

9 December 2022

Rowena Park
General Manager Compliance and Enforcement Branch
Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601

By online submission

Dear Ms Park

Draft Network Exemptions Guideline (version 7)

AEMO welcomes the opportunity to provide a submission to the AER's draft Network Exemptions Guideline (version 7) published for consultation on 31 October 2022 (the Guideline).

AEMO wishes to raise two important matters for the AER's consideration in the process of updating the Guideline. Both have been identified by AEMO in the process of developing the rule change request for flexible trading arrangements and metering of minor energy flows in the National Electricity Market (FTA rule change)¹ and considering the implementation of the Integrated Energy Storage Systems final rule and determination². These in summary are:

1. Application of the current exemption framework

AEMO considers that the embedded network framework is being misused in some instances. Arrangements are being established that position a customer's electrical installation as though it is a network, for the purposes of wholesale market arbitrage on the customer's behalf, rather than the on-selling of energy. The result is that a version of the flexible trading arrangement design recently presented for the AEMC's consideration in the AEMO FTA rule change request is being established without associated checks and balances having been considered by the AEMC (e.g. consumer protections, roles and responsibilities, ensuring National Electricity Market (NEM) settlement accuracy).

AEMO requests that the AER considers explicitly specifying that such a connection arrangement is not an embedded network through which electricity is distributed to another person and, as is the case for connections such as those in Stand-Alone Power Systems in section 3 of the Guideline, clarify that the Guideline exemption classes are therefore not relevant to those arrangements.

2. Recognition and management of off-market energy flows

Many embedded networks will have the capability for continued self-supply of energy, via generation and energy storage facilities within the embedded network, at times when the connection to the interconnected

¹ <https://www.aemc.gov.au/sites/default/files/2022-05/ERC0346%20Rule%20change%20request%20pending.pdf>

² <https://www.aemc.gov.au/rule-changes/integrating-energy-storage-systems-nem>



system is down. When such an instance occurs, energy flows from or to any on-market child connection point will be metered and recorded, data will be collected, processed and sent to AEMO by Metering Data Providers for use in energy settlement. AEMO will accept the data provided and will credit and debit financially responsible market participants using standard settlement processes, despite these energy flows being for a period when the market was not in operation.

AEMO notes that Condition 1.4 only relates to the physical design of embedded networks for loss of supply conditions. AEMO requests that the AER consider whether, within the remit and scope of the Guideline, this provision could explicitly consider the treatment of energy flows within embedded networks when there is a loss of supply to the interconnected system.

Attachment A expands on these matters which AEMO expects to be of interest to the AER and other interested parties in the review of the Guideline. The attachment also raises a number of other technical and drafting matters that AEMO considers are material for the purpose of clarifying the application of the Guideline. AEMO looks forward to working with the AER as it progresses towards finalising the Guideline.

Should you wish to discuss any of the matters raised in this submission, please contact Kevin Ly, Group Manager – Reform Development & Insights on [REDACTED].

Yours sincerely,



Violette Mouchaileh

Executive General Manager, Reform Delivery

Attachment A: AEMO's expanded response to the Network Exemptions Guideline review

Attachment A: AEMO’s expanded response to the Network Exemptions Guideline review

Application of the current exemption framework

AEMO is aware that some end users have sought to establish second connection points for their consumer energy resources (CER) using methods not explicitly provided for in the National Electricity Rules (NER). In some cases, an end user’s electrical installation has been presented as an embedded network, with “child” connection points used to separate the CER circuitry within.

Given the inherent complexity of the NEM and the NER, the use of any provision within the NER beyond the scope of its intended design risks impacting market processes and outcomes, including for end users, intentionally or otherwise. Principal differences between an embedded network and an end user’s electrical installation are outlined in Table 1 below.

Table 1 Comparison between an embedded network and end user electrical installation

Embedded Network	End user’s electrical installation
Embedded networks are private electricity networks that are owned, controlled, or operated by exempt network service providers. The embedded network forms part of the national grid ³ .	The end user’s electrical installation typically comprises a fuse-board, customer’s wiring, electrical outlets (plug sockets, etc.), switches, lights, electrical appliances, and other electrical equipment. It often includes short lengths of powerline, from the distribution fuse or switch to the metering position, but is not a network and does not form part of the national grid.
Embedded networks are connected to a distribution or transmission network through a parent connection point and serve multiple end users, separate from the network owner/operator, at child connection points (e.g. shopping centres, retirement villages, apartment complexes and caravan parks).	The end user’s electrical installations are for the use of the end user themselves or provided by a property owner or their agent for the end user.
Service providers for embedded networks must gain an exemption from the AER from the requirement to register as a network service provider. If on-selling energy to end users within the embedded network, it must also hold a retailer authorisation from the AER or be exempted from this requirement.	A single Market Customer is responsible for all flows of energy to and from an end user’s electrical installation. Energy is not on-sold via any formal or recognised mechanism in the NER.

