Integrating Energy Storage Systems June 2024 releases: Participant Development Support Environment

Fact Sheet

This fact sheet provides background and guidance in the scope, timing, use and support for the IESS Participant Development Support Environment.

AEMO has established the Integrating Energy Storage Systems (IESS) project under the NEM Reform Program to carry out the procedure and system changes arising from the IESS rule and to support industry readiness for the IESS changes.

The IESS rule comprises four distinct high-level changes, two of which have been implemented (Table 1). AEMO is providing a participant development support environment (PDSE) to assist participants in their development and implementation of the remaining IESS changes on and from June 2024.

Table 1   Changes introduced by the IESS rule

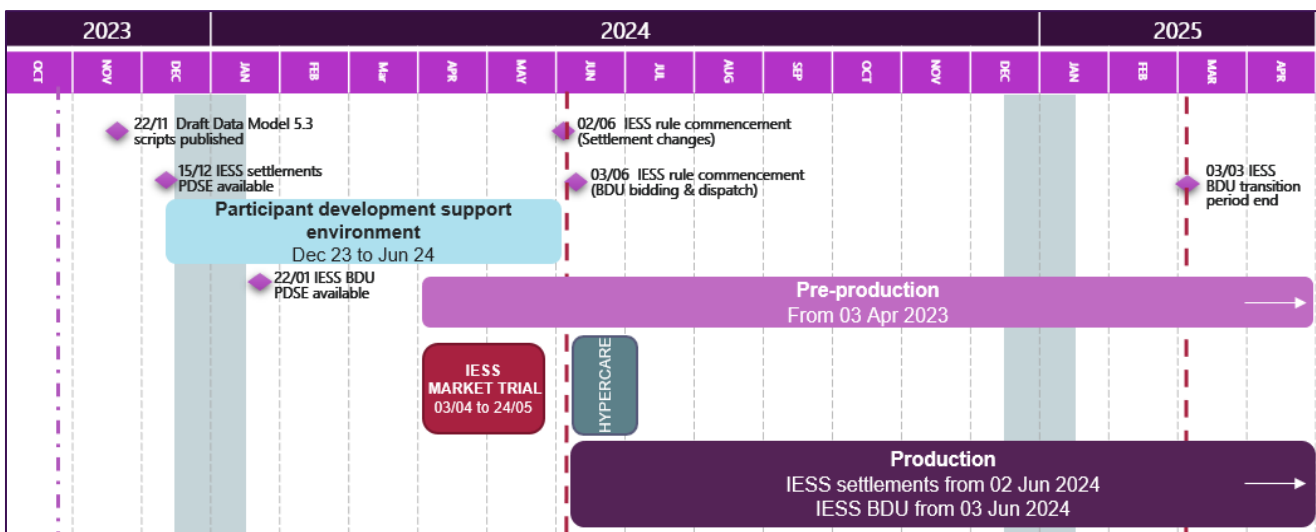| Implementation	Change	Description
31 Mar 2023	Small generation aggregators (SGA) providing FCAS	**Complete.** Aggregators of small generating and storage units can now provide ancillary services (if they choose to do so).
09 Aug 2023	Aggregated dispatch conformance (ADC)	**Complete.** • Aggregate Systems can choose to register for ADC • ADC provides an Aggregate System with the flexibility to conform to its dispatch instructions by dispatching energy at the connection point from any combination of its units (with some restrictions), rather than individually on a unit-by-unit basis • Includes minor changes for Battery Energy Storage Systems (BESS). AEMO will temporarily be using the ADC mechanism to monitor net dispatch conformance for a BESS across its scheduled generating unit/scheduled load pair, as a Target Aggregate.

