CROSS BOUNDARY SUPPLY GUIDELINE

Distribution Network to Adjacent Distribution Network Cross Boundary Supply

PREPARED BY:	AEMO Market Services
DOCUMENT REF:	
VERSION:	1.~~0~~1
EFFECTIVE DATE:	1 October 2021
STATUS:	Draft~~Final~~

Approved for distribution and use by:

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DATE:	~~29 March~~ 9 September 2021

VERSION RELEASE HISTORY

Version	Effective Date	Summary of Changes
1.0	1 October 2021	Final
1.1	1 October 2021	Added Metered Emergency Supply section

CONTENTS

1. INTRODUCTION

1.1. Purpose and Scope

(a) This Cross Boundary Supply Guideline (Guideline) assists with the creation and management of a *connection point* on a *distribution network* that *connects* to an adjacent *distribution network* (other than an *embedded network*).

(b) This Guideline supplements the MSATS NMI Procedure. The NER and the *National Electricity Law* prevail over this Guideline to the extent of any inconsistency.

1.2. Definitions and Interpretation

(a) The Retail Electricity Market Procedures – Glossary and Framework:

(i) is incorporated into and forms part of this Guideline; and

(ii) should be read with this Guideline.

(b) In this Guideline, a *connection point* where *energy* flows from one *distribution network* to an adjacent *distribution network* is referred to as a 'Cross Boundary *connection point*'. At any point in time, the 'supply DB' (Distribution Business) is the DB from whose *network energy* is flowing to the *network* of the 'receiving DB'.

1.3. Related AEMO Documents

Title	Location
Retail Electricity Market Procedures – Glossary and Framework	https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Retail-and-metering
National Metering Identifier Procedure	https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/market-operations/retail-and-metering/metering-procedures-guidelines-and-processes
Register as a Metering Coordinator in the NEM	https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/participate-in-the-market/registration/register-as-a-metering-coordinator-in-the-nem

2. CROSS BOUNDARY REQUIREMENTS

(a) The National Electricity Amendment (Global settlement and market reconciliation) Rule 2018 No 14 requires the amount of electrical *energy* flowing at each Cross Boundary *connection point* in each TI to be recorded in the *metering data* for the *connection point* to support the calculation of unaccounted for *energy* (UFE) for each *local area* related to the Cross Boundary *connection point*.[1]

(b) Rule 2018 No 14 also requires the two LNSPs, related to the Cross Boundary *connection point*, to agree which one will appoint the MC for the Cross Boundary *connection point*.[2]

[1] NER clause 3.15.5(a), definition of DDME
[2] NER clause 7.6.2(a)(2A)

2.1. The Process

When creating a Cross Boundary *connection point* some additional *NMI Standing Data* will be required and the nature of the Cross Boundary *connection point* will need to be determined. Cross Boundary *connection points* will fall into one of the categories below.

(a) Cross Boundary *connection point* in regular use.

(b) Cross Boundary *connection point* used infrequently under emergency conditions.

2.2. The Outcome

(a) The energy volume measured at or, where applicable, determined for a Cross Boundary *connection point* using this Guideline (DDME) will be allocated to both *local areas*, related to the Cross Boundary *connection point*, to support the calculation of UFE for each *local area*, as detailed in clause 3.15.5 of Rule 2018 No. 14.

(b) The *energy* volume outflow from the supply DB's *local area* is considered to be a *load* and the *energy* volume inflow to the receiving DB's *local area* is considered to be an *energy* source, similar to an *energy* source at a bulk supply point.

3. CROSS BOUNDARY CONNECTION POINT CONDITIONS

This guideline provides requirements and conditions related to various forms of Cross Boundary *connection points* to assist LNSPs with the creation and maintenance of those *connection points*.

3.1. General

(a) At a Cross Boundary *connection point* the relevant *transmission connection* to the supply DB's *distribution network* becomes the *energy* source for the receiving DB's *distribution network*.

