modify the application of these chapters in the NT, and therefore, further changes may be required to those regulations as a result of this rule change. The Commission will liaise with the Northern Territory in this regard.

A.5 Civil penalties

The Commission cannot create new civil penalty provisions. However, it may, jointly with the AER, recommend to ministerial forum of Energy Ministers (formerly COAG Energy Council) that new or existing provisions of the NER be classified as civil penalty provisions.

A.5.1 Amended provisions

The Commission's more preferable draft rule amends clauses of the NER that are currently classified as civil penalty provisions and also moves one clause in the NER that is currently classified as civil penalty provisions under Schedule 1 of the National Electricity (South Australia) Regulations (as set out in Table A.1 below). The Commission considers that these clauses should continue to be classified as civil penalty provisions and therefore will not recommend any change to their classification. While these clauses have been amended by the more preferable draft rule, the content remains similar and therefore, they should continue to be classified as civil penalty provisions. The AER has indicated that it supports this recommendation.

Table A.1: **Amendments to existing civil penalty provisions**

CLAUSE	NEW CLAUSE REFERENCE (WHERE APPLICABLE)	SUBJECT OF CLAUSE AND CHANGE
5.2.3(e)	N/A	A Network Service Provider must arrange for operation of that part of the national grid over which it has control in accordance with instructions given by AEMO. This clause is amended to remove

334 From 1 July 2016, the NER, as amended from time to time, apply in the NT, subject to derogations set out in regulations made under the NT legislation adopting the NEL. Under those regulations, only certain parts of the NER have been adopted in the NT. (See the AEMC website for the NER that applies in the NT.) National Electricity (Northern Territory) (National Uniform Legislation) Act 2015.

CLAUSE	NEW CLAUSE REFERENCE (WHERE APPLICABLE)	SUBJECT OF CLAUSE AND CHANGE
		DCASP.
5.2A.6(c)	N/A	If an applicant seeks DNA services, the Transmission Network Service Provider must comply with its access policy and the negotiating principles in schedule 5.12. This clause is amended to replace large DCA services with DNA services and DCASP with Primary TNSP.
5.2A.7(a)	5.2A.7(b)	A person must not commission, or permit the commissioning of, a funded network asset unless there is a network operating agreement between the owner of that funded network asset and the Primary Transmission Network Service Provider. This clause is amended to replace IUSA with funded network asset. It is also renumbered from (a) to (b) as a consequence of other amendments in clause 5.2A.7. Therefore, it is 5.2A.7(b) that is recommended to be classified as a civil penalty provision.
5.2A.8(l)	5.2A.8(n)	A Primary TNSP or a person who is provided DNA services must not engage in conduct for the purpose of preventing or hindering access to DNA services. This clause is amended to replace DCASP with Primary TNSP and large DCA services with DNA services. It is also renumbered from (l) to (n) as a consequence of other amendments in clause 5.2A.8. Therefore, it is 5.2A.8(n) that is recommended to be classified as a civil penalty provision.
5.3.3(b)	N/A	Response to a connection enquiry: the Network Service Provider must respond with specified information and perform certain actions in response to a connection enquiry. This clause is amended to replace IUSA concepts with FNA concepts and to remove the $10 million contestability threshold.
5.3.6(a)	N/A	A Network Service Provider processing an application to connect must make an offer to connect the Connection Applicant's facilities or funded network assets to the network within certain timeframes. This clause is amended to include funded network assets.

Source: AEMC.

A.5.2 New provisions

The Commission's more preferable draft rule introduces new provisions in the NER (as set out in Table A.2 below) that it considers should be classified as civil penalty provisions for consistency with similar provisions (currently classified as civil penalty provisions) and to promote compliance with these new obligations so that the designated network asset framework operates effectively. Therefore, the Commission will recommend these new provisions are classified as civil penalty provisions. The AER has indicated that it supports this recommendation.

Table A.2: New provisions proposed to be recommended as civil penalty provisions

CLAUSE	SUBJECT OF NEW CLAUSE AND RECOMMENDATION
New clause 5.2A.8(g)	The Primary Transmission Network Service Provider must submit its access policy (as amended following consultation) to the AER for approval. This clause should be classified as a civil penalty provision because the obligation on the Primary Transmission Network Service Provider to obtain the AER's approval for its access policy, following and informed by consultation, is key to the effective operation and transparency of the access framework for designated network assets.

Source: AEMC.

A.5.3 Deleted provisions

The Commission's more preferable draft rule removes provisions from the NER (as set out in Table A.3 below) that are currently classified as civil penalty provisions. Therefore, the Commission will recommend these civil penalty provisions are changed. The AER has indicated that it supports this recommendation.

