AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

APPLICATION GUIDE

Application Guide for Registration as an Integrated Resource Provider in the NEM

This guide is to be used in conjunction with the Application for Registration as an Integrated Resource Provider in the NEM form and is not to be altered without the prior consent of AEMO.

Disclaimer

This Application Guide (this Guide) is made available to you on the following basis:

Purpose	This Guide has been produced by the Australian Energy Market Operator Limited (AEMO) for the purposes of clause 2.1.3 of the National Electricity Rules (NER or Rules) to provide information about the process for becoming registered as a Participant in the National Electricity Market (NEM) as at the date of this publication.
Disclaimer	The information in this Guide is provided for explanatory purposes and may be subsequently updated or amended. This Guide does not constitute legal, investment, business, engineering or technical advice. It should not be relied on as a substitute for obtaining detailed advice about the National Electricity Law (NEL), the NER, any other applicable laws, procedures or policies, or any other aspect of the NEM or the electricity industry. AEMO has made reasonable efforts to ensure the quality of information in this Guide but cannot guarantee its accuracy or completeness. Accordingly to the maximum extent permitted by law AEMO and its officers, employees and consultants involved in the preparation of this Guide make no representation or warranty, express or implied, as to the currency, accuracy, reliability or completeness of the information in this Guide. To the maximum extent permitted by law, AEMO and its officers, employees and consultants involved in the preparation of this Guide are not liable (whether by reason of negligence or otherwise) for any statements, opinions, information or other matters contained in or derived from this Guide, or any omissions from this Guide, or for any use or reliance on the information in this Guide.

Rules terms

Terms defined in the Rules are italicised, and have the same meaning, when used in this Guide. Any failure to italicise such a term in this Guide does not change its meaning under the Rules, unless this Guide specifies otherwise.

Contents

1. Introduction

This application guide (**Guide**) is used to help those completing an Application for Registration as an Integrated Resource Provider in the NEM form (**the Form**).

Before commencing your application, please also read AEMO's Guide to Registration Exemptions and Production Unit Classification and the Exemption from Registering Based on Appointment of an Intermediary fact sheet . These explain when you may be entitled to an exemption from the requirement to register as an *Integrated Resource Provider* for a particular *integrated resource system*. If you do need to register, they also explain the available classifications for *production units* and participant categories. Your registration application must specify an appropriate classification and participant category. The Integrated Resource Providers and Hybrid Systems fact sheets may also assist in your understanding.

For the avoidance of doubt, any reference in this guide to *Scheduled Generator*, *Semi-scheduled Generator*, *Non-scheduled Generator*, *Market Generator* and *Non-market Generator* applies equally to an *Integrated Resource Provider* acting in that capacity.

1.1 Purpose of this guide

This Guide is used to help applicants applying to *AEMO* for registration as *an Integrated Resource Provider* with respect to an *integrated resource system* and classify *production units* and *scheduled load* using the Form available from the *AEMO* website. An applicant wishing to register as an *Integrated Resource Provider* with respect to a *generating system* and classify *generating units* only should use the Application for Registration as a Generator or Integrated Resource Provider in the NEM form on the AEMO website.

This Guide summarises the processes and information required by the Form but will not cover all circumstances. The National Electricity Law (NEL) and the NER prevail over this Guide to the extent of any inconsistency.

1.2 Requirement to register an Integrated Resource Provider in the NEM

Part 2, Div. 1, Section 11 of the NEL states that:

(1) "A person must not engage in the activity of owning, controlling or operating, in this jurisdiction, a generating system connected to the interconnected national electricity system…unless-

(a) the person is a Registered participant in relation to that activity; or

(b) the person is the subject of a derogation that exempts the person, or is otherwise exempted by AEMO, from the requirement to be a Registered participant in relation to that activity under this Law and the Rules."

(4) "A person must not engage in the activity of purchasing electricity directly through a wholesale exchange unless –

(a) the person is a Registered participant in relation to that activity; or

(b) the person is the subject of a derogation that exempts the person, or is otherwise exempted by AEMO, from the requirement to be a Registered participant in relation to that activity under this Law and the Rules."

If a person is required to register, penalties apply for failing to do so. See NEL Part 2, Div. 1, Section 11.

Further, clause 2.1A.1 of the *Rules* sets out the obligation to register for a non-exempt *generating system* or *integrated resource system* as an *Integrated Resource Provider*.

1.3 Exemptions and Special Approvals

1.3.1 Small production unit and intermediary exemptions

Please refer to AEMO's Guide to Registration Exemptions and Production Unit Classification and the Exemption from Registering Based on Appointment of an Intermediary fact sheet to determine:

- whether you may be entitled to an exemption from the requirement to register (typically where your *integrated resource system* is small) or where an intermediary is registering as an *Integrated Resource Provider* on your behalf, and
- what you need to do (if anything) to obtain that exemption.

1.4 Registration as an Intending Participant

Clause 2.7 of the *Rules* allows a person to register with AEMO as an *Intending Participant* if it can reasonably satisfy AEMO that it intends to carry out an activity in respect of which it must or may be registered as a *Registered Participant*. A person who intends to act as an *Integrated Resource Provider* may elect to register with AEMO as an *Intending Participant* if that person can satisfy AEMO that the relevant requirements have been met.

Please see the NEM General Application Guide if you would like to register as an *Intending Participant*.

1.5 Registration as a Project Developer

Clause 3.13.3AA (b) allows a person to apply to AEMO to be a *project developer*, if the person is not already a *Registered Participant*, and intends to develop plant to be connected to the transmission or distribution system in respect of which another person (other than an Intermediary) must or may be registered as a *Registered Participant*.

Please see the NEM General Application Guide if you would like to register as a *project developer*.

1.6 Fees

1.6.1 Registration Fee

All applicants for registration must pay a registration fee in accordance with AEMO's currently published fee schedule.

After the initial receipt and processing of the Form, AEMO will send a tax invoice to the applicant for payment. The registration fee can be paid by EFT. You should provide a remittance advice from your bank once payment has been lodged.

Please note that assessment of an Application will not be completed without confirmed payment of the registration fee.

1.6.2 Participant Fees

Clause 2.11.1(b)(2) of the *Rules* provides that *participant fees* should recover the budgeted revenue requirements for *AEMO*. Clause 2.11.1(b)(3) provides that the components of *participant fees* charged to each *registered participant* should be reflective of the extent to which the budgeted revenue requirements for *AEMO* involve that *registered participant*.

You should refer to the AEMO website for a summary of the AEMO budget and fees that are currently applicable to *Integrated Resource Providers*.

1.7 Other Documents to be submitted with the Registration application

All prospective *Integrated Resource Providers* in the *NEM* will be required to make or receive payments to or from AEMO in the *spot market* and must submit the following items with their registration application:

1.7.1 Bid and Offer Validation Data

If you are applying to classify a *scheduled production unit* or a *semi-scheduled generating unit*, you must provide AEMO with the *bid and offer validation data* and related information as specified in Schedule 3.1 of the *Rules* at least six weeks before you commence participation in the market.

1.7.2 Settlement Revision Liability Deed

Under clause 3.15.19 of the *Rules*, AEMO may revise or adjust a *settlement amount*. If you are to be *financially responsible* for an existing *market production unit*, you may also accept responsibility for these revisions. You will need to provide AEMO with a NEM Settlements Revision Liability Deed.

1.8 Application Submission

Please submit the completed Application by email, together with all the required attachments, to AEMO at: onboarding@aemo.com.au

Ensure any attachment clearly identifies the section it belongs to and is numbered sequentially (for example "Section D – Attachment 003").

For assistance. Contact AEMO:

Phone 1300 236 600 (International callers dial +61 3 9609 8000)

Email: onboarding@aemo.com.au

2. Registration Procedure

Chapter 2 of the NER deals with registration. Each prospective applicant must apply to AEMO for registration by using the relevant application form.

The registration process consists of the following steps:

Step 1 You submit the application form along with all attachments required by the Form to the address shown in Section 1.8 above.

Step 2 On receipt of your application, AEMO will send an invoice for payment by EFT.

For information regarding participant registration fees, see AEMO budget and fees on the AEMO website.

Step 3 AEMO will review the application and respond to you within 5 *business days* of receipt of the application (Clause 2.9.1(b) of the *NER*).

Step 4 AEMO may request additional information or clarification of the information contained in the application. If such a request is made, you must supply the additional information or clarification within 15 *business days* of AEMO's request (Clause 2.9.1(c) of the NER).

Step 5 Within 15 *business days* of receiving the application, or within 15 *business days* of receiving the requested additional information or clarification, AEMO will notify you of AEMO's determination and, if AEMO rejects your application, the reasons for rejecting it (Clause 2.9.2(a) of the *Rules*).

AEMO's notification will include:

- any conditions of registration, if applicable, that AEMO considers reasonably necessary, and

- an effective date of registration. This date will be determined considering AEMO's software change management process.