(b) The MDP must collate *interval metering data* for a Cross Boundary connection point into TIs to determine the *energy* flows related to each *local area*.

(c) The relevant LNSPs must obtain approval from AEMO before creating or modifying a NMI for a Cross Boundary *connection point*.

(d) Information to be provided when seeking approval from AEMO, in accordance with section 3.1(c), must be sent to NEM.LNSP&RP@aemo.com.au and must include the following:

(i) Identities of supply DB and receiving DB related to Cross Boundary *connection point*

(ii) Contact details for supply DB and receiving DB

(iii) Identities of agreed LNSP and NSP2 related to Cross Boundary *connection point* and evidence of the agreement

(iv) Current NMI for the Cross Boundary *connection point*, where applicable

(v) Cross Boundary connection characteristics, i.e. Whether aligned with section 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.4.1 or 3.4.2

(vi) Supply DB TNI related to Cross Boundary *connection point*

(vii) Supply DB HV feeder ID where Cross Boundary *connection point* has the characteristics detailed in section 3.3.1 or 3.3.2

(viii) List of receiving DB NMIs downstream of Cross Boundary *connection point*

(ix) Conformation that receiving DB NMIs downstream of Cross Boundary *connection point* are electrically connected to the supply DB's *network* only.

3.2. Responsibility

(a) Where a *distribution network* is *connected* to an adjacent *distribution network*, the two LNSP participants are required to determine which one will appoint the MC (the 'agreed LNSP') (ref. NER 7.6.2(a)(2A)). The agreed LNSP may be the MC (ref. 7.6.3B).

(b) Unless and until the LNSPs notify AEMO of an agreement reached under paragraph (a), both LNSPs remain jointly responsible for meeting the requirements in this section.

(c) For Cross Boundary *connection points* categorised under sections 3.3.1, 3.3.2, 3.3.3, 3.4.1 and 3.4.2, the agreed LNSP must complete the AEMO Cross Boundary Connection Point Checklist from AEMO. When completed, the checklist must be returned to AEMO facilitate the Cross Boundary *metering installation* registration process. The checklist can be obtained from and, when completed, returned to the NEM.LNSP&RP@aemo.com.au email address.

(d) The agreed LNSP must register each Cross Boundary *metering installation* with AEMO prior to *energisation*. A new *metering installation* is not to be *energised* without AEMO's approval.

(e) AEMO will create a TNI2 code for the Cross Boundary NMI and populate the TNI2 field with that code. AEMO will also populate the Cross Boundary NMI NSP2 field.

(f) AEMO will provide the TNI2 code to the receiving DB so the receiving DB can populate the TNI field with the TNI2 code for all receiving DB NMIs downstream of the Cross Boundary *connection points*.

(g) The agreed LNSP is responsible for the creation and maintenance of Cross Boundary *connection points* in MSATS.

(h) Where the agreed LNSP is to be the MC for a Cross Boundary *connection point*, that LNSP must be registered as an MC as required by the NER. Refer to AEMO's "Register as a Metering Coordinator in the NEM" web page link in section 1.3.

3.3. Cross Boundary connection points in regular use

Cross Boundary *connection points* that are in regular use are characterised in one of the following ways:

(a) A circuit *connects* two adjacent *local areas*. Electrical *energy* flowing from the supply DB's *local area* is subsequently conveyed through the receiving DB's *distribution network* to supply multiple End Users – see sections 3.3.1 to 3.3.3.

(b) A service *connects* an End User *connection point* in the receiving DB's *local area* to the supply DB's *distribution network*. There is no electrical *energy* conveyed through the receiving DB's *distribution network* as the End User's service is *connected* to the supply DB's *distribution network* – see section 3.3.4.

(c) Subject to section 3.1(c), existing sub-transmission and HV Cross Boundary *metering* arrangements are acceptable under this Guideline. Use of these types of *metering* arrangements for future Cross Boundary *connection points* will be the subject of consultation with AEMO in accordance with section 3.1(c).