Exemptions from the requirement to register with AEMO as a network service provider are governed by the AER through the Guideline, which provides three categories of exemption: deemed, registrable and individual. Where an end user believes or determines that the deemed exemption category is applicable to it, there is no requirement to apply for an exemption or register with the AER and exemption is automatic. Deemed exemptions apply to a range of parties and typically cover small-scale supply arrangements where the cost of exemption registration would outweigh the benefits.

³ NER Chapter 10 definition: The sum of all connected transmission systems and distribution systems within the participating jurisdictions.

There are many complexities in the operation of, and energy settlement within, embedded networks. These complexities and the associated impacts on end users, were highlighted both in the AEMC's embedded network framework review⁴ and more recently in the Victorian Department of Environment, Land, Water and Planning's (DELWP) embedded networks review⁵. Both reviews highlighted that end users within embedded networks:

- do not have the same consumer protections as on-market customers (such as lower standards for disconnections and life support arrangements);
- do not have the same access to rebates and concessions as on-market customers;
- have varying access to dispute resolution services; and
- face significant practical barriers to accessing retail market competition.

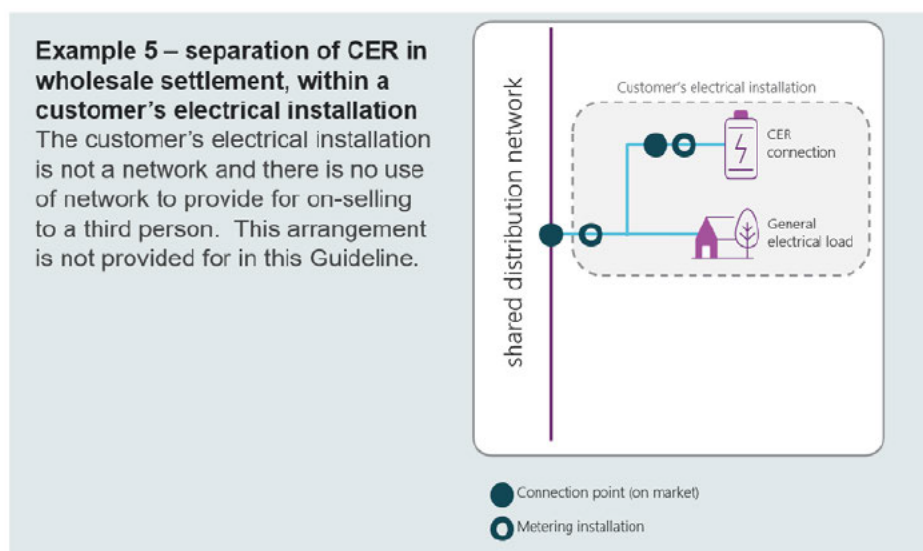
Whilst continuing to support reform to improve arrangements for embedded networks, as considered within both AEMC and DELWP reviews, AEMO contends that misapplication of the embedded network framework in the manner described is manifestly unsuitable for the establishment of additional trading arrangements within an end user's electrical installation.

In presenting the FTA rule change to the AEMC, AEMO has explicitly considered a framework for the establishment of a connection point within an end user's electrical installation, leveraging the systems and processes that support the embedded network framework but distinct from it. AEMO considers that it is critical for there to be clear mechanisms for connection point establishment and that use of the embedded network framework in the fashion described here should be explicitly disallowed to avoid confusion for market participants and end users. This clarity should be provided in the NER, as stated in the FTA rule change, and could also be provided in the Guideline. AEMO requests that the AER consider the inclusion of this arrangement within section 3 of the Guideline to provide that clarity and presents a graphic below as Figure 1, consistent with others presented in that section for the AER's consideration. Alternatively, AEMO requests that the AER provide explicit direction in their final decision on publication of version 7 of the Guideline that has the same effect.

⁴ See AEMC, 2017. *Review of regulatory arrangements for embedded networks*. Available at <https://www.aemc.gov.au/markets-reviews-advice/review-of-regulatory-arrangements-for-embedded-net>.

⁵ Victorian Government DELWP, 2021. *Victoria's Embedded Networks Review*. Available at <https://engage.vic.gov.au/embedded-networks-review>

Figure 1 Separation of CER in wholesale settlement, within a customer's electrical installation.



Recognition and management of off-market energy flows

Modern residential CER systems can have the capability to act as a back-up source of supply to the end user's loads when the supply from the distribution network is down; this functionality was highlighted in media reports during prolonged network outages in rural Victoria in mid-2021⁶. It is commonplace for end user-owned generating systems at commercial premises to be specifically designed for this purpose, as it is for health and other critical infrastructure facilities that require ongoing supply of energy during network power outages. Generation and storage distributed energy resources (DER) within embedded networks, such as retirement villages, shopping centres or airport complexes, may also be configured in this fashion.

