



APPLICATION GUIDE

Enrolment in the Virtual Power Plant Demonstrations

This Application Guide is to be used in conjunction with the corresponding Application Form.

The information in the Application Form is not to be altered without the prior written consent of Australian Energy Market Operator Ltd (AEMO).

Disclaimer

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

Purpose	This Guide has been produced by the Australian Energy Market Operator Limited (AEMO) to provide information about the process applying for VPP Demonstrations Enrolment in the <i>National Electricity Market (NEM)</i> as at the date of this publication.
No substitute	This Guide is not a substitute for, and should not be read in lieu of, the <i>National Electricity Law (NEL)</i> , the National Electricity Rules (NER or <i>Rules</i>) or any other relevant laws, codes, rules, procedures or policies. Further, the contents of this Guide do not constitute legal or business advice and should not be relied on as a substitute for obtaining detailed advice about the NEL, NER, or any other relevant laws, codes, rules, procedures or policies, or any aspect of the <i>NEM</i> or the electricity industry.
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Rules Terms

Terms defined in the *Rules* have the same meanings in this Guide unless otherwise specified. Those terms are intended to be identified in this Guide by italicising them, but failure to italicise such a term does not affect its meaning.

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1. Introduction

1.1 Purpose of this guide

This Application Guide (Guide) is intended to assist applicants applying to AEMO for VPP Demonstrations Enrolment using the Enrolment in the Virtual Power Plant Demonstrations Application Form (the Form) available from the AEMO website, to:

- classify loads as ancillary services loads; and
- aggregate two or more loads so they are treated as one ancillary services load.

This Guide summarises the processes and information required by the Form and for AEMO to determine your application. This Guide will not cover all circumstances. The NEL and NER prevail over this Guide to the extent of any inconsistency.

1.1.1 Prerequisite for enrolment in the VPP Demonstrations

Before applying to classify and aggregate two or more loads as *ancillary services*, on the basis of the terms and conditions applying to the VPP Demonstrations, you are required to meet the following prerequisites:

- (1) Registered *Market Participant*: You must be a registered *Market Participant* in the category of *Market Customer* or *Market Ancillary Service Provider* (MASP). If you are not currently registered as a *Market Customer* or MASP, please apply for registration with AEMO before using this Form to apply for VPP Demonstrations Enrolment.
- (2) Appropriate APIs setup: You will need to have appropriate APIs setup to submit device data and frequency injection test data for initial enrolment in the VPP Demonstrations. All subsequent data changes must also be provided via APIs. Please refer to the 'Guide to AEMO VPP Demonstrations APIs¹.'

In the case that APIs are not ready at the time of VPP Demonstrations launch, you will need to submit device data and frequency injection test data to AEMO by responding to email from VPPEnrolment@aemo.com.au during your enrolment process, using a VPP data template that can be found in the 'VPP Demonstrations Data Specification²'. Once the APIs are available, you will need to integrate with the AEMO APIs to facilitate the existing data transfer and use APIs for ongoing data submission and update.

1.1.2 Requirement to classify load as ancillary services load in the VPP Demonstrations

Under clause 2.3.5(a) of the Rules, if a MASP in respect to a *load*, or *Market Customer* in respect to a *market load*, wishes to use that *load* or *market load* to provide *market ancillary services* in accordance with Chapter 3, then the MASP or *Market Customer* must apply to AEMO for approval to classify the *load* or *market load* as an *ancillary service load*.

Also, as required in clause 2.3.5(b)(2) of the Rules, the application made by a MASP must not be in respect of a *market load* that is a *scheduled load*.

¹ At <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/DER-program/Virtual-Power-Plant-Demonstrations>.

² At <http://aemo.com.au/-/media/Files/Electricity/NEM/DER/2019/VPP-Demonstrations/VPP-Demonstrations-Data-Specification>.

1.2 Fees

1.2.1 Enrolment Fee

AEMO will not charge enrolment fees (for all four enrolment scenarios specified in the Application Form) to registered *Market Customer* or MASP to enrol in the VPP Demonstrations for the financial year starting 1 July 2019. AEMO will review this arrangement each financial year as part of the budget process, and during review of the *Participant fee* structure.

1.2.2 Registration Fee

AEMO has decided not to charge new registration fees to applicants that apply to register as a *Market Customer* or MASP, and to classify *loads* as frequency control *ancillary service loads* for the purpose of VPP Demonstrations Enrolment for the financial year starting 1 July 2019. AEMO will review this arrangement each financial year as part of the budget process, and during review of the participant fee structure.