3.3.1. HV Circuit connects supply DB's network to receiving DB's network

(a) Where a Cross Boundary HV circuit *connects* the supply DB's *distribution network* to the receiving DB's *distribution network* and electrical *energy* is then distributed to End Users in the receiving DB's *distribution network*, the Cross Boundary *connection point* is to be metered and the NMI would include the following attributes:

(i) LNSP = supply or receiving DB by agreement – Participant ID populated by LNSP

(ii) TNI = supply DB TNI

(iii) NMI Classification = XBOUNDRY

(iv) NSP2 = alternate DB to LNSP – Participant ID populated by AEMO

(v) TNI2 populated by AEMO

(vi) Cross Boundary *metering installation* E data stream measures *energy* flow away from TNI and B data stream measures *energy* flow towards TNI.

(b) NMIs *connected* downstream of the Cross Boundary *connection point metering installation*, i.e. in the receiving DB's *distribution network*, the receiving DB must ensure these NMIs have the following attributes:

(i) LNSP = receiving DB Participant ID

(ii) TNI = TNI2 code value from the Cross Boundary NMI – populated by receiving DB

(iii) No NSP2

(iv) Normal NMI Classification codes – SMALL, LARGE, etc.

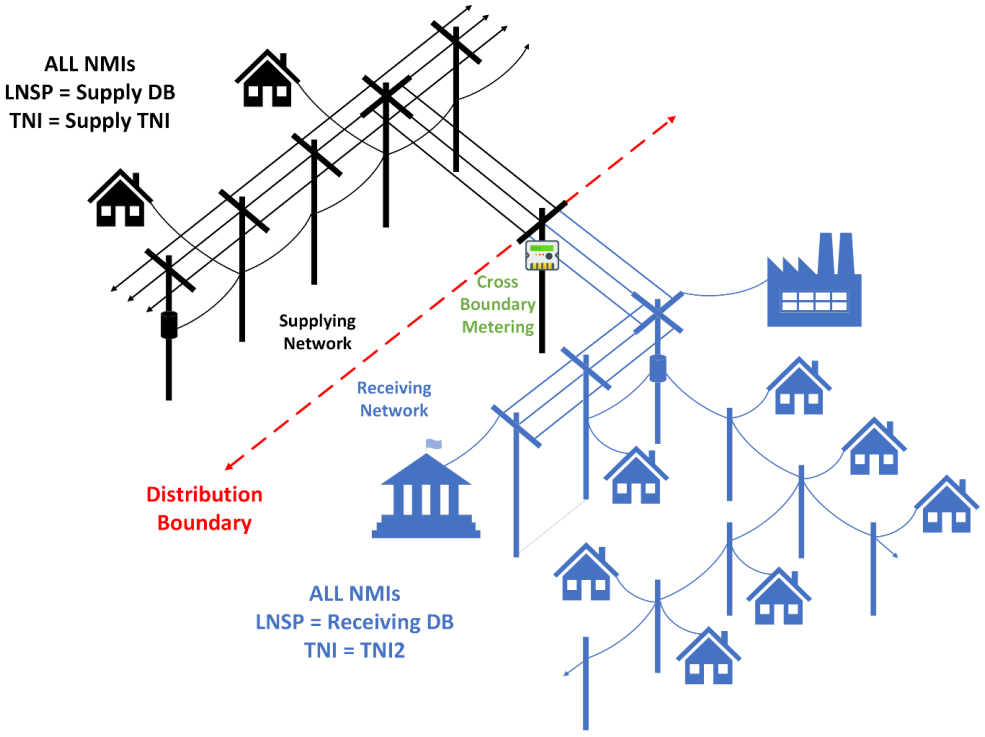

Diagram 1 – HV Circuit Cross Boundary connection into receiving DB's distribution network