Generation and storage connected within embedded networks that can provide back-up supply (including Small Generation Aggregator [SGA] connections), are capable of creating an anomaly in energy settlement as follows:

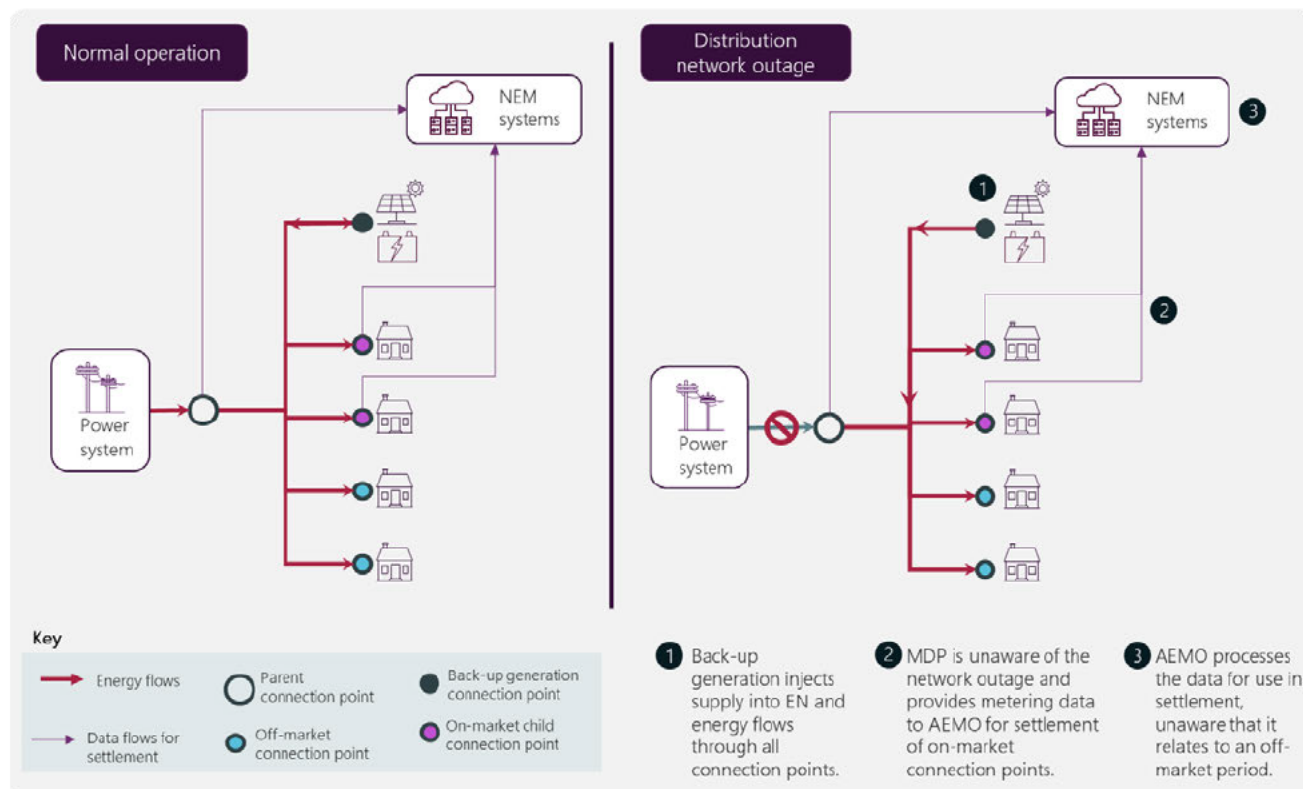
- Situation – the supply of electricity to an embedded network from a distribution network fails. Generation and storage resources within the embedded network inject energy into the embedded network to act as a back-up supply. Supply of energy is maintained and electricity flows through all connection points.
- For the duration of the distribution outage, these energy flows are neither part of the interconnected system; they are not described or otherwise considered within the NER.
- Metering Data Providers (MDPs) are, in practical terms, oblivious to the outage and will record the flows of energy assuming that they are market flows. As this scenario has not been considered within the NER, no rules or procedures have been established that would require them to act otherwise. This metering data will be provided as "Actual Metering Data" for processing in NEM settlements, despite it not being explicitly related to the market (as defined in the NER), or the interconnected national electricity system (as defined in the National Electricity Law [NEL]).