02 Jun 2024	IESS retail and settlement changes	Significant changes to the calculation method to be used for Non-Energy Cost Recovery (NECR):
		 • Recovery calculations are to consider the gross (consumption separate from generation) energy amounts of all participants, rather than current approach using net energy (generation – consumption) of specific participant types
		 • Major settlements database structure changes are required to enable the new calculations, these changes will flow into the Data Model and affect:
		   – Participant reconciliation and reporting activities
		   – AEMO data provision
		   – Embedded network management changes to ensure that the parent has the appropriate gross energy volumes available for settlement.

02 Jun 24 (IRP) **03 Jun 24 (BDU)**	Registration, bidding and dispatch changes	• Introduction of Integrated Resource Provider (IRP) participant type • Bidirectional unit (BDU) bidding and dispatch, with impacts for BDU participants and bidding system vendors/developers. BDUs bidding will be a single bid form with 10 bids bands each direction (generation/consumption) for energy and regulation FCAS. **Note**: BDU transition period to 03 Mar 2025 means that while AEMO needs to have systems and processes in place, there is no industry readiness requirement for "day 1" (rule commencement).

Fact Sheet

Participant development support environment

AEMO is making available a test environment (additional to AEMO's pre-production) called the PDSE to better support participants' development, internal testing and market readiness for IESS.

This environment allows participants to test their system changes against beta versions of key AEMO system changes in advance of the IESS market testing period.[1]

Figure 1 shows the PDSE availability in relation to the pre-production and production environments updated for IESS. 0 sets out a summary of key aspects of the PDSE.

Figure 1: IESS environment availability

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[1] The *IESS industry testing and market trial strategy* sets out the high level approach and principles associated with the NEM testing activities that will support IESS rule implementation.

Table 2   Summary of PDSE scope, timing, use and support

	IESS SETTLEMENTS	IESS BDU BIDDING & DISPATCH
WHO can choose to use the PDSE?	Financially responsible market participants (FRMPs) who are registered in pre-production. FRMPs are market customers, market generators and market small generation aggregators.	BESS participants wishing to use the PDSE must be a registered participant/user in pre-production. Registered participants who are planning to have a BESS but do not yet have one <u>will</u> be able to use the PDSE. Table 3 provides more details on which participant types can access the PDSE and pre-production, and when they can use it.
WHEN will the PDSE be available?	Fri 15 Dec 2023	Mon 22 Jan 2024
	- AEMO plans to have the PDSE available to support participant development until the IESS rule commences (early June 2024). - As per usual practice, the capability and data in the pre-production environment will remain available for participant testing.	
WHAT will be available in the PDSE?	- A release of EMMS Data model 5.3 settlement tables will be populated from a single settlement run. - The intent is to populate those tables to provide participants with insight to the structure of settlement data under IESS rule changes. - Table 4 lists the settlement data and reports populated in the PDSE.	- Existing DUIDs (BESS generation/load pairs) from pre-production will be available. - Bidding & dispatch for the new single DUID BDU approach will be supported, including reporting via MMS Data model version 5.3. - Table 5 lists the bidding and dispatch reports that will be available in the PDSE
WHAT will <u>not</u> be available in the PDSE?	- The PDSE will not support integrated end to end scenarios or activities. - Settlement data will not reconcile to RM reports. - Bids made in PDSE will not be reflected in the Settlement data available. - Dispatch information generated in the PDSE will not be reflected in the settlement data / statements available in the PDSE. - Settlement reports will be limited to those outlined in the section above. - PDSE will not provide support for Market Portal access.	
Is the PDSE software fully tested?	No. The PDSE will contain early release versions of both settlement and BDU bidding/dispatch. These early versions are being made available to support participant interface development, in line with participant requests.	
HOW do I access the PDSE?	- AEMO requires participants to pre-register their interest in using the PDSE by Fri 24 November 2023, by responding to AEMO's survey. - AEMO will use existing pre-production credentials of participants who are already registered in pre-production as the basis for establishing their Market Portal and API portal access in the PDSE. - AEMO will use information provided in survey responses to create accounts and access credentials for FTP participant FileShare folders in PDSE. - Table 3 provides more details on which participant types can access the PDSE and pre-production, and when they can use it.<blockquote>NOTE: Existing participants who currently have access to pre-production bidding API's will be using same credentials to use Bidding Submission API's in the PDSE. But new or existing participants who never had access to bidding API's in the pre-production environment will need to request for the Transport Layer Security (TLS) certificate which is a self-managed BAU process through the <u>Market Portal</u> similar to the one for obtaining access to pre-production.</blockquote> - Please note that the PDSE has been set up based on a snapshot of registered participants as of 24 October 2023. Participants who registered after this date and wish to use the PDSE should contact AEMO's Support Hub to gain access. - URL's for connecting to PDSE Markets Portal and MSATS	