3.3.2. HV Circuit supplies single distribution substation only in receiving DB's network

(a) Where a Cross Boundary HV circuit only supplies a single distribution substation in a receiving DB's *distribution network*, the *metering installation* for the Cross Boundary *connection point* may be located at that distribution substation, i.e. not necessarily at the DB geographic boundary. The Cross Boundary NMI would include the following attributes:

(i) LNSP = supply or receiving DB by agreement – Participant ID populated by LNSP

(ii) TNI = supply DB TNI

(iii) NMI Classification = XBOUNDRY

(iv) NSP2 = alternate DB to LNSP – Participant ID populated by AEMO

(v) TNI2 populated by AEMO

(vi) Cross Boundary *metering installation* E data stream measures *energy* flow away from TNI and B data stream measures *energy* flow towards TNI.

(b) NMIs *connected* downstream of the Cross Boundary *connection point metering installation*, i.e. in the receiving DB's *distribution network*, the receiving DB must ensure these NMIs have the following attributes:

(i) LNSP = receiving DB Participant ID

(ii) TNI = TNI2 code value from the Cross Boundary NMI – populated by receiving DB

(iii) No NSP2

(iv) Normal NMI Classification codes – SMALL, LARGE, etc.

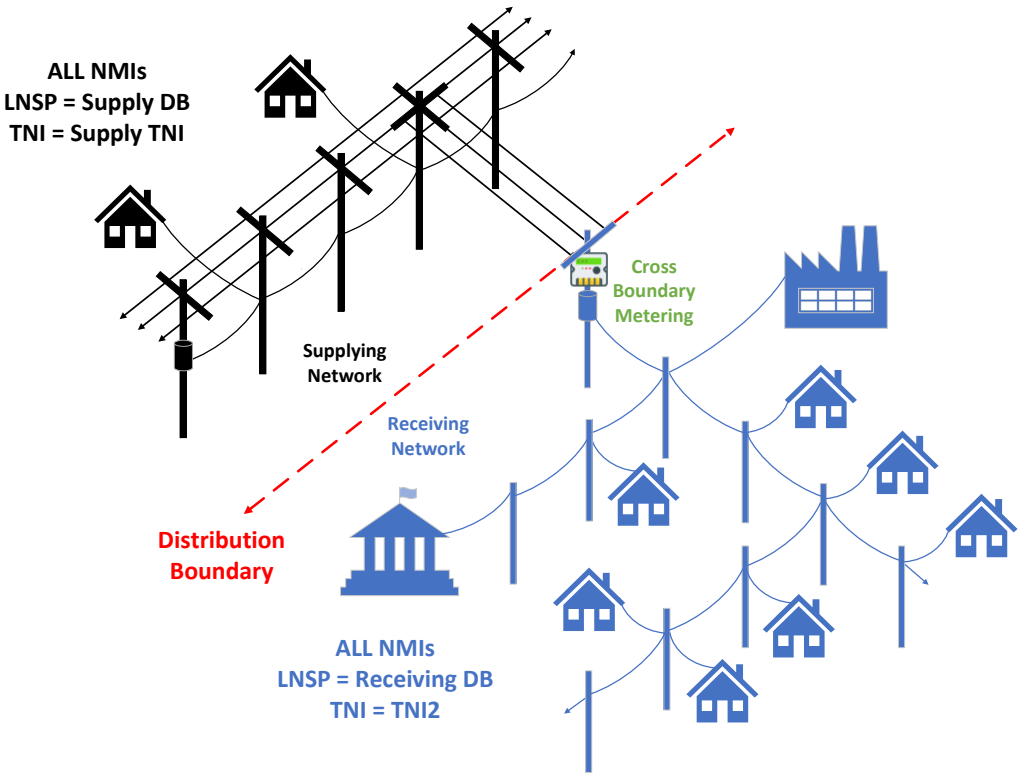

Diagram 2 – HV Circuit Cross Boundary connection to single substation in receiving DB's distribution network

3.3.3. LV Circuit connects supply DB's network to receiving DB's network

(a) Where a Cross Boundary LV circuit *connects* the supply DB's *distribution network* to the receiving DB's *distribution network* and electrical *energy* is then distributed to End Users in the receiving DB's *distribution network*, the Cross Boundary *connection point* is to be metered and the NMI would include the following attributes.