Note: Regardless of outcome, application processing activities and timeframes are the same and carry the same overheads, so fees and charges are non-refundable.

3. Explanation of the Application for Registration Form

Information required by the Form is divided into the following sections:

- Section A. Participant Category
- Section B. Application Details
- Section C. Contact Details
- Section D. Required Information
- Section E. Integrated Resource System
- Section F. Registration as Integrated Resource Provider, or taken as Non-Market Integrated Resource Provider
- Section G. Compliance with Technical Requirements
- Section H. Local Black System Procedures
- Section I. Connection Point, Metering and Network Connection
- Section J. IT Systems

Below is an explanation of how to complete Sections A to J, including a description of the attachments to the sections that are required and the two appendices.

3.1 Section A. Participant Category

In the Form, select the type of registration required and the purpose of the application by checking the appropriate checkbox. Options identify if you are already registered as an *Integrated Resource Provider* or *Generator* and if you are amending an existing facility, for example, classifying a new *production unit*, or establishing a new facility. Information provided in various sections of the Form will reflect the choice identified in this section.

The Form can only be used to classify one or more *production units* or *load* in an *integrated resource system*. This Form should be used to classify a *bidirectional unit* that is not capable of transitioning linearly from consuming to producing electricity as a *scheduled generating unit* and a *scheduled load*.

3.2 Section B. Application Details

3.2.1 B.1. Applicant details

You must formally apply for registration and provide your entity details.

3.2.1.1. Participant ID

You can suggest a Participant ID for your organisation. AEMO will advise you of the suitability of this suggestion prior to the establishment of the registration record in AEMO's systems. Please take care in nominating the ID as AEMO's systems do not support changes once IDs have been allocated. The Participant ID must be a maximum of 8 characters (letters only). If the proposed ID is already taken or no suggestion is made by the Applicant AEMO will allocate one for you.

You will be charged an additional fee per the AEMO budget and fees if you already have an existing Participant ID but have requested an additional Participant ID.

3.2.2 B.2. Applicant association

To be eligible for registration as an *Integrated Resource Provider*, you must either:

- own, operate or control; or
- otherwise source electricity from (e.g. as the buyer under a power purchase agreement) in relation to the *production unit(s)* you are applying to classify as part of this registration.

3.2.3 B.3. Consent to act as an intermediary

These eligibility criteria apply equally to applicants intending to act in an *intermediary* capacity. If you are applying as an *intermediary*, you must also tick one or more of the preceding boxes to confirm your eligibility. You must also identify the parties who have nominated you as their *intermediary* on behalf of other parties, you must identify those parties and provide their consent to your appointment.

Please note that any parties for which you are acting as *intermediary* must submit applications for exemption from registration as a generator. They each must identify you as their *intermediary* in their application.

3.2.4 B.4. Applicant declaration

This section of the form must be signed by an authorised representative of the Applicant as a declaration that the application and supporting documents are true and correct. Usually, the authorised representative is a Chief Executive Officer / Head of Organisation, Company Secretary or holds a management position.
You must also authorise AEMO to contact other parties to verify the information you have provided.
AEMO will not proceed without the declaration as it allows us to speak to all necessary parties required to make a considered decision about your application.
Please read this declaration carefully and ensure you are aware of its meaning.

Note: If a digital signature is used then the signatory must be copied into the email submission of the application to AEMO.

3.3 Section C. Contact Details

In Section C you must provide contact details for your head office, control room, trading room and relevant personnel. It is important that AEMO can communicate with the correct person within your organisation, especially during operational emergencies. Please note only Australian phone numbers are acceptable and all personnel must be based in Australia. A description of each of the contact categories is provided below.

To ensure all information is up to date AEMO requests this information even if you are currently registered.

After registration, *Registered Participants* must maintain up-to-date contact details of all nominated operational personnel with AEMO on a regular basis. To update your operational contacts after registration, please contact AEMO's Support Hub at Support.Hub@aemo.com.au or call 1300 236 600.

Compulsory Contacts for all *Integrated Resource Providers*	
Control Room	Group contact details of control room, for physical plant operations. Control room must be contactable 24/7. Control room phone number should not be a mobile number or desk number of an individual. It is the Applicant's responsibility to ensure the control room phone is physically staffed at all times or transfers incoming calls to rostered individuals who can receive calls at all times.
Trading Room	Group contact details of trading room or trading desk, for bidding operations. Trading room must be contactable 24/7. Trading room phone numbers should not be a mobile number or desk number of an individual. It is the Applicant's responsibility to ensure the trading room phone is

Compulsory Contacts for all *Integrated Resource Providers*	
	physically staffed at all times or transfers incoming calls to rostered individuals who can receive calls at all times.
Emergency Messaging System	Contact who receives emergency messages. In the event of failure of the normal Market Notice message system, AEMO will communicate with registered participants using the AEMO Emergency Messaging System. You may provide up to 5 contacts of this type.
Head of Organisation	The Managing Director or Chief Executive Officer of the Applicant organisation.
Company Secretary	Secretary or assistant to the Head of Organisation.
Local Black System Procedures	Point of contact for Local Black System Procedures
Dispute Management	First point of contact for the notification of disputes under NER Clause 8.2.
Registration	AEMO Onboarding's primary point of contact with the Applicant in regard to their registration. Able to liaise extensively within their organisation and with the different teams in AEMO.
SCADA	Responsible for the remote monitoring and control signals exchanged with AEMO in respect of the *integrated resource system*. For semi-scheduled generators, this includes signals required under the Energy Conversion Model.
Corporate Relations Manager	Responsible for issues relating to external communication.
IT notifications email address	**Note:** See 'Section J2 IT Notifications email address' of the Form as these details are added there. Distribution list email setup on the participant side (it is not an AEMO email address). The IT notifications email address allows the participant to manage recipients of any changes or business impact communications. Examples of messages sent to the generic email address include the AEMO Help Desk Bulletin and Change Notices.

Compulsory Contacts for *Integrated Resource Providers* (other than *Non-Market Integrated Resource Providers*)	
Metering Responsible Person	Contact representing the Applicant who is responsible for the revenue *metering installation*.
Metering Coordinator	Contact representing the *Metering Coordinator* who has been appointed for the revenue metering installation. Metering Coordinator is as defined in clause 7.3.1 of the *Rules*.
Clearing – Primary	Responsible for Austraclear trades.
Clearing – Secondary	Secondary to above.
Prudentials – Primary	Responsible for trading limit breaches and bank guarantees.
Prudentials - Secondary	Secondary to above.

Compulsory Contacts for *Integrated Resource Providers* (other than *Non-Market Integrated Resource Providers*)	
Settlements - Manager	Senior person within organisation with extensive knowledge of Settlement processes. Nominated 'Registration' contact in Settlements Direct. Receives formal correspondence such as Maximum Credit Limit (MCL) Letters, and is contacted if there are Settlements queries.
Senior to Settlements Mgr.	For example, Chief Financial Officer or General Manager.
IT Security – Primary	Primary IT contact for participant security and systems access. Will receive the MarketNet credentials needed for access to AEMOs market systems (MMS and MSATS) from AEMO's Information and Support Hub. This will occur after AEMO implements the participant in pre-production. They become the initial MSATS participant administrator.
IT Security – Secondary	Secondary to above. Must be available 24/7.
IT Technical Network	To setup your MarketNet connection (if requested). Provision and maintenance of the network connection to MarketNet requires a suitably qualified network specialist who is ready for contact from AEMO's network specialists. This is particularly important for the security-sensitive and time-critical nature of installation and maintenance of network connections.

Compulsory Contacts for *Integrated Resource Providers* requiring an Energy Conversion Model	
Intermittent Generating Unit Availability	Person responsible for updating the intermittent generation availability in the MMS portal for *semi* and *non-scheduled generating units*

Compulsory Contacts for scheduled or semi-scheduled generating units	
Operations – Trading Manager	Senior person within organisation with extensive knowledge of spot market operations.
Operations – Bidding	First point of contact for clarification of bids and offers in the spot market. Must be available 24/7.

Compulsory Contacts for *integrated resource system* >5MW	
Operations – Manager	Person responsible for day-to-day operations at the power station. First point of contact for physical operation of plant.
Operations – Shift Supervisor	Senior on shift who manages power station controllers.

Please clearly mark all attachments as '*Attachment to Section C*" and number each page consecutively

3.3.1 Section C: Operational Contact Details Requirements

The following points below summarise the requirements associated with the 24/7 control room and trading operational contacts:

- Primary operational contacts should be established via direct connections through a Public Switched Telephone Network (PSTN).