⁶ ABC News, 2021. *What the Dandenong Ranges extended power outage teaches us about backup battery power.* Available at <https://www.abc.net.au/news/2021-07-03/battery-power-dandenong-ranges-tesla-agm-grid/100264988>

- MDPs provide the metering data to AEMO for use in settlement – AEMO is unaware that the data provided is for a non-market period and processes it for settlement.
- Energy is settled – AEMO applies market prices and associated factors for the energy flows at each connection point, crediting some FRMPs and charging others.
- Money changes hands – some FRMPs will be charged, and others will receive funds, for energy settled and related charges such as loss allocation and non-energy cost recovery.

Figure 2 below illustrates this issue.

Figure 2 Settlement anomaly created by backup generation during distribution network outage in embedded networks



The materiality of this issue (e.g., in terms of the quantity of financial exchanges and regularity) is currently unknown to AEMO because the volume, length and timing (and ergo the prevailing spot price coincident with these outages) of distribution outages to embedded networks of this type is not apparent or otherwise recorded, nor are any technical measures specified to prevent it from occurring.

AEMO considers that these energy flows should be explicitly considered for recognition in the NER and either treated so they are excluded from settlement and other processes or acknowledged as a known and accepted anomaly. This matter has been raised for the AEMC's attention in the context of the FTA rule change request. AEMO requests that the AER consider whether the Guideline could explicitly consider the treatment of energy flows within embedded networks when there is a loss of supply to the interconnected system, to mitigate the issues described.

AEMO notes that the misuse of the embedded network framework as outlined in the discussion above, often establishes arrangements that exacerbate this anomaly and to that extent, the two issues raised in this submission are linked.

Other technical and administrative matters

AEMO has identified several matters in the draft Guideline for the AER's consideration that are of a technical or drafting nature, in addition to the substantive points raised above:

- Terminology relating to generating systems

AEMO is keen to engage with the AER to make the terminology used in the Guideline, as far as practicable, consistent with the NER terminology on classification and exemption of generating units, which is adopted in AEMO's registration resources⁷. Specifically, AEMO suggests that the terms 'off-market' or 'on-market' could be confused with 'non-market' and 'market' generating systems (both registered classifications). Although the definitions themselves confirm this is not intended, we think it would be clearer to change the terminology to 'exempt' and 'registered' generating systems respectively.

- Section 3 - Do you need a network exemption?

Administrative – consider aligning the numbering used at the start of this section with the graphical representations immediately below, or explicitly disassociate the two to avoid confusion.

To avoid the risk of confusion and misinterpretation, AEMO considers that the graphics presented as examples should include key elements critical to the connection arrangement. For example, in Example 2, the green and black circles in the legend should specify whether they are a NEM metering installation or an off-market metering installation, and critically the connection point market to the shared distribution network should have an associated NEM metering installation. AEMO is happy to assist the AER in a more detailed review.

- Section 7.1 Exemption conditions

Administrative – consider moving footnote reference 25 immediately following the text, "persons supplying electricity", to which the reference pertains.

Whilst the terms "third person" and "third party" are used in the Guideline, there is no definition of the terms and how they are to be applied in context. Clarification might assist in mitigating the first issue raised in AEMO's submission – the inappropriate application of the current exemption framework.

- Condition 1.7 Aggregation of meter readings

This section appears to lack specificity on when aggregation is allowed and the purpose of that aggregation, and where aggregation of meter readings is not enabled by the Guideline. AEMO recommends that this condition specifies the purpose of aggregation and confirms that any such aggregation is separate from, and unrelated to, the collection and management of meter readings and metering data required to support NEM settlement, that are provided for in the NER.

- Condition 2.4 - On-market generating systems and Registrable Exemption Class NR02

⁷ In particular, [Guide to Generator exemptions and classification of generating units](https://aemo.com.au/-/media/files/electricity/nem/participant_information/new-participants/generator-exemption-and-classification-guide.pdf?la=en), at: https://aemo.com.au/-/media/files/electricity/nem/participant_information/new-participants/generator-exemption-and-classification-guide.pdf?la=en

As 'on-market' generating systems cannot be exempt from the requirements of NER Chapter 5, AEMO considers that they cannot connect to an exempt network. AEMO recommends that this section is removed to avoid potential confusion.

The draft Guideline also contains two related footnotes which state '*If the aggregate nameplate rating of a generating system or inverter-based plant as measured at your connection point to the national grid is 5 MW or more, to be eligible for an exemption in this class you must confirm with the AEMO that registration of performance standards is not required.*' The concept of registration of *performance standards* is not a deciding factor. Rather, it is a consequence of a generating system either being exempt (which is determined by AEMO where an application is made), or the generation proponent opting to follow the Chapter 5 process (not at AEMO's discretion). In most cases we think this can be resolved by removing '*of performance standards*' in each instance, but would be happy to work through these with the AER.