Table A.3: Deleted provisions that are currently classified as civil penalty provisions

CLAUSE	DELETED
2.5.1(d4)	This clause is removed from the NER and therefore the clause no longer needs to be classified as a civil penalty provision.
5.2.7(b)	This clause is removed from the NER and therefore the clause no longer needs to be classified as a civil penalty provision.
5.2A.7(e)	This clause is removed from the NER and therefore the clause no longer needs to be classified as a civil penalty provision.
5.2A.8(d)	The content of this clause is removed from the NER and new paragraph (d) has different content that should not

CLAUSE	DELETED
	be classified as a civil penalty provision.

Source: AEMC.

A.6 Conduct provisions

The Commission cannot create new conduct provisions. However, it may recommend that new or existing provisions of the NER be classified as conduct provisions. The Commission's more preferable draft rule does not propose any changes to conduct provisions.

B KEY CONCEPTS

This Appendix provides an overview of the key concepts and their interaction as they are established by the more preferable draft rule.

B.1 Dedicated connection asset

Under the new framework for designated network assets, those assets that would currently be classified as 'large dedicated connection assets (DCAs)' are instead classified as 'designated network assets', i.e. assets including power lines with a total route length of 30km or more. Only those assets that would currently be classified as 'small DCAs' continue to be DCAs, i.e. assets including power lines with a total route length of less than 30km.

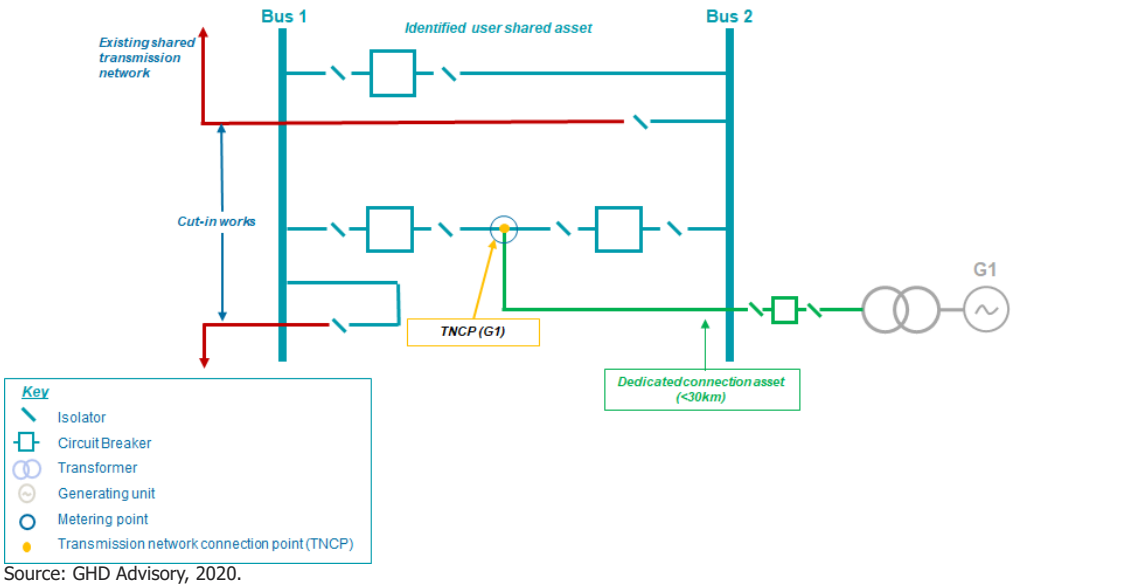
A DCA continues to facilitate the connection of a person at a transmission network connection point (TNCP), which can either be located:

- at an identified user shared asset (IUSA), or
- on a designated network asset.

As is the case under the current arrangements, a DCA would only be used for the purpose of forming a connection to a transmission network at a single TNCP. That is, a DCA canot connect to another DCA.

Figure B.1 illustrates a connection configuration where a DCA facilitates the connection of a facility to a TNCP at an IUSA.

Figure B.1: DCA connection configuration



Source: GHD Advisory, 2020.
Note: Diagram is illustrative only and intended to distinguish responsibilities not technical design.

In line with the existing NER arrangements, one financially responsible market participant (FRMP) exists at the TNCP where a person connects via a DCA. However, this does not preclude multiple facilities being owned and operated by the same person or a related entity behind the single TNCP, or multiple facilities owned and operated by different persons sitting behind the single TNCP. However, the NER does not regulate such scenarios, and instead, this would require the respective parties to put in place contractual arrangements outside of the NER.