(i) LNSP = supply or receiving DB by agreement – Participant ID populated by LNSP

(ii) TNI = supply DB TNI

(iii) NMI Classification = XBOUNDRY

(iv) NSP2 = alternate DB to LNSP – Participant ID populated by AEMO

(v) TNI2 populated by AEMO

(vi) Cross Boundary *metering installation* E data stream measures *energy* flow away from TNI and B data stream measures *energy* flow towards TNI.

(b) NMIs *connected* downstream of the Cross Boundary *connection point metering installation*, i.e. in the receiving DB's *distribution network*, the receiving DB must ensure these NMIS have the following attributes:

(i) LNSP = receiving DB Participant ID

(ii) TNI = TNI2 code value from the Cross Boundary NMI – populated by receiving DB

(iii) No NSP2

(iv) Normal NMI Classification codes – SMALL, LARGE, etc.

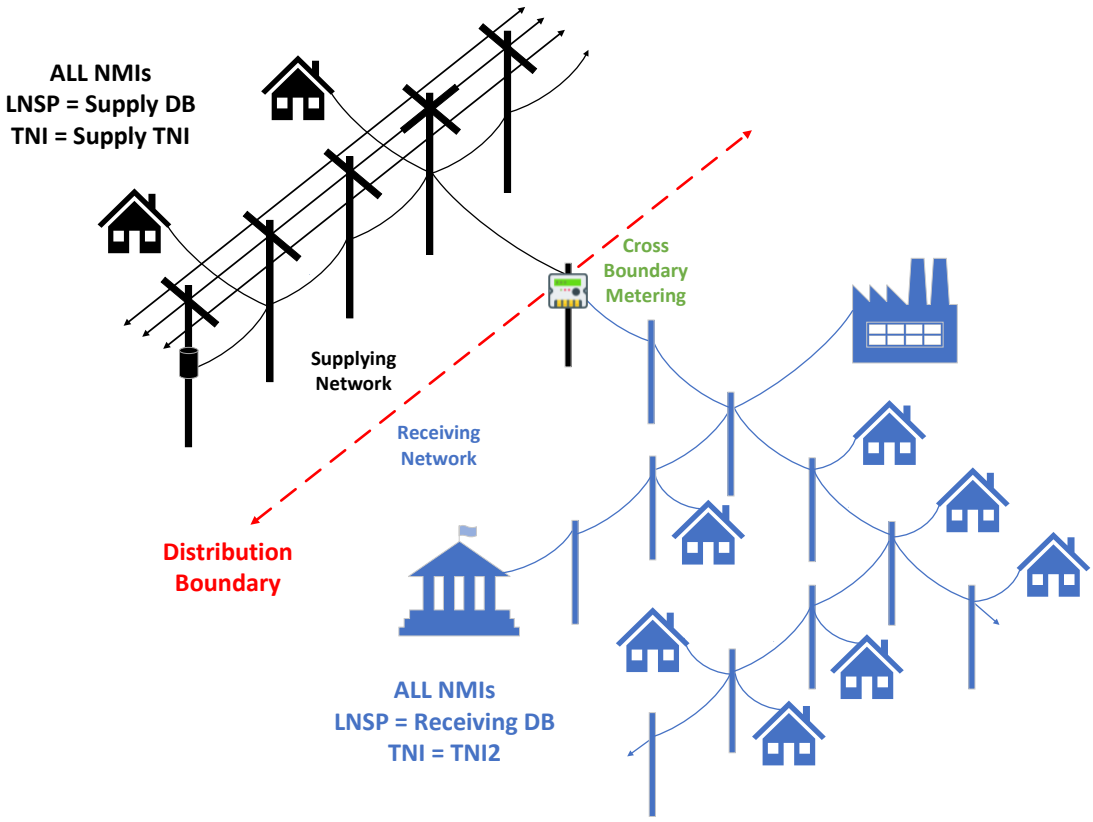

Diagram 3 – LV Circuit Cross Boundary connection into receiving DB's distribution network