1.2.3 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 [electricity fee schedule](#) for a summary of the participant fees currently applicable to a *Registered Participant*.

1.3 Application Submission

Please return your completed Application together with all required attachments to:

VPPEnrolment@aemo.com.au

To speak to AEMO in relation to your enrolment application, please use the following contacts:

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

Emails: VPPEnrolment@aemo.com.au

SupportHub@aemo.com.au

2. Enrolment Procedure

Chapter 2 of the *Rules* deals with the classification of *ancillary services load* under a *Market Customer* or a MASP.

Each prospective VPP Demonstrations Participant must apply to AEMO for enrolment by using the relevant application form. The enrolment application form is located on the AEMO website.

The enrolment process consists of the following steps:

- Step 1.** You submit the completed Application as described in Section 1.3 above.
- Step 2.** AEMO will review the Application and respond to you within 5 *business days* of receipt of the Application (clause 2.3.5(c) of the *Rules*).
- Step 3.** 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 2.3.5(d) of the *Rules*).
- Step 4.** Once all necessary information is received by AEMO, AEMO will notify you of AEMO's determination and, if AEMO rejects your application, the reasons for rejecting it.

3. Application Form

The application form allows enrolment based on the following four enrolment scenarios:

1) Scenario 1: Initial Enrolment

The Applicant is applying to initially enrol in the VPP Demonstrations to:

- classify *loads* in a region with a technology to provide *market ancillary services*; and
- aggregate two or more *loads* in a region so they are treated as one *ancillary service load*.

You can only aggregate *ancillary service loads* controlled by the same technology types (switching control or variable control).

This scenario also applies if the Applicant is applying to initially enrol in the VPP Demonstrations in respect of an existing aggregated *market ancillary service loads* in a region.

This scenario also applies if an existing VPP participant is applying to enrol in the VPP Demonstrations with a new VPP consortium.

2) Scenario 2: New Region with Enrolled Technology

The Applicant is already enrolled in the VPP Demonstrations with a technology in one region and is applying to classify and aggregate loads to provide *market ancillary services* in a new region with the same technology to provide *market ancillary services*.

3) Scenario 3: New Technology or New Services in an Enrolled Region

The Applicant is already enrolled in the VPP Demonstrations with a technology in a region and is applying to:

- use a new technology type in that region to classify and aggregate loads to provide *market ancillary services*; or
- register additional *market ancillary services* in that region with that technology.

4) Scenario 4: Amend loads

The Applicant is enrolled in the VPP Demonstrations with a technology in a region and is applying to:

- classify additional loads in that region with that technology; and
- aggregate the additional loads so classified,

which would increase the total aggregated market ancillary service load of the Applicant in that region in respect of that technology by one or more whole MW above the previously approved aggregation.

Under clause 2.3.5(j) of the *Rules*, a MASP and a *Market Customer* (as applicable) must immediately notify AEMO if a *load* it has classified as an *ancillary service load* ceases to meet the requirements for classification. For the purposes of the VPP Demonstration, and in addition to any other form of notification provided by a MASP or a *Market Customer*, AEMO will consider any device level data which the Applicant submits to constitute notification consistent with clause 2.3.5(j) (as well as any other form of notification that may be provided).

The Form is divided into the following sections, noting that relevant sections to be completed will depend upon the applicant's enrolment scenario:

- Section A – Enrolment Scenario
- Section B – Application Details
 - Section B.1 Applicant details
 - Section B.2 Declaration

- Section C – Contact Details
 - Section C.1 Head office contact details
 - Section C.2 Personnel contacts
- Section D – VPP Details
 - Section D.1 Description of VPP
 - Section D.2 VPP consortium member details
 - Section D.3 Data and cyber security obligations
- Section E – Information on Market Ancillary Service Loads
 - Section E.1 Ancillary service load identification
 - Section E.2 Market ancillary service information
- Section F – Information on Control Equipment
 - Section F.1 Determination of ancillary services information
 - Section F.2 Controls, communications and telemetry information
 - Section F.2.1 *Facilities* to receive dispatch instructions
 - Section F.2.2 Control *facilities*
 - Section F.2.3 Loads with switching controllers
 - Section F.2.4 Monitoring and recording *facilities*
 - Section F.2.5 Test data
- Section G – Terms and Conditions
- Section H – IT Systems

Below is an explanation of how to complete Sections A to H of the application.