	IESS SETTLEMENTS	IESS BDU BIDDING & DISPATCH
	PDSE Market portal - https://portal.pdse.marketnet.net.au MSATS - https://msats.preprod.nemnet.net.au/msats/index.jsp	

FREQUENTLY ASKED QUESTIONS

General PDSE questions

Why is AEMO providing the PDSE?

Participants requested an earlier release of technical material and provision of participant support environments for both the settlements and BDU components of the IESS project.

The intent of the PDSE is to better support participant interface development ahead of industry testing and market trials in the pre-production environment.

What is the PDSE?

The PDSE is being established to provide affected participants with early access to market systems environments to support their participant interface development of IESS changes.

Please note the PDSE is not a substitute for IESS industry testing and market trial activities in pre-production. There only will be one code drop to the PDSE and the code will not be maintained.

As a non-production environment, the PDSE is scaled to support interface development testing. It will not be suitable for performance or volume testing by participants.

How is the PDSE different from pre-production?

AEMO has pre-production and production environments that are maintained separately. The pre-production environment is intended for participant testing and training purposes. New features are added to the pre-production environment and announced in change notices and technical specifications, before being released into a 'live' production environment.

The PDSE is a dedicated environment for supporting participants in preparing for the IESS rule change. It will contain early versions of various features that are being developed by AEMO for IESS settlement changes and BDU bidding and dispatch.

The PDSE has not been built to replicate or replace pre-production. It is a dedicated IESS environment to support participants in the early stages of their development work, in particular the development testing of interfaces to

AEMO's updated market systems data models. The PDSE is not a complete replication of the pre-production environment and is not integrated with the Retail / MSATS system.

Once AEMO's IESS system changes are ready to go live, the usual AEMO process will be followed for releasing changes to the NEM systems i.e. first into AEMO's pre-production environment for participants to access and test their connectivity and integration during a set period, and then into the production environment. Prior to go-live in production, market trials and industry testing will be conducted in pre-production.

Who has access to the environment? Do I need to be a registered participant?

Participants wishing to use the PDSE must be a registered participant/user in pre-production. Table 3 details which participant types can access the PDSE and pre-production, and when they can use it.

Table 3   Participant access to AEMO's environments for IESS industry testing and market trial

	Access to and use of AEMO's environments	Financially responsible market participants (FRMP)	Market generator or market customer **with** existing BESS	Market generator or market customer **without** existing BESS	Not yet a NEM registered participant
IESS SETTLEMENT	**Can I use the PDSE for IESS settlement reports?**	Yes, from mid Dec 2023 to early June 2024 for existing NMIs / FRMPs.		No	
	Can I use pre-production for the settlement component of the IESS market trial and industry testing?	Yes, from 03 Apr 2024. Market trial period is Apr/May 2024. Industry testing can be performed in pre-production any time from 03 Apr 2024 based on settlement cases performed during Market Trial.		No	
IESS BDU BIDDING & DISPATCH	**Can I use the PDSE for BDU bidding and dispatch?**	n/a	Yes, from 22 Jan 2024 to early June 2024. Once you've confirmed interest in using the PDSE, a 'dummy' BDU DUID will be created for you.		No
	Can I use pre-production for the BDU component of the IESS market trial and industry testing?	n/a	Yes, providing Registration forms for IRP and new BDU DUID completed in sufficient time prior to commencement of Market Trial.	Limited opportunity and only if sufficiently progressed through registration process so that access to pre-production is established.	