3.3.4. Service connects end user in receiving DB's Local Area to supply DB's network

(a) Where a service *connects* an End User *connection point* in the receiving DB's *local area* to the supply DB's *distribution network*, the end user NMI would have the following attributes as the end user's service is *connected* to the supply DB's *distribution network*.

(i) LNSP = receiving DB Participant ID

(ii) TNI = supply DB TNI – obtained from supply DB, NMI populated by receiving DB

(iii) NSP2 = supply DB Participant ID – populated by AEMO

(iv) Supply DB and receiving DB must provide AEMO with NMIs related to these connection arrangements identifying the LNSP and NSP2 for each NMI.

(v) No TNI2

(vi) Normal NMI Classification codes – SMALL, LARGE, etc.

(vii) Receiving DB must notify AEMO when the service is no longer connected to the supply DB's *distribution network* for AEMO to reassign the NSP2 value.

(viii) End User *metering installation* E data stream measures *energy* flow away from TNI and B data stream measures *energy* flow towards TNI.

(b) AEMO expects that after populating the NSP2 field for these NMIs there will be no other such connection arrangements made.

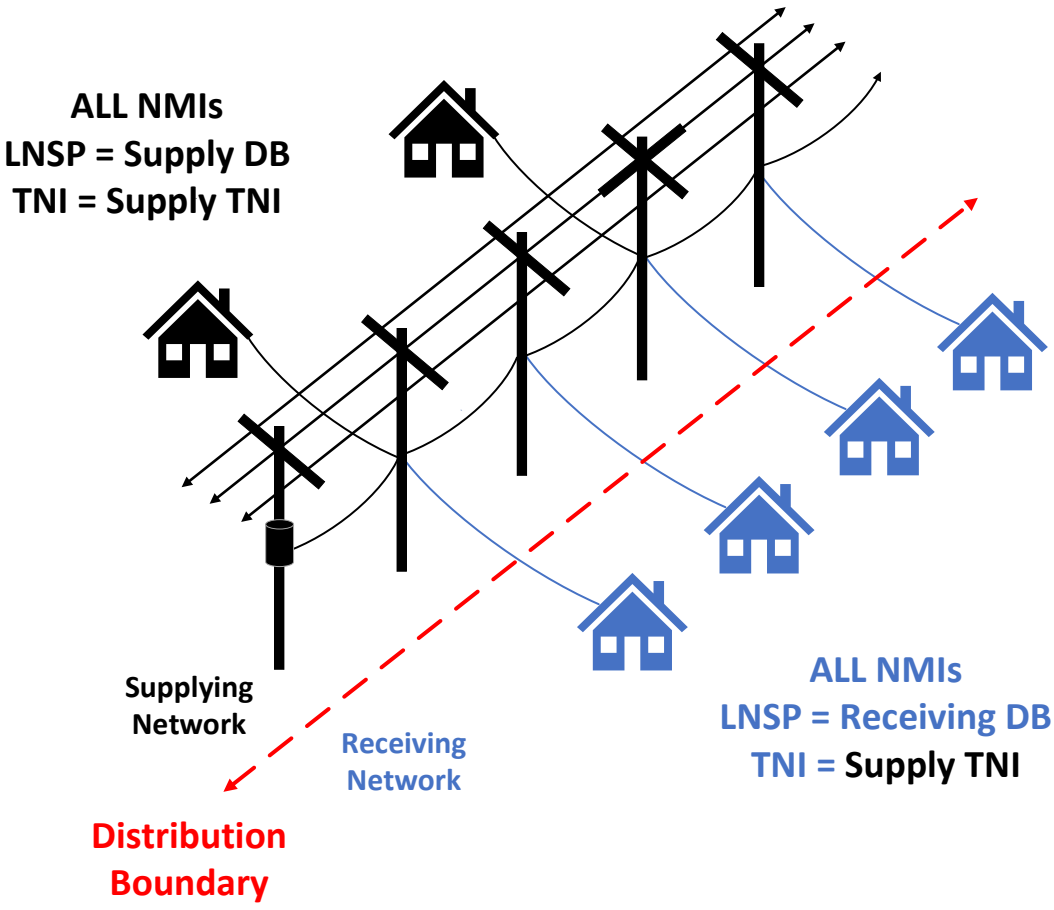

Diagram 4 – Service connects receiving DB End User to supply DB's network

3.4. Cross Boundary emergency connections

(a) During fault and emergency conditions there may be a requirement for a *distribution network* to receive electrical *energy* from an adjacent *distribution network* to maintain supply to End Users, at a Cross Boundary *connection point* where there is generally no *energy* flow in system normal conditions. Cross Boundary emergency connections are rare (infrequent) and normally of short duration.