3.1 Section A – Enrolment Scenarios

In Section A you must elect which scenario you are applying for from the following scenarios:

- Scenario 1: Initial enrolment
- Scenario 2: New region with enrolment technology
- Scenario 3: New technology or new services in an enrolled region
- Scenario 4: Amend loads

3.2 Section B – Application Details

3.2.1 Section B.1 - Applicant details

You must formally apply for enrolment and authorise AEMO to contact other parties, if necessary, to verify the information that you have provided with your application.

Before applying to enrol in the VPP Demonstrations, you must be a registered *Market Participant* in the category of *Market Customer* or *MASP*. You must specify an active *NEM* Participant ID under the registered category and all the ancillary service load identifiers proposed in Section E.1 will be associated with this *NEM* Participant ID.

3.2.2 Section B.2 - Declaration

The Application must be signed and dated by an authorised representative of your organisation as a declaration. Usually the authorised representative is a Chief Executive Officer / Head of Organisation, Company Secretary or holds an executive management position.

3.3 Section C – Contact Details

You must provide head office details and personnel contact details as outlined in the Form. The mandatory contacts must be provided before we can progress the Application for consideration. If contact details change during the process, please contact the Onboarding team. After enrolment, *Registered Participants* must maintain up-to-date contact details of contacts provided to AEMO on a regular basis. To update your contacts after enrolment, please contact AEMO's Support Hub.

If you require AEMO to liaise with persons that are not working directly for the applicant, you must submit a letter of authority with the application.³

3.4 Section D – VPP Details

3.4.1 Section D.1 – Description of VPP

Give a brief description of the VPP:

- General location and quantity of *connection points* in your VPP.
- Description of the controllable assets/technology employed in your VPP.
- Details of how the coordination of your VPP is achieved – e.g. have you procured or built an appropriate DER Management System (DERMS) software solution

3.4.2 Section D.2 – VPP consortium member details

You are considered a VPP consortium for the purposes of this application if you are collaborating with a third party to manage or coordinate the VPP fleet specified in this Application or provide data to AEMO. You will need to identify the third party as the VPP coordinator and provide their details in this section.

If you are developing multiple VPPs, each coordinated by a different partner as the VPP coordinator, you will need to apply for a separate enrolment and will need a different VPP ID (refer to Section E.1 – Ancillary service load identification) for VPP consortium. Details for VPP coordinator must be provided in this section.

3.4.3 Section D.3 – Data and cyber security obligations

If you nominate a third party to submit data to AEMO, as set out in the Data Specification⁴, they need to be identified as a data transfer provider. Please provide details of the data transfer provider in this section.

To determine the level of cyber security maturity of your organisation, the VPP coordinator listed in section D.2 and any data transfer provider listed in section D.3, each must complete the Cyber Security questionnaire⁵ prior to your enrolment in the VPP Demonstrations.

A Cyber Security questionnaire is only required to be completed and submitted to AEMO once, unless there have been changes since your previous submission. If an Applicant is developing multiple VPPs with different VPP coordinators, the Applicant will only need to complete the Cyber Security questionnaire once. You are required to confirm whether a completed questionnaire for your company, each VPP coordinator listed in section D.2 and each third-party data transfer provider, has been submitted with this application form, or is not required to be submitted because it has already been completed in relation to a prior application.

³ At http://aemo.com.au/-/media/Files/Electricity/NEM/Participant_Information/New-Participants/Letter-of-Authority-Template.docx

⁴ At <http://aemo.com.au/-/media/Files/Electricity/NEM/DER/2019/VPP-Demonstrations/VPP-Demonstrations-Data-Specification>.

⁵ At <http://aemo.com.au/-/media/Files/Electricity/NEM/DER/2019/VPP-Demonstrations/VPP-Demonstrations-Cyber-Security-Questionnaire>.

3.5 Section E – Information on Market Ancillary Service Loads

3.5.1 Section E.1 – Ancillary service load identification

Section E.1 identifies the *market load* or *load* to be classified as *ancillary service load*. For each region, you must provide information for each *market load* or *load* that you wish to classify as an *ancillary service load*

Table 1 Description of ancillary service load identification information

Items	Description
VPP ID	Virtual power plant identifier to identify individual VPP enrolment per region and per consortium.
VPP name	Name of the virtual power plant.
Dispatchable unit identifier (DUID)	Dispatchable unit identifier to dispatchable generating unit or load for the purposes of central dispatch.
DUID name	Name of the dispatchable unit.
Region	The geographical and electrical groupings at which the market is priced and settled.

If you are applying under one of the following scenarios, you will require a new VPP ID.

- Scenario 1: Initial enrolment; or
- Scenario 2: New region with enrolled technology

If you are applying under one of the below scenarios, you will require a new DUID.