- The use of mobiles as a primary contact may only be considered for Participants that are not covered by the requirements of the system restart communications protocol and where there is a dedicated 1300/1800 number which automatically connects to a prioritised list of recipients. If so, caller IDs must be correctly relayed such that correct call-back details are maintained. This requirement also ensures that caller authentication can be maintained. The call connectivity must also be robust.
- Backup operational contacts should also be established via direct connections through a PSTN but can include mobile phones if the phone is located in an area of reliable coverage to more than one carrier cell tower and is on a different network to the primary number.
- Call menu options are not appropriate for operational communication and points of operational contact should be established via a direct number to the relevant operator or controller.
- Operators or controllers of facilities in the NEM must be fluent in the English language.
- The physical voice communications channel must have low distortion and noise, such that the communication is intelligible.
- Operators or controllers must comply with the agreed electrical and switching terminology used within the NEM.
- The objective is to answer any incoming call within 30 seconds. All incoming calls must be answered within no more than 5 minutes. The recipient of a call should also initiate a response in the network within 15 minutes for any system security related requests, instructions or directions, in accordance with Clause 4.2.6.
- Call system annunciators are commonly used to advise callers that the call is being recorded, as per Clause 4.11.4(c). When used, the length and complexity of these annunciator messages should be minimised. For example, the following annunciator message is deemed appropriate: "This call is being recorded".

3.4 Section D. Required Information

Additional material must be attached in relation to the following unless the participant is already registered in which case confirmation that no change has occurred since this information was last provided, or updated information, is required:

3.4.1 D.1. Partnership Status

If you are applying for registration on behalf of a partnership, you must provide evidence of the legitimacy of the partnership, such as a partnership agreement.

3.4.2 D.2. Trust Status

Where the Applicant is acting in a trustee capacity, the Applicant must provide a copy of the Trust Deed establishing the Applicant Trust. It must also execute and return a Trustee Deed Poll in the form specified by AEMO. No changes are to be made to the form of Deed other than the completion of details where highlighted.

AEMO must be satisfied that an applicant for registration will be able to meet its obligations under the *Rules*. (The same applies to exemption applicants who appoint an intermediary, because they remain liable for the intermediary's acts and omissions.) Trustees, however, are generally not personally liable for obligations they incur on behalf of the trust. The purpose of the Trustee Deed Poll, therefore, is to assure AEMO that the trustee's right of recourse to the property and assets of the trust remains in place for the purpose of meeting its *Rules* obligations, on an ongoing basis.

3.4.3 D.3. Organisational Capability

You must show that you are in a position to control the design, construction, maintenance, operation, business and administrative processes applicable to your *integrated resource system* activities and that responsible officers within your organisation are in a position to establish, or have already established, resources, processes and procedures to ensure compliance with the *Rules* applicable to your participation as an *Integrated Resource Provider*.

To confirm this, you need to enclose the documents stated in this section then check the appropriate checkboxes to confirm each document is attached or provide reasons why not.

3.4.4 D.4. Financial Viability

You must be able to meet your financial obligations to AEMO and satisfy the prudential requirements as set out in clause 3.3 of the *Rules*. You must include:

- copies of your most recent audited financial statements; and
- explanation of any financial links with parent or other organisations.

You might be required to provide credit support to cover the value of commissioning supplies and auxiliary supplies during plant outages or periods of infrequent generation. Further information regarding the amount of credit support is available from the document "Credit Limit Procedures" which is on the AEMO website. Credit support instruments must conform strictly to the format for financial guarantees available on the AEMO website.

Credit support providers must meet the criteria of clause 3.3.3 of the *Rules*. Guarantees from parent or affiliated companies are unlikely to satisfy the criteria.

Please check the appropriate checkboxes to confirm the documents are attached.

3.4.5 D.5. Regulatory compliance

You must show that you comply with requirements currently imposed by the *Jurisdictional Regulator* who has jurisdiction over your activities. You must confirm that you have either met your jurisdictional requirements, you are exempt from jurisdictional requirements, or that no jurisdictional requirements apply in your case. You should enclose the following:

- a copy of your current electricity licence or approval applicable in one or more *NEM* jurisdiction(s), or copies of relevant exemptions or derogations; and
- details of any non-compliance with jurisdictional regulatory obligations.

Please check the appropriate checkboxes to confirm the documents are attached.

3.4.6 D.6. Market Participant Criteria

Check the appropriate checkboxes.

3.4.7 D.7. Credit support

If you do not meet the acceptable credit criteria as detailed in clause 3.3.3 of the *Rules*, you will need to provide a financial institution guarantee using the AEMO Guarantee Pro-Forma.
AEMO's prudential team will contact you following submission of your application to confirm your credit support requirements.
It is recommended that guarantees are checked by AEMO prior to execution by emailing a draft copy to prudentials@aemo.com.au. The guarantee is required at the time of registration.

For further assistance with financial guarantees, see the Credit Support Management Guide on the AEMO website.

3.4.8 D.8. Recipient Created Tax Invoice Agreement

If your company (having the same ABN as this application) has signed a current version of the Recipient Created Tax Invoice Agreement (RCTI), you do not need to complete a new one. To see if your previously signed agreement is still current, check the **Last Updated** date in the latest Agreement's "notes for completion". If you have previously submitted an RCTI in the most current format you can identify that fact as a reason for not attaching a signed agreement.

An RCTI form is available from the AEMO website. To fulfill the requirements for an RCTI, please ensure that all essential fields are filled in and signed, including the accompanying cover letter. AEMO accepts both

electronic and physical copies of RCTIs. In the case of physical copies, since the Agreement involves two parties, it is necessary to execute and send back two original copies to AEMO. This ensures that each party possesses a fully executed copy. AEMO will then proceed to sign each original and return one copy to you. Insert the date the authorised signatory signs the agreements underneath his/her signature. The date of the Agreement will be the date on which AEMO executes it.

3.4.9 D.9. Austraclear

Please provide your Austraclear Membership Number. AEMO uses an external electronic funds transfer system provided by Austraclear. You will have to apply directly to Austraclear for membership. Membership approvals can take up to five weeks to process and charges are payable direct to Austraclear. See Austraclear website.

If you do not have an Austraclear membership number at the time of submitting the application, AEMO will record that as an outstanding item.

If the Austraclear account holder is not the Applicant entity, the Applicant will need to provide with their application a formal letter on behalf of the account holder declaring that the Applicant has permission to use this Austraclear account.

3.5 Section E. Integrated Resource System

3.5.1 E.1. System details

You must specify the *nameplate rating* and the maximum capacity of the *integrated resource system* and each dispatchable unit:

- The *nameplate rating* is the maximum continuous output or consumption as specified by the manufacturer, or as subsequently modified.
- The maximum capacity is the maximum *generation* or *consumption* to which *scheduled bidirectional units*, *scheduled generating units, semi-scheduled generating units*, *loads* or systems may be dispatched. For non-scheduled production units or *loads*, the maximum capacity is the maximum *sent out generation* or *consumption* at the *connection point*.

3.5.1.1. Dispatchable Units

You must nominate one or more dispatchable units for your *integrated resource system.* Dispatchable units in the Form have been separated into *bidirectional unit* and *generating unit / load* types. A *bidirectional unit* that is not capable of transitioning linearly from *consumption* to *production* should provide two DUIDs – one a *generating unit*, the other a *scheduled load*.

Each dispatchable unit, represented by a *dispatchable unit identifier* or DUID in AEMO's system, will be sent its own *dispatch instructions*. You must also assign any non-scheduled production units to a dispatchable unit. This is for AEMO system configuration only. An *Integrated Resource Provider* will not be sent *dispatch Instructions* with respect to non-scheduled production units.

The following apply to bidirectional DUIDs with storage:

- Apply Operational State of Charge Constraint – An Applicant can choose to have a registered operational state of charge value applied as a default limit in AEMO's predispatch and 7 day predispatch systems so that the state of charge remains within the maximum and minimum operational state of charge values. If EnergyLimits are provided in bids the bid values will override default values.
- Storage Import Efficiency Value – The increase in state of charge per unit of energy imported from the grid i.e. increase in state of charge / imported energy. This is a value over 0 and up to 1, where 1 means no losses.

- Storage Export Efficiency Value – The sent out energy to the grid per unit of reduction in state of charge i.e. sent out energy / decrease in state of charge. This is a value over 0 and up to 1, where 1 means no losses.

3.5.1.2. Production Unit and Load Sets

You must nominate one or more *production unit* or *load* sets for each dispatchable unit you have nominated. A *production unit* or *load* set is an individually metered section of an *integrated resource system* which contains one or more physical units (e.g. wind turbines or PV inverters). Each physical unit within a set must have a common:

- NMI.
- *Connection point*.
- Classification.
- Technology.

You must identify the group of physical units in each *production unit set or load set*. Each group should identify the physical units of the same size. Please note that for solar and battery systems, the number of physical units is defined by the number of inverters.

As an example: a wind farm with 50 turbines that are of three different sizes might be represented as:

Unit identifier:	1-10, 11-20, 21-50

You must identify the number of physical units in each set and provide information about the nameplate rating and maximum capacity of each of the physical units as well as the aggregate nameplate rating and maximum capacity of the *production unit* set or *load* set.