AEMO requires participants to pre-register their interest in using the PDSE by Fri 24 November 2023, by responding to AEMO's survey.

- AEMO will use existing pre-production credentials of participants who are already registered in pre-production as the basis for establishing their Market Portal and API portal access in the PDSE.

- AEMO will use information provided in survey responses to create accounts and access credentials for FTP participant FileShare folders in PDSE.

The survey will close on 24 November 2023. From this time, participants may instead use AEMO's Support Hub to request access to the PDSE.

Please note that:

1. Existing participants who currently have access to pre-production bidding API's will be using same credentials to use Bidding Submission API's in the PDSE. But new or existing participants who never had access to bidding API's in the pre-production environment will need to request for the Transport Layer Security (TLS) certificate which is a self-managed BAU process through the Market Portal similar to the one for obtaining access to pre-production.

2. The PDSE has been set up based on a snapshot of registered participants as of 24 October 2023. Participants who registered after this date and wish to use the PDSE should contact AEMO's Support Hub to gain access.

Which Data Model is needed and will upgrade scripts be available

Both the Settlement and BDU components of the PDSE will use the MMS Data model v5.3 (in draft mode) as the data model basis. Upgrade scripts for the draft data model will be made available for participant use by 22 Nov 2023. Participants are warned that:

- *This pre-release version of the data model will have been tested and verified, however is still subject to potential change*

- *Participants should __not__ upgrade pre-production or production environments with these scripts as they may impact production / pre-production replication and functioning.*

Is 'Release' folder available in PDSE?

The purpose of "Release" folder is to provide the latest versions of Participants related application installations and this is currently available in the Pre-production environment only. It is also not available in Production.

For PDSE, it is not in scope to provide new IESS applications versions, but the participants can refer to the pre-production "Release" folder for any latest production versions of the applications.

NOTE: IESS June 2024 application release versions will not be available in the release folder until all internal AEMO testing is completed.

Is the software fully tested by AEMO?

No. Early release versions of both settlement and BDU bidding software will be made available via the PDSE to support participants' interface development. As such, the software is still subject to potential change.

- *This pre-release version of the data model will have been tested and verified, however is still subject to potential change.*

- *Participants should **not** upgrade pre-production or production environments with these scripts as they may impact production / pre-production replication and functioning.*

How will defects in the PDSE be managed?

Please note that the PDSE is not a coordinated test environment and only contains early versions of the settlement and BDU software.

- If defects are found in the code, it is unlikely that AEMO would update the PDSE. This is because the focus will be on preparing pre-production for IESS industry testing and market trial.

- However, defects should be reported via NEMReform@aemo.com.au so that they can be assessed for their impact to pre-production.

What if I have an issue? Raising and resolving issues.

Issues or queries arising during use of the environment must be raised via NEMReform@aemo.com.au

AEMO will address connection and access issues with the PDSE. Defect management will be limited (see question above). AEMO will address issues on a 'best endeavours' basis, including where appropriate:

- Providing a direct response to the participant who raised the issue

- Providing a general communication if multiple participants are likely to be affected

- Addressing access, environment integration and environment availability.

What are the environment support arrangements?

The PDSE environment is a non-production environment being made available to support participant development activities. It will be supported on a 'best endeavours' basis during business hours, with its priority ranking behind the Production and Pre-production support requirements.

Settlement PDSE questions

When will Settlement Data be available in the PDSE?

The PDSE will contain static settlement data for participant use from Fri 15 Dec 2023. This project milestones is monitored through the Implementation Forum and ITWG.

Who has access to the environment? Do I need to be a registered partcipant?

Registered FRMPs who receive settlement statements will be able to access the PDSE. Table 3 provides more details on which participant types can access the PDSE and pre-production, and when they can use it.