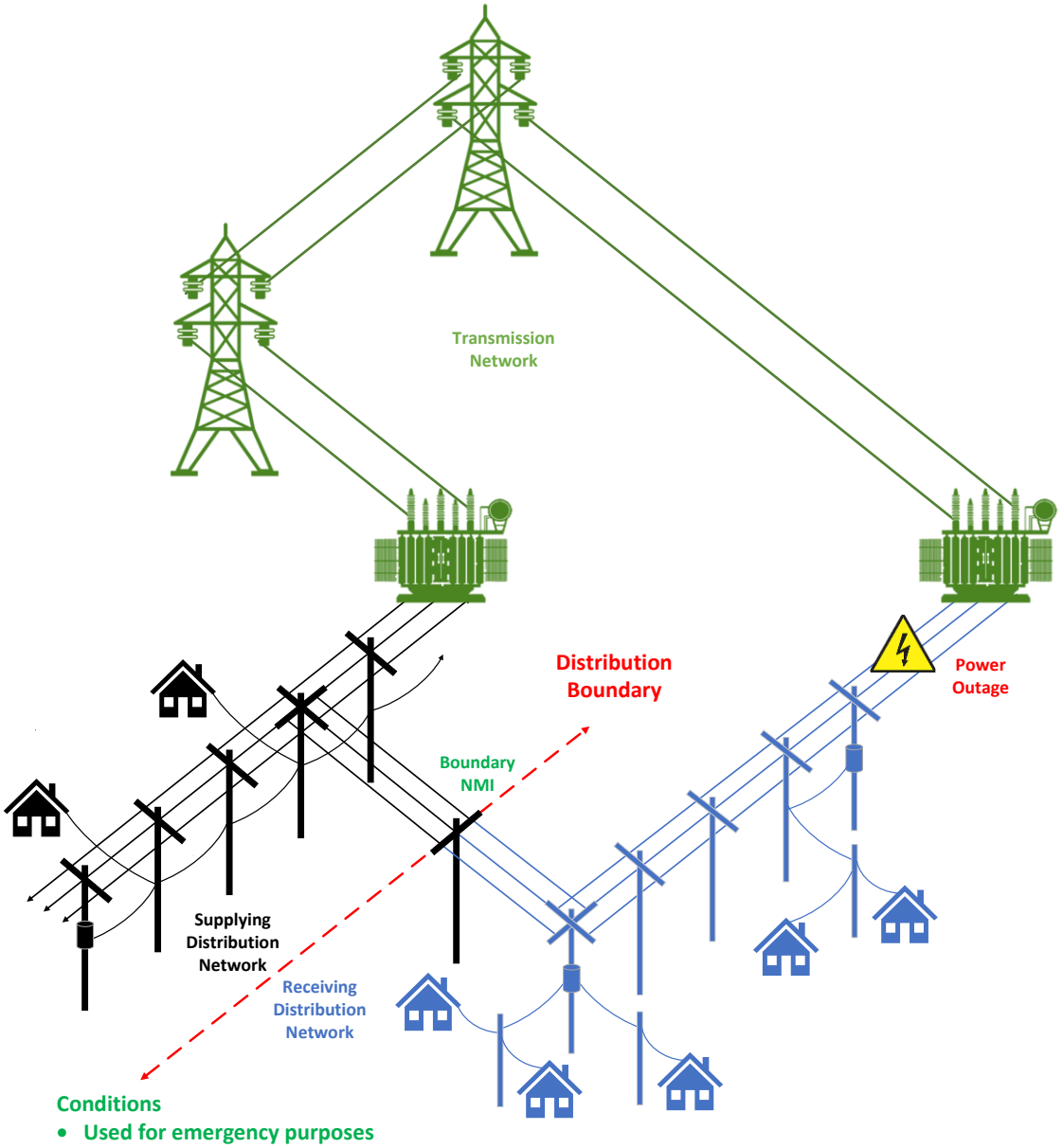

Diagram 5 – Cross Boundary emergency connection

3.4.1. Cross Boundary emergency connections – metered

(a) Where emergency *connections* are metered, AEMO, LNSPs and MDPs will co-operate to undertake further analysis of the *energy* flows related to these emergency *connections*, to determine the *energy* flows for UFE purposes.

(b) Relevant LNSPs and MDPs will provide reasonable assistance to AEMO to support the analysis. This includes the collation and provision by each LNSP with metered cross boundary emergency *connections* of the following information:

(i) Identification of each emergency *connection*

(ii) Frequency of operation of the emergency *connection*

(iii) Description of each *energy* transfer incident

(iv) Start and end dates and times of *energy* transfer incident

(v) Energy transfer direction (example from LNSP A to LNSP B, and TNI1 to TNI2)

(vi) NMIs impacted by the *energy* transfer

(vii) NMI status and data stream status of Cross Boundary NMI when emergency *connection* in use and not in use

(viii) *Metering data* quality flags of Cross Boundary NMI when emergency *connection* in use and not in use.

3.4.2. Cross Boundary emergency connections – unmetered