As an example, a battery with 20 inverters that represent battery packs of two different sizes might be represented as:

Number of physical units by:	[10, 10]	[ ]	[ ]
nameplate rating generation (MW)	[2.0, 4.0]	[ ]	[ ]
nameplate rating consumption (MW)	[2.0, 4.0]	[ ]	[ ]
maximum capacity generation (MW)	[2.0, 4.0]	[ ]	[ ]
maximum capacity consumption (MW)	[1.8, 4.0]	[ ]	[ ]
maximum storage capacity *(MWh)*	[3.6, 8.0]	[ ]	[ ]

with the first ten units having a nameplate rating of 2.0 MW for generation and consumption, a maximum capacity of 2.0 MW for generation and 1.8 MW for consumption and a maximum storage capacity of 3.6MWh.

You must classify each *production unit* set or *load* set as either:

- scheduled, semi-scheduled or non-scheduled; and
- market or non-market.

An explanation and examples of *production unit* classifications are provided in AEMO's Guide to Registration Exemptions and Production Unit Classifications. The scheduled, semi-scheduled or non-scheduled classification is requested under DUID, as each DUID must only contain *production units* or *load* of identical classification.

Where a value in the Form does not relate to the given *production unit* or *load* set, please write N/A.

Information to support exemption from *central dispatch* (that is, classification as a *non-scheduled production unit*) is to be submitted as an attachment to this section. You must provide information on each *production unit*, together with the evidence of the eligibility of each *production unit* to be classified in the selected category.

If you wish to classify and dispatch a *coupled production unit*, you should use the *production unit* tables in A.4 of the Form. These have been formulated to capture data on each technology in the *coupled production unit* as a separate *production unit* set. Where each coupled technology is to be dispatched independently, a DUID will be assigned to each technology and a *production unit* set will align with each DUID. Where a single DUID is required, more than one *production unit* set (one for each technology) will be associated with each DUID. The coupled production unit fact sheet may assist your understanding of how *coupled production units* may be classified and dispatched.

3.5.1.3. Start-Type

You must specify whether *scheduled production unit* sets are 'Fast' or 'Slow' start type.

Fast start *production units* can synchronise and reach minimum load within 30 minutes of receiving an instruction from AEMO and synchronise, reach minimum load, and shut down in less than 60 minutes. *Slow start production units* cannot do this. This information is requested under DUID as each DUID must only contain production units of the same start-type.

Fast start scheduled *production units* (and *scheduled loads*) can provide dispatch inflexibility profile data to AEMO in accordance with NER clause 3.8.19 to specify a dispatch inflexibility.

Note: Under NER clause 3.8.19(d), a Market Participant cannot submit a dispatch inflexibility profile for a *scheduled bidirectional unit* or *semi-scheduled generating unit*. Hence, *scheduled bidirectional units* and *semi-scheduled generating units* must be defined with start type as 'Slow'.

3.5.1.4. Ramp Rate Targets

The *maximum ramp rate* (MW/minute) sets an upper limit on the *ramp rate* that will be accepted in a bid. Bids with *ramp rates* that exceed the *maximum ramp rate* will be rejected.

The targeted change in a dispatchable unit's output (or *consumption* for *scheduled loads,* or *maximum generation* plus *consumption* for *bidirectional units*) sent via *dispatch instruction* will never exceed the *maximum generation* (or *consumption*) of that unit divided by five.

Hence the *maximum ramp rate* should not exceed the higher of:

- 20% of the unit's maximum *generation, consumption,* or *generation* plus *consumption* in the case of *bidirectional units* (expressed as MW/min); or
- the sum of the *minimum ramp rate* requirements for each individual bidirectional *unit* or *generating unit* if the unit is aggregated, even if the plant is physically capable of a higher *ramp rate*. The *minimum ramp rate* for an individual *bi-directional unit* or *generating unit* is the lower of 3 MW/min, or 3% of that unit's *maximum generation or consumption*, expressed as MW/min, rounded down to the nearest whole number greater than zero.

Bidirectional units have two *ramp rates*, one relating to *consumption* and the other *generation*.

3.5.1.5. Identifiers

When you first submit your application form, you must suggest Station IDs, Dispatchable Unit IDs and Production Unit or Load Set IDs. AEMO will advise you of the suitability of these suggestions prior to registration approval and request you to update them on the application form if necessary. Please take care in nominating these IDs as changes once IDs have been allocated are not supported. The following guidelines also apply to *production unit* and *load* IDs:

- All IDs are a maximum of 8 characters.

- IDs containing only alphanumeric characters are preferred. Underscores are not acceptable.
- Station IDs, DUIDs and *production unit* or *load* Set IDs must intuitively represent the full *power station* name or *load* name.
- Station ID or DUID must not contain any reference to the owner of the *power station* or *load*.
- For the DUID the final character must be a unique number which identifies the unit or *load* number. Even if only a single (or aggregated) unit is planned, the DUID should still end in 1. For any additional units, the number should increase sequentially.
- For consistency new units at an existing station should follow the existing DUIDs.
- Where there is a single Set under a Dispatchable Unit, it is acceptable for the Set ID to be the same as the Dispatchable Unit ID.
- Where there are multiple Sets under a Dispatchable Unit, please order the Sets.
- Example IDs for 'Blue Sky Power Station':
    - Suppose this *power station* has 2 dispatchable units. Each dispatchable unit contains a single Production Unit set.
        - Station ID: 'BLUESKY'
        - DUIDs: 'BLUESKY1' and 'BLUESKY2'
        - Production Unit Set IDs: 'BLUESKY1' and 'BLUESKY2'
    - Suppose this *power station* has two dispatchable units. The first dispatchable unit contains one Production Unit set and the second dispatchable unit contains two.
        - Station ID: 'BLUSKY'
        - DUIDs: 'BLUSKY1' and 'BLUSKY2'
        - Production Unit Set IDs: 'BLUSKY1', 'BLUSKY2A' and 'BLUSKY2B'

3.5.2 E.2. Scheduled production units

Where the dispatchable units you nominate contain multiple *scheduled production units*, *semi-scheduled generating units* (e.g. multiple wind turbines or PV inverters) or *scheduled loads*, you are indicating to AEMO that you wish to aggregate these units for the purposes of *central dispatch* in accordance with clause 3.8.3(a) of the *Rules*.

Please note that due to a system limitation, wind and solar *generating units* cannot be formally aggregated into a single dispatchable unit. Please contact AEMO to discuss this matter further if this was your intention.

Please check the appropriate checkboxes to confirm the documents are attached.

3.5.2.1. Energy Conversion Model

It is recommended that you provide AEMO with the *energy conversion model* for *semi-scheduled generating units* at least three months before you plan to commence participating in the market. This is to allow AEMO time to prepare the model for use in AEMO's wind or solar forecasting system. Guidelines for *energy conversion models* are available on the AEMO website.

If you are proposing to classify coupled production units which include intermittent technology you should contact AEMO to understand the requirement for an ECM.

3.5.3 E.4. Non-scheduled production units

If you intend to classify units as *non-scheduled bidirectional units*, please confirm their *nameplate rating* is less than 5 MW. If you intend to classify units as *non-scheduled generating units*, please confirm their *nameplate rating* is between 5 MW and 30 MW.

Please provide the basis and accompanying documentation on which your application is supported.

3.5.4 E.5. Status and duration

Confirm if the *integrated resource system* has previously commissioned or not and provide energisation and registration target dates.

3.5.4.1. Expected Closure Year

All *Integrated Resource Providers* with *scheduled* and *semi-scheduled production units* are required to provide the *expected closure year* which you expect the *integrated resource system* (or units within the system) to cease supplying electricity to the grid.

The *expected closure year* should be provided via AEMO's Supply Forecasting Generator Survey application. This can be accessed via AEMO's Electricity Market Management System (EMMS) portal, and will be used to:

- gather crucial information needed for AEMO's planning and forecasting publications such as the ESOO and the ISP, and
- accept standing data, including the *expected closure year*.

For instructions and assistance on how to log in to the portal, please contact AEMO's Support Hub at Support.Hub@aemo.com.au or call 1300 236 600.

Further, if an *Integrated Resource Provider* is planning to terminate any of its classifications of *scheduled or semi-scheduled production units*, it must officially notify AEMO in writing, giving details of the *closure date*, which must be no earlier than three years from the date of the notice (subject to any exemption the AER may grant).

These formal notices should be sent to onboarding@aemo.com.au and will be published on the NEM Registration and Exemption list.

Once registered, you will need to update AEMO if your closure plans change. Please refer to the requirements in 2.1B.3 of the *Rules* for details of these requirements.

Please clearly mark all attachments as 'Attachment to Section E' and number each page consecutively.