What is supported for Settlements?

The intent is to provide FRMPs with insight to the structure of settlement data under IESS rule changes. PDSE for IESS settlements will:

- include the items set out in Table 4.
- be a release of the MMS Data model v5.3 settlement tables that are populated from a single settlement run.

There will be no ongoing population of data, nor alignment to production. The EMMS technical specification contains the full detail of the data model update.

Table 4   Settlement data and reports populated in the PDSE

TOPIC	Data / reports
Data Interchange Files (CSV)	Billing Bill Daily energy Summ history Settlements
Invoicing Reports (TXT)	SR Report
Invoice PDFs	Prelim run -Non-Final Statement Final Run – Tax Invoice, RCTIs, Final Statement

Will AEMO be providing data refresh for Settlement data?

It is intended that the PDSE will be populated with one set of static data. This may be re-evaluated if major changes in the data structure are identified in subsequent AEMO or participant testing.

Which Settlements Run week is used for PDSE reports

AEMO used Contract Year 2023/Week 25/Final run. Settlement Case used is 9875. And there is no plan to do other runs in PDSE Env however it will likely be available during the Market Trial (the draft IESS market trial plan

will be released for comment on Fri 19 Jan). The data we are publishing in PDSE is only FINAL data for 2023 Week 25.

Is PDRBatcher and PDRLoader available in PDSE?

In PDSE, there will not be any uploads of CSV files from FTP to the public Nemweb folders and hence 'PDRBatcher' or 'PDRLoader' is not in scope of this environment offering. There will be no changes to the export/import directory paths and the folder structures are same as in production/preproduction.

Polling and deleting files from PDSE participant folders

It is understood that some participants may have automation in place in their respective internal environments to regularly poll files from PDSE participant folders and delete them. Please make sure that Settlement files are not being deleted, as these are a static set of reports and there will be no periodic loads.

Fact Sheet

BDU bidding and dispatch PDSE questions

When is the Bidding capability available?

Bidding functionality will be available in the PDSE on Mon 22 Jan 2024. This project milestones is monitored through the Implementation Forum and ITWG.

Who has access to the environment? Do I need to be a registered participant?

Participants with a BESS (or an imminent BESS) who have registered their interest in using the PDSE will be provided with access to the PDSE. Table 3 provides more details on which participant types can access the PDSE and pre-production, and when they can use it.

What capability can I test against for bidding?

The PDSE will support API and web interfaces for bidding; provide for bidding services for BDUs under the single DUID model; and reflect bids in dispatch (including 30-minute and 5-minute pre-dispatch), for the purposes of confirming interface and data model reporting.

What reports will be available for BDU bidding and dispatch?

The PDSE will include the Bidding & Dispatch NEM reports set out in 0.

Table 5   Bidding and dispatch reports available in the PDSE

Topic	Reports
Bidding	• BIDOFFERFILETRK (Confidential Energy/FCAS offer file tracking data.) • BIDOFFERFILETRK_LEGACY (Legacy Confidential Energy/FCAS offer file tracking data.) • NEM_BIDS (Confidential Energy/FCAS/MNSP offer file tracking data.)
Dispatch	• DISPATCHIS (Dispatch in Infoserver DB format) • DISPATCHIS_LEGACY (LEGACY Dispatch in Infoserver DB format) • DISPATCHOCD (Single Dispatch OCD case) • DISPATCHOCD_LEGACY (LEGACY Single Dispatch OCD case) • DISPATCHSCADA (Real time Scheduled, Semi-Scheduled and Non-Scheduled DUID SCADA data)
P5MIN	• P5MIN (Five-Minute Predispatch Reports) • P5MIN_LEGACY (LEGACY Five-Minute Predispatch Reports)
Pre-dispatch	• DEMAND_PREDISPATCH (Forecast region demand in Predispatch timeframe) • FORECAST_OPERATIONAL_DEMAND_HH (Half hourly forecast operational demand) • PREDISPATCHIS (PreDispatch Reports - Infoserver format) • PREDISPATCHIS_LEGACY (LEGACY PreDispatch Reports - Infoserver format)

Fact Sheet

I want to make use of the PDSE for development of my BDU model. What do I need to do?