(a) ~~As the conditions requiring cross boundary flows are rare (infrequent) and normally of short duration, these~~ Where emergency *connections* are ~~currently~~ unmetered~~.~~, AEMO, LNSPs and MDPs will co-operate to undertake further analysis of the *energy* flows related to these emergency *connections*, to develop one or more appropriate methods of measuring those flows for UFE purposes. This analysis may result in recommendations for NER changes if required to support fit-for-purpose outcomes.

(b) Relevant LNSPs and MDPs will provide reasonable assistance to AEMO to support the analysis. This includes the collation and provision by each LNSP with unmetered cross boundary emergency *connections* of the following information, or best estimates as applicable:

(i) Identification of each emergency *connection*

(ii) Frequency of operation of the emergency *connection*

(iii) Description of each *energy* transfer incident

(iv) Start and end dates and times of *energy* transfer incident

(v) Energy transfer direction (example from LNSP A to LNSP B, and TNI1 to TNI2)

(vi) Identification of *metering installation* requirements

(vii) Available forms of *energy* measurement

(viii) Measured or estimated quantity of transferred electrical *energy* and basis for determination

(ix) NMIs impacted by the *energy* transfer

(x) Identify MDP(s) with capability to collate *energy* transfer volumes into TI *metering data*.

(xi) NMI status and data stream status of Cross Boundary NMI when emergency *connection* in use and not in use

(xii) *Metering data* quality flags of Cross Boundary NMI when emergency *connection* in use and not in use.