3.5.5 E.6. Operational and System Readiness

The operation of the *power system* requires participants to have robust communication mechanisms and 24-hour operational capabilities in place prior to registration and commissioning. Among many other things, operational obligations outlined within the NER require *Integrated Resource Providers* to:

- nominate personnel who will receive and act on operational communications;
- maintain up-to-date contact details of nominated operational personnel with AEMO;
- provide two independent telephone system numbers for each nominated operational personnel and control centre (mobile phone numbers only are not acceptable);
- maintain both independent telephone systems in good repair and investigate communication faults within 4 hours;
- establish and maintain a form of electronic mail facility as approved by AEMO;
- notify AEMO of settings or model updates, and circumstances affecting plant operation that could affect AEMO's management of power system security;

- ensure that appropriate personnel are available at all times to receive and immediately act upon instructions from AEMO (24/7 operational coverage)[1]; and
- ensure that every *semi-scheduled generating unit* is at all times able to comply with its latest *dispatch offer*[2].

Prior to registration, *Integrated Resource Providers*[3] must provide AEMO evidence of their operational and system readiness, and demonstrate they are able to:

- participate in bidding and *central dispatch* processes; and
- ensure appropriate personnel are always available to receive and immediately act upon *dispatch instructions* and operational communications on a 24/7 basis.[4]

To demonstrate your operational readiness, you must attach to your application form:

- a diagram which shows the roles of the individuals responsible for daily bidding and physical control of your *integrated resource system*, including details of their expertise;
- a description of how 24/7 operational coverage[5] will be maintained, to ensure appropriate personnel are available at all times to receive and immediately act upon instructions issued by AEMO. This should include, but is not limited to:
  - details on how you intend to receive and immediately act upon *dispatch instructions* and other operational instructions for physical plant operation on a 24/7 basis;[6]
  - details on who will and how you intend to submit *bids*, including rebids, and comply with the latest generation offer;
  - details of the systems in place for 24-hour access to AEMO systems, in particular AEMO's MMS portal;
- details of the two independent voice communications systems established for the *integrated resource system*, to give or receive operational communications. Applicants must provide for each nominated operational person and control centre two independent telephone communication system numbers (mobile phone numbers are not acceptable);[7]
- details of the data communication systems established for the *integrated resource system* to connect to AEMO systems; and
- a completed and signed Application Capability Declaration.

To demonstrate your system readiness, you will be asked to submit evidence you can use AEMO's pre-production systems once you have been configured to do so. You will be required to submit screenshots of:

- the first energy offer that you are likely to submit post commissioning, and acknowledgment of successful submission (for *scheduled* and *semi-scheduled production units*);

[1] Example 1: operational personnel are available to adjust voltage set-points on a power station – either locally or remotely – regardless of the day of the week, or the time of the day,

Example 2: appropriate systems are in-place to receive and follow dispatch instructions via bidding systems and backup by AEMO's MMS portal.

[2] Note that any change in the commercial availability of *semi-scheduled generating units* must be communicated to AEMO by rebidding.

[3] Please note that *Non-Scheduled Integrated Resource Providers* may also be required to provide information relating to *dispatch*. AEMO will advise if you are required to provide associated supporting information.

[4] For both market dispatch and physical operations of plant.

[5] Please note 24/7 bidding operations is not considered the same as 24/7 physical generation operations (who can physically adjust plant).

[6] For example: details on how operational personnel are available to adjust voltage set-points on a power station – either locally or remotely – regardless of the day of the week, or the time of the day.

[7] Registered Participants are required to maintain both telephone communication systems in good repair and investigate communication faults within 4 hours.

- an MT PASA availability profile and acknowledgment of successful submission (for *scheduled production units*);
- an intermittent generator availability profile (upper MW limit and turbine/inverters unavailable) and acknowledgment of successful submission, for both energy availability (HH) and MTPASA availability (daily) (for *semi-scheduled generating units* and other intermittent *production units* required to submit an *energy conversion model*);
- receipt of *dispatch* target (MW) (for *scheduled production units*); and
- receipt of semi-dispatch cap (MW and flag) (for *semi-scheduled generating units*).

If the *production unit* classification being sought is with respect to an existing *integrated resource system* with the same *production unit* classification, the applicant will not be required to provide operational readiness documentation. However, the applicant may still be asked to provide system readiness information and a capability declaration will be needed for any Applicant that has not previously provided one.

Please clearly mark all attachments as ***'Attachment to Section E'*** and number each page consecutively.

3.5.6 E.7. Energy dispatch instructions

AEMO's primary interface for *dispatch instructions* is either AEMO's *automatic generation control system* (AGC) (for energy and regulation services only) or the Electricity Market Management System (MMS) Data Interchange.

Market Participants may choose to receive 5-minute *dispatch instructions* via SCADA but must be aware that AEMO considers this a secondary system and cannot monitor successful transmission of SCADA signals.

The SCADA signals that form part of a dispatch instruction are:

- For all units, the MW dispatch target;
- In addition, for *semi-scheduled generating units*, the semi-dispatch cap flag; and
- In addition, for units within an aggregate dispatch group, the conformance mode flag.

As part of their request for receiving *dispatch instructions* via SCADA, the *Market Participant* should consider extending this request to all the units in an aggregate dispatch group (except for those units receiving AGC setpoints via SCADA).

AEMO seeks to provide *Market Participants* with *dispatch* (energy and FCAS) targets and semi-dispatch caps in a reliable and robust way. The MMS Data Interchange system has been designed for this.

Although AEMO's SCADA can be used to provide *dispatch instructions*, AEMO cannot ensure that the *dispatch instructions* is sent to and received by a *Market Participant*. Any interruptions to the SCADA signal could be in AEMO's systems or NSP systems and may not be visible to AEMO. As such, a participant could be using an old or incorrect *dispatch instructions* and might be declared non-conforming as a result.

The AGC, which uses the SCADA communication paths, does not have this issue as the AGC recalculates the setpoints and sends the signals every 4 seconds.

3.5.7 E.8. Aggregated dispatch conformance

In accordance with AEMO's SO_OP_3705 Dispatch Procedure and NER clause 4.9.2A, an *Integrated Resource Provider* with an *integrated resource system,* or part of an *integrated resource system,* that comprises two or more of the following *scheduled resources - scheduled production unit, semi-scheduled generating unit, scheduled load* - is permitted to register two or more DUIDs within the *integrated resource system* or the relevant part of the *integrated resource system* as an Aggregate System, to conform in aggregate to *dispatch instructions* for those scheduled resources (aggregated dispatch conformance, or ADC), excluding any *scheduled resource* for which AEMO requires individual dispatch conformance.

An aggregate dispatch group (ADG) is a group of two or more *scheduled resources* (DUIDs) from the same Aggregate System which can achieve ADC. An *integrated resource system* may comprise of one or more ADGs.

If you wish to register the *integrated resource system* as an Aggregate System, complete section E.8, and where relevant appendix A3.

- Record your ADGID, as your Station ID appended by the _ADG1. For each additional ADG, the associated ADGID must follow the same format and the appended number should increase sequentially. AEMO will request you update this field if necessary.
- Record the details of the DUIDs which constitute the ADG:
    - DUID Name
    - DUID
    - DUID classification.

The DUID details should match the information provided in section E.1.1 DUID in the Form.

Please clearly mark all attachments as '*Attachment to Section E*' and number each page consecutively.

3.6 Section F. Registration as Integrated Resource Provider, or taken as Non-Market Integrated Resource Provider

Clause 2.2.5A(c) of the *Rules* provides:

> "An *Integrated Resource Provider* must purchase all electricity *supplied* through the *national grid* to the *connection point* for each of its *market bidirectional units* from the *spot market* and make payments to *AEMO* for such electricity in accordance with the provisions of Chapter 3."

Appendix 1 of this Guide explains when *Integrated Resource Providers* can be taken to purchase electricity from a second *connection point*. In this case, they have a choice to classify the second connection point as a *market connection point* or have a different *Market Customer* or *Integrated Resource Provider* do so. Applicants who may need to draw electricity from the *network* (i.e. purchase through the *spot market*) at a second *connection point* must include supporting documentation to demonstrate the arrangement and confirm if they or a third party *Market Customer* or *Integrated Resource Provider* is classifying that connection point.

Please identify the *Market Participant* who will be *financially responsible* for *load* that is *supplied* at a *connection point* that is not part of the overall connection of the *integrated resource system* to the *network*.

Please clearly mark all attachments as '*Attachment to Section F*' and number each page consecutively.

3.7 Section G. Compliance with Technical Requirements

If you are registering in respect of an *integrated resource system* that has already been classified in the *NEM*, you may use existing information to support your application. The application form lists the information that must be provided.