AEMO requires participants to pre-register their interest in using the PDSE by Fri 24 November 2023, by responding to AEMO's survey.

- AEMO will use existing pre-production credentials of participants who are already registered in pre-production as the basis for establishing their Market Portal and API portal access in the PDSE.

- AEMO will use information provided in survey responses to create accounts and access credentials for FTP participant FileShare folders in PDSE.

The survey will close on 24 November 2023. From this time, participants may instead use AEMO's Support Hub to request access to the PDSE.

Please note that:

- AEMO will create a new BDU DUID that will allow testing of 'single DUID' capability.

- The BDU DUID created in the PDSE is for interface testing only and will not be migrated to pre-production or production.

- Existing participants who currently have access to pre-production bidding API's will be using same credentials to use Bidding Submission API's in the PDSE. But new or existing participants who never had access to bidding API's in the pre-production environment will need to request for the Transport Layer Security (TLS) certificate which is a self-managed BAU process through the Market Portal similar to the one for obtaining access to pre-production.

- The PDSE has been set up based on a snapshot of registered participants as of 24 October 2023. Participants who registered after this date and wish to use the PDSE should contact AEMO's Support Hub to gain access.

Can I see dispatch results in settlement tables for BDUs?

No. In the PDSE, bidding and dispatch activity:

- Will be reflected in bidding reports and tables

- Will NOT be reflected in settlement data.

Can we submit bids via Web portal in PDSE?

While the Web bidding services are enabled in PDSE, we currently have a known issue where Participants are unable to use 'Web bidding' channel for submitting their first bids. AEMO is working towards a fix for this issue and will aim to deploy a solution prior to the market trials in the pre-production environment. Please use the 'FTP/API' channels to submit your first bids in PDSE. Web bidding services can be utilised for second bid submissions and for all other bids.

Why can't I see the CO2 Emission and Meter details in PDSE RMC for the dummy BDU DUID's?

AEMO identified a bug in the PDSE Registrations Client that was blocking us to register the dummy BDU DUID's in RMC with CO2 Emission and Meter details. To deliver the Bidding and Dispatch services in PDSE on time (from 22nd January 2024), AEMO registered the dummy BDU DUID's excluding these details given they are not required for BDU development. AEMO will aim to fix this issue in the upcoming versions of the RMC that will be used for industry testing and market trials in the pre-production environment.

Fact Sheet

AEMO has taken all reasonable care in the preparation of this fact sheet.

However, the information should not be construed as advice.

Where can I find more information?

AEMC's IESS determination & rule	https://www.aemc.gov.au/rule-changes/integrating-energy-storage-systems-nem
AEMC's Implementing IESS determination & rule	https://www.aemc.gov.au/rule-changes/implementing-integrated-energy-storage-systems
AEMO's IESS participant toolbox	https://aemo.com.au/initiatives/major-programs/integrating-energy-storage-systems-project/integrating-energy-storage-systems-faqs
IESS industry testing and market trial strategy	https://aemo.com.au/-/media/files/initiatives/integrating-energy-storage-systems-project/aemo-iess-june-2024-industry-test-and-market-trials-strategy---final.pdf?la=en
AEMO's IT change and release management	https://aemo.com.au/energy-systems/market-it-systems/it-change-and-release-management

For PDSE enquiries, please contact AEMO's NEM Reform Program via NEMReform@aemo.com.au

For any further enquiries, please contact AEMO's Information and Support Hub via

- Support.hub@aemo.com.au or
- call 1300 236 600

This fact sheet is only a summary of the PDSE arrangements. Applicants are responsible for ensuring they understand the relevant provisions of the National Electricity Rules and other applicable instruments, which prevail in the case of any inconsistency.