DCAs continue to be electrically isolatable from the transmission network at the TNCP, in a way that does not affect the provision of shared transmission services to other persons.

The concept of a dedicated connection asset service provider (DCASP) is removed. The person that owns and operates a DCA could be the registered party at the TNCP, i.e. a generator or market customer, or it could be a third party. In any case, the registered participant at the TNCP will be responsible for the performance of its assets at the TNCP, and therefore, takes on the risk for performance of the DCA (and any party that owns or operates it on its behalf).

B.2 Funded network asset

The more preferable draft rule introduces the new concept of funded network asset as an umbrella term to cover different types of market-participant funded assets that form part of the transmission network of a Primary Transmission Network Service Provider (TNSP), which are:

- Designated network assets, and
- IUSAs.

As funded network assets are funded by market participants, these assets will not provide prescribed transmission services.

Whilst such funded network assets can be contestably designed, built and owned, the Primary TNSP must control, operate and maintain (and provide for the functional specification) of these assets. The Primary TNSP must provide these services as negotiated transmission services, due to the fact that these assets that form part of its network. As such, the contestability arrangements that apply to funded network assets, i.e. IUSAs and designated network assets, build on the existing contestability arrangements for third party IUSAs, except for two modifications:

- **Removal of the contestability threshold**: no further application of the current $10 million monetary limb from the current contestability threshold for IUSAs, with only the 'separability' limb being maintained.
- **Removing the ownership restriction**: no further application of the ownership restriction that currently prevents a person who owns a third party IUSA from owning, operating or controlling a generating system or facility that utilises electrical energy that is connected to that third party IUSA.

If the Primary TNSP does not own a funded network asset, the Primary TNSP must control, operate and maintain a funded network asset as part of its transmission network under a network operating agreement (NOA).

However, the creation of the funded network asset concept does not imply that these assets are all subject to the open access regime under Chapter 5 of the NER. Whilst IUSAs continue to be subject to open access, a special access regime applies to designated network assets.

B.3 Designated network asset

The concept of a designated network asset replaces that of large DCAs and is intended to capture 'material additions' to the transmission system in terms of the length and size (i.e. connected generation capacity) of such additions. As such, designated network asset refers to transmission assets including power lines with a total route length of 30km or more by building on the existing threshold that differentiates between small and large DCAs. The key difference between large DCAs and the newly introduced designated network asset, is that the latter is part of the transmission network, whereas the former is a connection asset.

A designated network asset refers to a specific part of the Primary TNSP's network that conveys electricity for an identified user group. This part of the Primary TNSP's network will have been funded by market participants rather than by consumers through prescribed TUOS charges.

One or more generators or large load customers can be connected to a designated network asset. To reflect this, the concept of an identified user group is linked to the concept of a designated network asset.

As noted in the context of funded network assets, designated network assets are subject to contestable design, construction and ownership. These services can be provided by any party (including the Primary TNSP) on an unregulated basis where they meet the contestability criteria.

However, as these assets form part of the Primary TNSP's network, the Primary TNSP must provide services for control, operation and maintenance of these assets as a negotiated transmission service. Accordingly, the existing contestability arrangements for IUSAs will apply, with minor modifications, in the context of designated network assets. These modifications relate to the removal of the contestability threshold and the ownership restriction (as described under B.2 on 'funded network asset').

If the Primary TNSP does not own a designated network asset, the Primary TNSP must control, operate and maintain a designated network asset as part of its transmission network under a NOA. If different components of a designated network asset are owned by different persons, the Primary TNSP will have different NOAs with the respective owners of different components of a designated network asset.

To facilitate the application of a special access regime, designated network assets are limited to radial assets, i.e. cannot form part of a network loop. A boundary point (see for further detail B.5 on 'boundary point') demarcates between a designated network asset and an IUSA

in terms of the application of different access regimes, i.e. a special third party access regime on the designated network asset as opposed to open access at the IUSA.

A person seeking to connect to a part of the transmission network that is a designated network asset will be subject to the connections and access regime under Chapter 5 of the NER and the relevant access policy. Through its responsibility to operate a designated network asset, the Primary TNSP will also be responsible for administering access to a designated network asset. This will involve the Primary TNSP developing an access policy that will apply to all designated network assets that form part of its network, based on a number of negotiating principles specified in Schedule 5.12 of the NER, as amended by the more preferable draft rule.