If you are registering in respect of a new *integrated resource system* or adding new *production units* or *scheduled load* to an existing *integrated resource system* that has already been classified (modified *integrated resource* or *generating system*), then you must provide the following:

- Integrated Resource Provider Performance Standards

  You must attach the *performance standards* for your *integrated resource system*.
- Technical information submission

  You must submit the R1 technical information for your *integrated resource system* to your *Network Service Provider* and AEMO to assess and confirm *plant* performance for the purposes of assessing your

application for registration and for ongoing *power system security* assessment. You must confirm if the R1 technical information has been submitted and when it was sent. If the R1 technical information has not been submitted yet, you must send it to your *Network Service Provider* and copy NEM.connections@aemo.com.au.

Please refer to AEMO website for relevant templates, checklists and guidelines.

Please clearly mark all attachments as '*Attachment to Section G*' and number each page consecutively.

3.8 Section H. Local Black System Procedures

Clause 4.8.12 of the *Rules* requires *Integrated Resource Providers* to develop *local black system procedures* for each of their *power stations* and submit them to AEMO for approval. Guidelines for preparing *local black system procedures* are available on the AEMO website.

This information is required to allow AEMO to understand the likely condition of *integrated resource systems* following a *black system* event and any constraints or conditions of operation that would apply during the restoration process. AEMO needs to confirm there are no inconsistencies between your *local black system procedures* and AEMO's own *system restart plan*. Accordingly, you must provide AEMO with any relevant technical information that may affect the capabilities or performance of your *production unit(s)* in a system restart scenario.

Please clearly mark all attachments as '*Attachment to Section H*' and number each page consecutively.

3.9 Section I. Connection Point, Metering and Network Connection

3.9.1 Rules Requirements

In Section I you must confirm that the proposed *metering installation* will be able to meet the requirements of Chapter 7 of the *Rules*.

Under clause 5.3.7(g) of the *Rules*, a *Network Service Provider* and the *Registered Participant* must jointly notify AEMO that a *connection agreement* has been entered and forward the relevant technical details of the proposed *plant* and *connection* which includes the *metering installation* information.

Clause 7.2.1(a) of the *Rules* requires *metering* to be installed and operational prior to participation in the *market* in respect of the relevant *connection point*.

Clause 7.2.1(b) of the *Rules* provides that AEMO may refuse to permit a *Registered Participant* to participate in the *market* if clause 7.2.1(a) has not been complied with.

3.9.2 I.1. Connection point Details

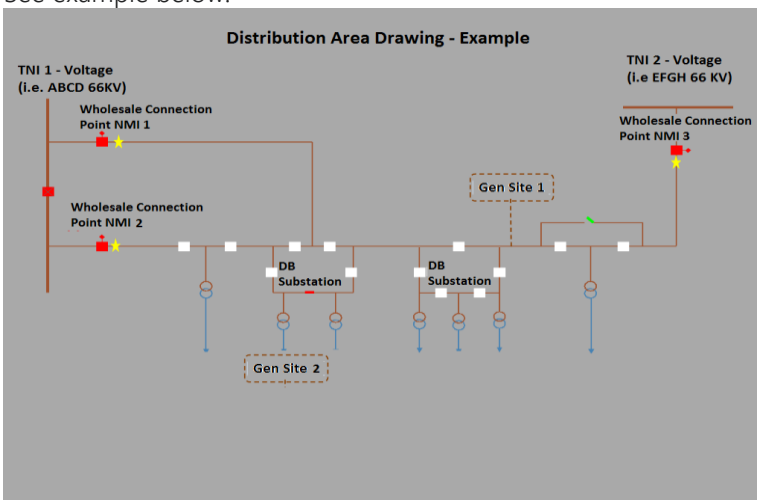
The Connection Point Details is to be completed to satisfy the minimum requirements for the registration of *metering installations* at the *connection point* as required under Chapters 5 and 7 of the *Rules*.

All fields must be supplied for AEMO to be able to conduct a full technical assessment (except where indicated below). Clarification of the information required for the Connection Point Details are provided below:

The Connection Point Details is to be completed to satisfy the minimum requirements for the registration of *metering installations* at the *connection point* as required under Chapters 5 and 7 of the *Rules*.

All fields must be supplied for AEMO to be able to conduct a full technical assessment (except where indicated below). Clarification of the information required for the Connection Point Details are provided below:

Connection Point NMI(s):	*National Metering Identifier* (NMI) as advised by the *Network Service Provider*. If the NMI is not already registered in MSATS, provide confirmation of the NMI from the *Network Service Provider* as an attachment to Section I.
Special site or Technology Related Conditions	Refer to *Rules* 7.8.12 - Special Site or Technology Related Conditions. If there is an existing algorithm for the *connection point(s)*, provide a copy of the algorithm as an attachment. All new algorithms require AEMO approval. Algorithms are not an acceptable substitute for actual metering installations that meet NER requirements. As such, a detailed explanation why an algorithm is required and why compliance with other NER metering installations clauses are not able to be achieved, is to be provided with the request for consideration.
Physical Address of *connection point:*	Physical address at which the *integrated resource system connection point* is situated including street, suburb/town and postcode.
Physical Location of *connection point:*	A specific statement that clearly details the physical locality of the *connection point* is situated as per the Applicant's *connection agreement*. AEMO needs to understand where the *connection point* is in relation to the *metering installations*. (E.g. At 66KV Circuit Breaker 12345 on the low voltage side of Transformer 1 at Substation XYZ).
Single line (schematic) diagram of the installation showing the *connection point* and revenue metering installation:	Single Line diagram (SLD) of the *connection point* highlighting: • Revenue *metering installation* location details, • CT/VT location details, • relevant switching system/s that control import/export to the *national grid* • asset boundaries and asset owners • other assets and asset owners that could potentially be impacted by the installation. Identify the drawing number and provide the drawing as an attachment to Section I. (Drawings need to be re-sized with clarity and accuracy).
The distance between the Connection Point and the revenue *metering installation*:	Rule 7.8.7 requires the *metering point* to be as close as practicable to the *connection point*. Provide the distance (in metres) between the *connection point* and the *metering installation*. A value must be entered.
Detailed Wiring diagram of the Metering Installation:	Detailed Wiring diagram of the *metering installation* which must clearly identify: • Revenue Metering • Check Metering (when installed and required) • Meter Class Accuracy • Meter Make and Type • CT Class

	• VT Class • CT Ratio • VT Ratio • CT (Burden Rating) • VT (Burden Rated) Identify the drawing number and provide the drawing as an attachment to Section I. (Drawings need to be re-sized with clarity and accuracy).
Distribution or transmission area diagram showing the generation system's relativity to TNI:	Drawing showing the proposed *connection point* relative to the associated wholesale *connection point* and/or the TNI. Identify the drawing number and provide the drawing as an attachment to Section I. (Drawings need to be re-sized with clarity and accuracy). These drawings should be obtainable from the DNSP or TNSP associated with the installation. See example below: 
Distribution Loss Factor	
DLF Code:	DLF Code provided by the DNSP.
DLF Value:	DLF value as determined in accordance with approved methodology.
If *active rated power* >10MW or forecast annual *production* > 40 GWh, and connected to the Distribution Network, approval for site specific Distribution Loss Factor from the Australian Energy Regulator (AER).	If the *integrated resource system* will be *connected* to a *distribution network*, and proposed *active rated power* is greater than 10MW or forecast annual *production* is > 40 GWh, Rule 3.6.3 requires a site specific DLF to be created. *Rules* 3.6.3(b)(2)(i)(A) and 3.6.3(i) require a site specific DLF to be derived from a methodology determined by the DNSP and approved by the AER. Where the *integrated resource system* is connected to an *embedded network* (EN), the *Embedded Network Operator* (ENO) must determine the loss factor between the *child connection point* and the *parent connection point*. The DNSP is responsible for determining the loss factor between the *parent connection point* and the TNI. The site specific DLF for the *child connection point* is the product of these two loss factors.

	Provide, as an attachment, the document detailing the methodology and approval letter from the AER.
Generation capacity	
Feeder Capacity:	Capacity of the feeder in MVA or Amps
Transformer Capacity:	Capacity of the transformer in MVA
Generator Capacity:	Capacity of the *integrated resource system*. Provide MVA, MW and *power factor*
Annual Energy Generation:	Forecast energy generated in MWh per annum.