- Scenario 1: Initial enrolment; or
- Scenario 2: New region with enrolled technology; or
- Scenario 3: New technology or new services in an enrolled region

When you first submit your enrolment application form, you suggest a VPP ID, VPP ID name, DUID(s) and DUID name(s) for your VPP and *ancillary service load*. AEMO will advise you of the suitability of these suggestions prior to the establishment of the registration record. Please take care in nominating these identifiers as changes after the VPP ID and DUID(s) have been allocated are not supported.

The guidelines on how to determine these identifiers are described below.

Each DUID will need to be classified as switching control / variable control, and generation / load. Ancillary service loads controlled by the same technology types (switching control or variable control) should be aggregated under either the switching DUID set or the variable DUID set.

Each VPP will be able to configure up to two DUIDs per region as per the following DUID types.

- Type 1: SL – Switching control, Load
- Type 2: VL – Variable control, Load

The following guidelines apply to VPP ID, VPP ID name, DUID(s) and DUID name(s):

- VPP ID is a maximum of 6 characters and DUID is a maximum of 8 characters.
- IDs containing only alphanumeric characters are preferred. Special symbols (e.g. dash, underscores etc.) and the letter "O" are not acceptable.

- The VPP ID and DUID should follow the following naming convention:

VPP ID: <VS><Region><Participant><NumberA>

DUID: <VS><Region><Participant><NumberA><Technology type><NumberB>

- must start with alphabetic characters "VS";
 - <Region> is a single alphanumeric character indicate the *NEM* region of VPP ID and DUID:
 - N – NSW;
 - Q – QLD;
 - S – SA;
 - V – VIC;
 - T – TAS;
 - <Participant> is two alphabetic characters abbreviation representing the participant name;
 - <Technology type> is a single alphabetic character indicate the type of controller / control system that delivers a specific amount of service:
 - S - Switching Controller;
 - V – Variable Controller;
 - <NumberA> is a single digit from 1 to 9. The final character of each VPP ID must be a unique number which identifies the VPP number. Even if only a single VPP ID should still end in 1. For any additional IDs the number should increase sequentially.
 - <NumberB> is a single digit from 1 to 9. The final character of each DUID must be a unique number which identifies the DUID number. Even if only a single DUID should still end in 1. For any additional IDs the number should increase sequentially.
- VPP name and DUID name must intuitively explain the VPP ID and DUID, and comply with the following guidelines. DUID name must be less than 20 characters (including spaces).

VPP name: <VPP><Participant><Region><NumberA><Others>

DUID name: <VPP><Participant><Region><NumberA><DUID type><Others>

- must start with "VPP";
 - <Participant> indicates the participant company name;
 - <Region> indicates the region of VPP ID and DUID;
 - <DUID type> is two alphabetic characters abbreviation representing the DUID type 1 or type 2.
 - <NumberA> is a single digit from 1 to 9; This should be the number as the <NumberA> in the VPP ID or DUID;
 - <Others> is additional explanatory notes, e.g. indication of multiple DUIDs or different consortium etc. It can be left as blank.
- Example IDs and names for VPP Demonstrations participant 'Blue Sky Pty Ltd'
 - Suppose this participant initially enrolls in NSW with batteries using a variable controlling system:
 - VPP ID = VSNBS1
 - VPP name = VPP BlueSky NSW1
 - DUID(s) = VSNBS1V1
 - DUID name(s) = VPP BlueSky NSW1 VL1
 - Suppose this participant also wants to enrol in QLD for the controllable load using a switching controlling system:
 - VPP ID = VSQBS1
 - VPP name = VPP BlueSky QLD1

- DUID(s) = VSQBS1S1
- DUID name(s) = VPP BlueSky QLD1 SL1

3.5.2 Section E.2 – Market ancillary service information

In Section E.2, you need to indicate which of the six contingency *market ancillary services* the *ancillary service load* will offer, and the parameters within which each service can be provided. You will not be able to apply for regulation FCAS and participation in the energy market by using the Application Form. AEMO will review this information and indicate whether the *ancillary service load* can be used to provide the nominated *ancillary services* in accordance with the *Market Ancillary Service Specification*⁶ (MASS) or the *VPP Demonstrations FCAS Specification*⁷. The parameters that you specify, once registered in AEMO's MMS, will be used to validate *ancillary services* bids that you submit.

You must indicate:

- the *market ancillary services* you are seeking to provide from the *ancillary service load*
- the type of control equipment being used to control the load for each of the services to be provided, and
- the maximum *market ancillary service* capacity that you can provide for each of the services to be provided. This must be in whole number. For example, 3.9 MW must be 3 MW.