B.4 Identified user shared asset

An IUSA forms part of the Primary TNSP's transmission network and is used for the purposes of:

- Connecting a person (through a DCA) to the transmission network, or
- facilitating the integration of a designated network asset into the transmission network.

Accordingly, an IUSA is located at:

- The interface between a DCA and the 'shared' transmission network (this does not include where the interface is between a DCA with a designated network asset).
- The boundary point between a designated network asset and part of a transmission network that is not a designated network asset. There is no IUSA if an expansion of a designated network asset occurs, such that subsequent components are incorporated into an existing designated network asset, i.e. if a designated network asset is 'expanded' to facilitate the connection of a connection applicant whose facility is located further away from an existing designated network asset than 30km. Instead, this is an additional component of the designated network asset.

In contrast to a designated network asset, to which a special access regime applies, open access continues to apply to IUSAs. As such, an IUSA is subject to the connections and access regime under Chapter 5 of the NER.

Regarding the contestability arrangements that will apply, the existing contestability arrangements for IUSAs continue to apply with the following modifications: removing the existing contestability threshold and the existing ownership restriction (as described under A.2 on 'funded network asset'). Similarly, if an IUSA is owned by a party other than the Primary TNSP, the Primary TNSP must control, operate and maintain the IUSA under a NOA.

B.5 Boundary point

The more preferable draft rule introduces a new concept of the boundary point, which refers to the point of delineation between a designated network asset and an IUSA. Like a connection point, there could be one or more physical boundary points between the assets (for example, where a designated network asset comprised of a double circuit line is integrated with an IUSA). If there are multiple physical points, the involved parties can select

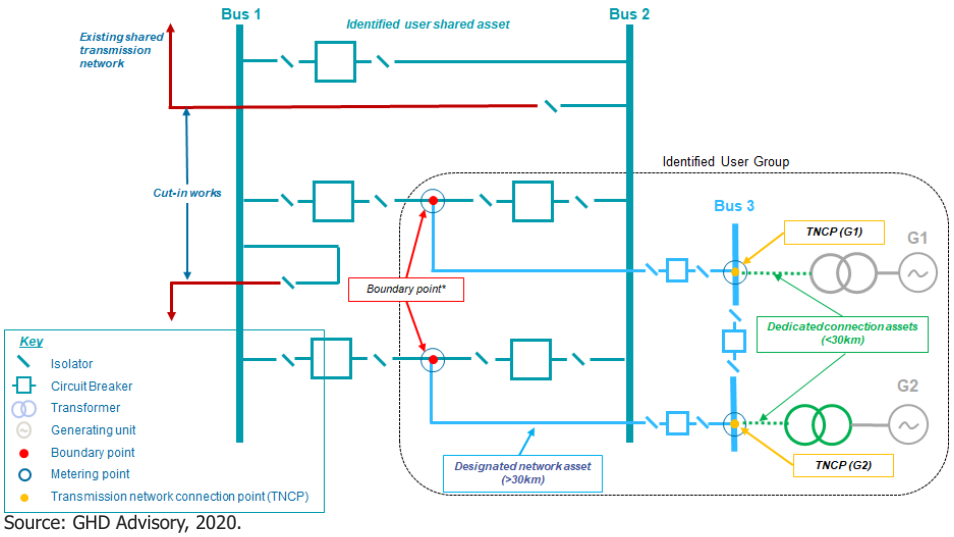
a single point that is designated as the functional boundary point in the NOA and access policy.

The boundary point concept is illustrated in Figure B.2. It shows a designated network asset that consists of a double circuit and there are two physical interface points between the designated network asset and the IUSA. For these two physical points to be considered to be a single boundary point, the points will necessarily have the following characteristics:

- There is negligible impedance between the physical points (i.e. they are within a single substation); and
- There is no part of the shared transmission network that is not part of the IUSA to which the designated network asset is connected between the two physical points at any time regardless of the configuration of the designated network asset.

The second condition intends to ensure the physical boundary points are not located within two proximate, but separate substations that could be considered to have negligible impedance between them.

Figure B.2: Double-circuit designated network asset



Source: GHD Advisory, 2020.
Note: Diagram is illustrative only and intended to distinguish responsibilities not technical design.

One identified user group (which could consist of one or multiple persons) is located behind the boundary point.

The components of a designated network asset that are behind the boundary point could be owned by different parties and each owner must have a separate NOA with the Primary TNSP for the component it owns. The subsequent incorporation of additional components to the designated network asset with different owners would not change the boundary point because it describes the point of delineation between the initial component of the designated network asset and the IUSA.