3.9.3 I.2. Network Connection Details

Is the Connection Point connected to a Network other than a Registered Transmission or Distribution Network?	Provide details of the type of *network* the *connection point* is connected to if it is not connecting to a registered *transmission* or *distribution network*, i.e., a private network or other registered network.
Is this *integrated resource system* connected to a *Dedicated Connection Asset* (DCA)?	Provide confirmation as to whether the *integrated resource system* will be connected to a DCA.
Is this *integrated resource system* connected to an existing *Dedicated Connection Asset*?	Provide confirmation as to whether the *integrated resource system* will be connected to an existing DCA. An existing DCA relates to unregulated transmission connection assets where the *connection application* was submitted prior to the introduction of the DCA framework (1 July 2018). If the *integrated resource system* is to connect to an existing DCA, advise whether the location of the *connection point* is at the point of connection to the regulated *transmission network* or a negotiated location within the existing DCA. If negotiated, detail the location of the negotiated *connection point*.
Is this *integrated resource system* connected to a Designated Network Asset (DNA)?	Provide confirmation as to whether the *integrated resource system* will be connected to a DNA. If the *integrated resource system* is to connect to a DNA, provide a single line diagram clearly indicating the locations of both the *connection point* of the *integrated resource system* and the boundary point (where DNA connects to regulated *transmission network*).
Regulated *transmission node* location name and voltage level	This is the location where the installation or *distribution network* connects to the regulated *transmission network*. At what voltage is this connection. If there is an existing TNI code at this location it can be provided. A new code may be established and a unique MLF calculated.
If *integrated resource system* is connected to a *distribution network* or	If the *integrated resource system* will be *connected* to a *distribution network* or another non-transmission Network

non-transmission Network type, provide the NMI(s) located at the *transmission node*	type, provide the bulk classified NMI's located at the *transmission node* to validate the installations connectivity to the *transmission network*. This information is obtainable from the DNSP or TNSP associated with the installation.

3.9.4 I.3. Metering Details

Revenue metering installation details	
Metering Coordinator	
Detail:	*Metering Coordinator* (MC) for *connection point* For *connection points* that are connected to a *transmission network*, only the TNSP or the FRMP may be appointed as the MC. This party must be registered with AEMO as an MC. For *connection points* that are connected to a *distribution network*, only a registered contestable MC may be appointed. Review NER Chapter 7 Part C for all requirements relating to the appointment of an MC.
Metering installation	
Metering Installation Type (S7.2.3):	Clause S7.4.3 of the NER defines the meter type requirements. The *metering installation* must meet the accuracy requirements stated.
Meter Details	
Meter Serial No:	Serial number which identifies the meter installed. (add additional rows if required).
Meter Make & Model:	Name of the manufacturer of the meter and the model of the meter installed.
Pattern Approval Cert No:	The National Measurement Institute of Australia issues a certificate of approval when an electricity meter is pattern approved. Provide the Pattern Approval Cert No.
Meter Class Accuracy:	Meter class accuracy must meet the minimum acceptable class or standard of components as outlined in S7.4.3 of the *Rules*.
Is Meter Bi-Directional:	A *metering installation* must be capable of separately recording energy data for energy flows in each direction where bi-directional active energy flows occur or could occur.
Current Rating:	The operating range of the meter in Amps.
Meter Test Results:	Copies of the most recent *meter* test results conducted in accordance with S7.6.2 of the *Rules*.

	These results must show compliance with the relevant Australian standard or international standard as identified in Metrology Procedure Part A and must come from either a: *NATA* laboratory or a body recognised by *NATA* under the International Laboratory Accreditation Corporation (ILAC); or An accredited *metering provider* that has used *NATA*/ILAC traceable reference/calibration equipment as per S72.3(b)(6) of the *Rules*. The test results must meet the minimum allowable uncertainties (±) as per Table S7.6.1.1 of the *Rules*. Provide the *meter* test results as an attachment to Section I.
Current transformer (CT) details	
CT Serial No:	Serial number which identifies the *current transformer* installed. (add additional rows if required).
CT Ratios Available:	Provide the range of *current transformer* tap ratios available.
CT Connected Ratio:	Provide the connected ratio of the *current transformer*.
CT Burden (rated):	Provide the *nameplate* burden rating of the *current transformer* in VA.
CT Class:	Provide the class of the CT's installed. *Current transformer* class accuracy must meet the minimum acceptable class of components as outlined in S7.4.3 of the *Rules*.
CT Test Results	Copies of the most recent *current transformer* test results conducted in accordance with S7.6.2 of the *Rules*. These results must show compliance with the relevant Australian Standard or *International Standard* as identified in Metrology Procedure Part A and must come from either a: *NATA* laboratory or a body recognised by *NATA* under the International Laboratory Accreditation Corporation (ILAC); or An accredited *metering provider* that has used *NATA*/ILAC traceable reference/calibration equipment as per S7.2.3(b)(5) of the Rules. The test results must be within the maximum allowable uncertainty (±) as per Table S7.6.1.1 of the *Rules*. Provide the *current transformer* test results as an attachment to Section I.

Voltage Transformer (VT) Details	
VT Arrangement:	Advise if the *voltage transformer* is a 3 x single phase *voltage transformer* or a three phase *voltage transformer*.
VT Serial No.	Serial number/s which identifies the *voltage transformer* installed. (add additional rows if required).
VT Ratio:	Provide the ratio that the *voltage transformer* is connected at.
VT Burden (Rated):	Provide the *nameplate* burden rating of the *voltage transformer*.
VT Class:	Provide the class of the VT's installed. *Voltage transformer* class accuracy must meet the minimum acceptable class of components as outlined in S7.4.3 of the *Rules*.
VT Test Results	Copies of the most recent VT test results conducted in accordance with S7.6.2 of the *Rules*. These results must show compliance with the relevant *Australian Standard* or *International Standard* as identified in Metrology Procedure Part A and must come from either a: *NATA* laboratory or a body recognised by *NATA* under the International Laboratory Accreditation Corporation (ILAC); or An accredited *metering provider* that has used *NATA*/ILAC traceable reference/calibration equipment as per S7.2.3(b)(5) of the Rules. The test results must be within the maximum allowable uncertainties (±) as per Table S7.6.1.1 of the *Rules*. Provide the VT test results as an attachment to Section I.

Check metering installation details
The requirements for *check metering installations* is outlined in S7.4.4 of the *Rules*. Also refer to Chapter 10 Glossary definitions relating to *check meter*, *check metering data* and *check metering installation* to assist with determining *check metering* requirements. Any proposal for partial *check metering* will need to be approved by AEMO.

Participant relationships in MSATS	
Role ID	Description
FRMP:	The *Financially Responsible Market Participant*
LNSP:	The *Local Network Service Provider* – either the *Transmission Network Service Provider* or the *Distribution Network Service Provider* if the *integrated resource system* is connected to a *distribution network*.
LR:	*Local Retailer*

MDP / MPC:	Accredited *Metering Data Provider*.
MPB:	Accredited *Metering Provider*
MC:	*Metering Coordinator* (previously known as Responsible Person).
ROLR:	Retailer of Last Resort.

3.9.5 I.4 Attachments

Provide (where required) the following attachments to Section I:

- Logical NMI – Algorithm
- Single Line (Schematic)
- Detailed Wiring diagram of the Metering Installation
- Distribution or transmission area drawing
- Distribution Loss Factor from the Australian Energy Regulator (AER)
- Meter Test Result
- Current Transformer Test Results
- Voltage Transformer Test Results

Clearly mark attachments with 'Attachment to Section I' and number each page consecutively.

3.10 Section J. IT Systems

When appropriate, Applicants need to provide AEMO with IT system information.

3.10.1 MarketNet connection

All participants requiring access to AEMO's IT market systems must have access to AEMO's private network called MarketNet. As part of processing an application, AEMO's network specialist will liaise with your IT Technical Network Contact (or third party as organised by you) to setup a primary and secondary connection according to your request.

In this section, you need to select 'Yes' if you require a new MarketNet connection and provide the information requested or select 'No' if you have access to an existing connection or do not require one.

For details regarding MarketNet options and entitlements, see the Guide to Information Systems on the AEMO website.

3.10.2 IT Notifications email address

It is important to receive AEMO notifications regarding IT changes or outages that may impact your business, including gas FRC Hub notifications (if applicable).

Please have your IT staff set up and maintain a group email address with an appropriate distribution list for this to occur (individual email addresses are not accepted).

Once established, enter your organisation's email address in the space provided.

3.10.3 e-Hub access

AEMO has a private communication platform called e-Hub which supports the exchange of information between participants and AEMO using APIs. The e-Hub is accessible over MarketNet or the internet.

The e-Hub includes:

- An API Developer portal
- An API Gateway

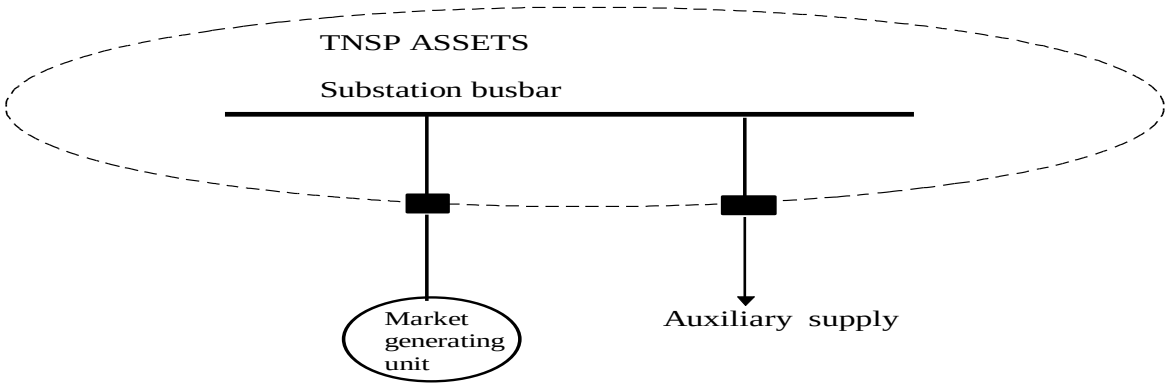
Not all applicants require e-Hub access. If you require e-Hub access, select 'Yes' then fill in the appropriate fields, or select 'No' if you do not.