To classify *loads* as *ancillary service loads* and aggregate two or more *loads* so they are treated as one *ancillary services load*, please submit completed data lists of the *ancillary service loads* via APIs. This could include adding additional connection points, removing connection points or amending the details of the *ancillary services load* at a connection point. Please refer to the Guide to AEMO VPP Demonstrations APIs and Data Specification for data submission via APIs.

Complete lists of data required for enrolment include:

- a NMI and Device Data list
- a Frequency Injection Test Data (FITD) list, which includes
 - FITD-Device: Frequency injection test on every battery system model
 - FITD-DUID: VPP wide test (frequency injection or frequency dead-band adjustment) for all controller types

In the case that APIs are not ready at the time of VPP Demonstrations launch, please refer to section 1.2.1(2) of this Guide.

You must submit completed lists of data and satisfy AEMO that the data will be capable of meeting or exceeding the relevant performance standards and specifications. This data will be assessed prior to your enrolment application being approved.

⁶ At <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Security-and-reliability/Ancillary-services/Market-ancillary-services-specifications-and-FCAS-verification>.

⁷ At <http://aemo.com.au/-/media/Files/Electricity/NEM/DER/2019/VPP-Demonstrations/VPP-Demonstrations-FCAS-Specification>.

3.6 Section F– Information on Control Equipment

3.6.1 Section F.1 – Determination of ancillary service information

In Section F.1, you must confirm how you determined your *loads* can provide the ancillary services you wish to offer and meet the conditions specified in the MASS or the *VPP Demonstrations FCAS Specification*⁸ by selecting one or more items and describe the details (if selecting Other) in this Section.

3.6.2 Section F.2 – Controls, communications and telemetry information

In Section F.2, you are required to:

- describe the *facilities* you have installed to receive dispatch instructions for the enablement of each *ancillary service*,
- describe the control and monitoring *facilities* installed for each *ancillary service* in accordance with the MASS or the *VPP Demonstrations FCAS Specification*,
- identify any *loads* with switching controllers and the proposed frequency deviation setting of the switching controllers, in line with the frequency settings specified in Table 3 and Table 4 of the MASS,
- describe the monitoring and recording facilities installed for each ancillary service in accordance with the MASS or *VPP Demonstrations FCAS Specification*, including communications and telemetry, where applicable, and
- provide test data that demonstrates provision of any fast, slow and/or delayed services applied for. This data is to be provided for all control equipment devices you are proposing to use and be in accordance with MASS or be agreed by AEMO under the *VPP Demonstrations FCAS Specification*. Further details can be found in Data Specification. You must submit test data which will be assessed prior to your application being approved. Please refer to Section 1.2.1(2) of this Guide for details about how to submit data.

3.7 Section G – Terms and Conditions

In Section G.5, you are required to provide a declaration by selecting one or more of the following items and describe the details (for any item not selected) in this Section.

- The Applicant confirms that the *load* being classified is a *load*.
- The Applicant confirms that appropriate arrangement(s) are in place with *retail customer(s)* at the relevant *connection point(s)*.
- The Applicant confirms that the *load* complies with the MASS or *VPP Demonstrations FCAS Specification*.
- The Applicant confirms that there is no *generating unit* at the connection point of the load that is registered, or required to be registered, as a *Generator*.

⁸ At <http://aemo.com.au/-/media/Files/Electricity/NEM/DER/2019/VPP-Demonstrations/VPP-Demonstrations-FCAS-Specification>.

3.8 Section H – IT Systems

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

3.8.1 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.

3.8.2 e-Hub access for VPP - initial enrolments only

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 and access may be optional or mandatory. If you require e-Hub access, select 'Yes' then fill in the appropriate fields, or select 'No' if you do not.

Your IT Security Contact will need to provide or obtain an AEMO certificate. e-Hub access cannot be finalised until an AEMO certificate is provided.

To obtain an AEMO certificate, you will be required to submit a Certificate Signing Request (CSR) to apiportal@aemo.com.au, refer to Section 4.2 'Obtain a new certificate' in the [Guide to AEMO's e-Hub APIs](#).

Note: When attaching a CSR file, please change the '.csr' filename extension to '.txt' to avoid email rejection of the attached file.

AEMO's IT specialist will liaise with your IT Security Contact to obtain this and to set up e-Hub access.

For API users, see the [Guide to AEMO VPP Demonstration APIs](#) to register on the API Developer portal and locate technical information about API development.