To access, an AEMO-signed TLS certificate is required, please see the TLS Certificate Management guide.

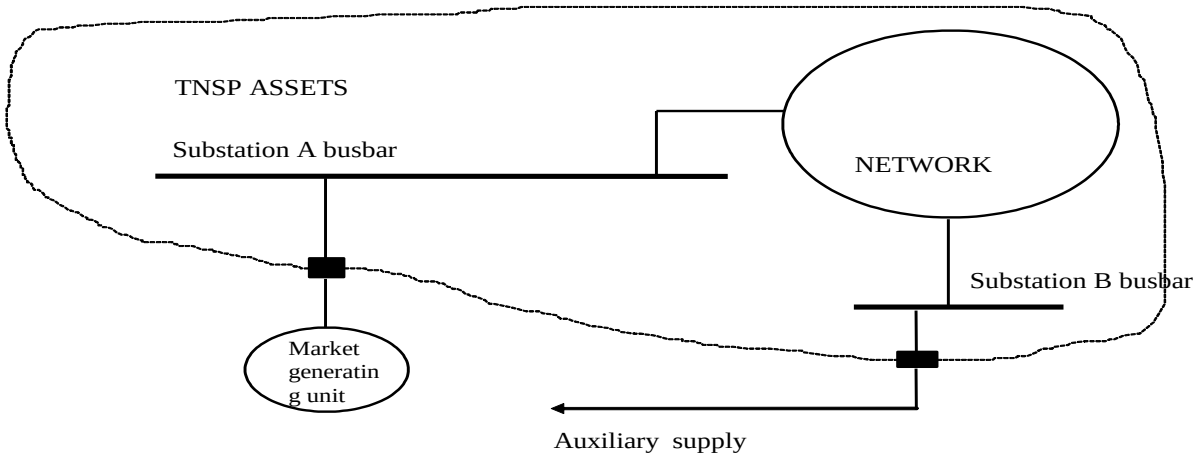
A1. Appendix 1 – Multiple points of connection to the network

There are situations in which a*n integrated resource system* may consume electricity at a second *connection point*. These are outlined in the following diagrams and cover the following situations:

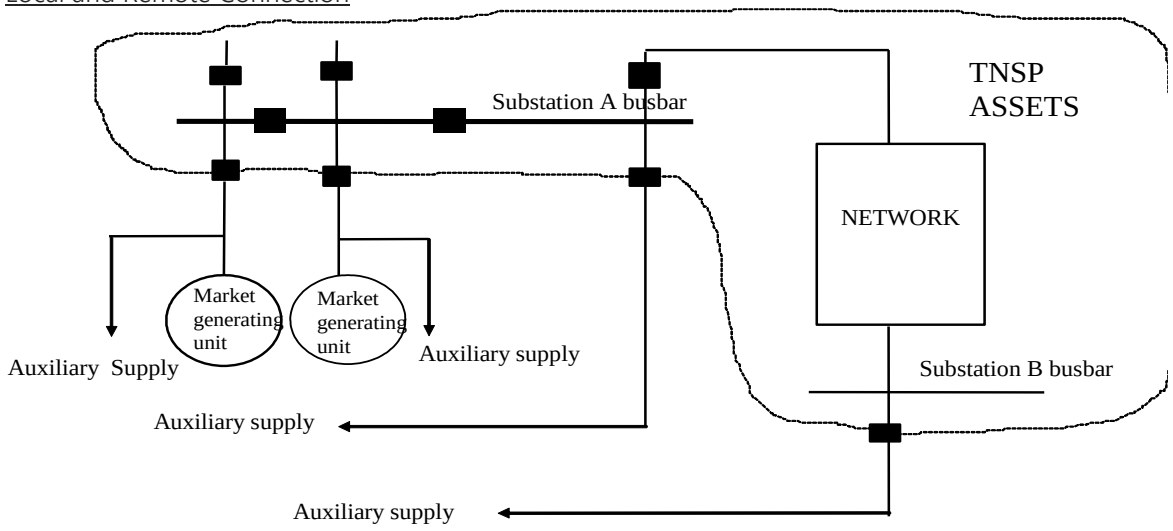
Local Connection



Remote Connection



Local and Remote Connection



In all cases above, auxiliary supply for the *market generating unit* is taken from physically separated *connection points*, either at the same substation, or another point in the *network*, or a combination of local and remote points.

As referred to in the *Rules*, a *connection point* can refer to multiple physical points. The *connection point* is defined in Chapter 10 of the *Rules* as:

> "In relation to a *declared shared network* and a *distribution network* (other than an *embedded network*), the agreed point of supply established between *Network Service Provider(s)* and another R*egistered Participant*, *Non-Registered Customer* or *franchise customer* and includes a *parent connection point*.
> In relation to other *transmission networks*, the point at which power flows to or from a person *connected* to the *transmission network* can be isolated from the *transmission network*. If there is more than one such point, the *Network Service Provider* and that person 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".

In all cases, AEMO will require the *Integrated Resource Provider* either to:

- classify the additional *connection points* that consume electricity as a *market connection point*; or
- have the additional connection points classified as a market connection point by another Integrated Resource Provider or Market Customer,

unless

- the Integrated Resource Provider and the relevant Network Service Provider confirm that all relevant points of physical connection form the agreed connection point (point of supply) for the integrated resource system; and
- the electricity consumed through all those points is used for the activity of operating the integrated resource system.

A2. Appendix 2 – Fuel Source and Technology Type

The fuel source and technology of all registered *production units* must be submitted in Section F of the Application Form; this information will be published. A list of common fuel source and technology types is provided below:

Fuel Source	
Primary Fuel Source	Descriptor
Renewable/ Biomass / Waste	Bagasse Biodiesel Biofuel - other Biogas - other (captured for combustion (not methane)) Biogas - Sludge (captured for combustion (methane only)) Biomass recycled municipal and industrial materials Dry wood Ethanol Green and air-dried wood Landfill methane / Landfill gas
Fossil	Black coal Blast furnace gas Brown coal Brown coal briquettes Charcoal Coal seam methane Coal tailings Coke oven coke Coke oven gas Crude oil and condensates Diesel Ethane Fuel Oil Gaseous fossil fuels - other Gasoline (aviation fuel used for stationary energy) - avgas Gasoline (non-aviation fuel) Heating oil Kerosene (aviation fuel used for stationary energy) – avtur Kerosene (non-aviation fuel)

	Liquefied aromatic hydrocarbons Liquefied petroleum gas Naphtha Natural gas – compressed Natural gas – liquefied Natural gas – unprocessed Natural gas (pipeline) Natural gas / diesel Natural gas / fuel oil Natural gas liquids – other Petroleum based greases Petroleum based oils and lubricants Petroleum based products – other Petroleum coke Recycled fossil fuel derived industrial and municipal materials Refinery coke Refinery gas and liquids Solid fossil fuels – other Solvents if mineral turpentine or white spirits Sulphites Lyes Tar Town gas Waste coal mine gas
Hydro	Water
Geothermal	Geological heat
Solar	Solar
Wave	Water
Wind	Wind
Tidal	Water
Battery storage	Wind Solar Grid

Technology	
Primary Technology	Descriptor
Renewable	Hydro - Gravity Run of River Pump Storage Tidal Wave Wind - Offshore Wind - Onshore Photovoltaic Flat panel Photovoltaic Concentrator Photovoltaic Tracking Flat panel Photovoltaic Tracking Concentrator Solar Thermal Boosted Solar Thermal Solar Thermal with Storage Boosted Solar Thermal with storage Enhanced Geothermal Systems (Hot Dry Rock) / Binary cycle Enhanced Geothermal Systems (Hot Dry Rock) / Flash Enhanced Geothermal Systems (Hot Saturated Aquifer) / Binary cycle Enhanced Geothermal Systems (Hot Saturated Aquifer) / Flash
Combustion	Compression Reciprocating Engine Spark Ignition Reciprocating Engine Combined Cycle Gas Turbine (CCGT) Open Cycle Gas turbines (OCGT) IDGCC (Integrated Drying and Gasification Combined Cycle) IGCC (Integrated Gasification Combined Cycle) Integrated CTL (Coal to Liquid) Steam Sub Critical Steam Super Critical
Storage	Battery and Inverter Battery